

Revision E  
April 2018

# FLAMEBREAK

Flamebreak 44mm  
Flamebreak 54mm

View this manual online at [www.flamebreaktechnical.com](http://www.flamebreaktechnical.com)





# FLAMEBREAK

## About this Manual:

This Technical Manual has been prepared for Pacific Rim Wood Ltd., for use as guidance in the use of FLAMEBREAK™ Door Blanks.

This manual suggests methods for the use of FLAMEBREAK™ solid laminated wood cores as a base product for the manufacture of wooden door assemblies to satisfy a wide range of design and performance requirements with reference to relevant British Standards.

**NOTE 1:** The contents of this manual shown with the 'Q' symbol are approved by reference to current fire test / assessment data for the manufacture of fire doors under the 'Q-Mark' third party certification scheme administered by Exova - BM TRADA. For the content of this manual that is not marked with this symbol, the information is advisory and may not apply for fire door applications.

**NOTE 2:** To maintain the 'Q-Mark' status, the door assembly manufacturer must be certified in the 'Q-Mark' third party certification scheme. For various reasons, users of FLAMEBREAK™ may wish to be members of alternative third party certification schemes. Pacific Rim Wood Ltd. provide support for users of FLAMEBREAK™ by making base test data available to alternative UKAS accredited third party certification providers for this purpose.

Enquiries and requests for technical support on the use of FLAMEBREAK™ Door Blanks should be referred to:

Pacific Rim Wood Ltd.,  
Ground Floor Suite, Block B,  
The Old Kelways  
Somerton Road  
Langport,  
Somerset TA10 9SJ

Tel: +44 (0) 1458 252 305

E-mail: [enquiries@prwuk.com](mailto:enquiries@prwuk.com)

The development of FLAMEBREAK™ door cores is an ongoing process. The information contained in this manual is current at the time of publication but may be changed without prior notice.

### NOTE:

**This manual is for guidance only. Pacific Rim Wood Ltd. do not accept any liability in tort or otherwise resulting from any failure of FLAMEBREAK™ based products to satisfy any project performance requirements or for any damage howsoever caused resulting from the use of FLAMEBREAK™ door cores.**



012

Certificate Number 006/020



### About 'Q Mark'

The 'Q-Mark' Fire Door Scheme is a third party certification scheme accredited by UKAS which is designed to prove the worth of a manufacturer's products.

Manufacturers are required to have their products type tested and assessed to cover a product range. They then undergo periodic audits on their factory, with a full scale fire resistance test every three years.

Fire Door  
Manufacture



012

## Pacific Rim Wood Ltd

Ground Floor Suite  
Block B  
The Old Kelways  
Somerton Road  
Langport  
Somerset  
TA10 9SJ

## Flamebreak™ Technical Manual Revision E April 2018 Validation of Data against Global Assessment Reports

The specifications of all pages within this technical manual which are marked with a “Q” have been checked against the following Global Assessment reports and verified to be correct:

FEA/F98164 Rev M     **Flamebreak™30** 30 minute doorsets  
FEA/F02141 Rev J     **Flamebreak™60** 60 minute doorsets

The data contained in the Q-Mark designated sections of this manual can therefore be utilised in the following ways, provided that both of the assessments listed above are still valid, and have not been updated, revised or withdrawn:

- 1) By a fabricator who does not hold 3<sup>rd</sup> party certification under the Exova BM TRADA Q-Mark scheme to support the demonstration of conformance of their specification to the global assessment reports listed above. Whilst this may be acceptable for building regulations compliance, this does not infer 3<sup>rd</sup> party certification in any way and the final product will not be covered by 3<sup>rd</sup> party certification in this instance.
- 2) By a Q-Mark Fire Door Scheme Certified Fabricator in support of their certification provided that the fabricator has these Global Assessments included in their scope of certification.

Supplementary data also contained in this manual (in Appendices) which does not hold the “Q” symbol has not been approved by Exova BM TRADA. This therefore may not be used in support of 3<sup>rd</sup> party certification under the Exova BM TRADA Q-Mark fire door scheme.

Signed on behalf of  
Exova BM TRADA

27<sup>th</sup> April 2018

Validation Date:

26<sup>th</sup> April 2021

Expiry Date:

<b>Section 1 -</b>	<b>FLAMEBREAK™ General specifications</b> & UK stock sizes. including Health & Safety recommendations.
<b>Section 2 -</b>	<b>FLAMEBREAK™ Fire Door Application data</b> ('Q' Mark approved dimensional application envelopes).
<b>Section 3 -</b>	<b>Lippings &amp; Facings</b> - Recommended materials & methods.
<b>Section 4 -</b>	<b>Intumescent Seals</b> - Recommended seal types and seal location advice.
<b>Section 5 -</b>	<b>Smoke Sealing</b> - Recommended seal types and seal location advice.
<b>Section 6 -</b>	<b>Glazing</b> - Glass types with recommended beading options for fire rated doorsets.
<b>Section 7 -</b>	<b>Frames</b> - Recommended minimum frame section dimensions with lists showing recommended softwood and hardwood species for fire door applications.
<b>Section 8 -</b>	<b>Hardware</b> - Recommendations concerning the selection and use of hardware with fire rated and other doorsets.
<b>Section 9 -</b>	<b>Coordination</b> - Recommendations for the coordination of doorsets; doors / frames and doorsets with surrounding structures.
<b>Section 10 -</b>	<b>Acoustics</b> - Recommendations and guidance for the use of FLAMEBREAK™ cores for satisfying sound attenuating performance requirements with tested and assessed performance data.
<b>Section 11 -</b>	<b>Mechanical Performance</b> - DD171, BS EN 1192, PAS23 & PAS24 related performance data and guidance.
<b>Section 12 -</b>	<b>Thermal Insulation</b> - Guidance for the use of FLAMEBREAK™ door cores for satisfying 'U' value performance requirements.
<b>Section 13 -</b>	<b>External Doors</b> - Recommendations and guidance for the use of FLAMEBREAK™ cores for use in external locations.
<b>Section 14 -</b>	<b>Fire Door Installation</b> - Recommendations and guidance for the installation of fire rated door sets.
<b>Section 15 -</b>	<b>FSC Certified FLAMEBREAK™</b> - Information and guidance for the specification of FSC certified FLAMEBREAK™ door cores.
<b>Section 16 -</b>	<b>Appendices:</b>
	<b>Appendix 16a. Flamebreak Certificates.</b>
	<b>Appendix 16b. Architectural &amp; Specialist Door Manufacturers Association (ASDMA) Publications:</b>
	<ul style="list-style-type: none"><li>• Recommended environmental conditions for maintaining the moisture content of wood doors and door cores during storage &amp; use.</li><li>• ASDMA Document - Pre-Installation, Preparation, Site Reception, Handling, Storage &amp; Installation advice relating to wood door sets.</li><li>• ASDMA Document - Maintenance, Damage Prevention &amp; Troubleshooting advice relating to wood door sets.</li></ul>
	<b>Appendix 16c. UKAS approved 3rd. party certification providers.</b>
	<b>Appendix 16d. Acoustic seal supplier brochures:</b>
	<ul style="list-style-type: none"><li>• Norsound Ltd.</li><li>• Sealed Tight Solutions.</li></ul>
	<b>Appendix 16e. NGS Group - Pilkington Glass data.</b>
	<b>Appendix 16f. Safehinge™ brochure.</b>
	<b>Appendix 16g. Rutland Door Controls brochure.</b>
	<b>Appendix 16h. Acrovyn Door Edge Protection.</b>



FLAMEBREAK



- Pacific Rim Wood Ltd. provides for a worldwide sales and distribution service for wood products manufactured by P.T. Kutai Timber Indonesia including a range of FLAMEBREAK™ door core products.
- The basic core construction consists of three layers of cross banded lamels contributing to exceptional dimensional stability.
- The core construction includes a concealed perimeter framing to all four edges with framing elements tongue and groove jointed to the core structure.
- The core material consists of a light weight fast growing tropical hardwood of approx. 300Kgs/m<sup>3</sup> density. The timber for the core is harvested from forests that are managed to provide for reforestation under the control of an ISO14001 Environmental Management System supported by chain of custody certification.
- The core framing material is made up of mixed tropical hardwoods of approx. 480Kgs/m<sup>3</sup> density. The framing is finger jointed to make economical use of timber from other processes that would otherwise be wasted.
- FLAMEBREAK 30™ Door Blanks are provided with optional facings as follows:
  - 4mm Plywood.
  - 6mm Plywood.
  - 6mm Medium Density Fibreboard.
- FLAMEBREAK 60™ Door Blanks are provided with optional facings as follows:
  - 6mm Plywood.
  - 6mm Medium Density Fibreboard.
- Individual core blocks are assembled with a PVA adhesive and the three layer core lamels are bonded using a Melamine Urea adhesive system. Facings are applied to the core assembly with a melamine adhesive. Blank assemblies have been subjected to Soak Delaminating Tests and are suitable for external use, subject to the application of suitable finishing systems.
- FLAMEBREAK™ Door blanks have been subjected to a number of BS476 Pt.22 fire resistant tests with and without additional lippings and have a proven performance for a wide range of FD30 (*half hour fire resistance*) and FD60 (*one hour fire resistance*) applications. More recently, door assemblies based upon the use of FLAMEBREAK™ cores have been successfully tested to the requirements of BS EN 1634-1 providing for confidence that 44mm FLAMEBREAK™ cores have the potential to provide for a stable door core product for the development of CE marked doorset designs for half hour fire door applications.
- FLAMEBREAK™ Door blanks can be faced with a wide range of decorative facing materials, e.g. decorative veneers, laminates PVC etc.
- Doors manufactured using FLAMEBREAK™ Door Blanks can be glazed using an extensive range of glass and beading systems.
- The solid wooden core construction of FLAMEBREAK™ Door Blanks provides for fixing of a wide range of ironmongery items. For fire rated door assemblies, reference should be made to BS8214 and the related ABHM & Guild of Architectural Ironmongers Code of Practice. 'Hardware for Timber Fire and Escape Doors'.

**Handling & Storage:**

- When handling FLAMEBREAK™ Door Blanks with forklift trucks or other mechanised handling equipment, care should be taken to observe the safety advice and weight restrictions related to the equipment.
- When manually handling, operatives should wear suitable industrial quality gloves to avoid injury.
- FLAMEBREAK™ Door Blanks should be stored under clean dry conditions similar in ambient condition to that intended for further production.
- Areas for storing FLAMEBREAK™ Door Blanks should be dry and adequately ventilated such that the Blanks are not subjected to excessive humidity and temperature.
- FLAMEBREAK™ Door Blanks should be stored flat in packaging as delivered. The lower bundle should be stored on a flat and level base supported by a minimum of 4No. equi-spaced timber bearers. Additional bundles may be stacked on top of a base bundle with each bundle separated by equi-spaced bearers to a maximum recommended height of 5 bundles per stack. Where varying size blanks are stored, the larger size blanks should be positioned at the bottom of the stack reducing to the smaller size blanks at the top of a stack.

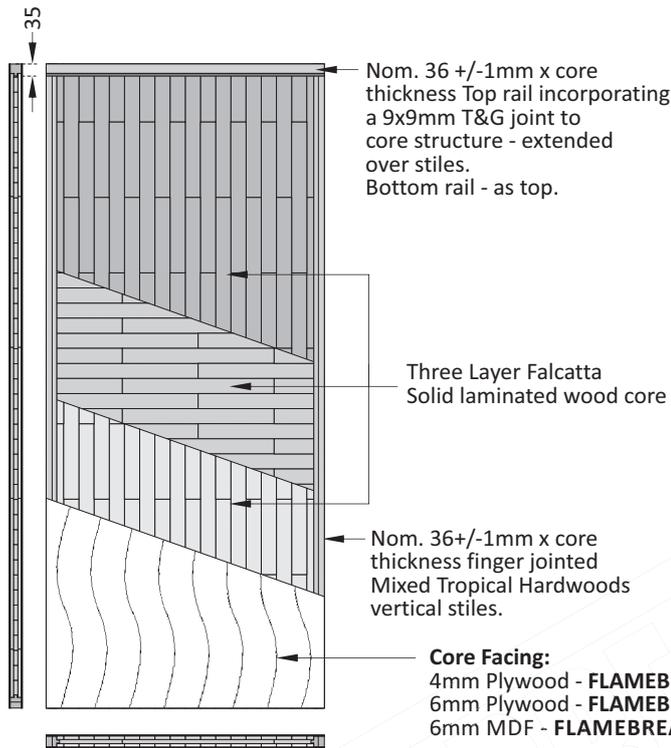
**Health & Safety:**

- When worked, it is likely that the Door Blanks will produce wood dust that can act as a skin or respiratory irritant. Adequate ventilation and dust waste extraction should be provided for in the workplace.  
**NOTE: Refer to COSHH Regulations and Guidance Note EH40.**
- Ori-nasal masks to BS EN 149 and eye shields to BS EN 166 ~ 168 are recommended for use by operatives involved in the handling and working of FLAMEBREAK™.
- **In the event of exposure resulting in injury to persons the following first aid recommendations are suggested:**
  - **Inhalation of Wood Dust:** Remove person to fresh air. Clean nasal passages.
  - **Wood Dust in Eyes:** Flush eyes with tepid clean water for 15mins.
  - **If no recovery is made:** Seek immediate medical advice.

**Fire & Explosion:**

- FLAMEBREAK™ Door Blanks will not explode but airborne dust particles released when working the blanks could present a fire hazard. Smoking and the use of naked flames should not be permitted in work areas.
- The work area should be provided with an efficient and continuous dust extraction system.
- FLAMEBREAK™ Door Blanks are solid wood products. Normal wood fire fighting procedures should be adopted in the event of fire.

Fig. 1.1



### FLAMEBREAK™ Door Blanks

Manufacturing tolerances:

- Thickness = + or - 0.5mm
- Height & Width = + or - 2mm
- Squareness = + or - 0.3mm

Component	Species / Type		Configuration	Min. density (kg/m <sup>3</sup> )
Core	Parasoriantes falacateria or Albisia falcatta or Orchroma pyramidale		3 layers of lamels laid in alternate directions - grooved to accept the stiles and rails	140 ~ 360 (average 210)
Stiles	Mixed tropical hardwood	Leaf size ≤ 2440(h) x 1220 (w)	1 No. 32 ~ 36 thick (depending on facing thickness) x Nom. 36 deep, incorporating a 9x9 tongue to locate into the core material.	480
		Leaf size ≤ 2135(h) x 915 (w)	1 No. 32 ~ 36 thick (depending on facing thickness) x Nom. 36 deep.	480
Top & Bottom Rails	Mixed tropical hardwood		1 No. 32 ~ 36 thick (depending on facing thickness) x Nom. 36 deep, incorporating a 9x9 tongue to locate into the core material.	480
Core Facings	FLAMEBREAK 430 FLAMEBREAK 630 FLAMEBREAK FF630		Nom. 4mm Plywood. Nom. 6mm Plywood. Nom. 6mm MDF.	Various

**WARNING:**

For fire door applications, the top perimeter rail that forms part of the core structure, must generally be retained with a maximum trimming allowance of 3mm. (See page 1.8 for approved height adjustments for fire rated doors up to FD30).

The bottom rail may be removed completely, without the necessity for replacement by lipping. However, the use of hardwood lippings is strongly recommended where doors are to be used in external locations or for internal locations likely to be subjected to wet conditions.

For non fire rated applications, the core perimeter framing may be reduced in width - or removed - from either or both vertical edges. (See page 1.7 for approved width adjustments for fire rated doors up to FD30).

**NOTE:** Flamebreak cores in excess of 2745mm high are supplied without top and bottom rails.

Flamebreak 430 cores that are supplied without the top rail and that are used for fire door applications, must be hardwood lipped with the application limited to latched, single leaf, single swing configurations with 25x4mm Lorient 617 being the only approved intumescent material for this application.

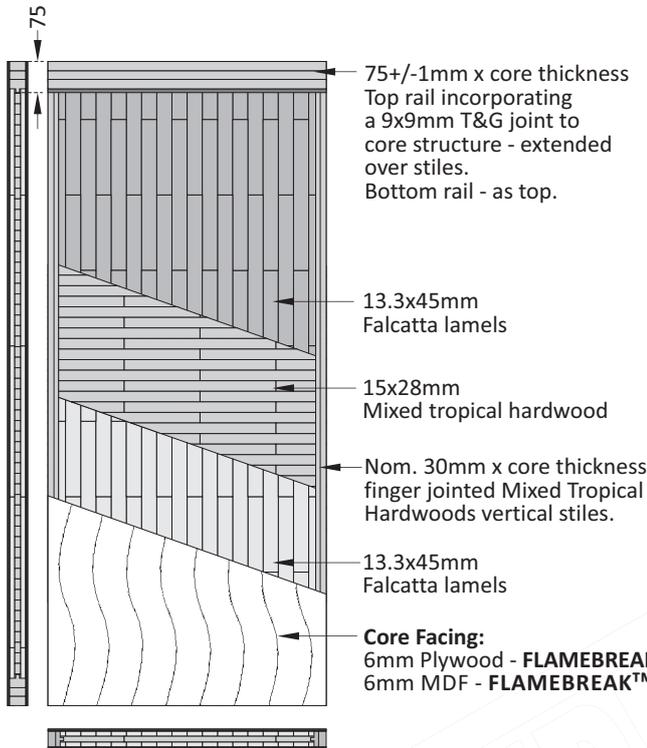


# 1.4

## General Construction 54mm FLAMEBREAK™

# FLAMEBREAK

Fig. 1.2



### FLAMEBREAK 660™

Manufacturing tolerances:

Thickness	= + or - 0.5mm
Height & Width	= + or - 2mm
Squareness	= + or - 0.3mm

Component	Species / Type	Configuration	Min. density (kg/m <sup>3</sup> )
Core Outer layers	Parasoriantes falacateria or Albisia falcatta	Vertically oriented 13.5 thick x 45 wide lamels.	180 ~ 360
Core Inner layer	Mixed tropical hardwood	Horizontally oriented 15 thick x 28 wide lamels.	480
Stiles	Agathis or mixed tropical hardwood - in 2 lamels	35 wide (total) x Nom. 41+/-1 thick incorporating a 9 wide x 9 deep tongue into the core.	Agathis - 480 or mixed tropical hardwood - 610
Top Rail	Agathis or mixed tropical hardwood - in 2 lamels	75 wide (total) x Nom. 41+/-1 thick incorporating a 9 wide x 9 deep tongue into the core.	Agathis - 480 or mixed tropical hardwood - 610
Bottom Rail	Agathis or mixed tropical hardwood - in 2 lamels	35 wide (total) x Nom. 41+/-1 thick incorporating a 9 wide x 9 deep tongue into the core.	Agathis - 480 or mixed tropical hardwood - 610
Core Facings	FLAMEBREAK 660 FLAMEBREAK FF660	Nom. 6mm Plywood. Nom. 6mm MDF.	Various

**WARNING:**

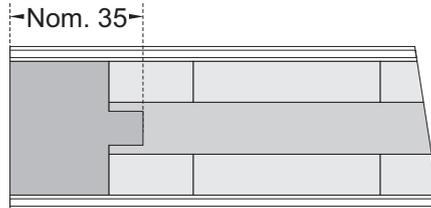
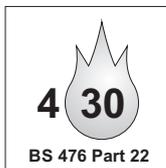
For fire door applications, the 75 mm top rail that forms part of the core structure must be retained with a maximum trimming allowance of 3mm. (See page 1.9 for approved height adjustments for FD60 fire rated doors).

For non fire rated applications, the bottom rail may be removed completely, without the necessity for replacement by lipping. However, the use of hardwood lippings is strongly recommended where doors are to be used in external locations or for internal locations likely to be subjected to wet conditions. (See page 1.9 for approved height adjustments for FD60 fire rated doors).

For non fire rated applications, the core perimeter framing may be reduced in width - or removed - from either or both vertical edges. (See page 1.7 for approved width adjustments for FD60 fire rated doors).

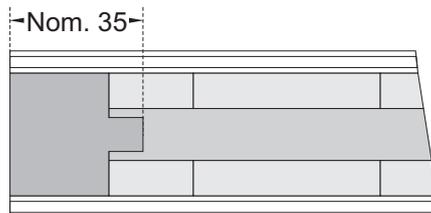
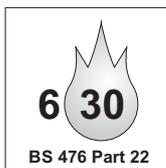


Fig. 1.3



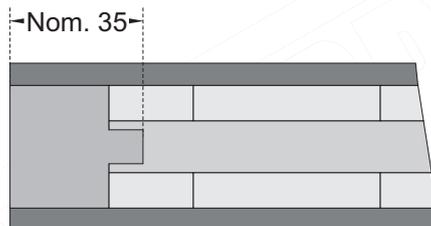
### FLAMEBREAK Type 430

Nom. 44mm fin. thickness. Faced with 4mm long grain plywood.  
Suitable for external use.  
Suitable for fire door applications.  
Suitable for Acoustic door applications.  
Suitable for PAS23 & PAS24 applications.  
Suitable for Thermal Insulation applications.  
Avg. Density: 370Kgs/m<sup>3</sup> = approx: 16.4Kgs/m<sup>2</sup>



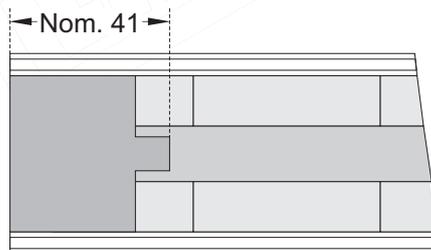
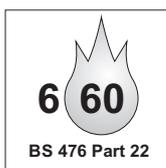
### FLAMEBREAK Type 630

Nom. 45mm fin. thickness. Faced with 6mm long grain plywood.  
Suitable for external use.  
Suitable for fire door applications.  
Suitable for Acoustic door applications.  
Suitable for PAS23 & PAS24 applications.  
Suitable for Thermal Insulation applications.  
Avg. Density: 380Kgs/m<sup>3</sup> = approx: 16.9Kgs/m<sup>2</sup>



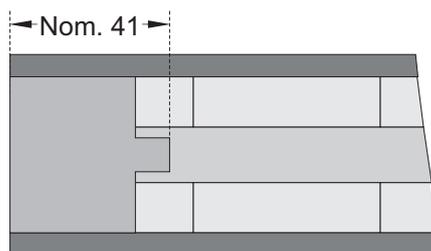
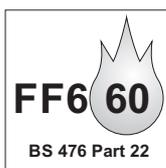
### FLAMEBREAK Type FF630

Nom. 44mm fin. thickness. Faced with 6mm Medium Density Fibreboard.  
Suitable for internal painted doors and for facing with veneers or other decorative finishes.  
Suitable for fire door applications.  
Suitable for Acoustic door applications.  
Suitable for PAS23 & PAS24 applications.  
Suitable for Thermal Insulation applications.  
Avg. Density: 470Kgs/m<sup>3</sup> = approx: 21Kgs/m<sup>2</sup>



### FLAMEBREAK Type 660

Nom. 54mm fin. thickness. Faced with 6mm long grain plywood.  
Suitable for internal or external use.  
Suitable for fire door applications.  
Suitable for Acoustic door applications.  
Suitable for PAS23 & PAS24 applications.  
Suitable for Thermal Insulation applications.  
Avg. Density: 380Kgs/m<sup>3</sup> = approx: 20.5Kgs/m<sup>2</sup>



### FLAMEBREAK Type FF660

Nom. 54mm fin. thickness. Faced with 6mm Medium Density Fibreboard.  
Suitable for internal use.  
Suitable for fire door applications.  
Suitable for Acoustic door applications.  
Suitable for PAS23 & PAS24 applications.  
Suitable for Thermal Insulation applications.  
Avg. Density: 380Kgs/m<sup>3</sup> = approx: 20.5Kgs/m<sup>2</sup>

**NOTE: Core perimeter framing can be in one or more pieces.**

# 1.6

## FLAMEBREAK™ UK Stock Sizes



### 44mm FLAMEBREAK™

#### Door Cores:

#### FLAMEBREAK™ 430

44mm Thickness  
4mm Plywood face.  
Paint Grade.

Height mm	Width mm	Pack Qty.
3050	1220	14No.
2032	813	22No.
2745	915	14No.
2440	1220	22No.
2440	915	22No.
2135	1220	22No.
2135	915	22No.
2058	838	22No.
1981	838	22No.
1981	762	22No.

### FLAMEBREAK™ UK Stock Sizes:

The following FLAMEBREAK™ cores are generally available for delivery from stocks held in the United Kingdom. Alternative size cores may be manufactured to special order.

FLAMEBREAK™ Door Blanks are also stocked in the United Kingdom with hardwood lippings factory applied to all edges. Consult stockist for further details.

### FLAMEBREAK™ FF630

44mm Thickness  
6mm MDF face.

Height mm	Width mm	Pack Qty.
2440	1220	22No.
2044	915	22No.
2135	915	22No.
2058	838	22No.

**NOTE 1:** FLAMEBREAK™ Door blanks in the following dimensions have scarf jointed faces: 3050x1220mm, & 2745x915mm

**NOTE 2:** 2745 ~ 3050mm high cores supplied without top rail - See page 1.3

### 54mm FLAMEBREAK™ Door Cores:

#### FLAMEBREAK™ 660

54mm Thickness  
6mm Plywood face.  
Paint Grade.

Height mm	Width mm	Pack Qty.
2440	1220	18No.
2135	915	18No.

#### FLAMEBREAK™ FF660

54mm Thickness  
6mm MDF face.

Height mm	Width mm	Pack Qty.
2440	1220	18No.
2135	915	18No.

### FSC Certified 44mm FLAMEBREAK™ Door Cores:

#### FLAMEBREAK™ 430FSC

44mm Thickness  
4mm Plywood face.  
Paint Grade.

**NOTE:** FSC Certified door cores are supplied with top rails only as part of the core structure.

*These cores must be hardwood lipped for fire door applications.*

Height mm	Width mm	Pack Qty.
2440	1220	22No.
2135	915	22No.

#### FLAMEBREAK™ FF630FSC

44mm Thickness  
6mm MDF face.

Height mm	Width mm	Pack Qty.
2440	1220	22No.
2135	915	22No.

### FSC Certified 54mm FLAMEBREAK™ Door Cores:

#### FLAMEBREAK™ 660FSC

54mm Thickness  
6mm Plywood face.  
Paint Grade.

**NOTE:** FSC Certified door cores are supplied with top rails only as part of the core structure.

*These cores must be hardwood lipped for fire door applications.*

Height mm	Width mm	Pack Qty.
2440	1220	18No.
2135	915	18No.

#### FLAMEBREAK™ FF660FSC

54mm Thickness  
6mm MDF face.

Height mm	Width mm	Pack Qty.
2440	1220	18No.
2135	915	18No.

**NOTE:** Stock sizes identified above are current at the time of publication but may vary according to demand.

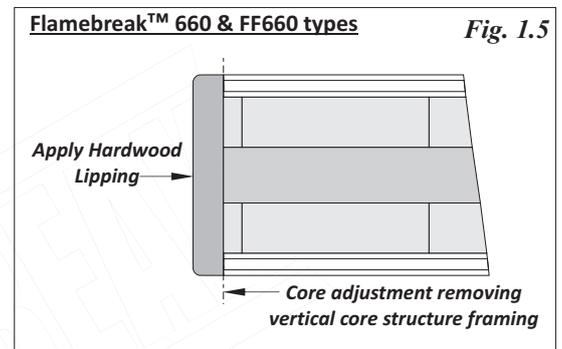
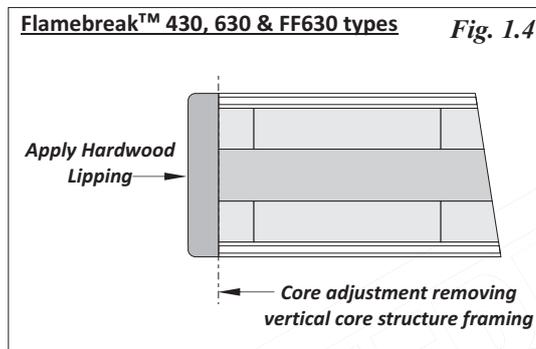
### Lipped Stiles

With the exception of FSC Certified - (or unless specified for special order) - Flamebreak™ door cores are supplied with perimeter framing as described by reference to **pages 1.3 & 1.4**.

For door manufacturing / sizing purposes, the vertical core structure framing can be removed completely.

Where the vertical core structure framing is removed on one or both sides of the core the vertical door edges must be hardwood lipped as described by reference to **Section 3 - Facings & Lippings**.

Hardwood lippings complying with Section 3 can also be added to door cores without the necessity to remove the vertical core structure framing.

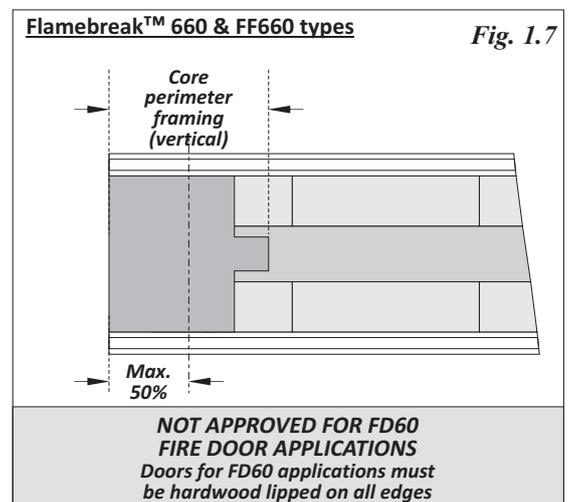
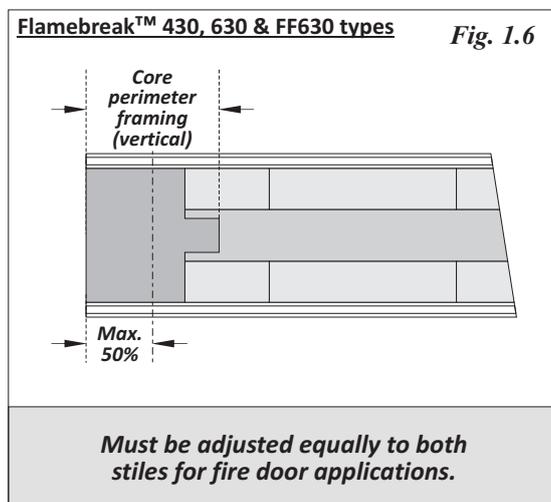


### Edge Banded Stiles

With the exception of FSC Certified (or unless specified for special order) Flamebreak™ door cores are supplied with perimeter framing as described by reference to **pages 1.3 & 1.4**.

Use of Flamebreak™ door cores is also approved using an edge banded detail - (where core facing materials are visible at the edge of the door) - without the need to apply additional lippings subject to the following:

- The edge banded option is not approved for FD60 fire door applications
- The vertical core framing can be reduced by a maximum of 50% of the core framing as supplied.
- The vertical core framing must be reduced equally from both sides of the door.



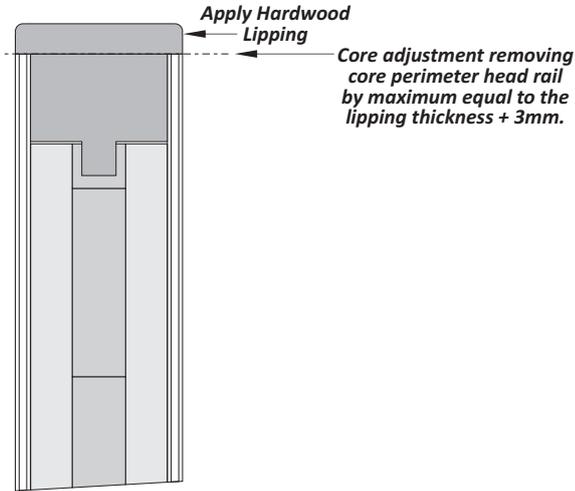
# 1.8 FLAMEBREAK™ Door Core Adjustments Height Types 430, 630 & FF630



## Lipped Head of Door

Flamebreak™ 430, 630 & FF630 types

Fig. 1.8



### Approved Adjustments for FD30 Applications - Core construction Top Rail - Flamebreak™ core Types 430, 630 & FF630:

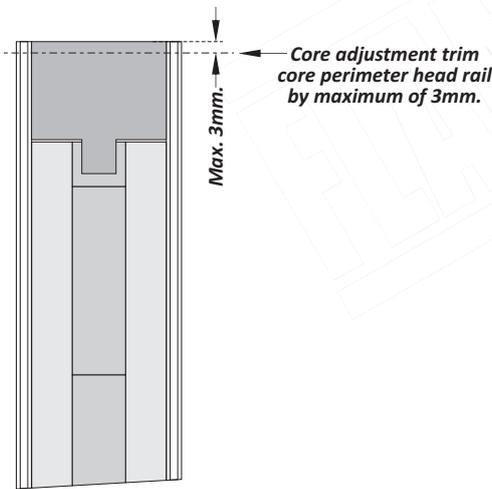
Flamebreak™ 430, 630 & FF630 door cores are supplied with perimeter framing head rails as described by reference to **pages 1.3 & 1.4**.

For door manufacturing / sizing purposes, the head rail can be reduced by a maximum dimension equal to the lipping thickness + 3mm.

## Edge Banded Head of Door

Flamebreak™ 430, 630 & FF630 types

Fig. 1.9



### Approved Adjustments for FD30 Applications - Core construction Top Rail - Flamebreak™ core Types 430, 630 & FF630:

Flamebreak™ 430, 630 & FF630 door cores are supplied with perimeter framing as described by reference to **pages 1.3 & 1.4**.

Use of Flamebreak™ door cores is also approved using an edge banded detail - (where core facing materials are visible at the edge of the door) - without the need to apply additional lippings subject to the following:

- The core construction top rail may be reduced by a maximum of 3mm.

## Bottom Rail Adjustments

### Approved Adjustments - Core construction Bottom Rail - Flamebreak™ core Types 430, 630 & FF630:

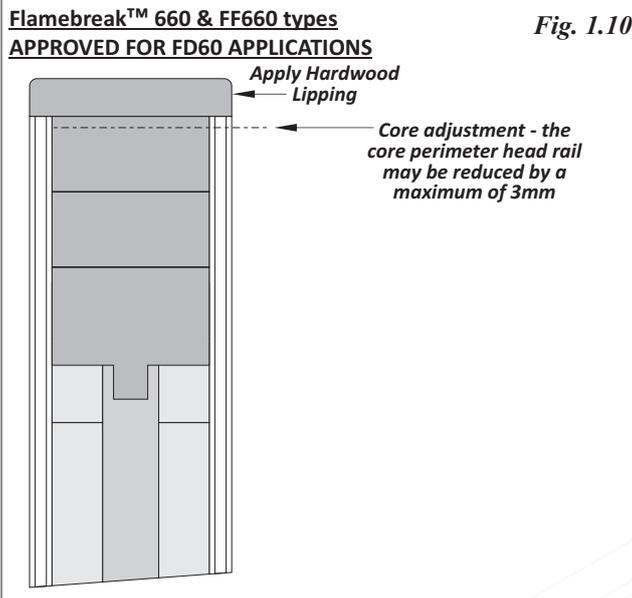
Flamebreak™ 430, 630 & FF630 door cores are supplied with perimeter framing as described by reference to **pages 1.3 & 1.4**.

The core construction bottom rail can be removed completely without the necessity to lip the bottom edge.

**NOTE:** When the core construction bottom rail is removed, the use of hardwood lippings is strongly recommended where doors are to be used in external locations or for internal locations likely to be subjected to wet conditions.



## Lipped Head of Door



### Approved Adjustments for FD60 Applications - Core construction Top Rail - Flamebreak™ core Types 660 & FF660:

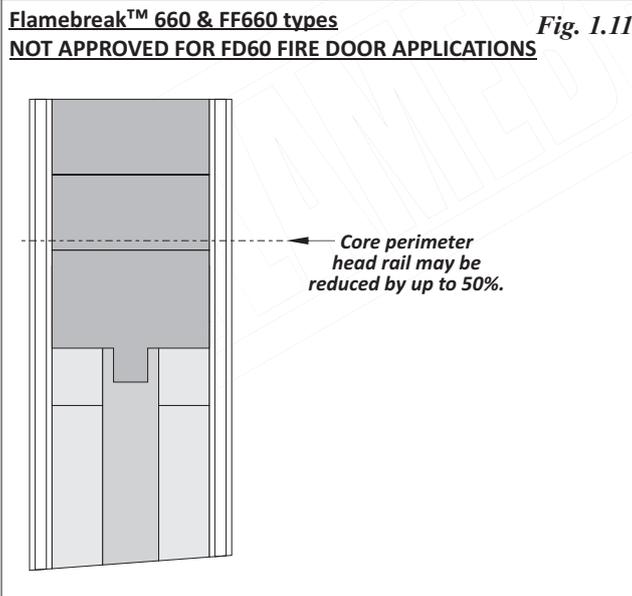
Flamebreak™ door cores are supplied with perimeter framing head rails as described by reference to *pages 1.3 & 1.4*.

For door manufacturing / sizing purposes, the core perimeter framing head rail can be reduced by a maximum of 3mm.

Door used for FD60 applications must be hardwood lipped on the top edge. **See Section 3.**

For FD60 applications doors must be hardwood lipped on all edges.

## Edge Banded Head of Door



### Approved Adjustments - Core construction Top Rail - Flamebreak™ core Types 660 & FF660 **NOT APPROVED FOR FD60 FIRE DOOR APPLICATIONS**

Flamebreak™ 660 & FF660 door cores are supplied with perimeter framing as described by reference to *pages 1.3 & 1.4*.

For uses excluding FD60 fire door applications, the perimeter head rail may be reduced by up to 50% to provided for an edge banded appearance without the need to apply lippings.

## Bottom Rail Adjustments

### Approved Adjustments - Core construction Bottom Rail - Flamebreak core Types 660 & FF660:

Flamebreak™ 660 & FF660 door cores are supplied with perimeter framing as described by reference to *pages 1.3 & 1.4*.

The core construction bottom rail can be reduced or removed completely but for FD60 applications a bottom edge lipping must be applied. **See Section 3.**

For FD60 applications doors must be hardwood lipped on all edges.

**NOTE:** When the core construction bottom rail is removed, the use of hardwood lippings is strongly recommended where doors are to be used in external locations or for internal locations likely to be subjected to wet conditions.





FLAMEBREAK



### Fire Door Applications:

Safety provisions in the event of fire are generally described by reference to National Regulations. In addition, requirements may be influenced by:

- Local Bye Laws.
- Client specifications.

**NOTE: Client specifications may take into account the particular purpose of the building e.g. HTM58 for Hospitals or Building Bulletin 100 for Schools in the United Kingdom.**

The applicable Regulation for England & Wales is: Building Regulations (*England & Wales*) - Approved Document 'B' - 2006 Edition incorporating 2010 & 2013 amendments.

**NOTE: Similar regulations apply in Scotland, Northern Ireland and the Republic of Ireland.**

Approved Document 'B' is in two parts:

- Approved Document 'B1' applies to Dwellings.**
- Approved Document 'B2' applies to Public Buildings.**

For dwellings, the door assembly designs are generally determined by the door / door set manufacturer and are normally available in 'standard' sizes (*See BS4787 Pt.1*) from Builders Merchant sources. The doors / door sets are generally manufactured for 'stock' with no particular final location in mind.

For public buildings, the design of the door assemblies may be determined by an Architect or Designer with each door assembly designed to suit a particular opening in a particular building. This may result in a wide variety of dimensional and feature requirements often with performance attributes in addition to the fire performance.

A standard (prescribed) product can be tested to the required performance standard and supplied on the basis of the base test evidence. For non standard or bespoke products it would be an impossible task to test every possible variant in size, configuration, glazing requirements and hardware variations. The method adopted in the United Kingdom is for bespoke door / door assembly suppliers to test constructions to provide for applications 'envelopes'.

**NOTE: Similar methods apply in the United States of America, Commonwealth and ex Commonwealth countries and many other Middle Eastern and Far Eastern states.**

An 'applications envelope' is determined by way of 'expert opinion' based upon test evidence. The base test evidence sources include testing carried out by the door core manufacturer and other door component suppliers / manufacturers. e.g. intumescent seal, glass, hardware suppliers / manufacturers. etc.

The 'owners' of the base test data make their test evidence available to a 3rd. party fire consultancy (*expert organisation*). The independent 3rd. party fire consultancies create what is generally described as a 'Global Assessment' which sets out the parameters for fire door applications related to a particular construction.

As with any expert opinion, opinions may differ according to the experiences of the particular 3rd. fire consultancy provider. This manual sets out the parameters for the application of FLAMEBREAK™ based fire performance door assemblies under the 'Q-Mark' scheme that is owned and operated by Exova BM TRADA. To maintain the 'Q-Mark' certification the door assembly manufacturer using FLAMEBREAK™ must also be a member of the 'Q-Mark' certification scheme.

**NOTE: Exova BM TRADA is the Exova Group's dedicated certification division incorporating former leading global certification body BM TRADA Certification Ltd.**

For various reasons, users of FLAMEBREAK™ may wish to be members of alternative 3rd. party certification schemes. A list of leading providers of 3rd party certification is shown in *Section 16 Appendix 4* of this manual together with brief details of facilities offered and contact details. Pacific Rim Wood Ltd. provide support for all of the listed 3rd. party certification providers by making base test evidence available for the purpose of assessment.

**NOTE: The term 'assessment' in this context applies to product related expert opinions produced by a 3rd. party fire consultancy provider and should not be confused with the term 'assessment' used in Approved Document 'B' for the purpose of regulation. The assessment required by reference to regulations is determined by the 'authorities' responsible for the particular building, generally recognised as being the Designer, in consultation with Local Building Control, and (where applicable) the Local Fire Services. The authorities may accept the expert opinions provided by 3rd. party fire consultancy providers as guidance but they are under no obligation to accept such expert advice.**

## Fire Door Applications contd.

The particular project authorities may require:

- a/ 3rd. party certification originating from a particular 3rd. party certification provider.
- b/ A 'project assessment' related to the particular design requirements for a particular building.
- c/ Further testing of particular designs or design detail.
- d/ Additional 3rd. party certification to cover particular requirements that are outside of the scope of the Global Assessment.

There is generally an additional cost where there is a demand for certification in addition to that provided by the 'Global Assessment'. The cost will be influenced by the work required and the extent of the which any resultant data is limited to the particular project or can be applied generally for future applications.

Pacific Rim Wood Ltd. will support users of FLAMEBREAK™ by providing base test data owned by them for reference by 3rd. party certification bodies. Further, Pacific Rim Wood Ltd. may provide support for users of FLAMEBREAK™ door cores who wish to carry out further testing by way technical support and the provision of core materials for testing purposes.

Project specifications will generally define the regulations to be applied to the particular building with a further definition of design requirements. It is generally the responsibility of the door assembly manufacturer to provide for the necessary documentation to the reasonable satisfaction of the project authorities. It is strongly recommended that considerations of this nature are dealt with in advance of manufacture of the door assemblies.

This section provides for general guidance for the application of FLAMEBREAK™ core doors for BS476 Pt.22 : 1987 related FD30 and FD60 performances. It is important to note that size envelopes may vary according to the size and type of intumescent seal used. Reference should be made to other sections in this manual to determine recommended intumescent seal locations and requirements for additional intumescent gaskets for use with hardware.

**NOTE 1: The dimensional envelopes for the fire door application of FLAMEBREAK™ core doors will vary according to the size and type of intumescent seal selected for the particular project. To assist users, this Section identifies application dimensions related to intumescent seal type and size.**

**NOTE 2: More limited application dimensions apply to some intumescent seal types. This does not imply that the particular seal type is in anyway inferior but rather, this reflects the extent of testing carried out with the particular seal types at the time of publication of this manual. A continuing fire test programme is likely to result in variations to these published application dimensions and users should contact Pacific Rim Wood Ltd. for further advice for applications not covered by this manual.**

**WARNING: Various formulae are used in the manufacture of intumescent seals which may provide for different performance characteristics under fire conditions. The mixing of intumescent seal types for use in the same door assembly is not approved.**

### **Door Gaps / Alignment:**

The following describes the maximum / minimum approved gaps and door leaf positioning for fire door applications. This advice is related specifically to the achievement of design fire performances and should not be referred to as an authority to vary the requirements of BS 4787 Pt.1 for general applications.

Location	Dimension
Head & Stile edge gaps.	Approved minimum = 2mm Approved maximum = 4mm
*Threshold	Approved maximum = 10mm above finished floor level.
Alignment	Door leaves must not project beyond the face of the adjacent door / panel or the frame by more than 1mm

*\* See Section 5 for Smoke sealed doors.*

**In addition to FLAMEBREAK™ Pacific Rim Wood Ltd. also supply SAFEGUARD™ door cores and other door assembly related components. These products are beyond the scope of this manual.**

**For further details in respect of other products available from Pacific Rim Wood Ltd. please contact:**

**Pacific Rim Wood Ltd.,**  
Ground Floor Suite, Block B,  
The Old Kelways,  
Somerton Road,  
Langport,  
Somerset TA10 9SJ

**Tel: +44 (0) 1458 252 305**  
**E-mail: enquiries@prwuk.com**

FLAMEBREAK

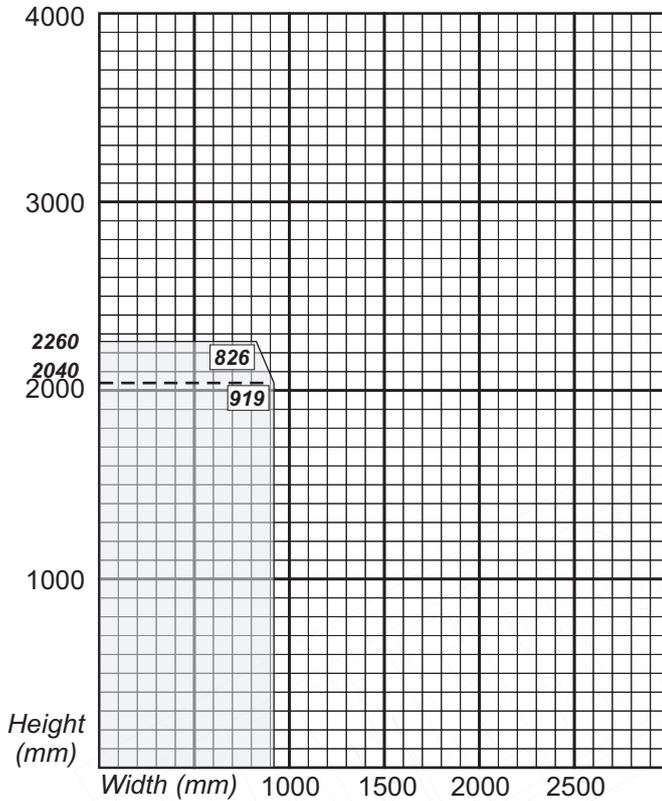


### FD30 - BS476 Pt.22 :1987

**10x4mm PVC encased Pyroplex Rigid Box seal**

#### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single Action Single leaf



Latched Single Action Single leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2040	919
	To	2260	826
Latched Single Action Double Door (LSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b>  See Section 4 - Intumescent Seals and Section 8 - Hardware	Head: 1No. 10x4mm exposed and fitted centrally in the leaf or frame head. Jams & Overpanel: 1No. 10x4mm exposed and centrally fitted to leaf or frame.
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# 2A.2

## Fire Door Applications FLAMEBREAK 430

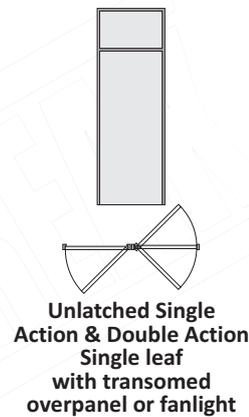
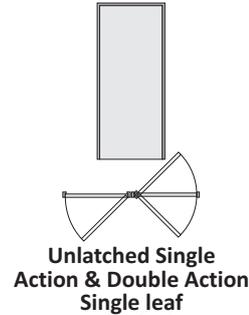
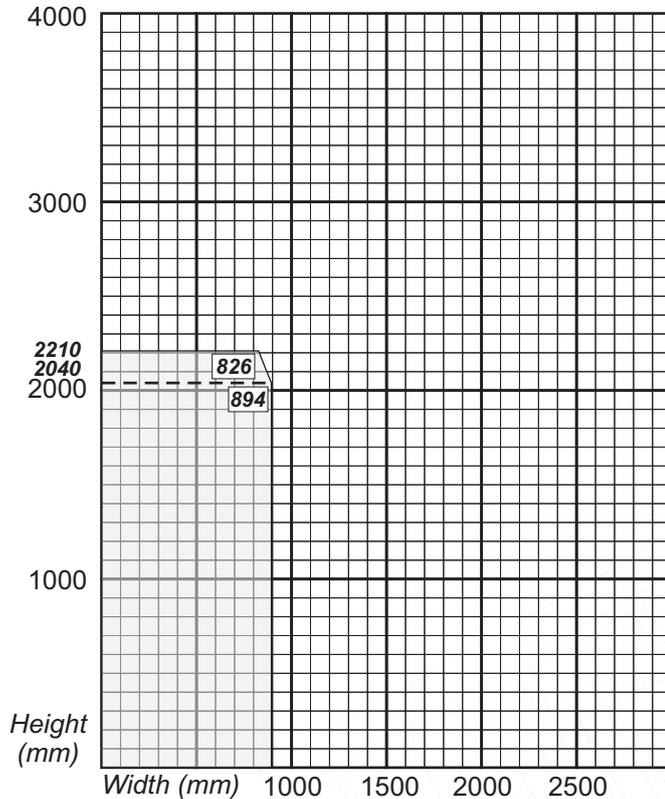


### FD30 - BS476 Pt.22 :1987

**10x4mm PVC encased Pyroplex Rigid Box seal**

#### UNLATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2040	894
	To	2210	826
Double Action Single Door (DASD)	From	2040	894
	To	2210	826
Unlatched Single Action Double Door (ULSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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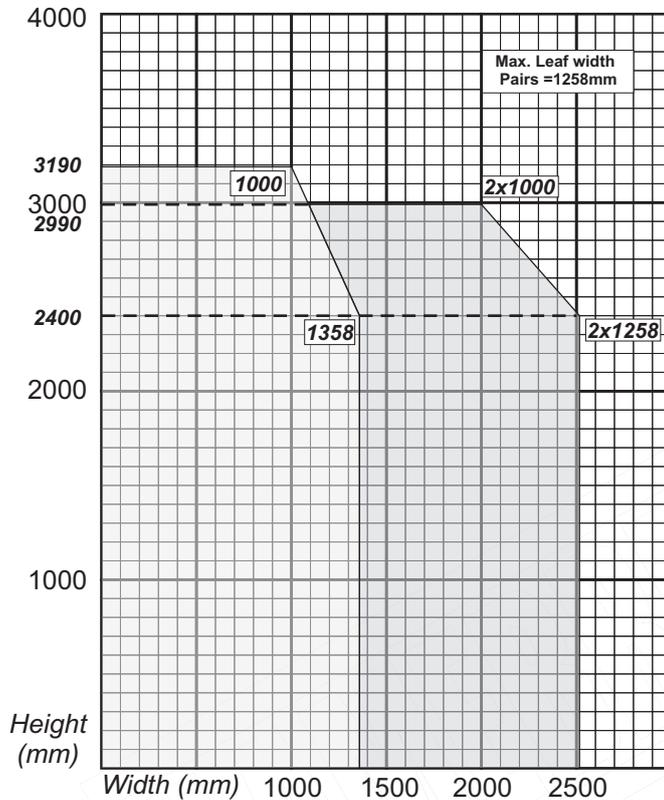
<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b>  See Section 4 - Intumescent Seals and Section 8 - Hardware	Head: 1No. 10x4mm exposed and fitted centrally in the leaf or frame head. Jamb & Overpanel: 1No. 10x4mm exposed and centrally fitted to leaf or frame.
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### FD30 - BS476 Pt.22 :1987

**2No.10x4mm PVC encased Pyroplex Rigid Box seal**



#### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



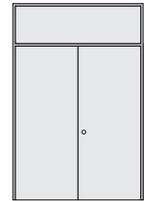
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2400	1358
	To	3190	1000
Latched Single Action Double Door (LSADD)	From	2400	1258
	To	2990	1000

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 2No 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Jamb &amp; Overpanel:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated: NOT APPROVED.</b>
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# 2A.4

## Fire Door Applications FLAMEBREAK 430



### FD30 - BS476 Pt.22 :1987

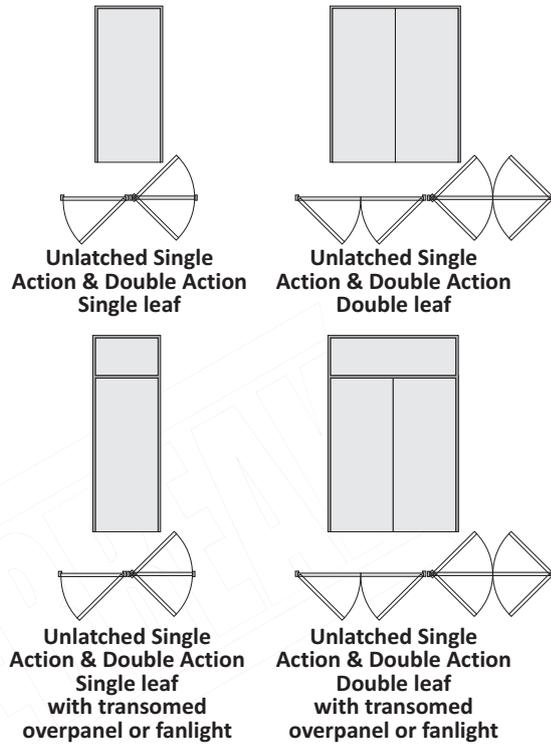
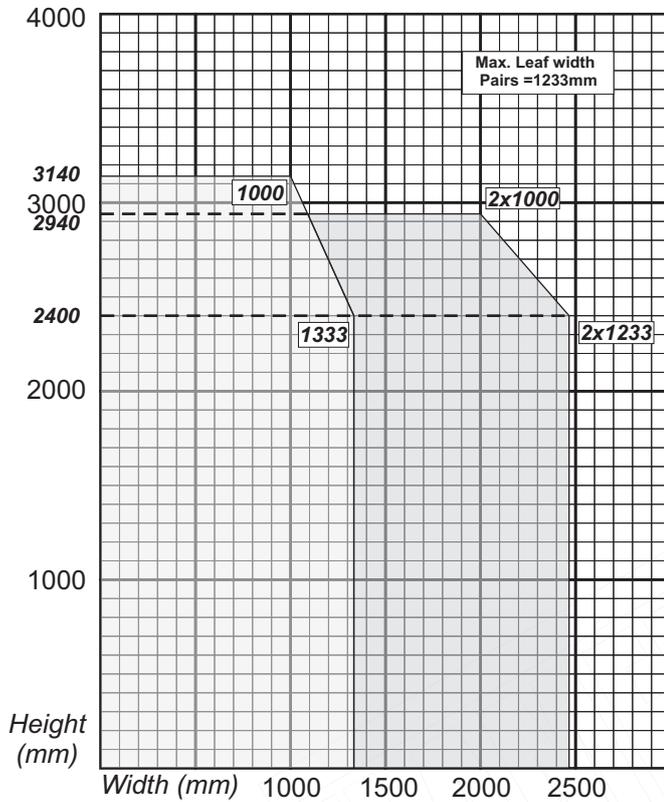
**2No.10x4mm PVC encased Pyroplex Rigid Box seal**

#### UNLATCHED DOORSETS

#### Door Height Assemblies

&

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2400	1333
	To	3140	1000
Double Action Single Door (DASD)	From	2400	1333
	To	3140	1000
Unlatched Single Action Double Door (ULSADD)	From	2400	1233
	To	2940	1000
Double Action Double Door (DADD)	From	2400	1233
	To	2940	1000

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 2No 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Jams &amp; Overpanel:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated: NOT APPROVED.</b>
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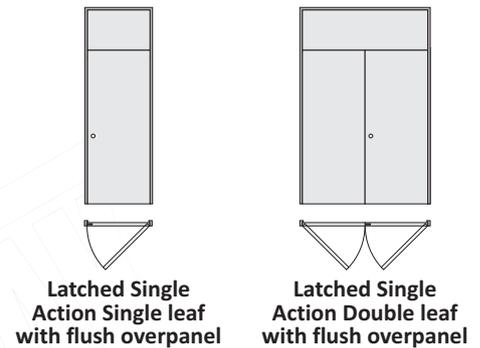
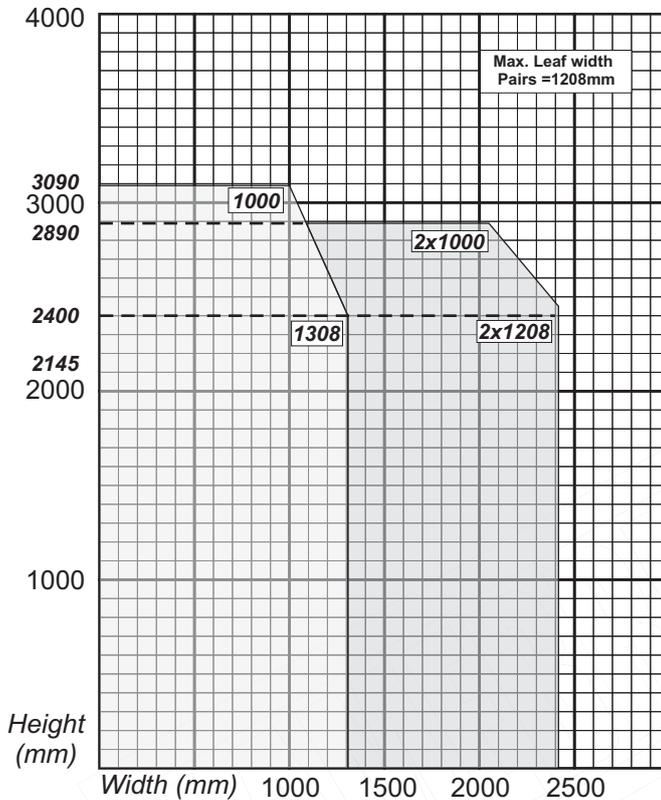


### FD30 - BS476 Pt.22 :1987

**2No.10x4mm PVC encased Pyroplex Rigid Box seal**

#### LATCHED DOORSETS

Storey Height Assemblies with Flush Overpanel



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2400	1308
	To	3090	1000
Latched Single Action Double Door (LSADD)	From	2400	1208
	To	2890	1000

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood
	Double leaf door assembly	

<b>Intumescent Seals</b> 2No 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Door / Overpanel:</b> <i>See Section 4 pages 4.11 &amp; 4.13.</i> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in the top of the door leaf or bottom of overpanel with 10mm separation. <b>Rebated:</b> 1No. 10x4 located centrally at the top of the door plus 1 No. 10x4 located centrally in the rebate to the door leaf. <b>Head / Jambs &amp; Overpanel:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame with 10mm separation, extended to vertical edges and top of overpanel.
	<b>Meeting edges - pairs of doors:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Rebated:</b> NOT APPROVED.



# 2A.6

## Fire Door Applications FLAMEBREAK 430

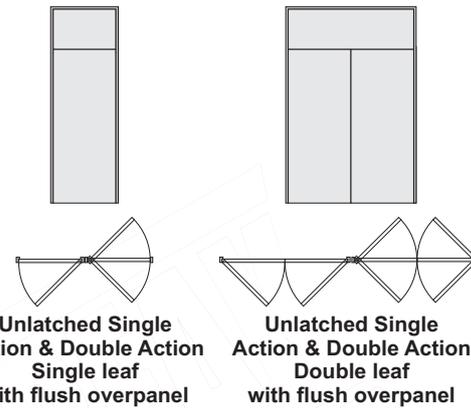
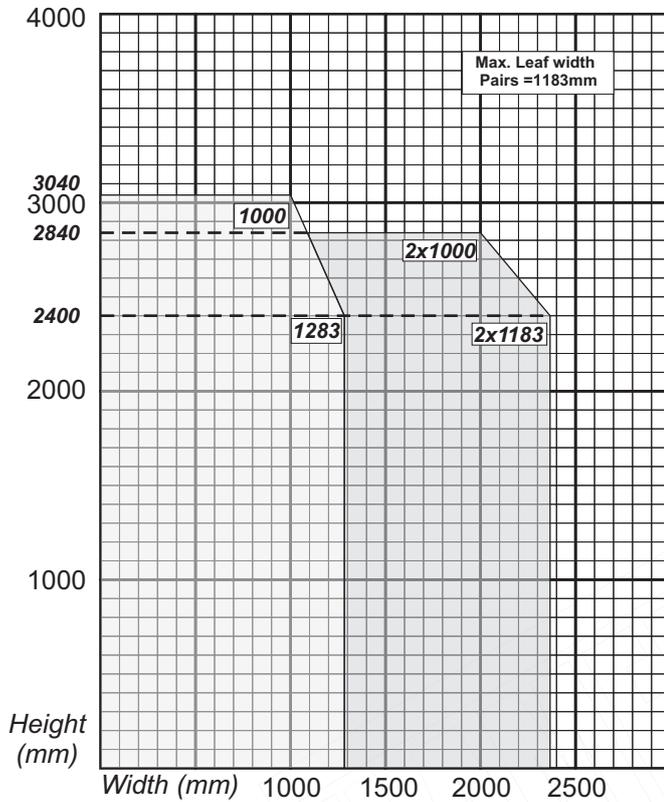


### FD30 - BS476 Pt.22 :1987

**2No.10x4mm PVC encased Pyroplex Rigid Box seal**

#### UNLATCHED DOORSETS

#### Storey Height Assemblies with Flush Overpanel



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2400	1283
	To	3040	1000
Double Action Single Door (DASD)	From	2400	1283
	To	3040	1000
Unlatched Single Action Double Door (ULSADD)	From	2400	1183
	To	2840	1000
Double Action Double Door (DADD)	From	2400	1183
	To	2840	1000

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

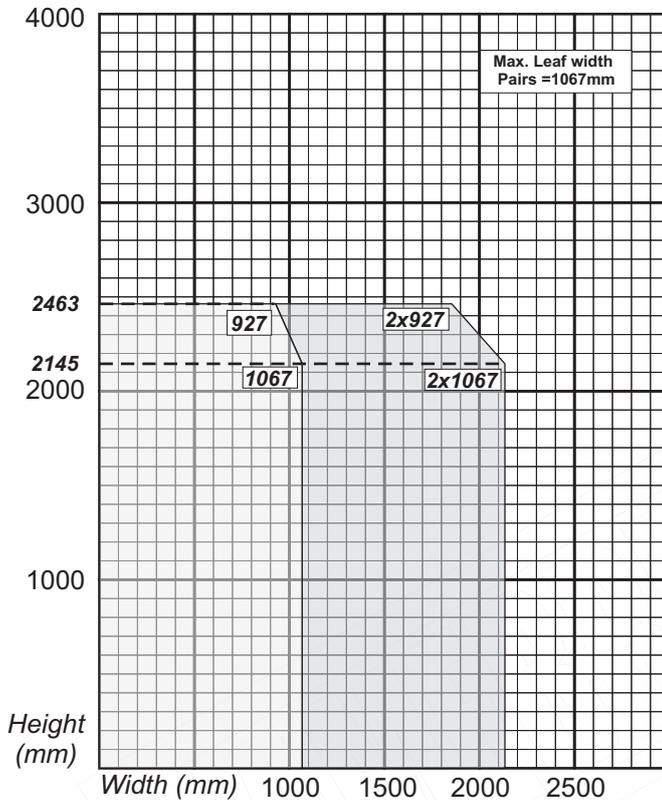
Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood
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<b>Intumescent Seals</b> 2No 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Door / Overpanel:</b> <i>See Section 4 pages 4.11 &amp; 4.13.</i> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in the top of the door leaf or bottom of overpanel with 10mm separation. <b>Rebated:</b> 1No. 10x4 located centrally at the top of the door plus 1 No. 10x4 located centrally in the rebate to the door leaf.
	<b>Head / Jamb &amp; Overpanel:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame with 10mm separation, extended to vertical edges and top of overpanel. <b>Meeting edges - pairs of doors:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Rebated:</b> NOT APPROVED.



### FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Pyroplex Rigid Box seal**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



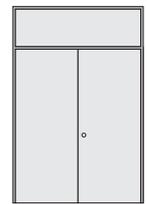
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2145	1067
	To	2463	927
Latched Single Action Double Door (LSADD)	From	2145	1067
	To	2463	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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# 2A.8

## Fire Door Applications FLAMEBREAK 430



### FD30 - BS476 Pt.22 :1987

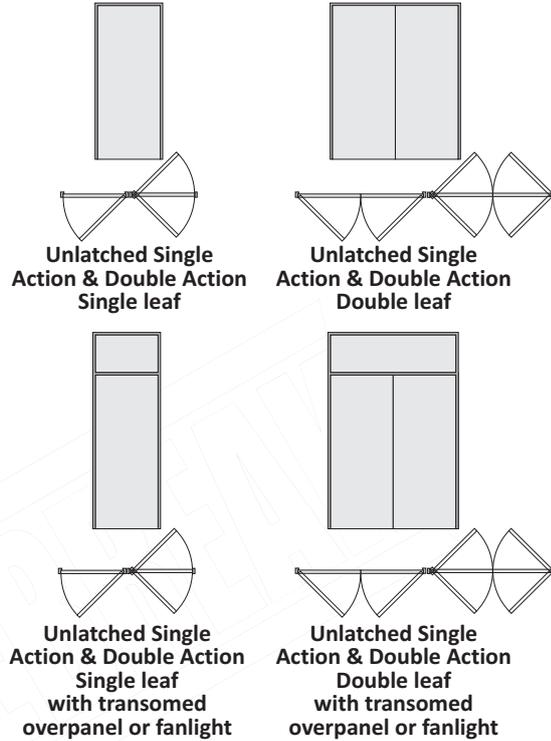
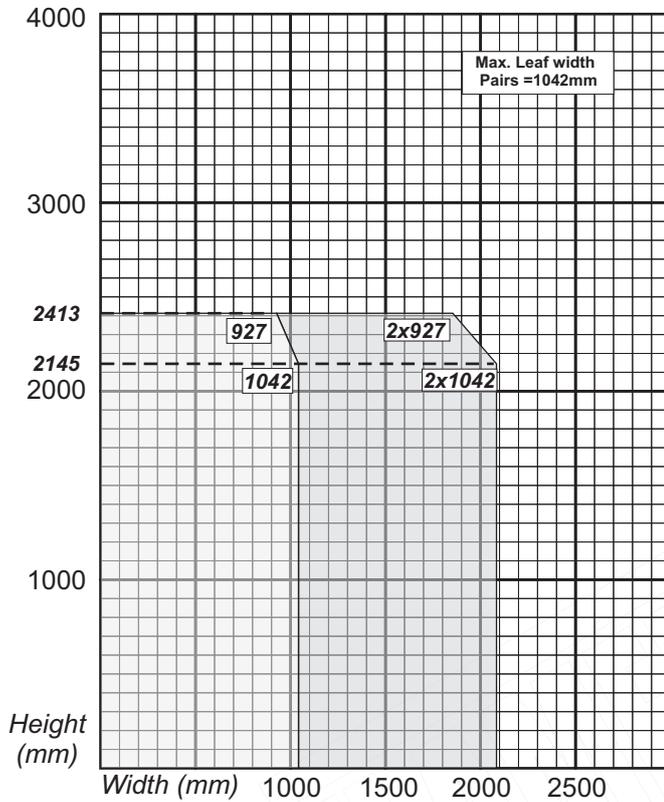
**15x4mm PVC encased Pyroplex Rigid Box seal**

### UNLATCHED DOORSETS

#### Door Height Assemblies

&

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2145	1042
	To	2413	927
Double Action Single Door (DASD)	From	2145	1042
	To	2413	927
Unlatched Single Action Double Door (ULSADD)	From	2145	1042
	To	2413	927
Double Action Double Door (DADD)	From	2145	1042
	To	2413	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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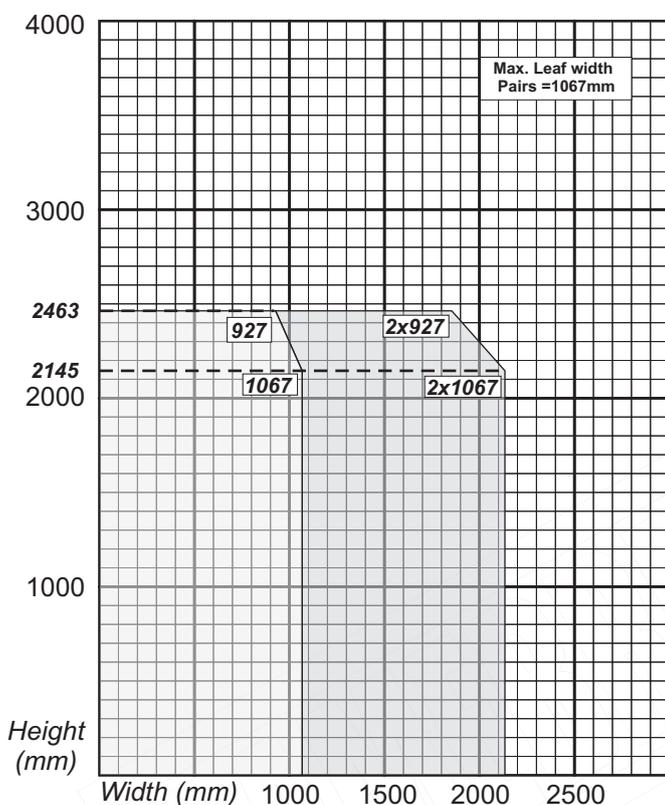
<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb's &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> <i>NOT APPROVED.</i>
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Exova Warrington fire Report Ref: FEA/F98164 Rev. M Valid until 23rd. February 2023



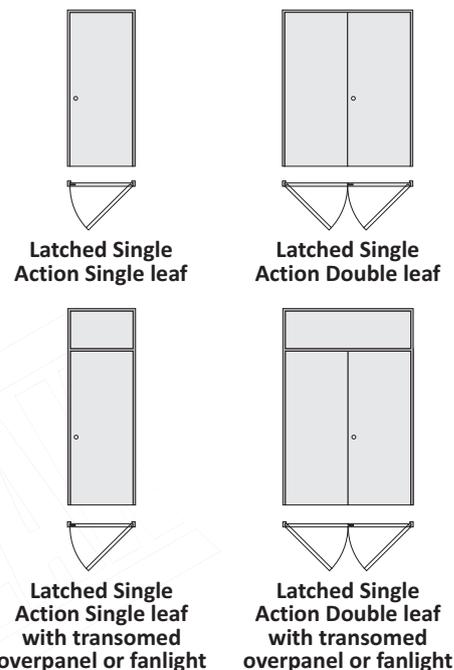
## FD30 - BS476 Pt.22 :1987

**20x4mm PVC encased Pyroplex Rigid Box seal**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2145	1067
	To	2463	927
Latched Single Action Double Door (LSADD)	From	2145	1067
	To	2463	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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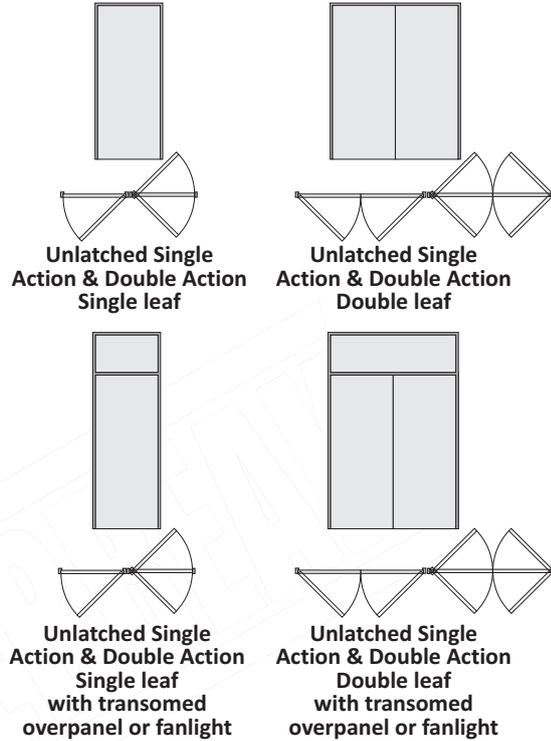
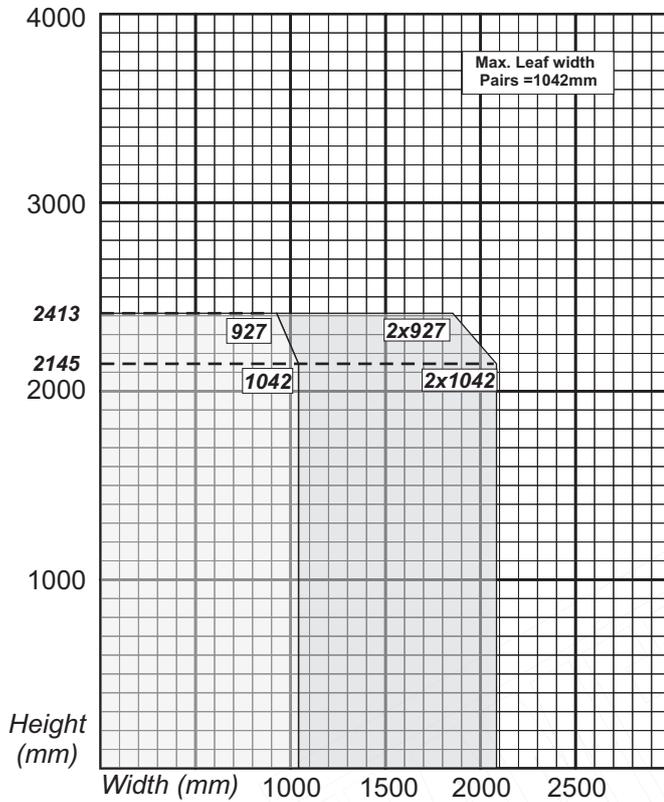
**FD30 - BS476 Pt.22 :1987**

**20x4mm PVC encased Pyroplex Rigid Box seal**

**UNLATCHED DOORSETS**

**Door Height Assemblies &**

**Storey Height Assemblies with Transom**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2145	1042
	To	2413	927
Double Action Single Door (DASD)	From	2145	1042
	To	2413	927
Unlatched Single Action Double Door (ULSADD)	From	2145	1042
	To	2413	927
Double Action Double Door (DADD)	From	2145	1042
	To	2413	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> See Section 4 - Intumescent Seals and Section 8 - Hardware	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambes &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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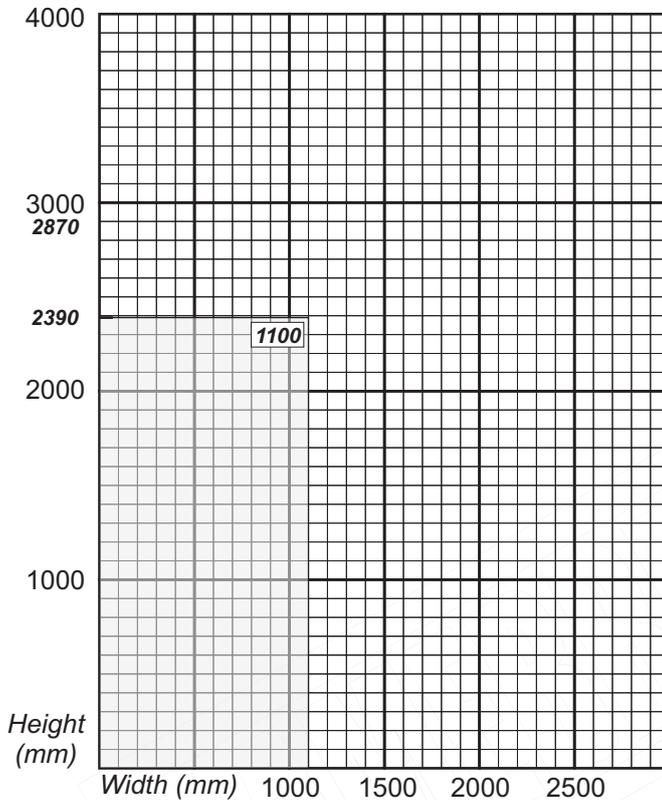


## FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Palusol 100  
or Lorient 617**

### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single  
Action Single leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From To	2390	1100
Latched Single Action Double Door (LSADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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Frame Specification <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	Single leaf door assembly <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jams &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame.</p>
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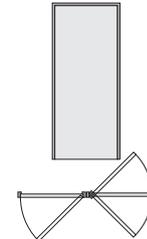
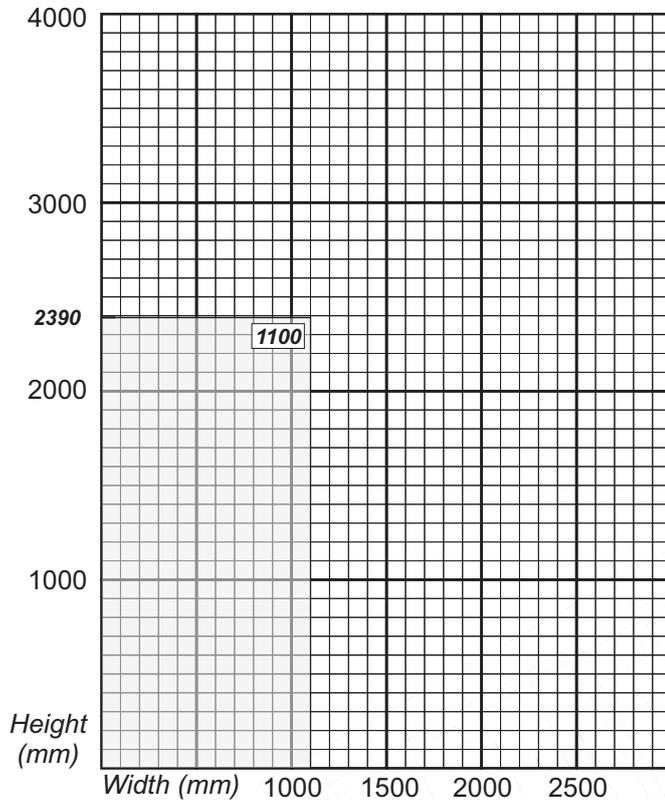


**FD30 - BS476 Pt.22 :1987**

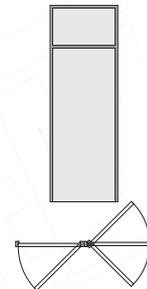
**15x4mm PVC encased Palusol 100  
or Lorient 617**

**UNLATCHED DOORSETS**

**Door Height Assemblies  
&  
Storey Height Assemblies with Transom**



**Unlatched Single  
Action & Double Action  
Single leaf**



**Unlatched Single  
Action & Double Action  
Single leaf  
with transomed  
overpanel or fanlight**

Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From To	2390	1100
Double Action Single Door (DASD)	From To	2390	1100
Unlatched Single Action Double Door (ULSADD)	From To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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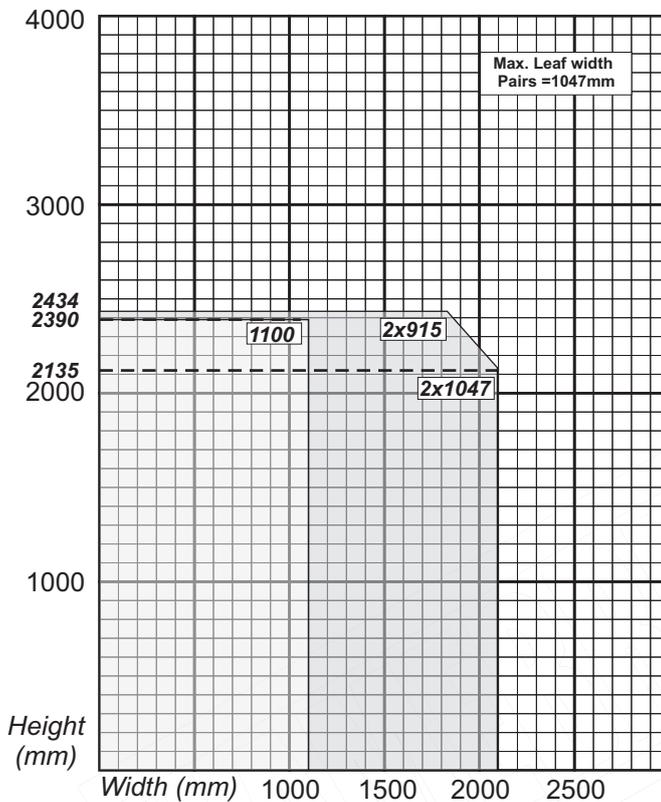
<b>Frame Specification</b> See Section 7 - Frames NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> See Section 4 - Intumescent Seals and Section 8 - Hardware	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb's &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame.
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## FD30 - BS476 Pt.22 :1987

**20x4mm PVC encased Palusol 100  
or Lorient 617**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



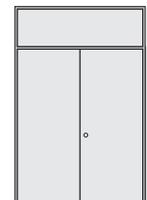
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From To	2390	1100
Latched Single Action Double Door (LSADD)	From To	2135 2434	1047 915

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm 1500mm
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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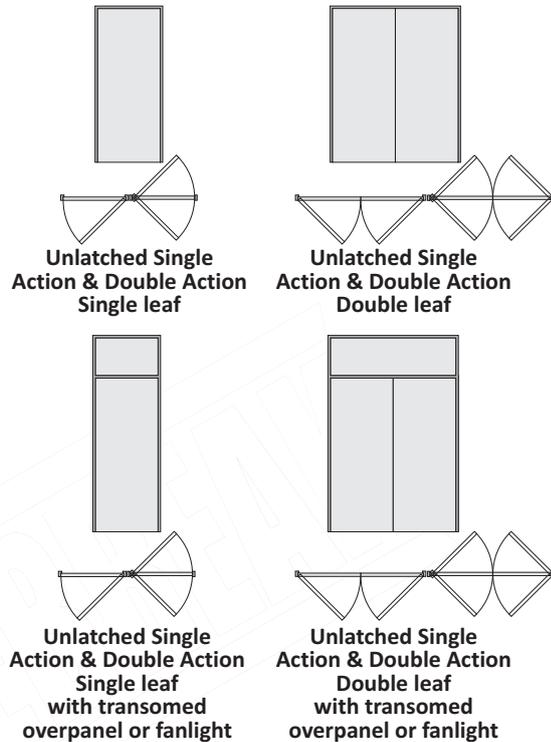
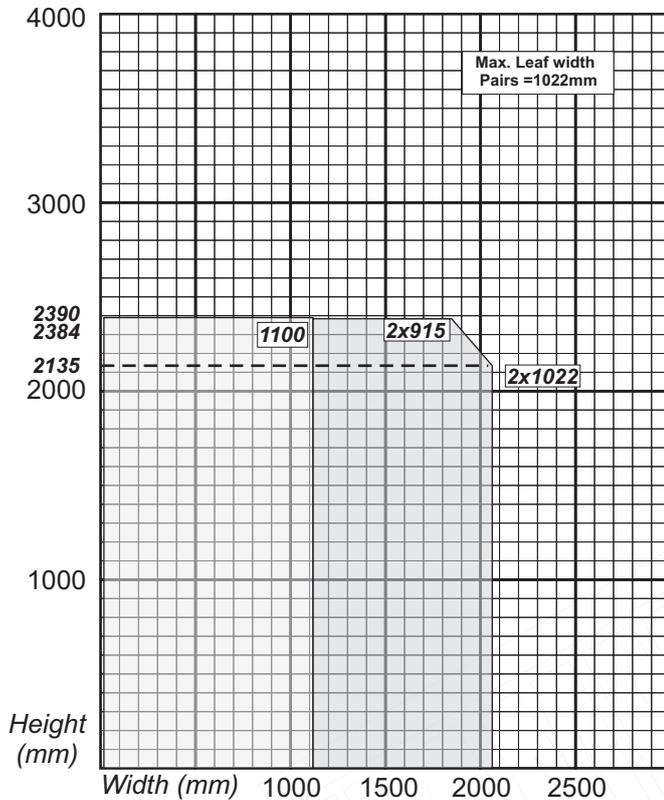
**FD30 - BS476 Pt.22 :1987**

**20x4mm PVC encased Palusol 100  
or Lorient 617**

**UNLATCHED DOORSETS**

**Door Height Assemblies  
&**

**Storey Height Assemblies with Transom**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2390	1100
	To		
Double Action Single Door (DASD)	From	2390	1100
	To		
Unlatched Single Action Double Door (ULSADD)	From	2135	1022
	To		
Double Action Double Door (DADD)	From	2135	1022
	To		

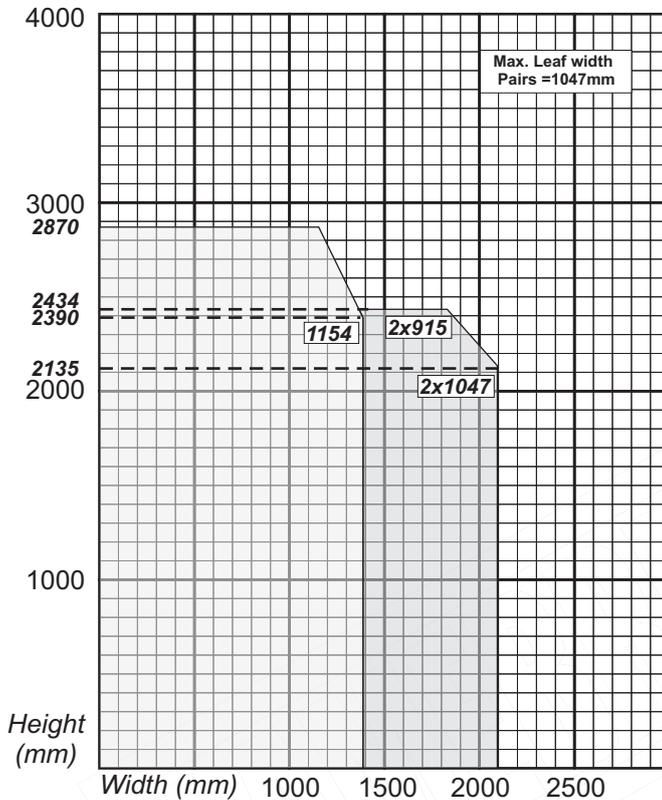
Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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## FD30 - BS476 Pt.22 :1987

**25x4mm PVC encased Palusol 100  
or Lorient 617**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



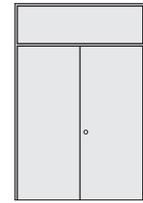
Latched Single  
Action Single leaf



Latched Single  
Action Double leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight



Latched Single  
Action Double leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2390	1387
	To	2870	1154
Latched Single Action Double Door (LSADD)	From	2135	1047
	To	2434	915

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 25x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 25x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 25x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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**FD30 - BS476 Pt.22 :1987**

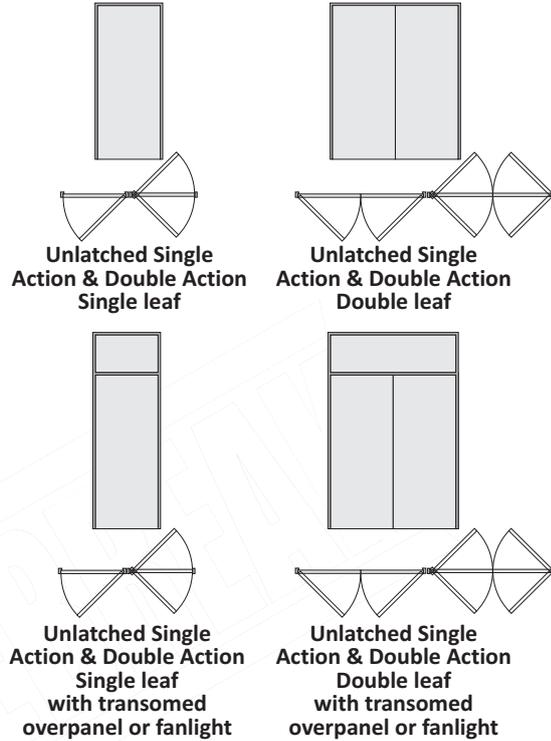
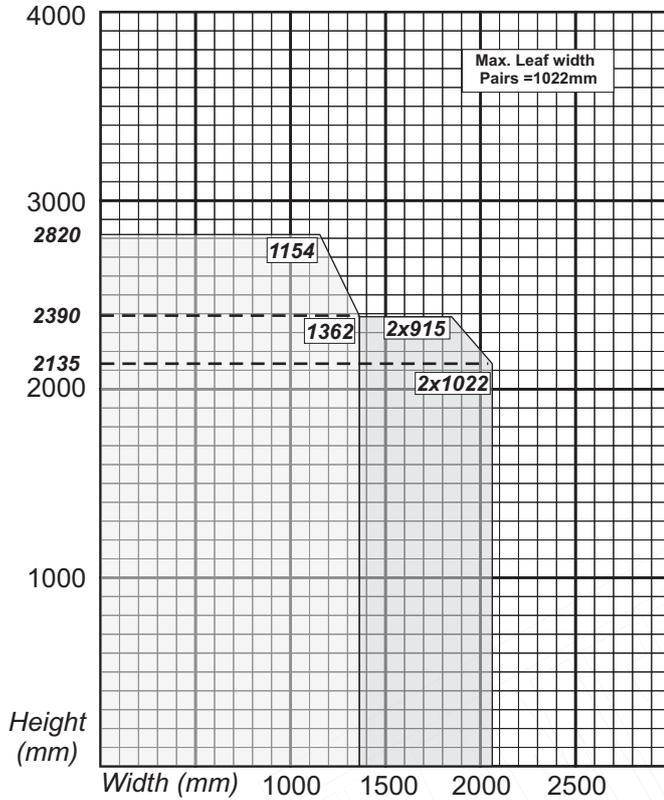
**25x4mm PVC encased Palusol 100  
or Lorient 617**

**UNLATCHED DOORSETS**

**Door Height Assemblies**

**&**

**Storey Height Assemblies with Transom**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2390	1362
	To	2820	1154
Double Action Single Door (DASD)	From	2390	1362
	To	2820	1154
Unlatched Single Action Double Door (ULSADD)	From	2135	1022
	To	2384	915
Double Action Double Door (DADD)	From	2135	1022
	To	2384	915

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 25x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> See Section 4 - Intumescent Seals and Section 8 - Hardware	<b>Head:</b> 1No. 25x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 25x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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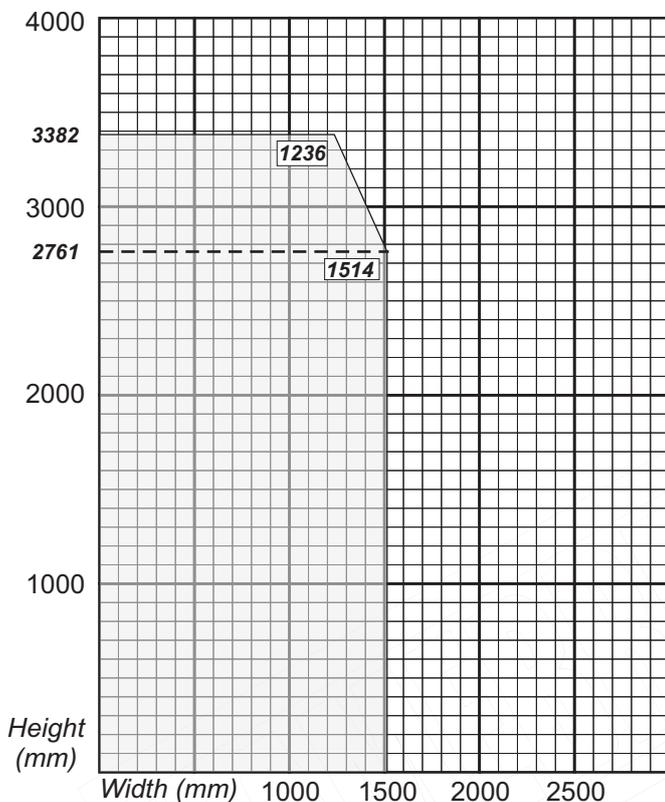


## FD30 - BS476 Pt.22 :1987

**25x4mm PVC encased Lorient 617**

### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single Action Single leaf



Latched Single Action Single leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2761	1514
	To	3382	1236
Latched Single Action Double Door (LSADD)	From	NOT APPROVED	NOT APPROVED
	To		

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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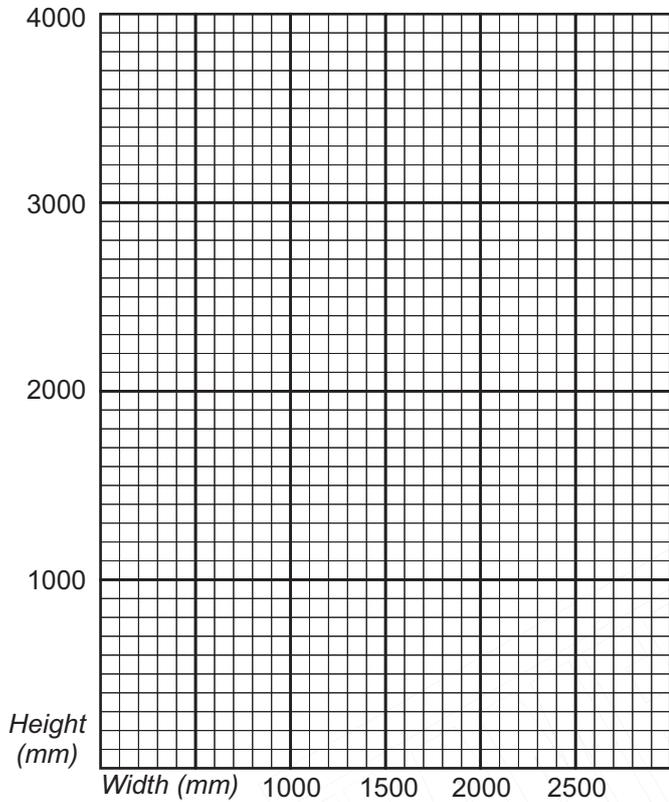
<b>Intumescent Seals</b> 25x4mm PVC encapsulated <b>Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>NOTE: This product is supplied without any perimeter framing to the core construction - Doors must be hardwood lipped.</b>  Head: 1No. 25x4mm exposed and fitted centrally in the leaf or frame head. Jamb & Overpanel: 1No. 25x4mm exposed and fitted centrally in the leaf or frame.
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**FD30 - BS476 Pt.22 :1987**

**UNLATCHED DOORSETS**

**25x4mm PVC encased Lorient 617**



**NOTE:**  
 This door blank construction is approved for single leaf, single swing, latched door only.

This construction is *not* approved for the following applications:

- Unlatched Single Action Single Door.
- Double Action Single Door.
- Latched Single Action Double Door.
- Unlatched Single Action Double Door.
- Double Action Double Door.

Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From To	NOT APPROVED	NOT APPROVED
Double Action Single Door (DASD)	From To	NOT APPROVED	NOT APPROVED
Unlatched Single Action Double Door (ULSADD)	From To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	Maximum Overpanel height	Single door doorset Double door doorset
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 25x4mm PVC encapsulated <b>Lorient 617</b> See Section 4 - Intumescent Seals and Section 8 - Hardware	
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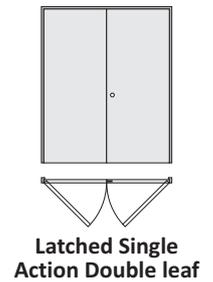
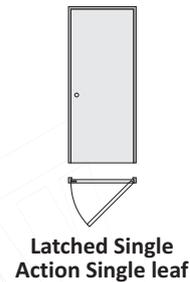
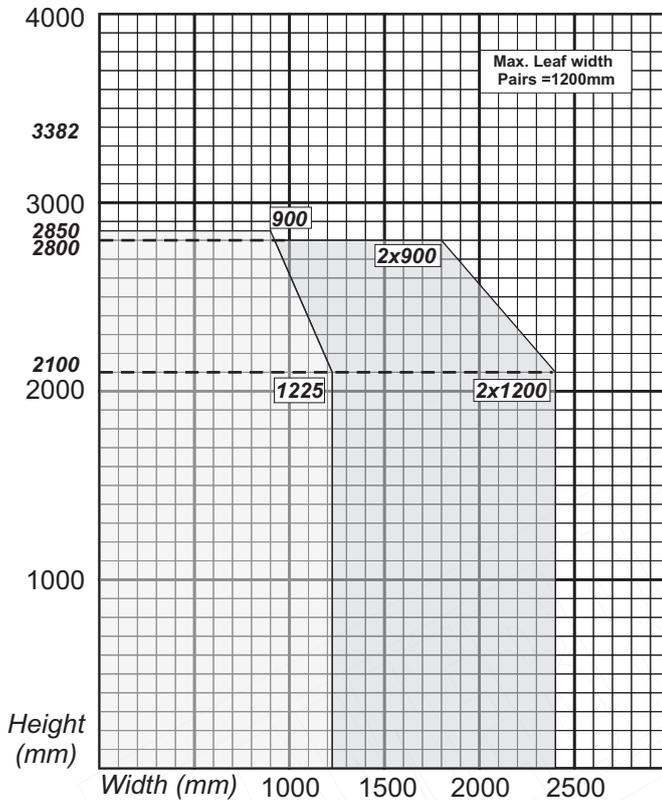


## FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Lorient 617  
 + Intregal CS Acrovyn intumescent**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2100	1225
	To	2850	900
Latched Single Action Double Door (LSADD)	From	2100	1200
	To	2800	900

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4mm PVC encapsulated  <b>Lorient 617 + Intregal CS Acrovyn Intumescent</b>  <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the frame head.  <b>Jamb:</b> 1No. 15x4mm exposed and fitted centrally in the leaf in addition to CS Acrovyn edge protectors with integral intumescents fitted on the leaf edges.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the CS Acrovyn edge protectors to both door leaf edges.</p>
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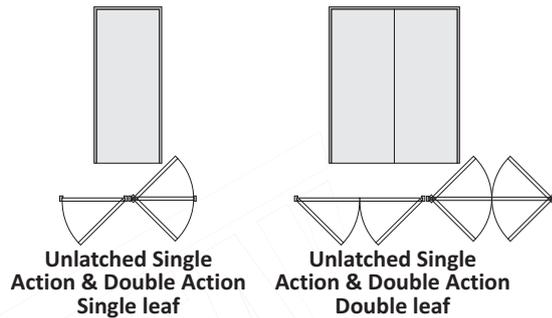
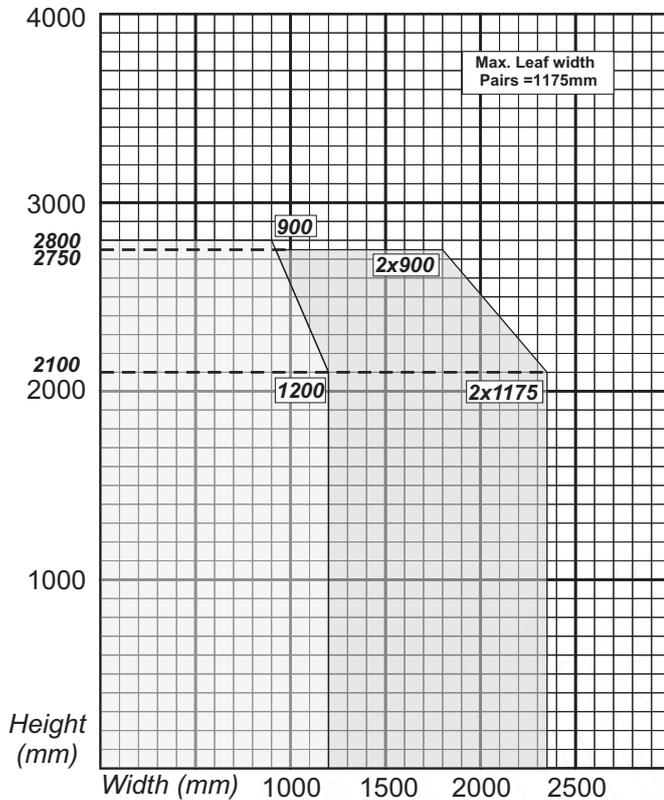


**FD30 - BS476 Pt.22 :1987**

**15x4mm PVC encased Lorient 617  
 + Intregal CS Acrovyn intumescent**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2100	1200
	To	2800	900
Double Action Single Door (DASD)	From	2100	1200
	To	2800	900
Unlatched Single Action Double Door (ULSADD)	From	2100	1175
	To	2750	900
Double Action Double Door (DADD)	From	2100	1175
	To	2750	900

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4mm PVC encapsulated  <b>Lorient 617 + Intregal                  CS Acrovyn Intumescent</b>  <i>See Section 4 - Intumescent Seals                  and                  Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the frame head.  <b>Jams :</b> 1No. 15x4mm exposed and fitted centrally in the leaf in addition to CS Acrovyn edge protectors with integral intumescents fitted on the leaf edges.  <b>Meeting Stiles :</b> 1No. 15x4mm exposed and fitted centrally in the CS Acrovyn edge protectors to both door leaf edges.</p>
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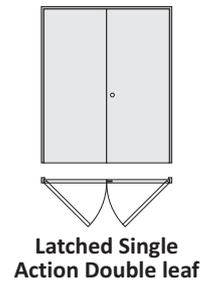
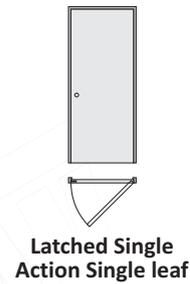
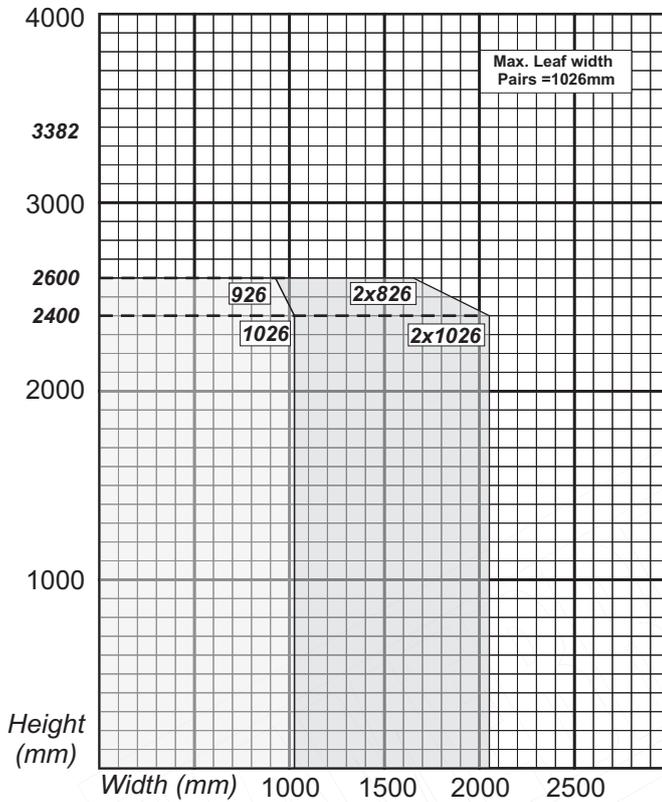


## FD30 - BS476 Pt.22 :1987

**15x4 + 20x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2400	1026
	To	2600	926
Latched Single Action Double Door (LSADD)	From	2400	1026
	To	2600	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4 + 20x4mm PVC encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the frame head.  <b>Jams:</b> 1No. 15x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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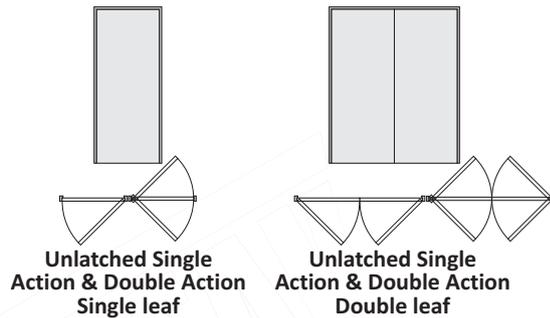
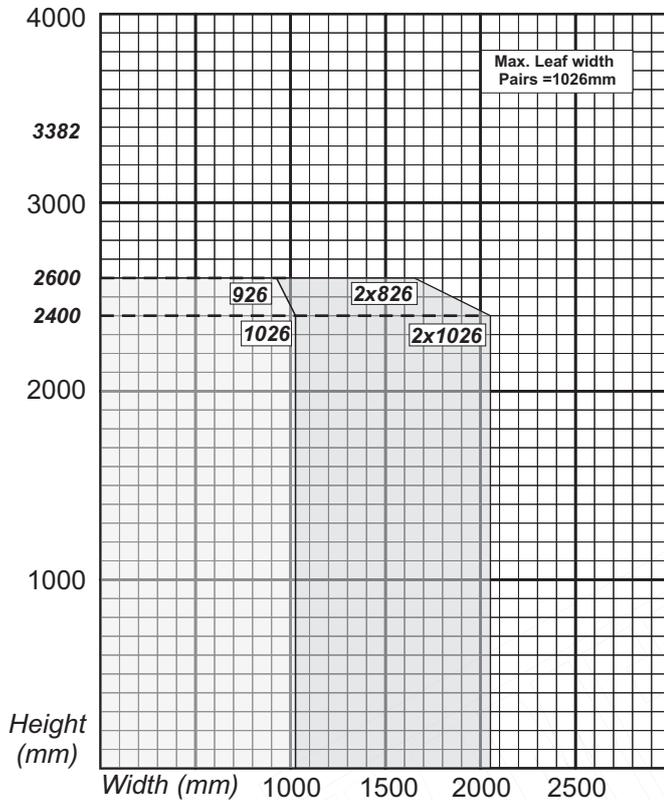


**FD30 - BS476 Pt.22 :1987**

**15x4 + 20x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2400	1026
	To	2600	926
Double Action Single Door (DASD)	From	2400	1026
	To	2600	926
Unlatched Single Action Double Door (ULSADD)	From	2400	1026
	To	2600	826
Double Action Double Door (DADD)	From	2400	1026
	To	2600	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4 + 20x4mm PVC                  encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals                  and                  Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the frame head.  <b>Jamb:</b> 1No. 15x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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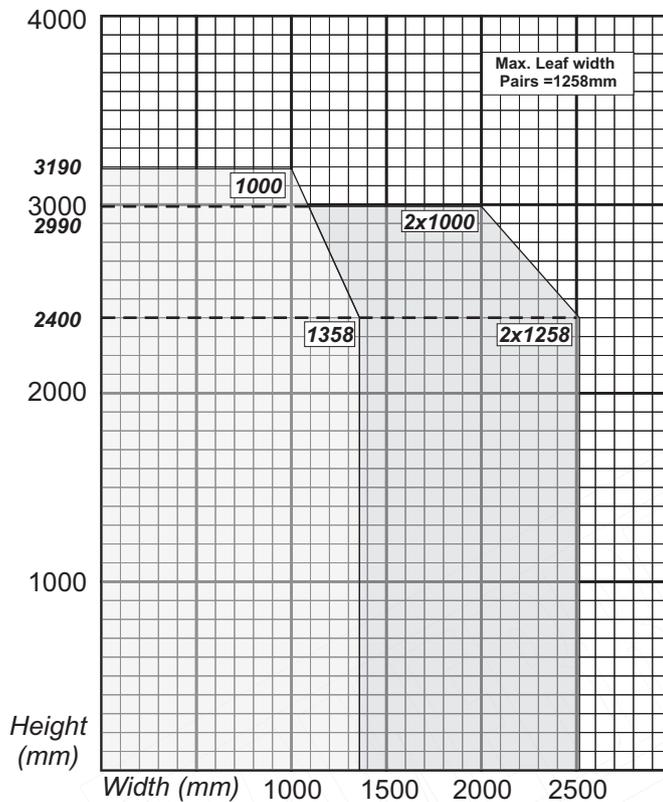


FLAMEBREAK



### FD30 - BS476 Pt.22 :1987

**2No.10x4mm PVC encased Pyroplex Rigid Box seal**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



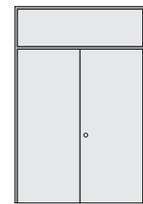
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2400	1358
	To	3190	1000
Latched Single Action Double Door (LSADD)	From	2400	1258
	To	2990	1000

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 2No 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Jams &amp; Overpanel:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated: NOT APPROVED.</b>
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# 2B.2

## Fire Door Applications FLAMEBREAK 630



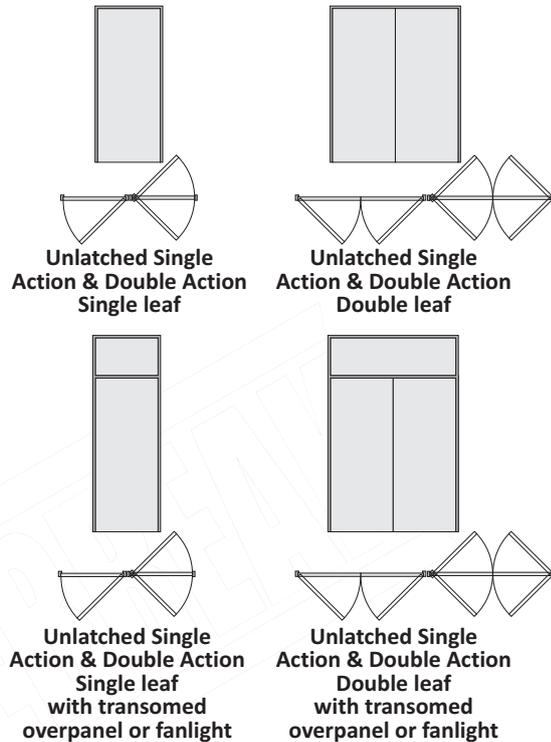
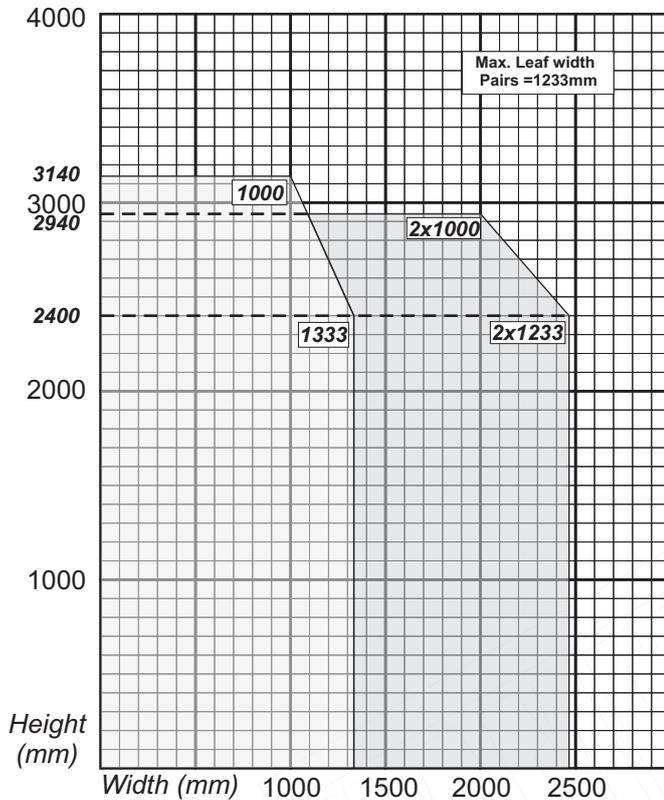
### FD30 - BS476 Pt.22 :1987

**2No.10x4mm PVC encased Pyroplex Rigid Box seal**

#### UNLATCHED DOORSETS

#### Door Height Assemblies &

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2400	1333
	To	3140	1000
Double Action Single Door (DASD)	From	2400	1333
	To	3140	1000
Unlatched Single Action Double Door (ULSADD)	From	2400	1233
	To	2940	1000
Double Action Double Door (DADD)	From	2400	1233
	To	2940	1000

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

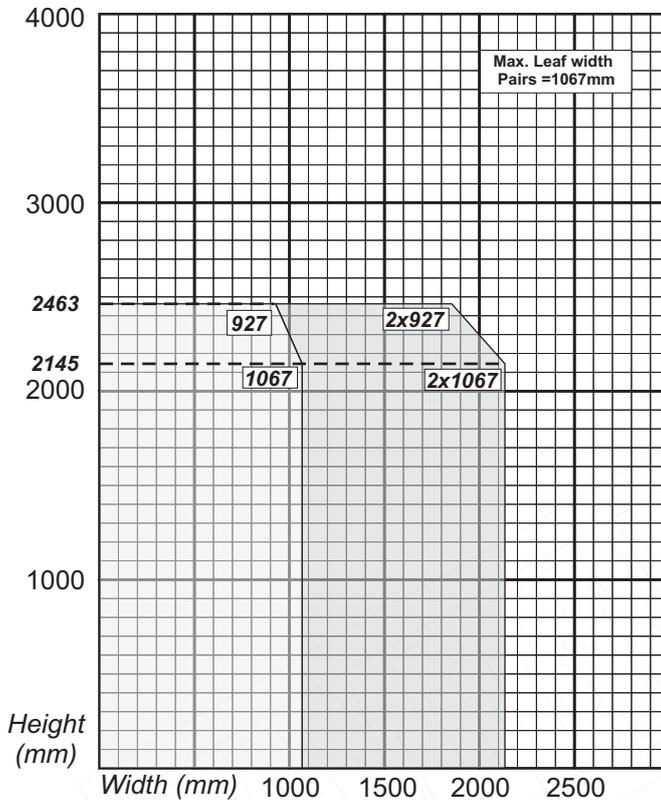
<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 2No 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Jams &amp; Overpanel:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated: NOT APPROVED.</b>
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### FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Pyroplex Rigid Box seal**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



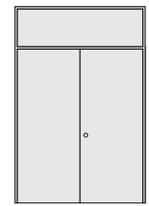
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2145	1067
	To	2463	927
Latched Single Action Double Door (LSADD)	From	2145	1067
	To	2463	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated: NOT APPROVED.</b>
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# 2B.4

## Fire Door Applications FLAMEBREAK 630



### FD30 - BS476 Pt.22 :1987

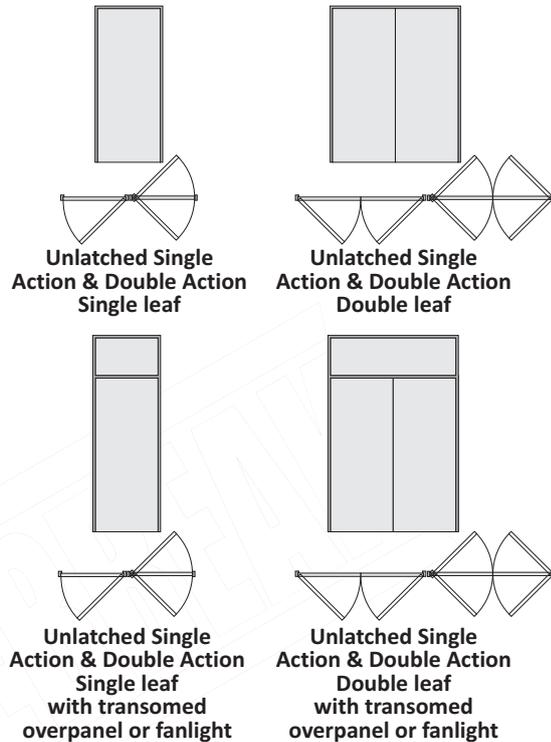
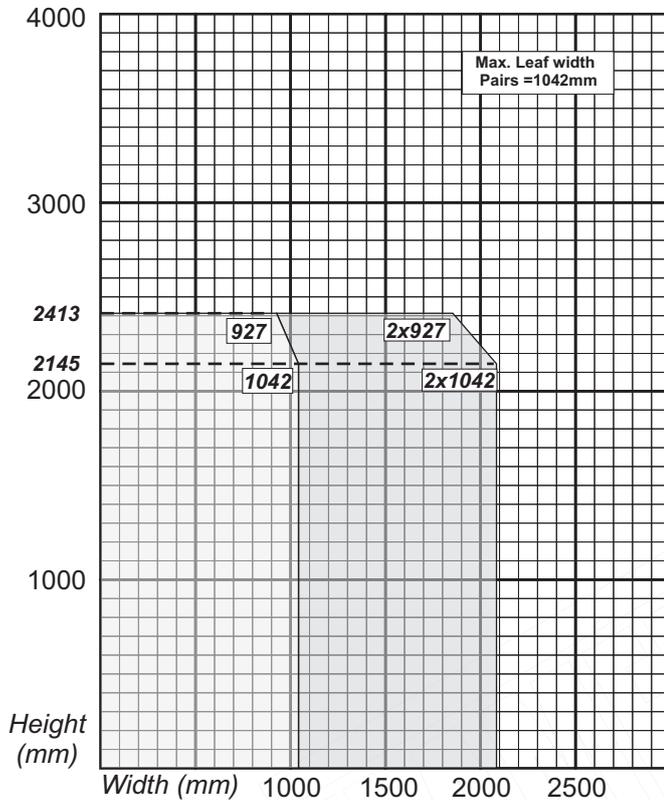
**15x4mm PVC encased Pyroplex Rigid Box seal**

### UNLATCHED DOORSETS

#### Door Height Assemblies

&

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2145	1042
	To	2413	927
Double Action Single Door (DASD)	From	2145	1042
	To	2413	927
Unlatched Single Action Double Door (ULSADD)	From	2145	1042
	To	2413	927
Double Action Double Door (DADD)	From	2145	1042
	To	2413	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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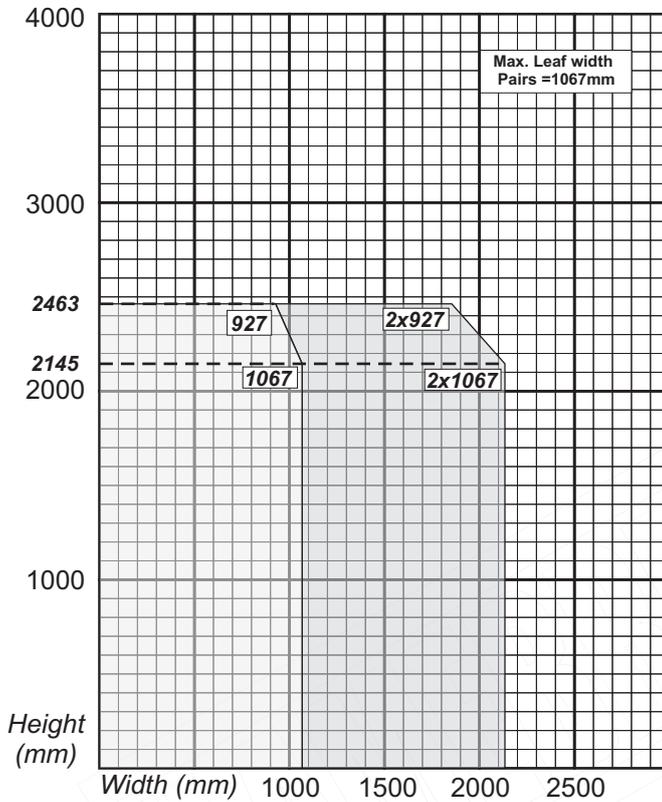
<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb's &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> <i>NOT APPROVED.</i>
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Exova Warrington fire Report Ref: FEA/F98164 Rev. M Valid until 23rd. February 2023



## FD30 - BS476 Pt.22 :1987

**20x4mm PVC encased Pyroplex Rigid Box seal**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



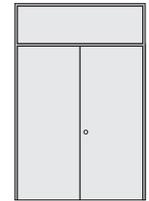
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2145	1067
	To	2463	927
Latched Single Action Double Door (LSADD)	From	2145	1067
	To	2463	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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# 2B.6

## Fire Door Applications FLAMEBREAK 630



### FD30 - BS476 Pt.22 :1987

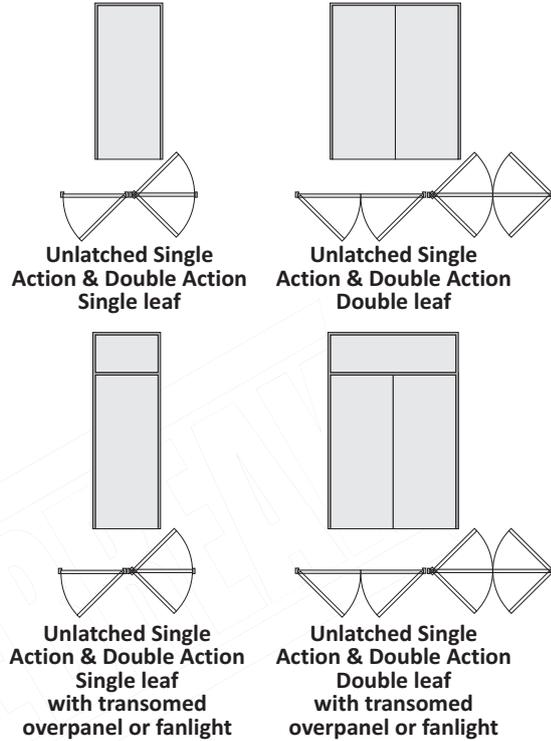
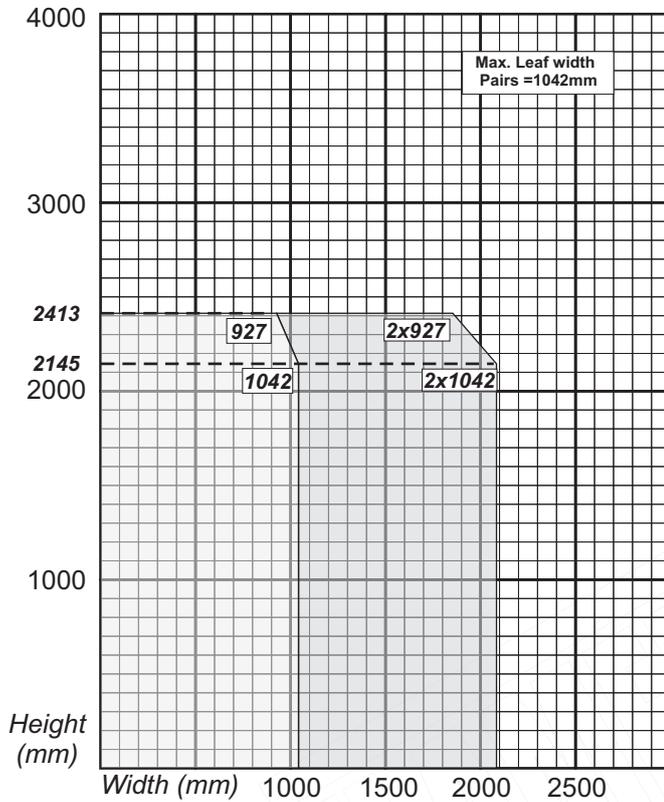
**20x4mm PVC encased Pyroplex Rigid Box seal**

#### UNLATCHED DOORSETS

#### Door Height Assemblies

&

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2145	1042
	To	2413	927
Double Action Single Door (DASD)	From	2145	1042
	To	2413	927
Unlatched Single Action Double Door (ULSADD)	From	2145	1042
	To	2413	927
Double Action Double Door (DADD)	From	2145	1042
	To	2413	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb's &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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Exova Warrington fire Report Ref: FEA/F98164 Rev. M Valid until 23rd. February 2023

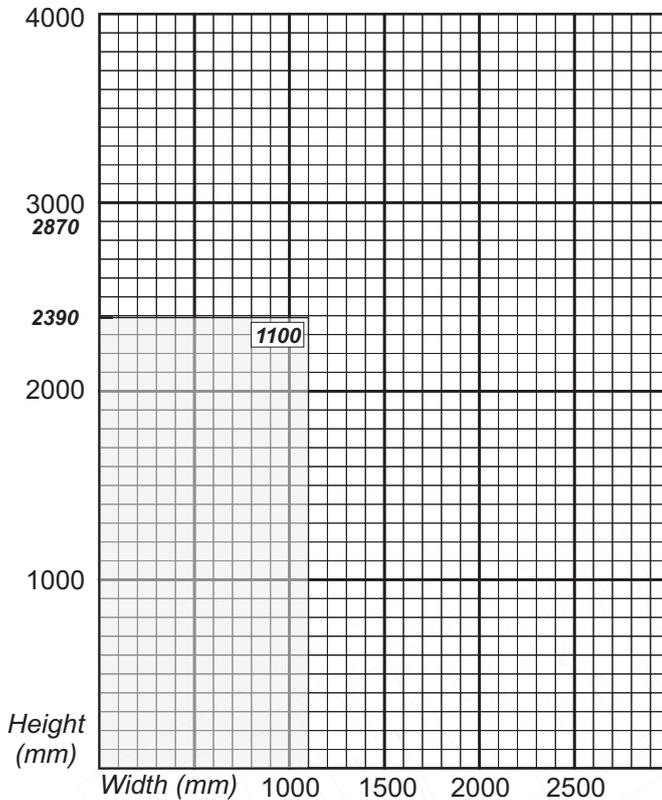


## FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Palusol 100  
or Lorient 617**

### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single  
Action Single leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From To	2390	1100
Latched Single Action Double Door (LSADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>2</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jams &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame.
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# 2B.8

## Fire Door Applications FLAMEBREAK 630

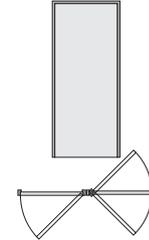
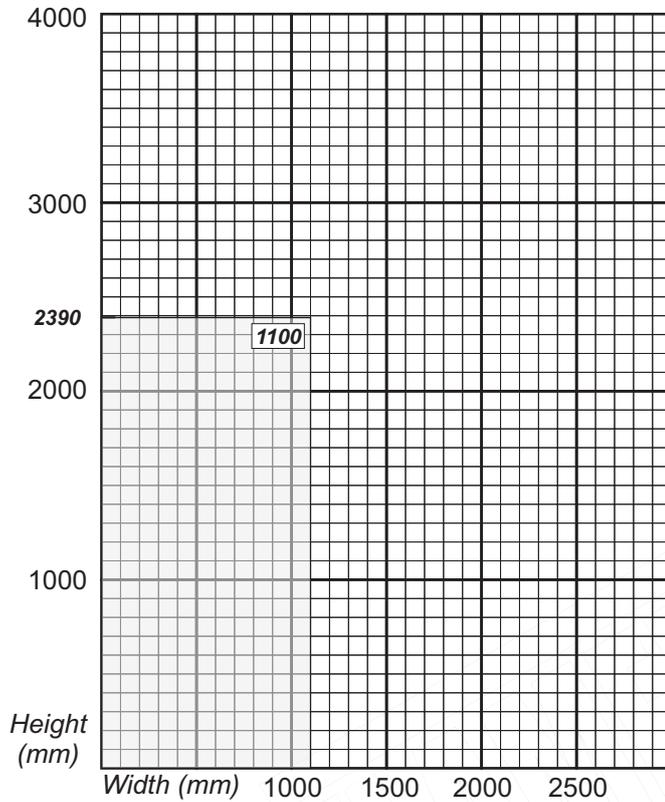


### FD30 - BS476 Pt.22 :1987

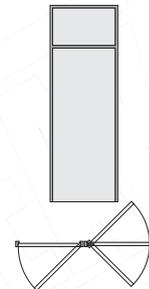
**15x4mm PVC encased Palusol 100  
or Lorient 617**

#### UNLATCHED DOORSETS

**Door Height Assemblies  
&  
Storey Height Assemblies with Transom**



**Unlatched Single  
Action & Double Action  
Single leaf**



**Unlatched Single  
Action & Double Action  
Single leaf  
with transomed  
overpanel or fanlight**

Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From To	2390	1100
Double Action Single Door (DASD)	From To	2390	1100
Unlatched Single Action Double Door (ULSADD)	From To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood OR 700kg/m<sup>3</sup> MDF</b>
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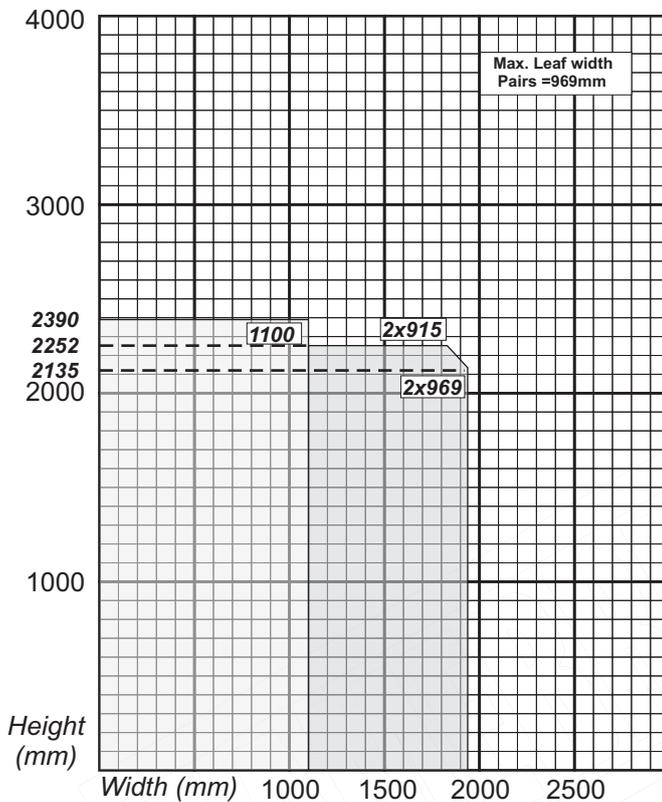
<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb's &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame.
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Exova Warrington fire Report Ref: FEA/F98164 Rev. M Valid until 23rd. February 2023



## FD30 - BS476 Pt.22 :1987

**20x4mm PVC encased Palusol 100  
or Lorient 617**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



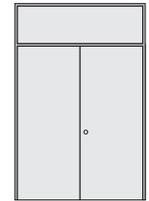
Latched Single  
Action Single leaf



Latched Single  
Action Double leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight



Latched Single  
Action Double leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From To	2390	1100
Latched Single Action Double Door (LSADD)	From To	2135 2252	969 915

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm 1500mm
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood OR 700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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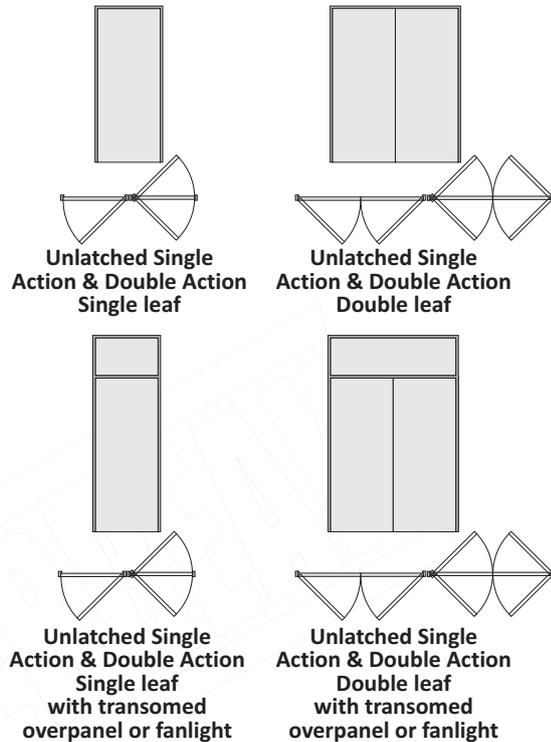
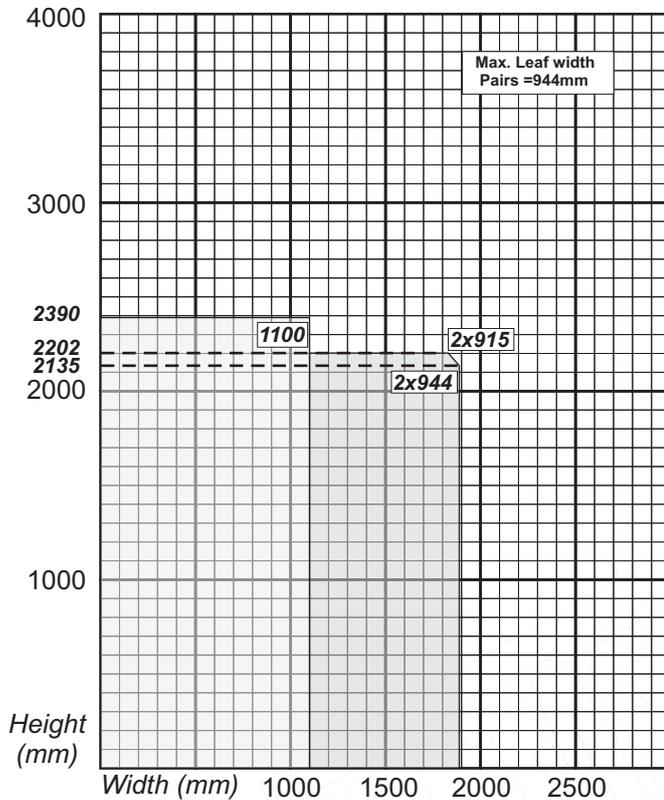
**FD30 - BS476 Pt.22 :1987**

**20x4mm PVC encased Palusol 100  
or Lorient 617**

**UNLATCHED DOORSETS**

**Door Height Assemblies  
&**

**Storey Height Assemblies with Transom**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2390	1100
	To		
Double Action Single Door (DASD)	From	2390	1100
	To		
Unlatched Single Action Double Door (ULSADD)	From	2135	944
	To		
Double Action Double Door (DADD)	From	2135	944
	To		

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

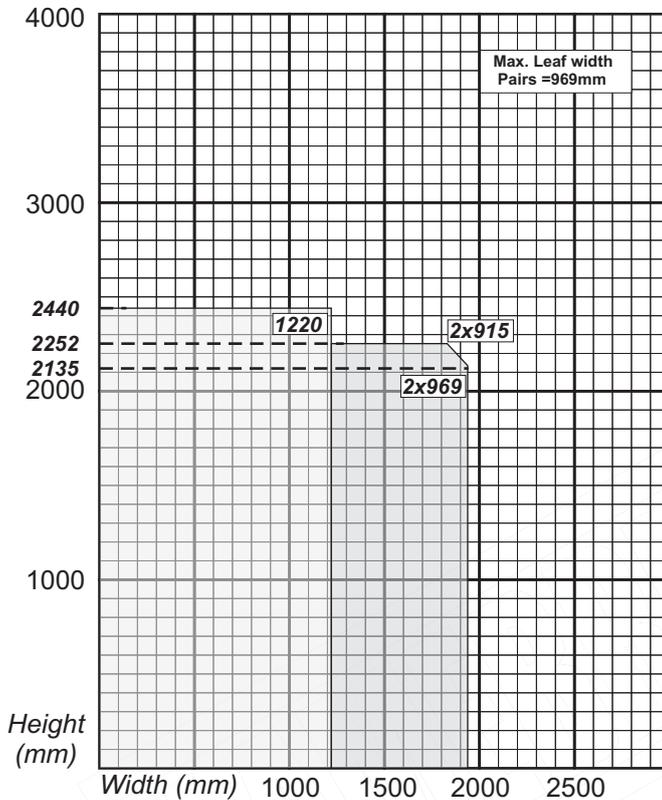
<p><b>Frame Specification</b> See Section 7 - Frames <i>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</i></p>	<p><b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i></p>	<p><b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b></p>
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<p><b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.</p>
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## FD30 - BS476 Pt.22 :1987

**25x4mm PVC encased Palusol 100  
or Lorient 617**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



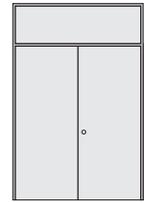
Latched Single  
Action Single leaf



Latched Single  
Action Double leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight



Latched Single  
Action Double leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From To	2440	1220
Latched Single Action Double Door (LSADD)	From To	2135 2252	969 915

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm 1500mm
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood OR 700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 25x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 25x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 25x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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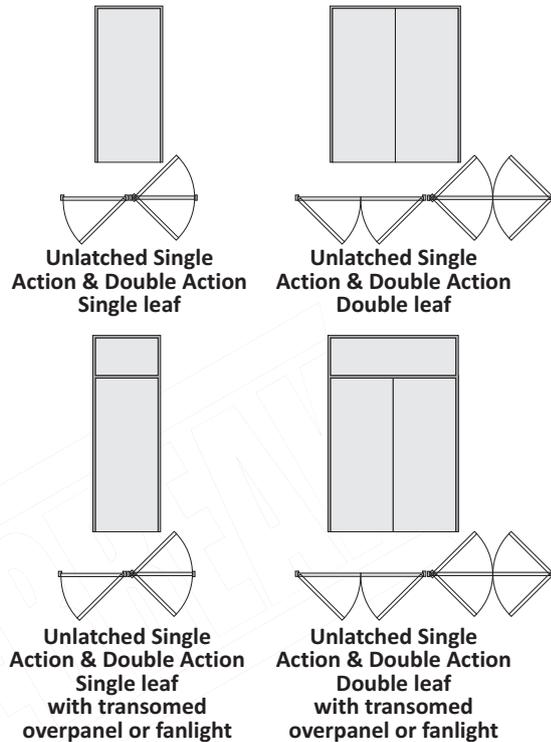
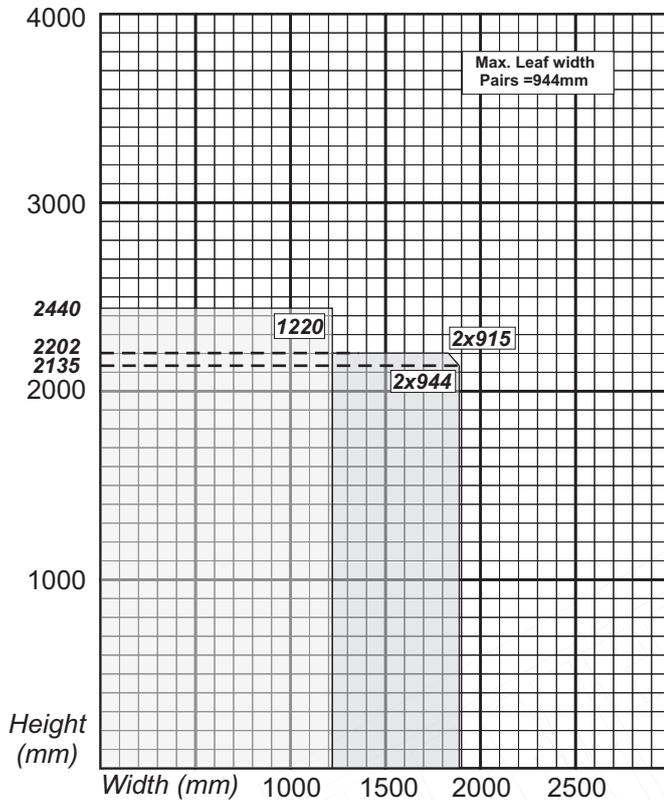
**FD30 - BS476 Pt.22 :1987**

**25x4mm PVC encased Palusol 100  
or Lorient 617**

**UNLATCHED DOORSETS**

**Door Height Assemblies  
&**

**Storey Height Assemblies with Transom**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2440	1220
	To		
Double Action Single Door (DASD)	From	2440	1220
	To		
Unlatched Single Action Double Door (ULSADD)	From	2135	944
	To		
Double Action Double Door (DADD)	From	2135	944
	To		

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<p><b>Frame Specification</b> See Section 7 - Frames <i>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</i></p>	<p><b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i></p>	<p><b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b></p>
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<p><b>Intumescent Seals</b> 25x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 25x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 25x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.</p>
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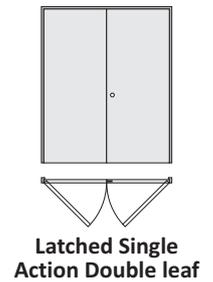
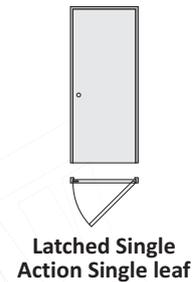
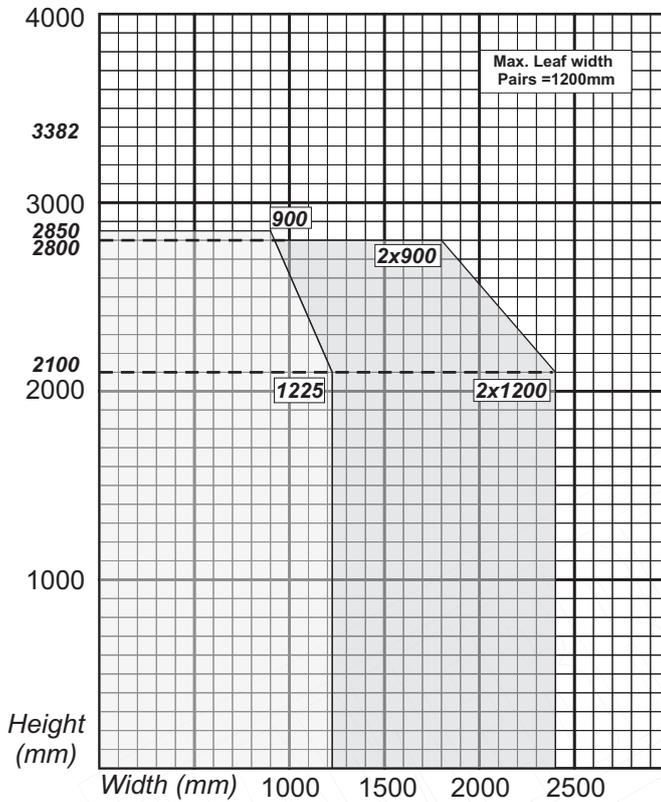


## FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Lorient 617  
 + Intregal CS Acrovyn intumescent**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2100	1225
	To	2850	900
Latched Single Action Double Door (LSADD)	From	2100	1200
	To	2800	900

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	NOT APPROVED
	Double door doorset			Double door doorset	

Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4mm PVC encapsulated  <b>Lorient 617 + Intregal CS Acrovyn Intumescent</b>  <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the frame head.  <b>Jamb:</b> 1No. 15x4mm exposed and fitted centrally in the leaf in addition to CS Acrovyn edge protectors with integral intumescent fitted on the leaf edges.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the CS Acrovyn edge protectors to both door leaf edges.</p>
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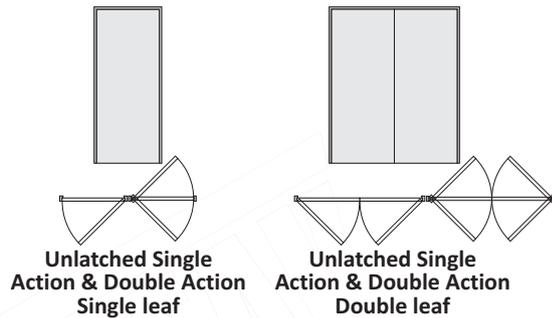
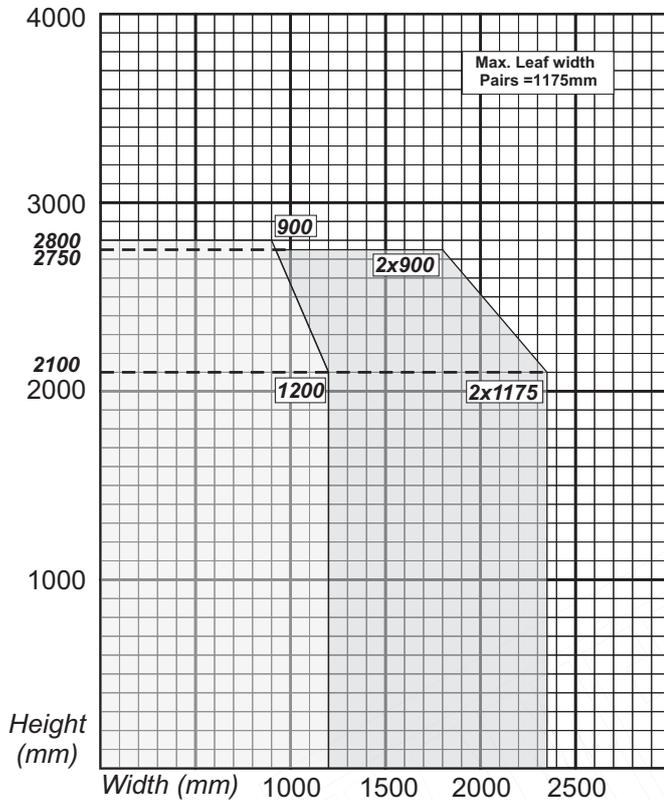


**FD30 - BS476 Pt.22 :1987**

**15x4mm PVC encased Lorient 617  
 + Integral CS Acrovyn intumescent**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2100	1200
	To	2800	900
Double Action Single Door (DASD)	From	2100	1200
	To	2800	900
Unlatched Single Action Double Door (ULSADD)	From	2100	1175
	To	2750	900
Double Action Double Door (DADD)	From	2100	1175
	To	2750	900

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4mm PVC encapsulated  <b>Lorient 617 + Integral CS Acrovyn Intumescent</b>  <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the frame head.  <b>Jams:</b> 1No. 15x4mm exposed and fitted centrally in the leaf in addition to CS Acrovyn edge protectors with integral intumescents fitted on the leaf edges.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the CS Acrovyn edge protectors to both door leaf edges.</p>
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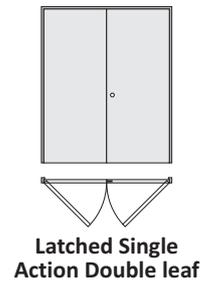
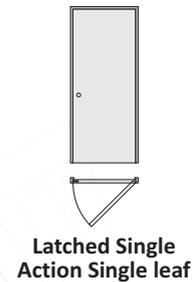
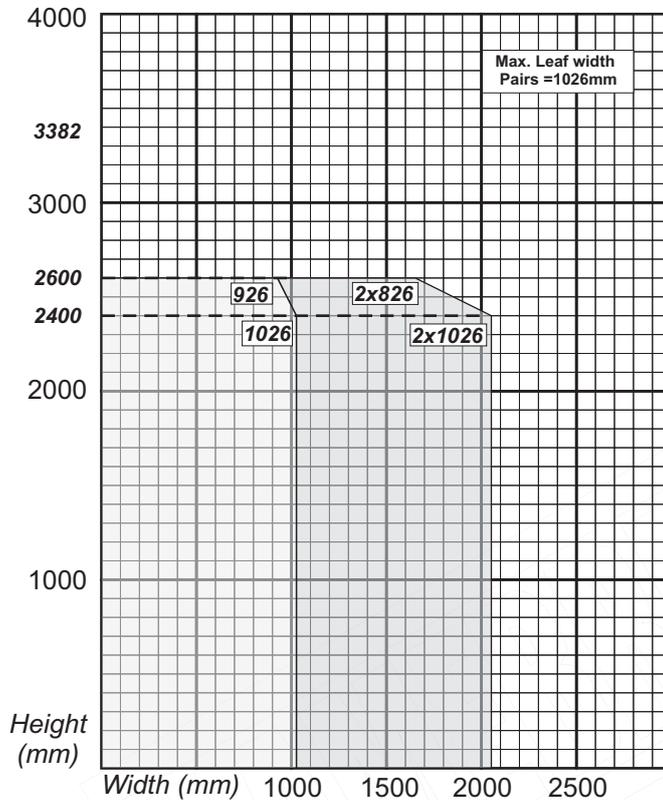


## FD30 - BS476 Pt.22 :1987

**15x4 + 20x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2400	1026
	To	2600	926
Latched Single Action Double Door (LSADD)	From	2400	1026
	To	2600	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4 + 20x4mm PVC encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the frame head.  <b>Jams:</b> 1No. 15x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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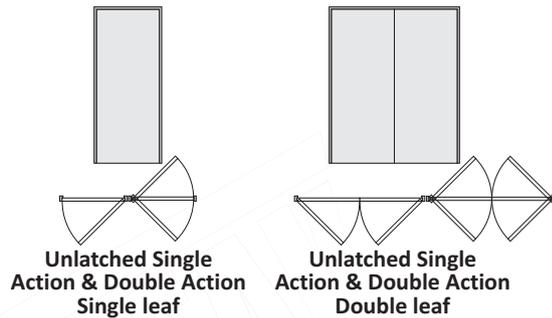
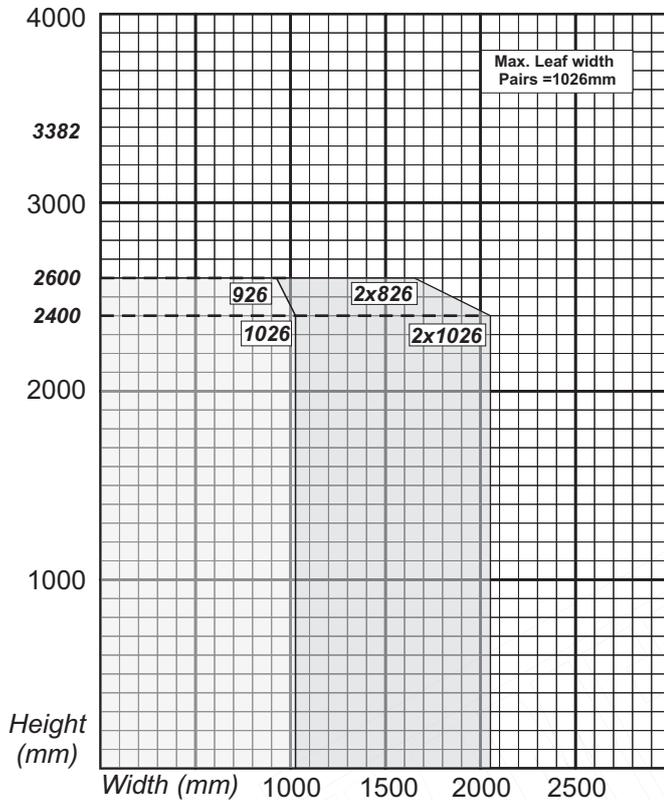


**FD30 - BS476 Pt.22 :1987**

**15x4 + 20x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2400	1026
	To	2600	926
Double Action Single Door (DASD)	From	2400	1026
	To	2600	926
Unlatched Single Action Double Door (ULSADD)	From	2400	1026
	To	2600	826
Double Action Double Door (DADD)	From	2400	1026
	To	2600	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4 + 20x4mm PVC encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the frame head.  <b>Jamb:</b> 1No. 15x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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FLAMEBREAK

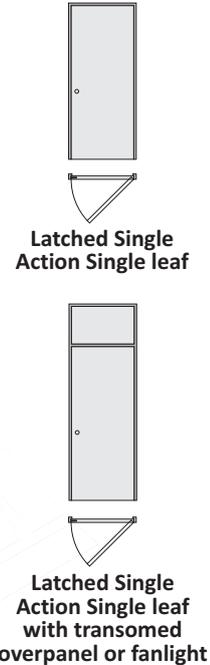
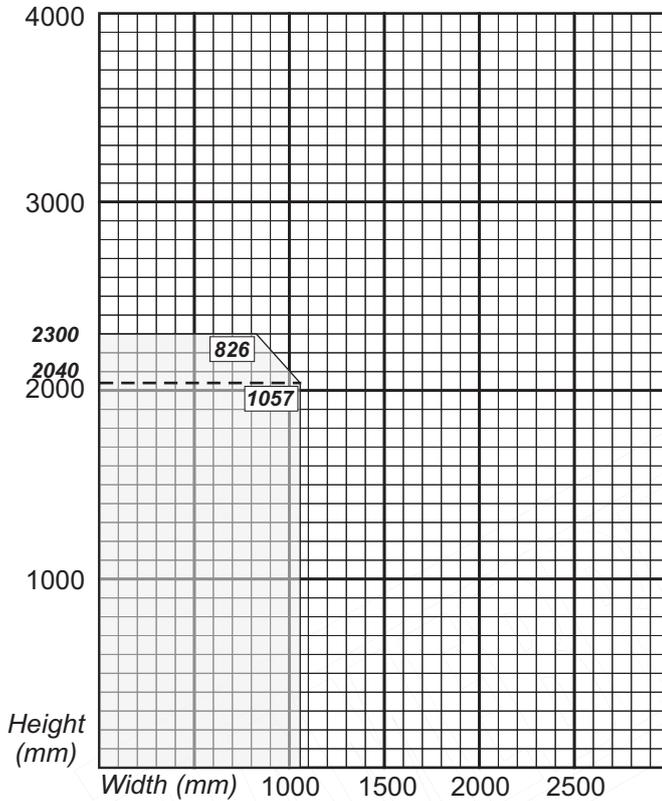


### FD30 - BS476 Pt.22 :1987

**10x4mm PVC encased Pyroplex Rigid Box seal**

#### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2040	1057
	To	2300	826
Latched Single Action Double Door (LSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> See Section 4 - Intumescent Seals and Section 8 - Hardware	<b>Head:</b> 1No. 10x4mm exposed and fitted centrally in the leaf or frame head. <b>Jams &amp; Overpanel:</b> 1No. 10x4mm exposed and centrally fitted to leaf or frame.
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# 2C.2

## Fire Door Applications FLAMEBREAK FF630

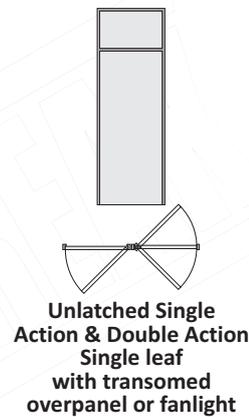
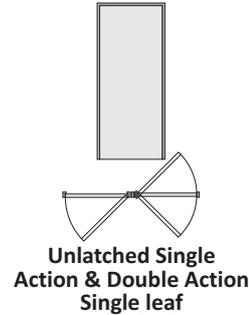
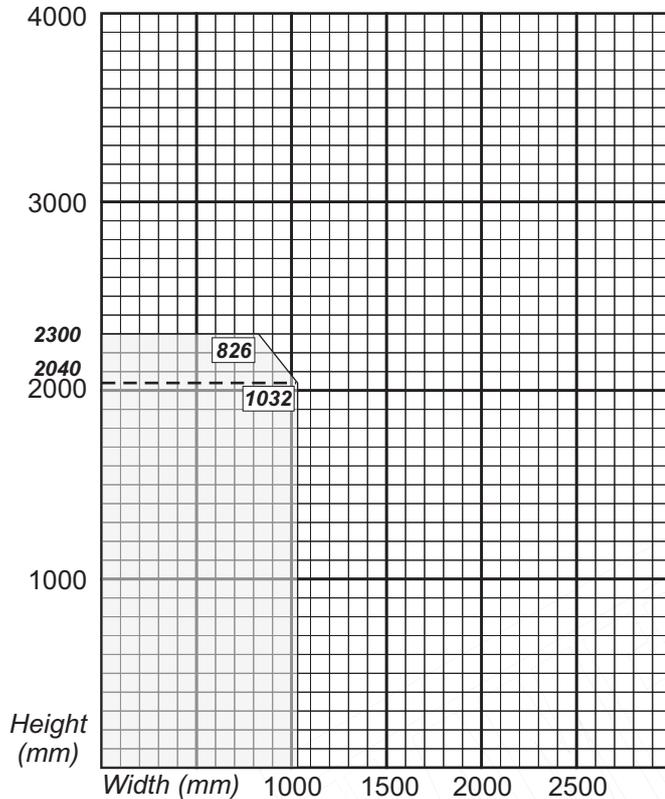


### FD30 - BS476 Pt.22 :1987

**10x4mm PVC encased Pyroplex Rigid Box seal**

#### UNLATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2040	1032
	To	2300	826
Double Action Single Door (DASD)	From	2040	1032
	To	2300	826
Unlatched Single Action Double Door (ULSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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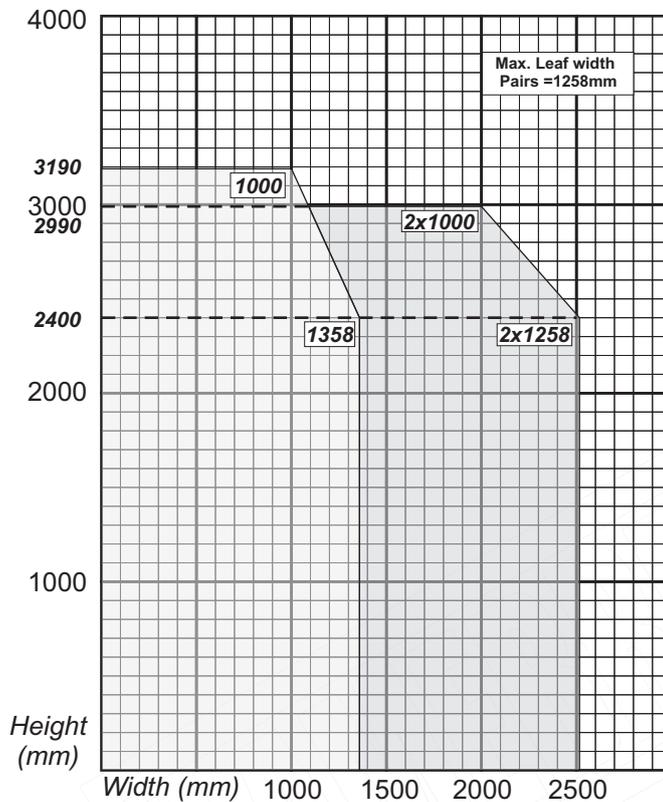
<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b>  See Section 4 - Intumescent Seals and Section 8 - Hardware	Head: 1No. 10x4mm exposed and fitted centrally in the leaf or frame head. Jamb & Overpanel: 1No. 10x4mm exposed and centrally fitted to leaf or frame.
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### FD30 - BS476 Pt.22 :1987

**2No.10x4mm PVC encased Pyroplex Rigid Box seal**



#### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



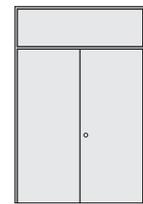
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2400	1358
	To	3190	1000
Latched Single Action Double Door (LSADD)	From	2400	1258
	To	2990	1000

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 2No 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Jams &amp; Overpanel:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated: NOT APPROVED.</b>
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# 2C.4

## Fire Door Applications FLAMEBREAK FF630



### FD30 - BS476 Pt.22 :1987

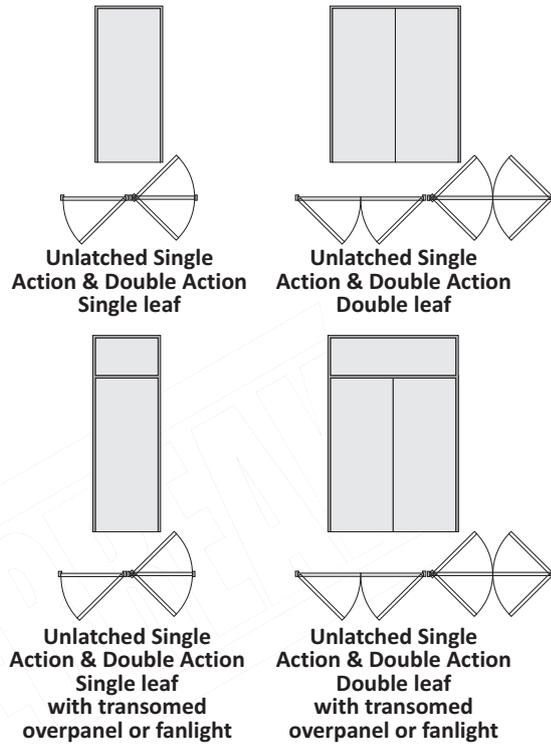
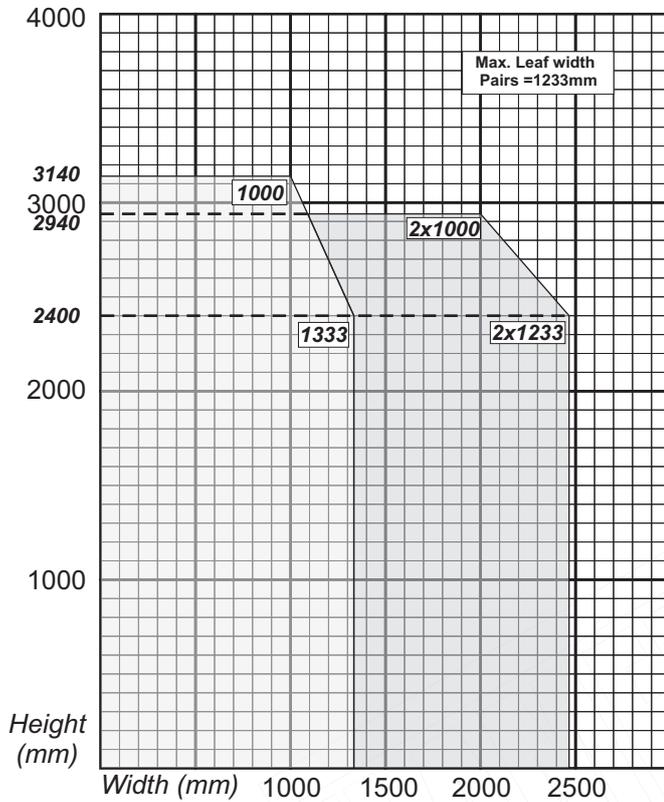
**2No.10x4mm PVC encased Pyroplex Rigid Box seal**

#### UNLATCHED DOORSETS

#### Door Height Assemblies

&

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2400	1333
	To	3140	1000
Double Action Single Door (DASD)	From	2400	1333
	To	3140	1000
Unlatched Single Action Double Door (ULSADD)	From	2400	1233
	To	2940	1000
Double Action Double Door (DADD)	From	2400	1233
	To	2940	1000

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

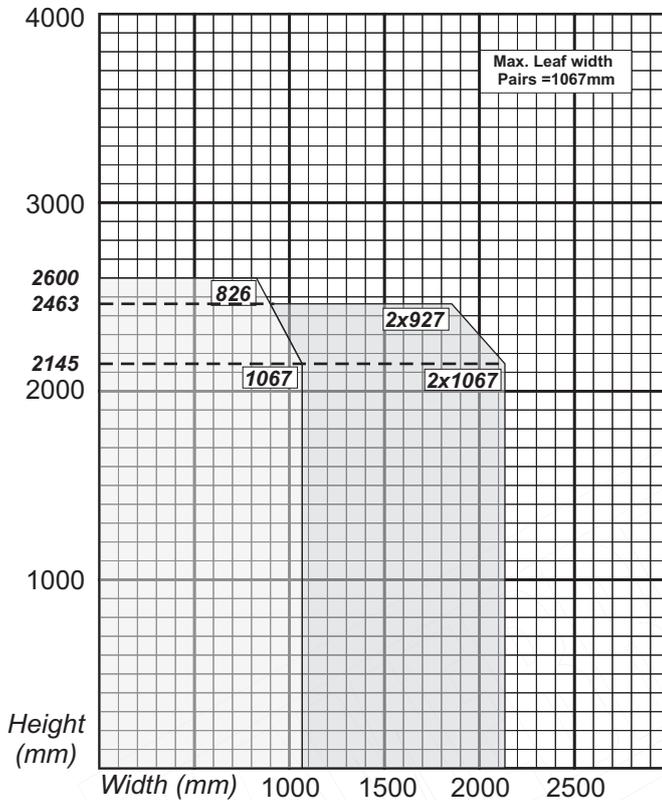
<b>Frame Specification</b> See Section 7 - Frames NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 2No 10x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> See Section 4 - Intumescent Seals and Section 8 - Hardware	<b>Head:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Jams &amp; Overpanel:</b> 2No. 10x4mm exposed and fitted centrally in the leaf or frame head with 10mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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### FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Pyroplex Rigid Box seal**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



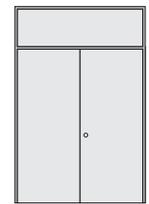
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2145	1067
	To	2600	826
Latched Single Action Double Door (LSADD)	From	2145	1067
	To	2463	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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# 2C.6

## Fire Door Applications FLAMEBREAK FF630



### FD30 - BS476 Pt.22 :1987

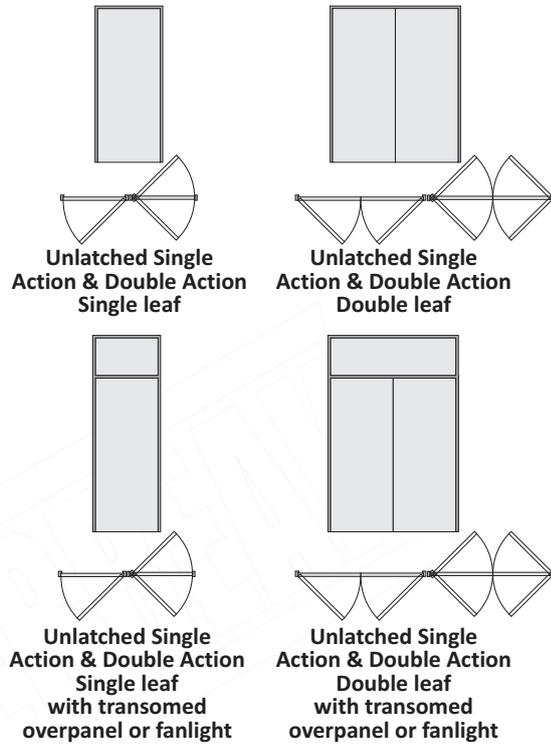
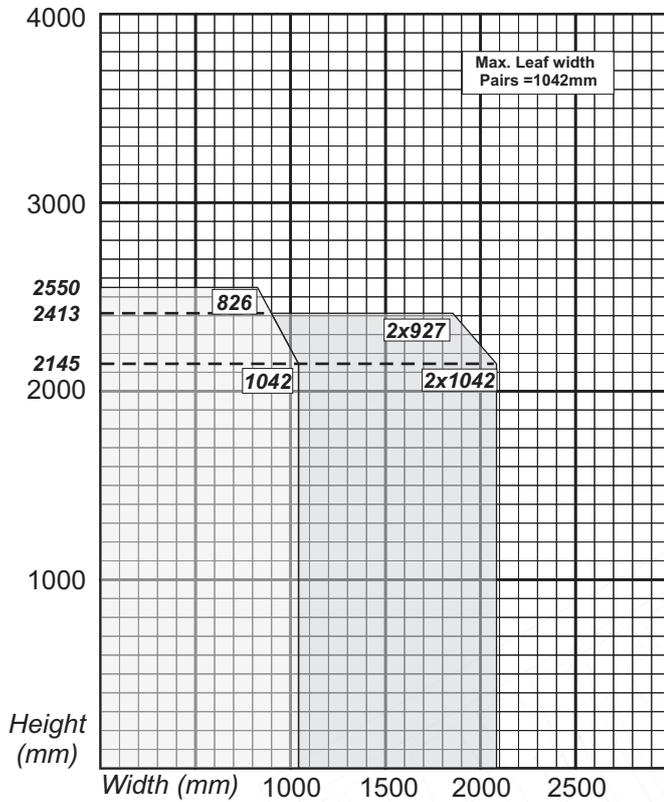
**15x4mm PVC encased Pyroplex Rigid Box seal**

### UNLATCHED DOORSETS

#### Door Height Assemblies

&

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2145	1042
	To	2550	826
Double Action Single Door (DASD)	From	2145	1042
	To	2550	826
Unlatched Single Action Double Door (ULSADD)	From	2145	1042
	To	2413	927
Double Action Double Door (DADD)	From	2145	1042
	To	2413	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

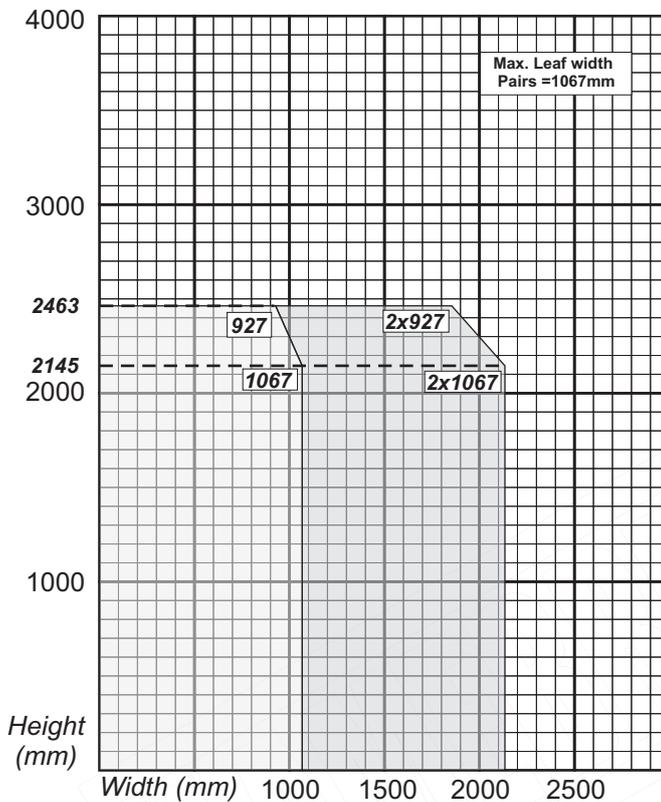
<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb's &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> <i>NOT APPROVED.</i>
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## FD30 - BS476 Pt.22 :1987

**20x4mm PVC encased Pyroplex Rigid Box seal**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



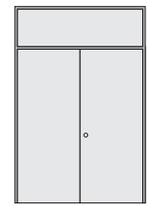
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2145	1067
	To	2463	927
Latched Single Action Double Door (LSADD)	From	2145	1067
	To	2463	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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# 2C.8

## Fire Door Applications FLAMEBREAK FF630



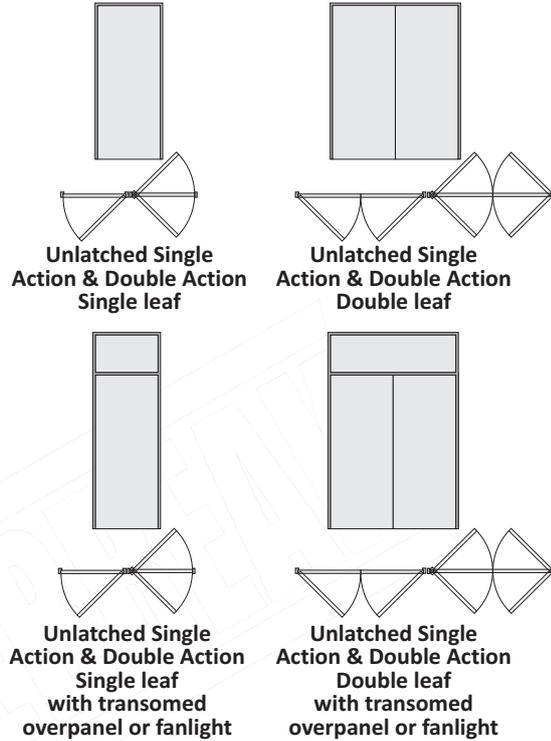
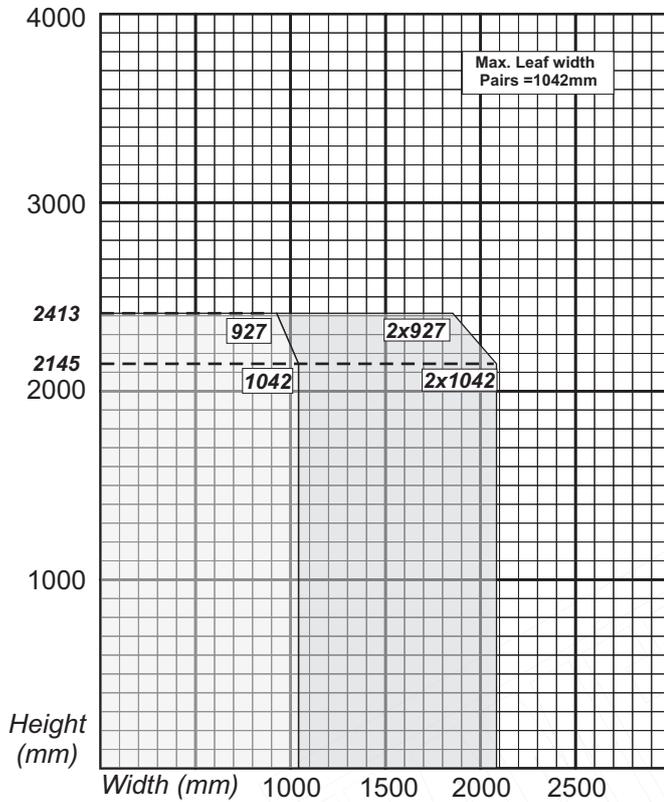
### FD30 - BS476 Pt.22 :1987

**20x4mm PVC encased Pyroplex Rigid Box seal**

#### UNLATCHED DOORSETS

#### Door Height Assemblies &

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2145	1042
	To	2413	927
Double Action Single Door (DASD)	From	2145	1042
	To	2413	927
Unlatched Single Action Double Door (ULSADD)	From	2145	1042
	To	2413	927
Double Action Double Door (DADD)	From	2145	1042
	To	2413	927

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb's &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 2No. 10x4mm exposed and fitted centrally in one leaf only with 10mm separation. <b>Rebated:</b> NOT APPROVED.
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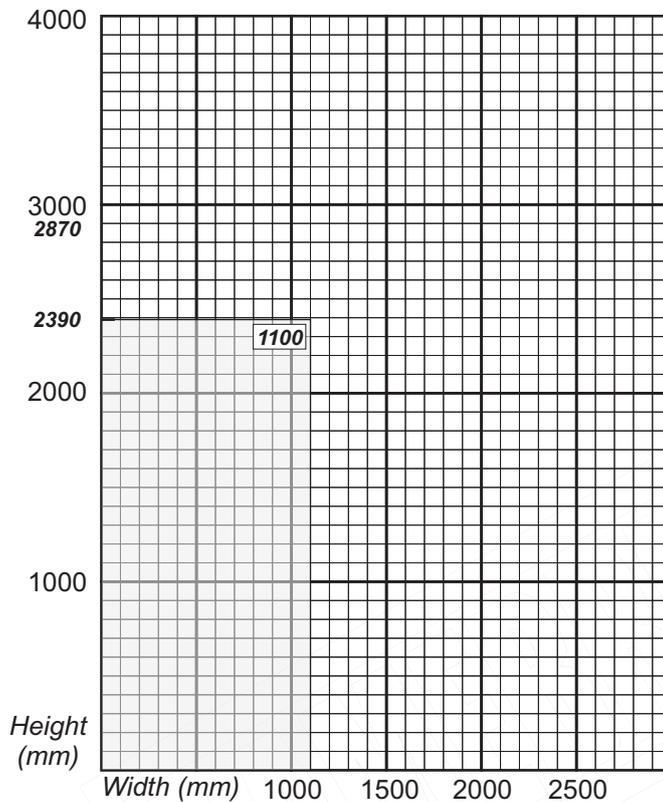


## FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Palusol 100  
or Lorient 617**

### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single  
Action Single leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From To	2390	1100
Latched Single Action Double Door (LSADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>2</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood</b> <b>OR</b> <b>700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jams &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame.
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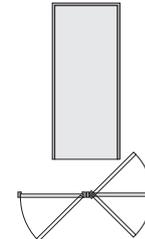
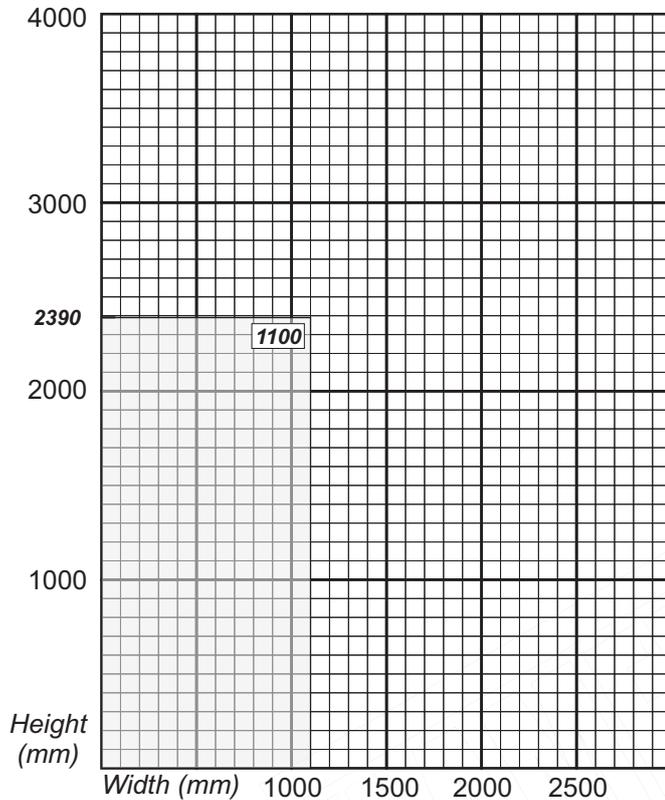


**FD30 - BS476 Pt.22 :1987**

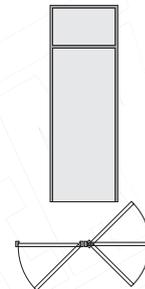
**15x4mm PVC encased Palusol 100  
or Lorient 617**

**UNLATCHED DOORSETS**

**Door Height Assemblies  
&  
Storey Height Assemblies with Transom**



**Unlatched Single  
Action & Double Action  
Single leaf**



**Unlatched Single  
Action & Double Action  
Single leaf  
with transomed  
overpanel or fanlight**

Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From To	2390	1100
Double Action Single Door (DASD)	From To	2390	1100
Unlatched Single Action Double Door (ULSADD)	From To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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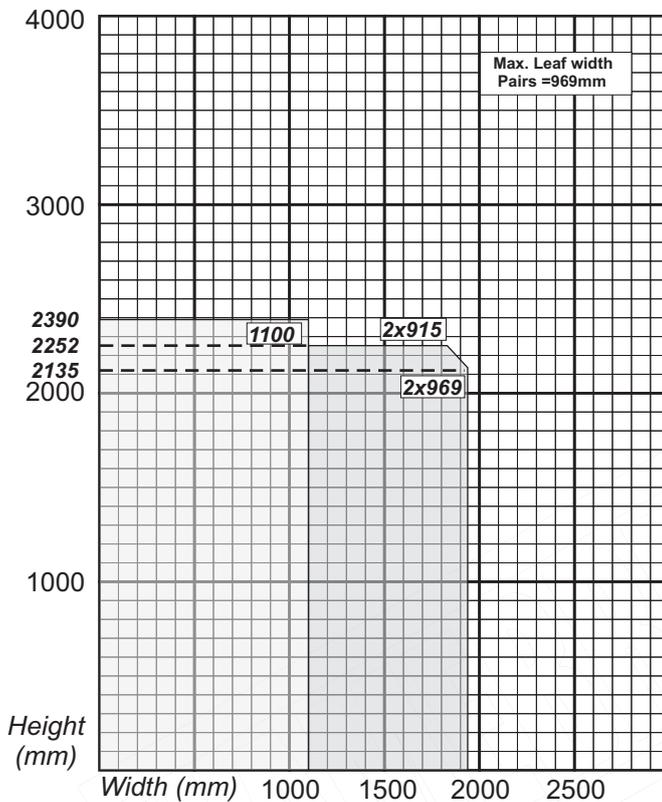
<b>Frame Specification</b> See Section 7 - Frames NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 15x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> See Section 4 - Intumescent Seals and Section 8 - Hardware	<b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb's &amp; Overpanel:</b> 1No. 15x4mm exposed and fitted centrally in the leaf or frame.
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## FD30 - BS476 Pt.22 :1987

**20x4mm PVC encased Palusol 100  
or Lorient 617**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



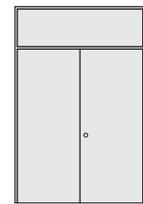
Latched Single  
Action Single leaf



Latched Single  
Action Double leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight



Latched Single  
Action Double leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From To	2390	1100
Latched Single Action Double Door (LSADD)	From To	2135 2252	969 915

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm 1500mm
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood OR 700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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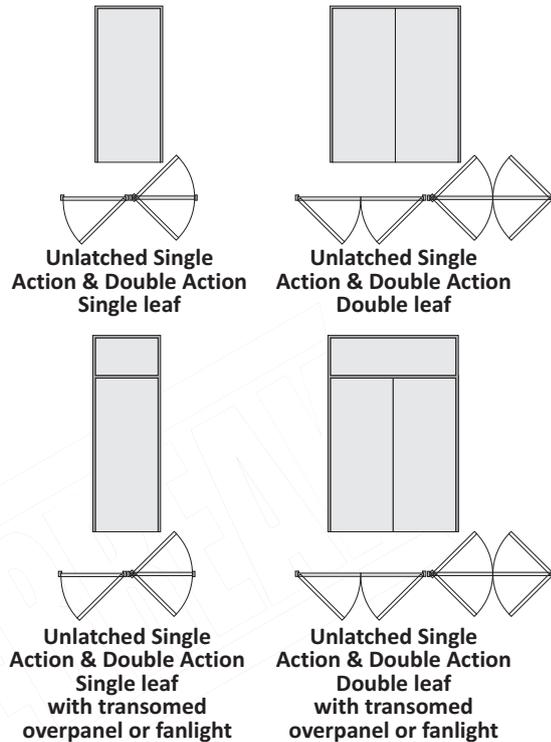
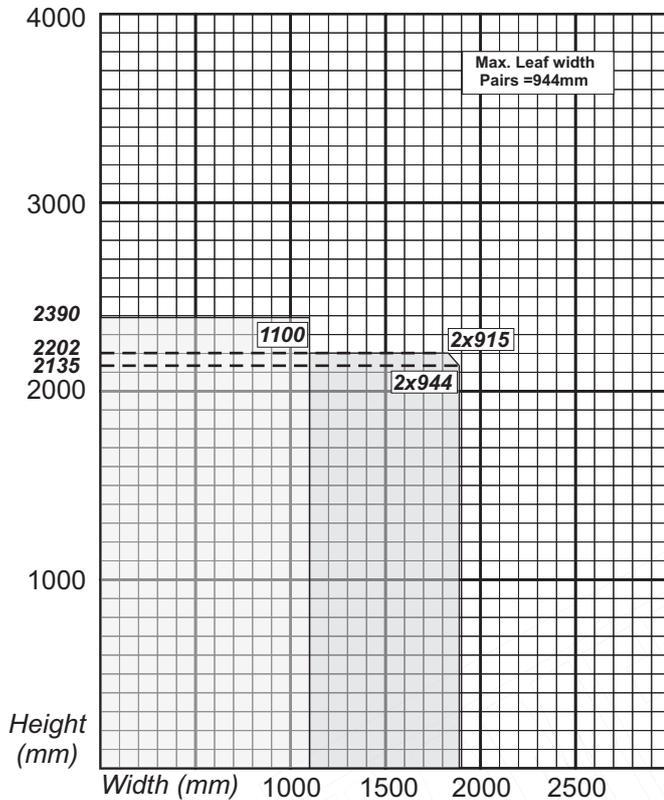
**FD30 - BS476 Pt.22 :1987**

**20x4mm PVC encased Palusol 100  
or Lorient 617**

**UNLATCHED DOORSETS**

**Door Height Assemblies  
&**

**Storey Height Assemblies with Transom**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2390	1100
	To		
Double Action Single Door (DASD)	From	2390	1100
	To		
Unlatched Single Action Double Door (ULSADD)	From	2135	944
	To		
Double Action Double Door (DADD)	From	2135	944
	To		

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

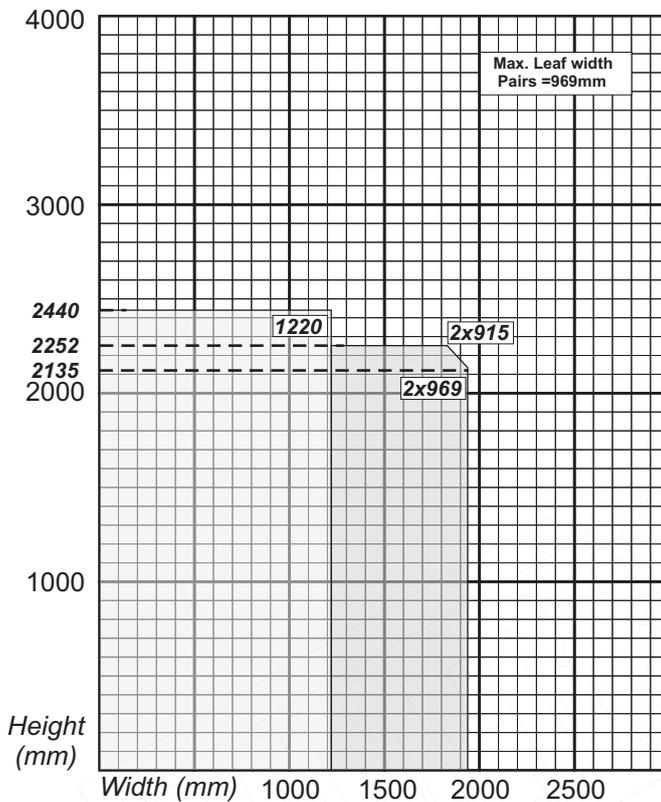
<b>Frame Specification</b> <i>See Section 7 - Frames</i> NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	<b>Single leaf door assembly</b> <b>Double leaf door assembly</b> NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 20x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame head. <b>Jamb &amp; Overpanel:</b> 1No. 20x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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## FD30 - BS476 Pt.22 :1987

**25x4mm PVC encased Palusol 100  
or Lorient 617**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



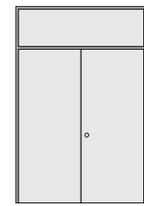
Latched Single  
Action Single leaf



Latched Single  
Action Double leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight



Latched Single  
Action Double leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From To	2440	1220
Latched Single Action Double Door (LSADD)	From To	2135 2252	969 915

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm 1500mm
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<b>Frame Specification</b> <i>See Section 7 - Frames</i> <b>NOTE: MDF frames are approved for door height door assemblies (without transoms) only.</b>	<b>Single leaf door assembly Double leaf door assembly</b> <b>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</b>	<b>450kg/m<sup>3</sup> Softwood or Hardwood OR 700kg/m<sup>3</sup> MDF</b>
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<b>Intumescent Seals</b> 25x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 25x4mm exposed and fitted centrally in the leaf or frame head. <b>Jambs &amp; Overpanel:</b> 1No. 25x4mm exposed and fitted centrally in the leaf or frame. <b>Meeting edges:</b> <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in one leaf only. <b>Rebated:</b> 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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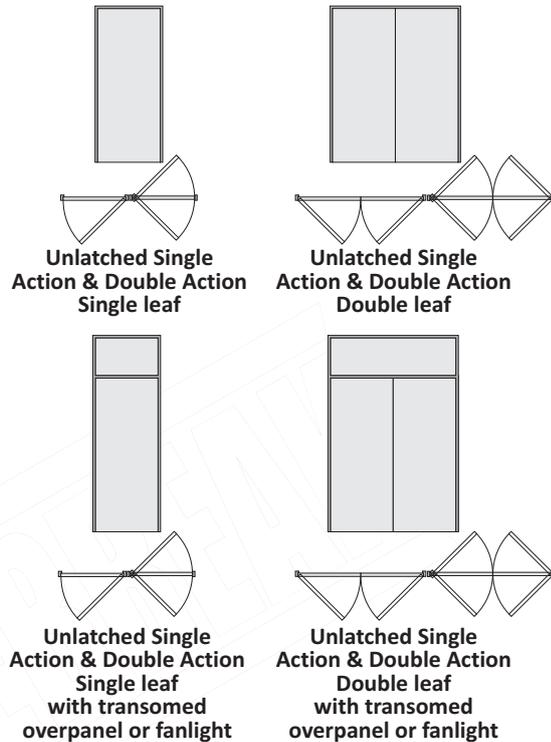
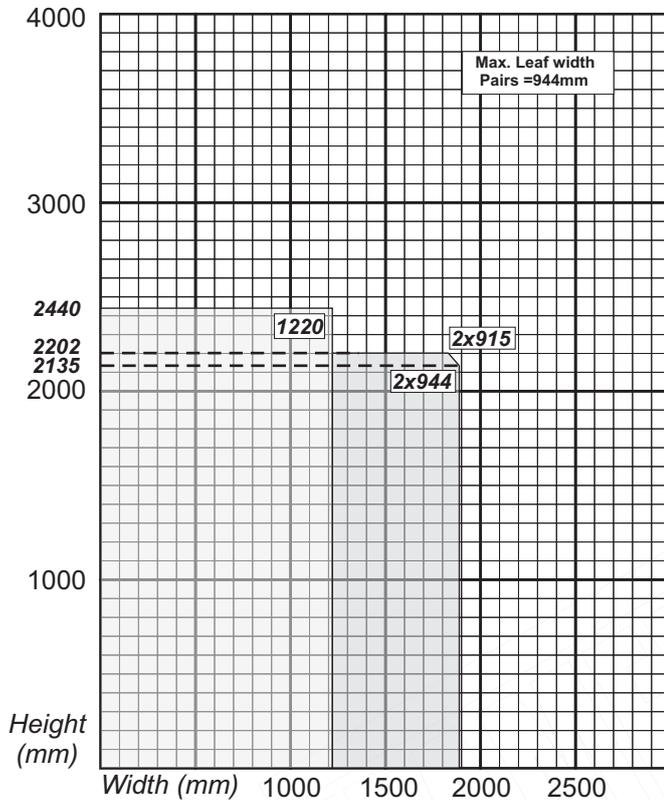
**FD30 - BS476 Pt.22 :1987**

**25x4mm PVC encased Palusol 100  
or Lorient 617**

**UNLATCHED DOORSETS**

**Door Height Assemblies  
&**

**Storey Height Assemblies with Transom**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2440	1220
	To		
Double Action Single Door (DASD)	From	2440	1220
	To		
Unlatched Single Action Double Door (ULSADD)	From	2135	944
	To		
Double Action Double Door (DADD)	From	2135	944
	To		
	From	2202	915
	To		

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm 1500mm
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<b>Frame Specification</b> See Section 7 - Frames NOTE: MDF frames are approved for door height door assemblies (without transoms) only.	Single leaf door assembly Double leaf door assembly NOTE: Glazed fanlights approved for door assemblies with 640kg/m <sup>3</sup> Hardwood frames only.	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<b>Intumescent Seals</b> 25x4mm PVC encapsulated <b>Palusol 100 or Lorient 617</b> See Section 4 - Intumescent Seals and Section 8 - Hardware	Head: 1No. 25x4mm exposed and fitted centrally in the leaf or frame head. Jamb & Overpanel: 1No. 20x4mm exposed and fitted centrally in the leaf or frame. Meeting edges: Square: 1No. 25x4mm exposed and fitted centrally in one leaf only. Rebated: 1No. 10x4mm exposed and fitted centrally in the rebate of both leaf edges.
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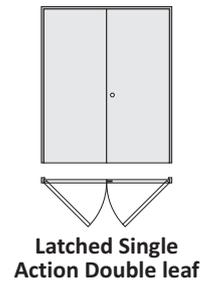
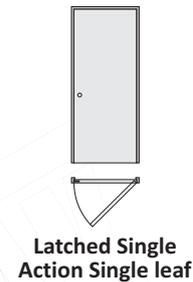
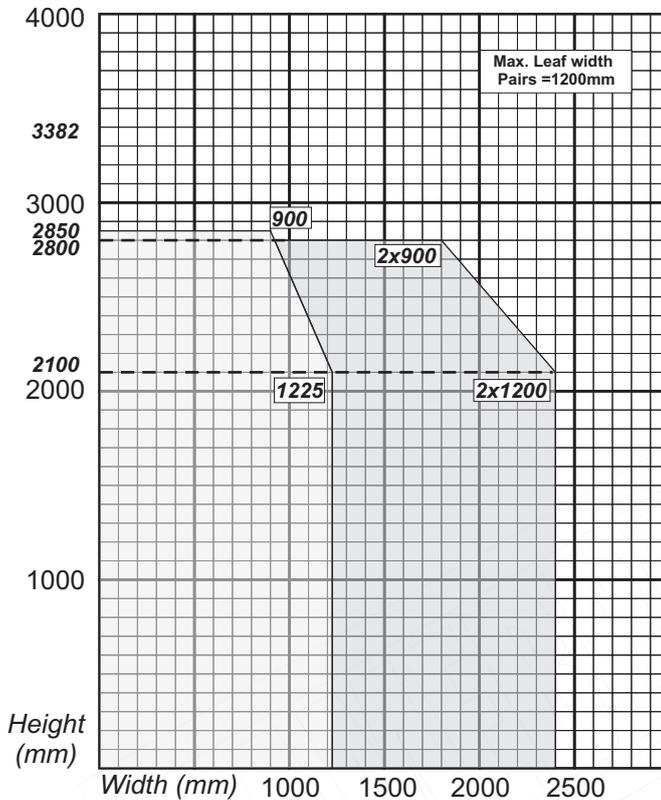


## FD30 - BS476 Pt.22 :1987

**15x4mm PVC encased Lorient 617  
 + Intregal CS Acrovyn intumescent**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2100	1225
	To	2850	900
Latched Single Action Double Door (LSADD)	From	2100	1200
	To	2800	900

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset	NOT APPROVED
	Double door doorset			Double door doorset	

Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4mm PVC encapsulated  <b>Lorient 617 + Intregal CS Acrovyn Intumescent</b>  <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the frame head.  <b>Jamb:</b> 1No. 15x4mm exposed and fitted centrally in the leaf in addition to CS Acrovyn edge protectors with integral intumescent fitted on the leaf edges.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the CS Acrovyn edge protectors to both door leaf edges.</p>
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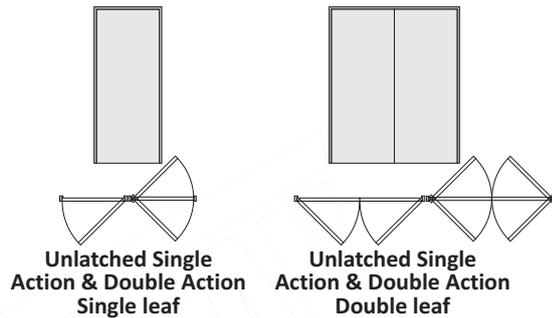
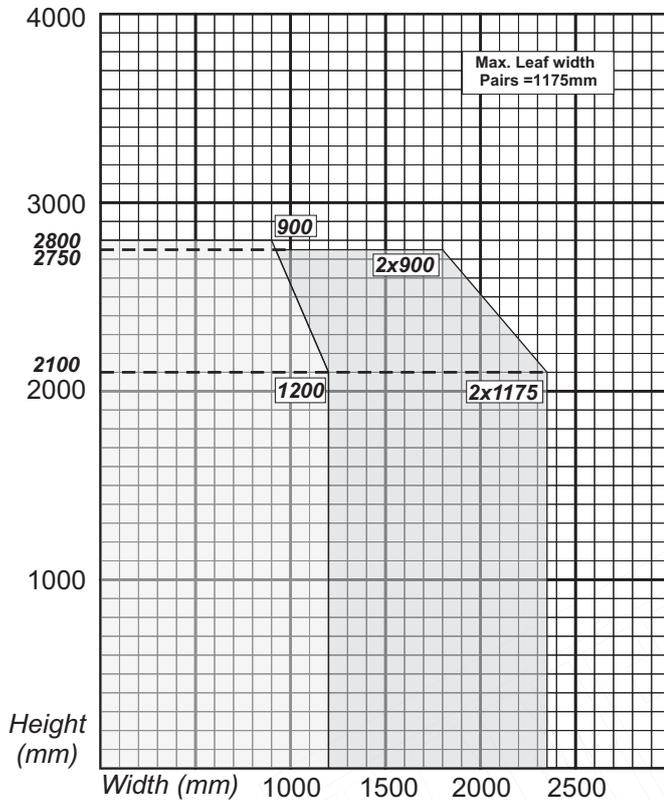


**FD30 - BS476 Pt.22 :1987**

**15x4mm PVC encased Lorient 617  
 + Integral CS Acrovyn intumescent**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2100	1200
	To	2800	900
Double Action Single Door (DASD)	From	2100	1200
	To	2800	900
Unlatched Single Action Double Door (ULSADD)	From	2100	1175
	To	2750	900
Double Action Double Door (DADD)	From	2100	1175
	To	2750	900

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4mm PVC encapsulated  <b>Lorient 617 + Integral CS Acrovyn Intumescent</b>  <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 15x4mm exposed and fitted centrally in the frame head.  <b>Jams :</b> 1No. 15x4mm exposed and fitted centrally in the leaf in addition to CS Acrovyn edge protectors with integral intumescents fitted on the leaf edges.  <b>Meeting Stiles :</b> 1No. 15x4mm exposed and fitted centrally in the CS Acrovyn edge protectors to both door leaf edges.</p>
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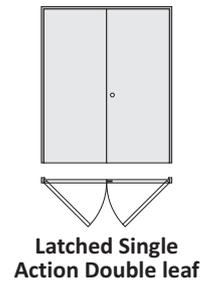
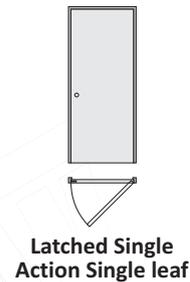
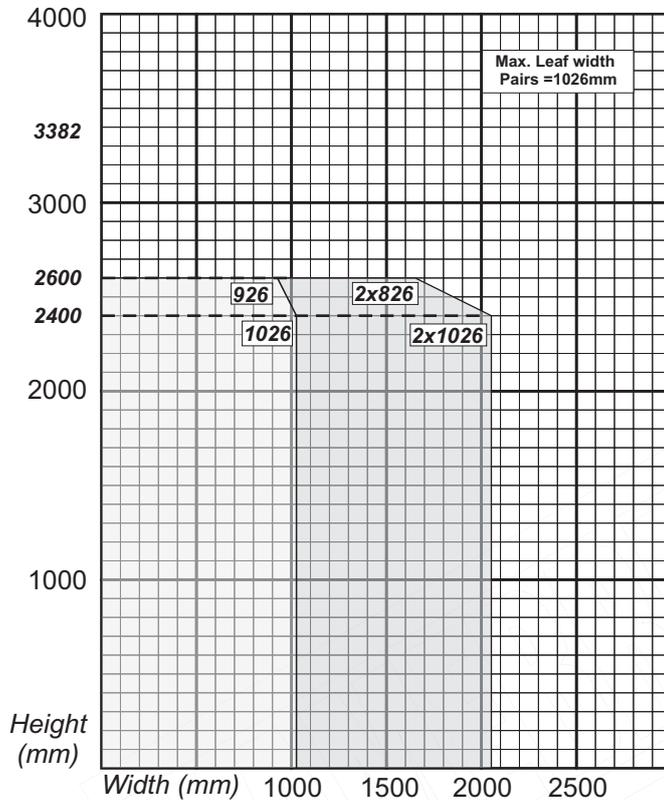


## FD30 - BS476 Pt.22 :1987

**15x4 + 20x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2400	1026
	To	2600	926
Latched Single Action Double Door (LSADD)	From	2400	1026
	To	2600	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4 + 20x4mm PVC encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the frame head.  <b>Jams:</b> 1No. 15x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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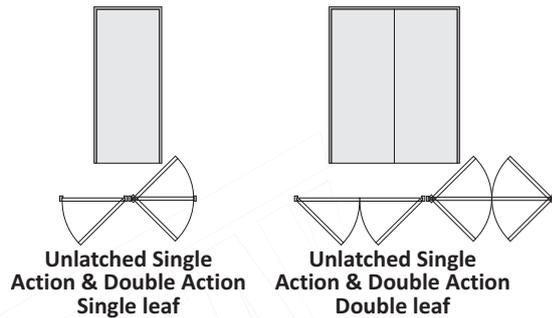
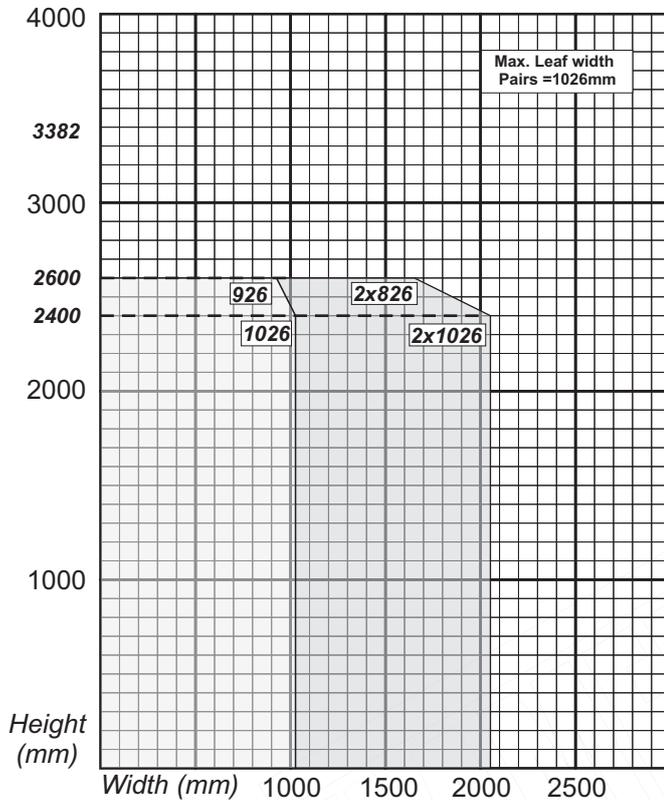


**FD30 - BS476 Pt.22 :1987**

**15x4 + 20x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2400	1026
	To	2600	926
Double Action Single Door (DASD)	From	2400	1026
	To	2600	926
Unlatched Single Action Double Door (ULSADD)	From	2400	1026
	To	2600	826
Double Action Double Door (DADD)	From	2400	1026
	To	2600	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	1.15m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly	450kg/m <sup>3</sup> Softwood or Hardwood OR 700kg/m <sup>3</sup> MDF
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<p><b>Intumescent Seals</b>                  15x4 + 20x4mm PVC                  encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals                  and                  Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 20x4mm exposed and fitted centrally in the frame head.  <b>Jamb:</b> 1No. 15x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting Stiles:</b> 1No. 15x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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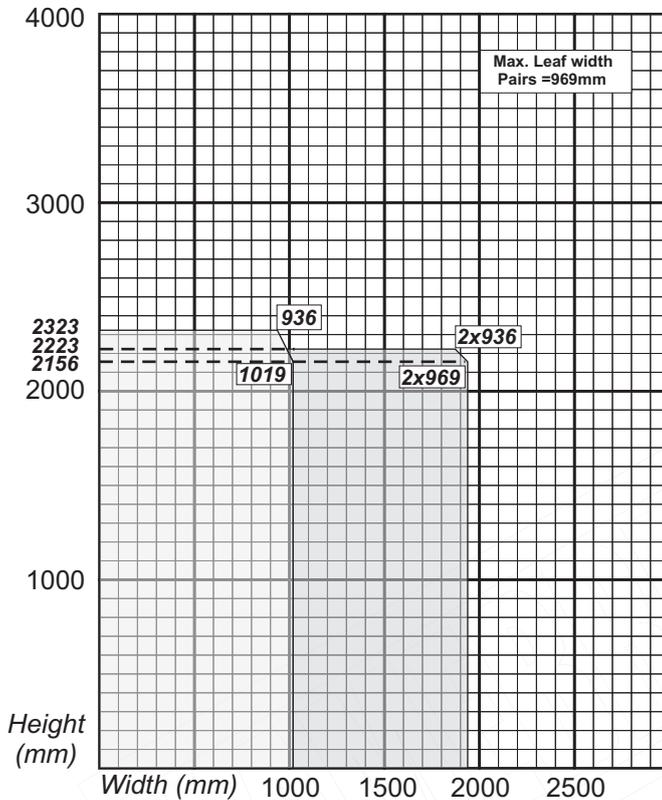


FLAMEBREAK™



### FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Pyroplex Rigid Box seal - 5mm separation**



### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



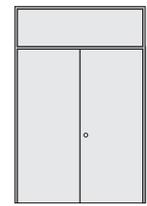
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2156	1019
	To	2323	936
Latched Single Action Double Door (LSADD)	From	2156	969
	To	2223	936

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<p><b>Intumescent Seals</b> 2x15x4mm PVC encapsulated with 5mm separation <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 2No. 15x4mm exposed and fitted centrally in the frame head with 5 mm separation. <b>Jambs &amp; Overpanel:</b> 2No. 15x4mm exposed and fitted centrally in the frame with 5 mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 15x4mm exposed and fitted centrally in one leaf only with 5mm separation. <b>Rebated:</b> NOT APPROVED.</p>
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# 2D.2

## Fire Door Applications FLAMEBREAK 660



### FD60 - BS476 Pt.22 :1987

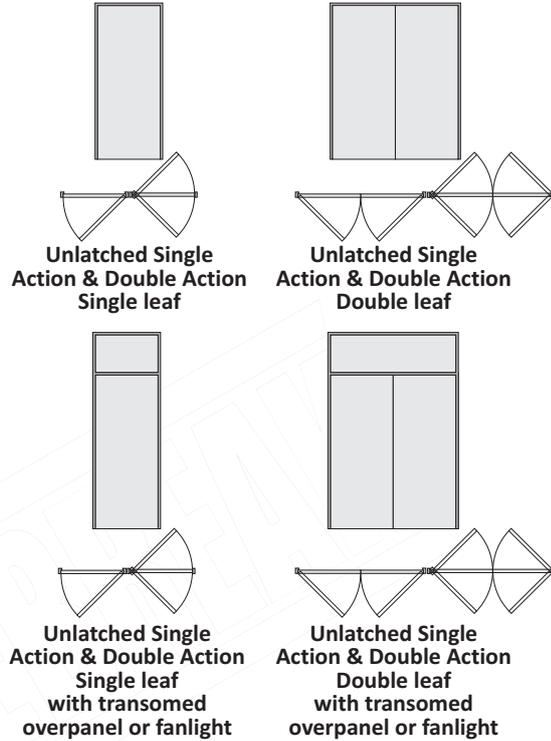
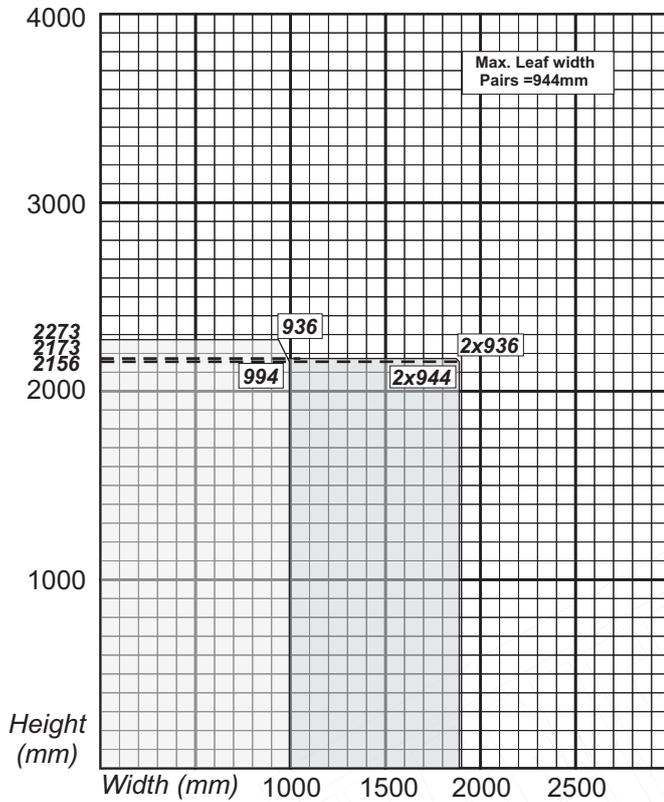
**2x15x4mm PVC encased Pyroplex Rigid Box seal - 5mm separation**

#### UNLATCHED DOORSETS

#### Door Height Assemblies

&

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2156	994
	To	2273	936
Double Action Single Door (DASD)	From	2156	994
	To	2273	936
Unlatched Single Action Double Door (ULSADD)	From	2156	944
	To	2173	936
Double Action Double Door (DADD)	From	2156	944
	To	2173	936

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm 1500mm
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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Intumescent Seals 2x15x4mm PVC encapsulated with 5mm separation <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	Head: 2No. 15x4mm exposed and fitted centrally in the frame head with 5 mm separation. Jamb & Overpanel: 2No. 15x4mm exposed and fitted centrally in the frame with 5 mm separation. Meeting edges: Square: 2No. 15x4mm exposed and fitted centrally in one leaf only with 5mm separation. Rebated: <i>NOT APPROVED.</i>
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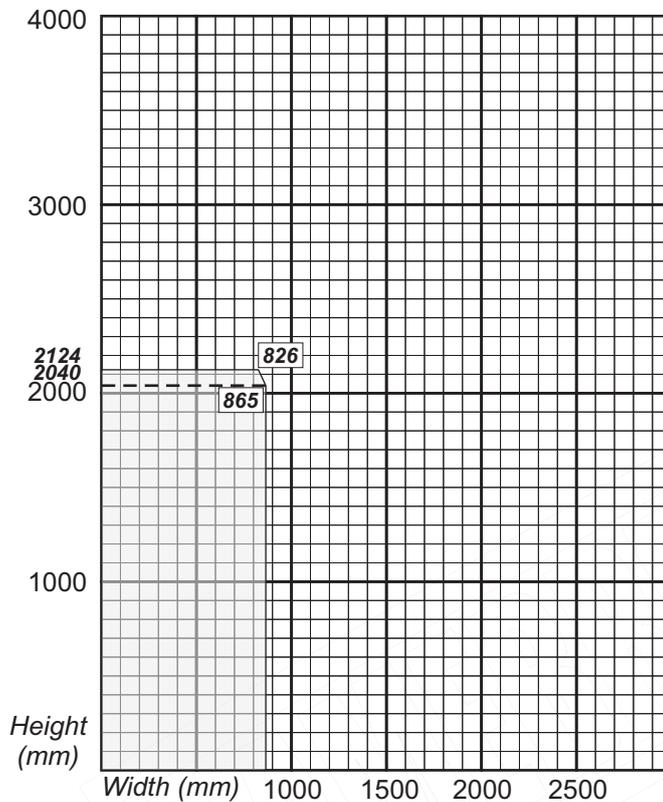


### FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Pyroplex Rigid Box seal - 10mm separation**

#### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single Action Single leaf



Latched Single Action Single leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2040	865
	To	2124	826
Latched Single Action Double Door (LSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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Intumescent Seals 2x15x4mm PVC encapsulated with 10mm separation <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	Head: 2No. 15x4mm exposed and fitted centrally in the frame head with 10 mm separation. Jambs & Overpanel: 2No. 15x4mm exposed and fitted centrally in the frame with 10 mm separation.
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# 2D.4

Fire Door Applications  
FLAMEBREAK 660

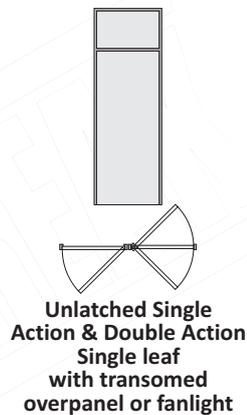
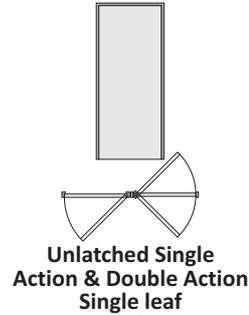
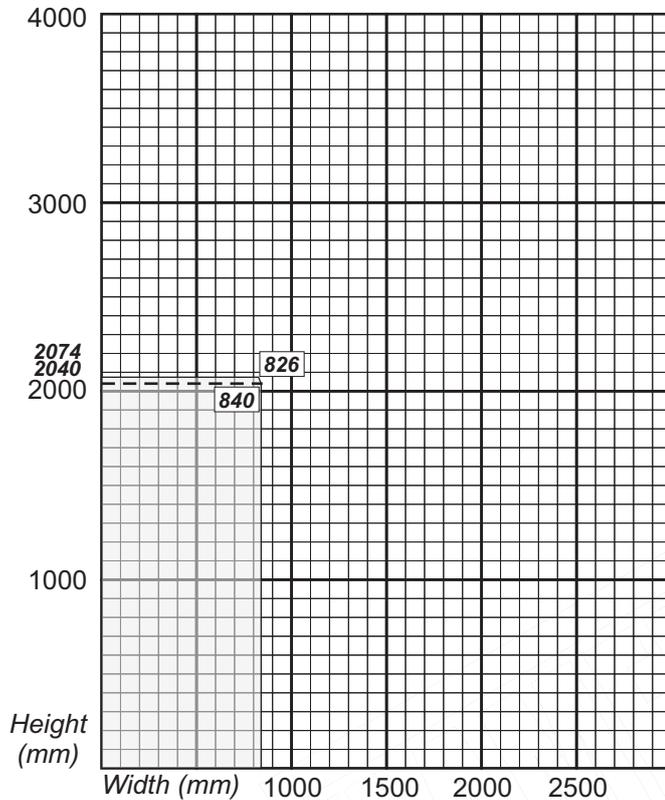
# FLAMEBREAK

## FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Pyroplex Rigid Box seal - 10mm separation**

### UNLATCHED DOORSETS

Door Height Assemblies & Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2040	840
	To	2074	826
Double Action Single Door (DASD)	From	2040	840
	To	2074	826
Unlatched Single Action Double Door (ULSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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Intumescent Seals 2x15x4mm PVC encapsulated with 10mm separation <b>Pyroplex Rigid Box</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	Head: 2No. 15x4mm exposed and fitted centrally in the frame head with 10 mm separation. Jamb & Overpanel: 2No. 15x4mm exposed and fitted centrally in the frame with 10 mm separation.
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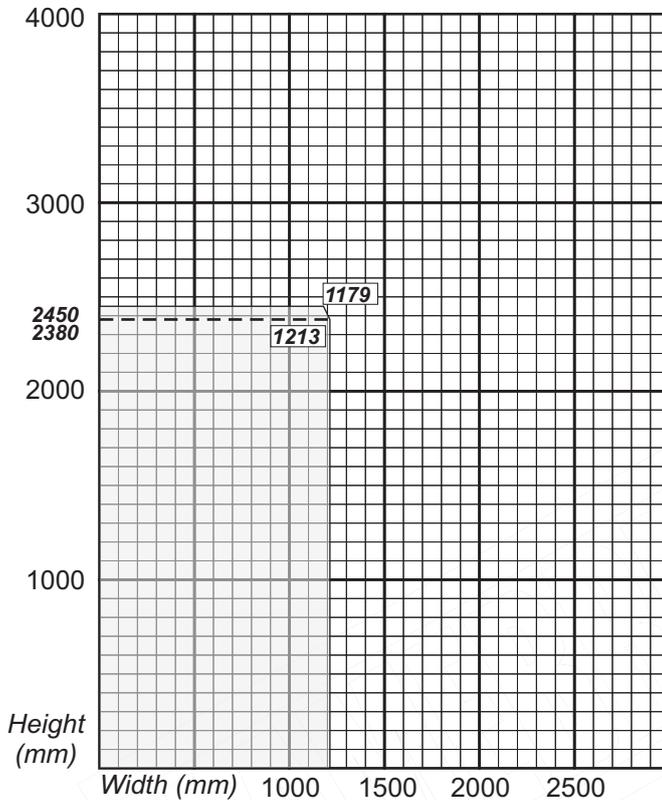


### FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Mann McGowan Pyrostrip 500P - 10mm separation**

#### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single Action Single leaf



Latched Single Action Single leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2380	1213
	To	2450	1179
Latched Single Action Double Door (LSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm N/A
	Double door doorset			Double door doorset	

Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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Intumescent Seals 2x15x4mm PVC encapsulated with 10mm separation <b>Mann McGowan Pyrostrip 500P</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	Head: 2No. 15x4mm exposed and fitted centrally in the leaf frame head with 10 mm separation. Jams & Overpanel: 2No. 15x4mm exposed and fitted centrally in the frame with 10 mm separation.
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# 2D.6

## Fire Door Applications FLAMEBREAK 660

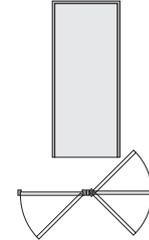
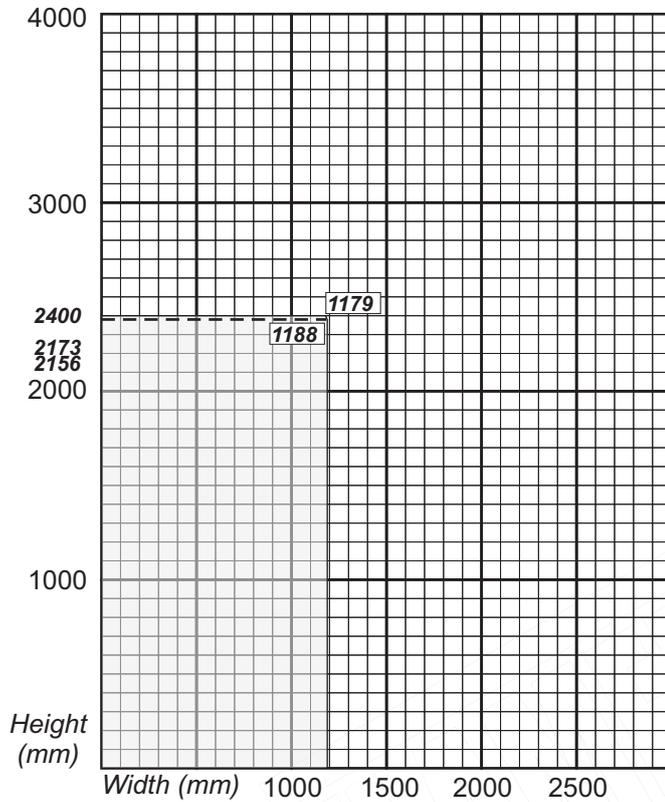


### FD60 - BS476 Pt.22 :1987

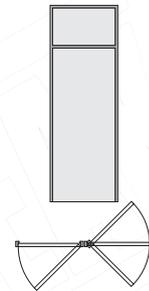
**2x15x4mm PVC encased Mann McGowan Pyrostrip 500P - 10mm separation**

#### UNLATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Unlatched Single Action & Double Action Single leaf



Unlatched Single Action & Double Action Single leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2380	1188
	To	2400	1179
Double Action Single Door (DASD)	From	2380	1188
	To	2400	1179
Unlatched Single Action Double Door (ULSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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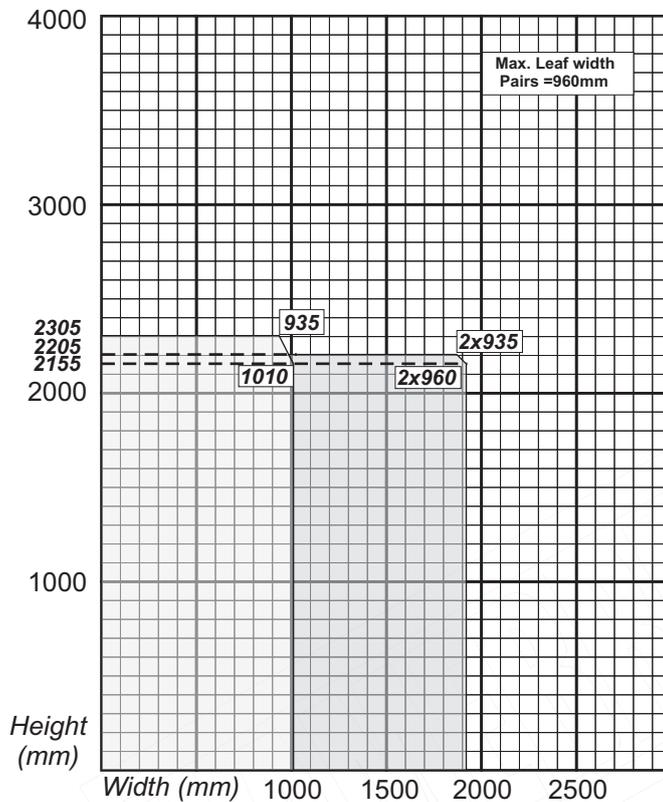
Intumescent Seals 2x15x4mm PVC encapsulated with 10mm separation <b>Mann McGowan Pyrostrip 500P</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	Head: 2No. 15x4mm exposed and fitted centrally in the frame head with 10 mm separation. Jamb & Overpanel: 2No. 15x4mm exposed and fitted centrally in the frame with 10 mm separation.
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### FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Mann McGowan Pyrostrip 500P - 10mm separation + 30x4**



#### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



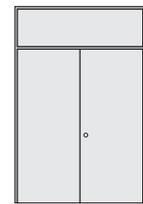
Latched Single Action Single leaf



Latched Single Action Double leaf



Latched Single Action Single leaf with transomed overpanel or fanlight



Latched Single Action Double leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2155	1010
	To	2305	935
Latched Single Action Double Door (LSADD)	From	2155	960
	To	2205	935

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<p><b>Intumescent Seals</b> 2x15x4mm PVC encapsulated with 10mm separation + 30x4 at head only. <b>Mann McGowan Pyrostrip 500P</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 30x4mm exposed and fitted centrally in the frame head. <b>Jams &amp; Overpanel:</b> 2No. 15x4mm exposed and fitted centrally in the frame with 10mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 15x4mm exposed and fitted centrally in one leaf only with 8mm separation. <b>Rebated:</b> NOT APPROVED.</p>
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# 2D.8

## Fire Door Applications FLAMEBREAK 660



### FD60 - BS476 Pt.22 :1987

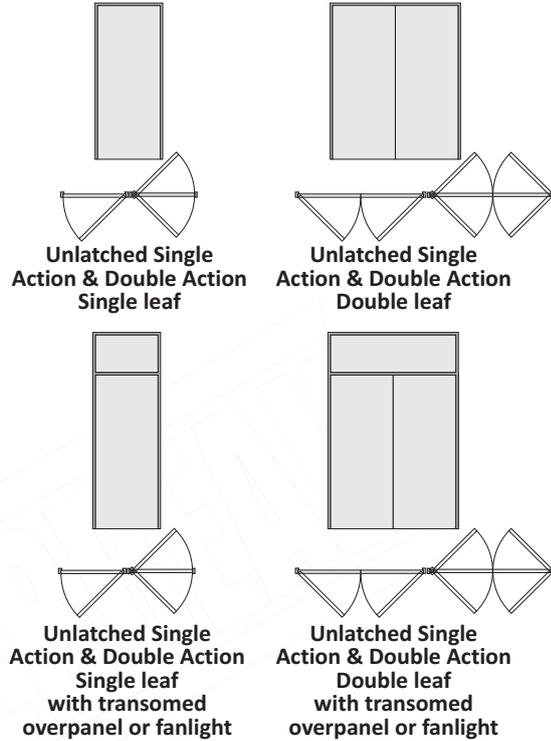
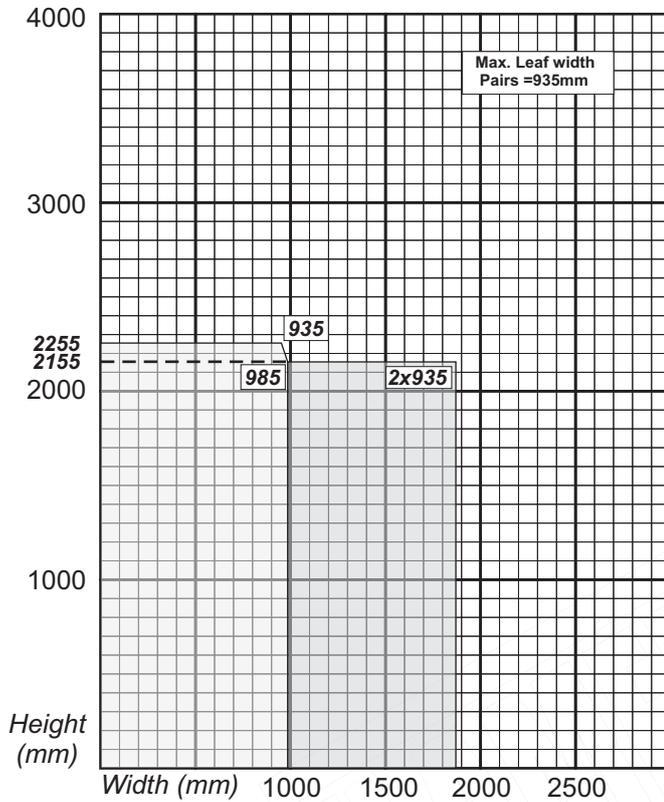
**2x15x4mm PVC encased Mann McGowan Pyrostrip 500P - 10mm separation + 30x4**

#### UNLATCHED DOORSETS

#### Door Height Assemblies

&

#### Storey Height Assemblies with Transom



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2155	985
	To	2255	935
Double Action Single Door (DASD)	From	2155	985
	To	2255	935
Unlatched Single Action Double Door (ULSADD)	From	2155	935
	To	2155	935
Double Action Double Door (DADD)	From	2155	935
	To	2155	935

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset	2000mm
	Double door doorset			Double door doorset	1500mm

Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<b>Intumescent Seals</b> 2x15x4mm PVC encapsulated with 10mm separation + 30x4 at head only. <b>Mann McGowan Pyrostrip 500P</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 1No. 30x4mm exposed and fitted centrally in the frame head. <b>Jamb &amp; Overpanel:</b> 2No. 15x4mm exposed and fitted centrally in the frame with 10mm separation. <b>Meeting edges:</b> <b>Square:</b> 2No. 15x4mm exposed and fitted centrally in one leaf only with 8mm separation. <b>Rebated:</b> NOT APPROVED.
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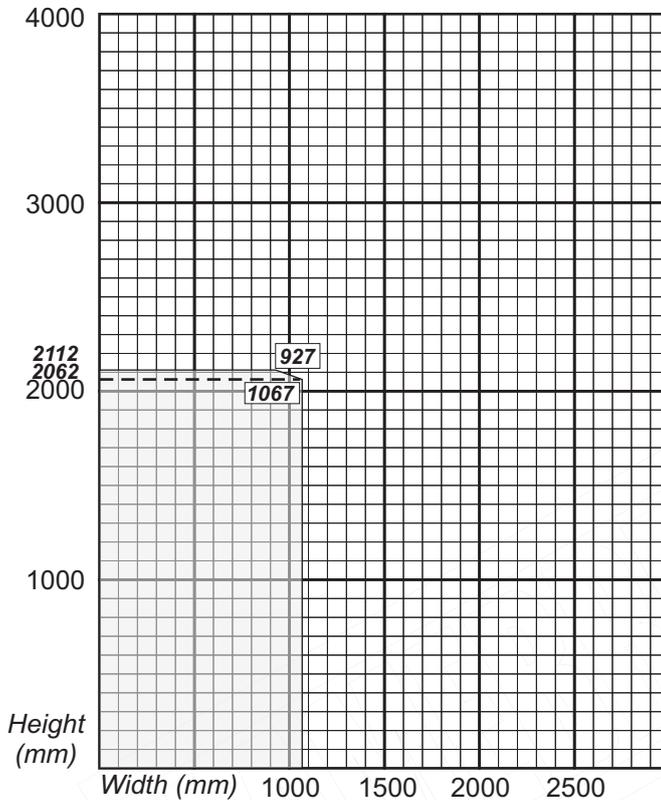


### FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Lorient 617  
- 10mm separation + 30x4**

#### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single  
Action Single leaf



Latched Single  
Action Single leaf  
with transomed  
overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2062	1067
	To	2112	927
Latched Single Action Double Door (LSADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<p><b>Intumescent Seals</b> 2x15x4mm PVC encapsulated with 10mm separation + 30x4 at head only. <b>Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 1No. 30x4mm exposed and fitted centrally in the frame head. <b>Jams &amp; Overpanel:</b> 2No. 15x4mm exposed and fitted centrally in the frame with 10mm separation.</p>
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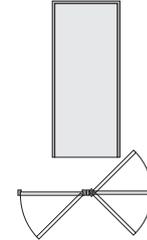
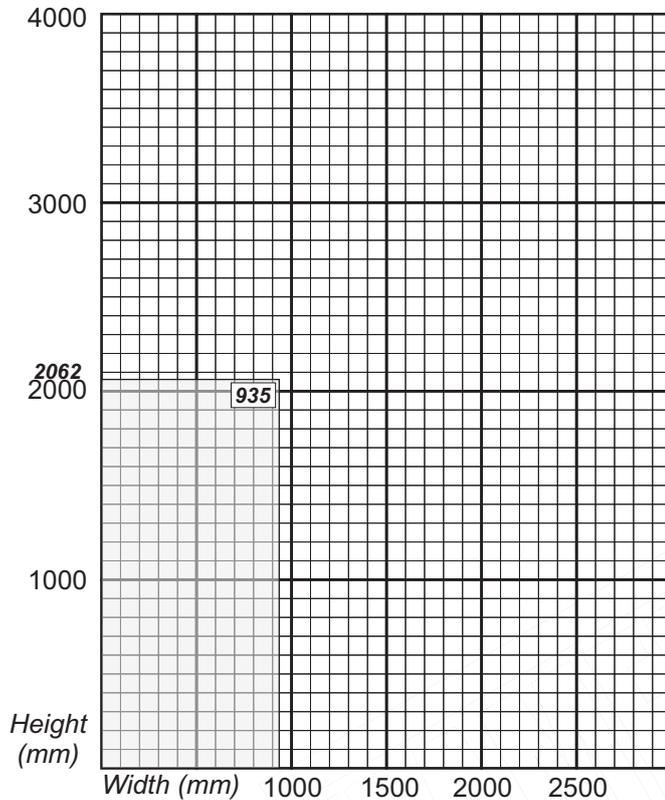


**FD60 - BS476 Pt.22 :1987**

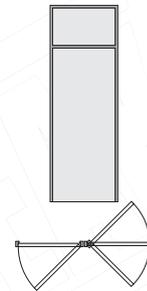
**2x15x4mm PVC encased Lorient 617  
- 10mm separation + 30x4**

**UNLATCHED DOORSETS**

**Door Height Assemblies  
&  
Storey Height Assemblies with Transom**



**Unlatched Single  
Action & Double Action  
Single leaf**



**Unlatched Single  
Action & Double Action  
Single leaf  
with transomed  
overpanel or fanlight**

Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From To	2062	935
Double Action Single Door (DASD)	From To	2062	935
Unlatched Single Action Double Door (ULSADD)	From To	NOT APPROVED	NOT APPROVED
Double Action Double Door (DADD)	From To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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Intumescent Seals 2x15x4mm PVC encapsulated with 10mm separation + 30x4 at head only. <b>Lorient 617</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	Head: 1No. 30x4mm exposed and fitted centrally in the frame head. Jamb & Overpanel: 2No. 15x4mm exposed and fitted centrally in the frame with 10mm separation.
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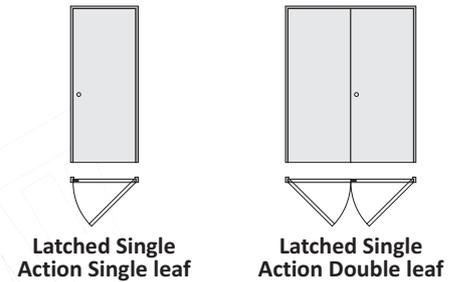
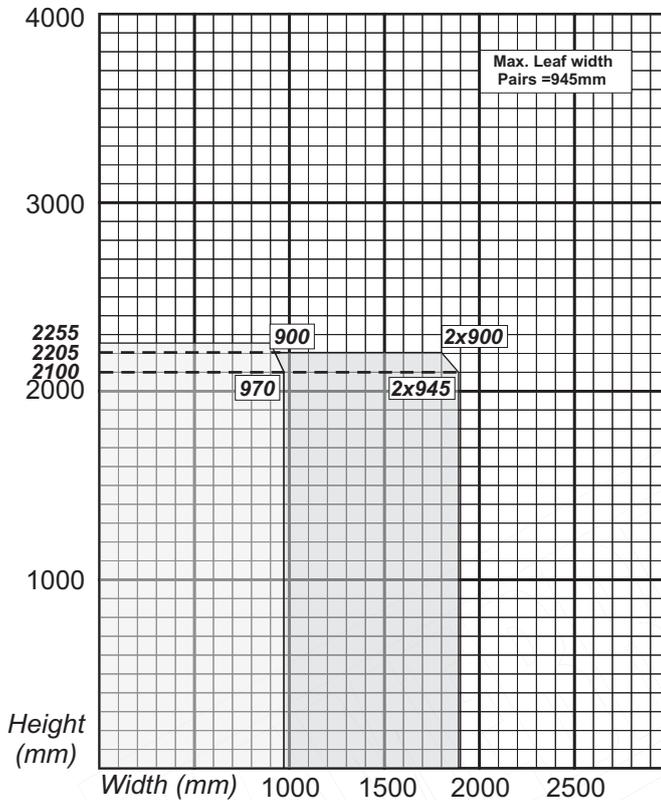


## FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Lorient 617  
 + Intregal CS Acrovyn intumescent**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2100	970
	To	2255	900
Latched Single Action Double Door (LSADD)	From	2100	945
	To	2205	900

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset	NOT APPROVED
	Double door doorset			Double door doorset	

Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<b>Intumescent Seals</b> 2x15x4mm PVC encapsulated <b>Lorient 617 + Intregal                  CS Acrovyn Intumescent</b>  <i>See Section 4 - Intumescent Seals                  and                  Section 8 - Hardware</i>	<b>Head:</b> 2No. 15x4mm exposed and fitted centrally in the frame head with 10mm separation. <b>Jambs :</b> 2No. 15x4mm exposed and fitted centrally in the frame with 10mm separation in addition to the integral intumescents in the CS Acrovyn edge protectors. <b>Meeting edges:</b> <b>Square:</b> 1No. 15x4mm exposed and fitted centrally in the CS Acrovyn edge protector to both door leaves.
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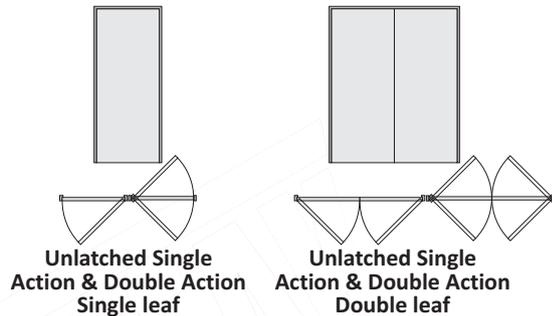
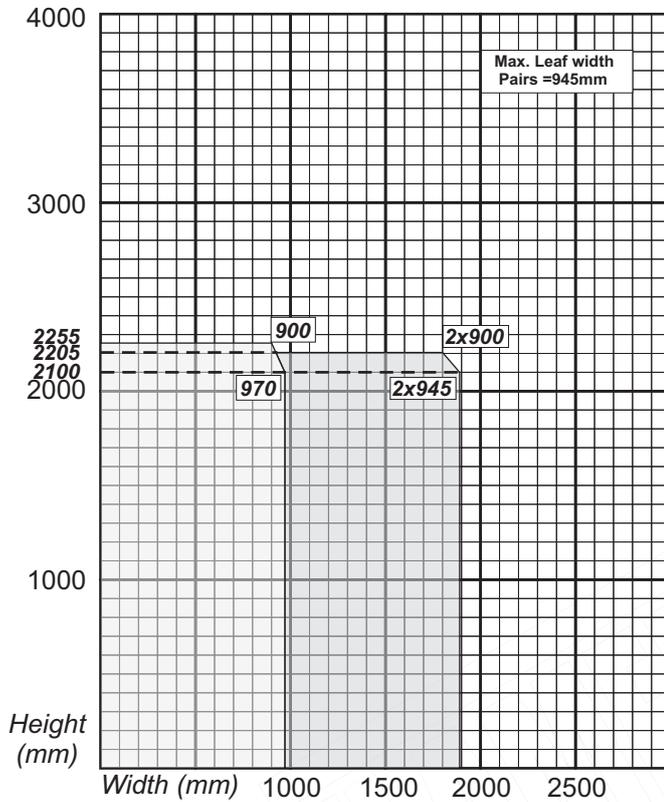


**FD60 - BS476 Pt.22 :1987**

**2x15x4mm PVC encased Lorient 617  
 + Intregal CS Acrovyn intumescent**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2100	970
	To	2255	900
Double Action Single Door (DASD)	From	2100	970
	To	2255	900
Unlatched Single Action Double Door (ULSADD)	From	2100	945
	To	2205	900
Double Action Double Door (DADD)	From	2100	945
	To	2205	900

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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Intumescent Seals 2x15x4mm PVC encapsulated <b>Lorient 617 + Intregal CS Acrovyn Intumescent</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	<b>Head:</b> 2No. 15x4mm exposed and fitted centrally in the frame head with 10mm separation. <b>Jams &amp; Overpanel:</b> 2No. 15x4mm exposed and fitted centrally in the frame with 10mm separation in addition to the integral intumescents in the CS Acrovyn edge protectors. <b>Meeting edges:</b> <b>Square:</b> 1No. 15x4mm exposed and fitted centrally in one the CS Acrovyn edge protector in both door leaves.
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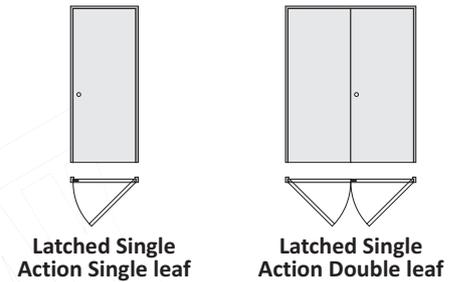
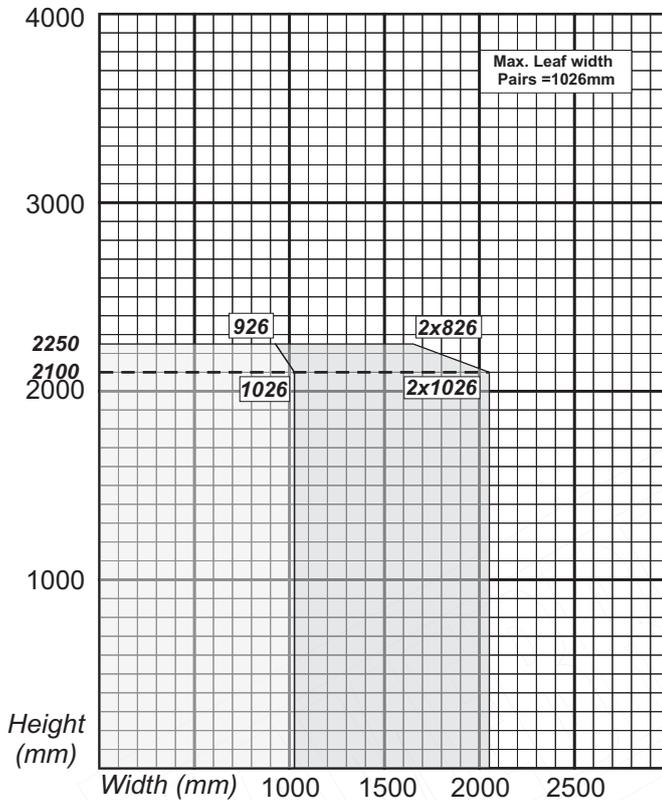


## FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2100	1026
	To	2250	926
Latched Single Action Double Door (LSADD)	From	2100	1026
	To	2250	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<p><b>Intumescent Seals</b>                  2x15x4 + 20x4mm PVC encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 2No. 15x4mm exposed and fitted centrally in the frame head with 10mm separation.  <b>Jams:</b> 1No. 20x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting edges:</b>  <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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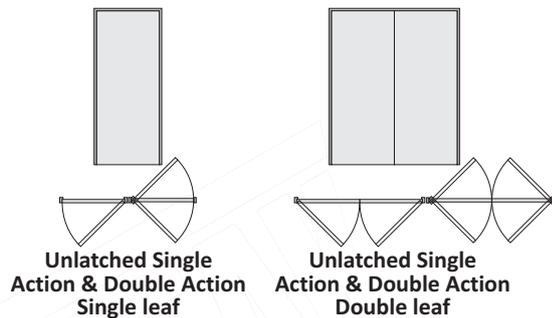
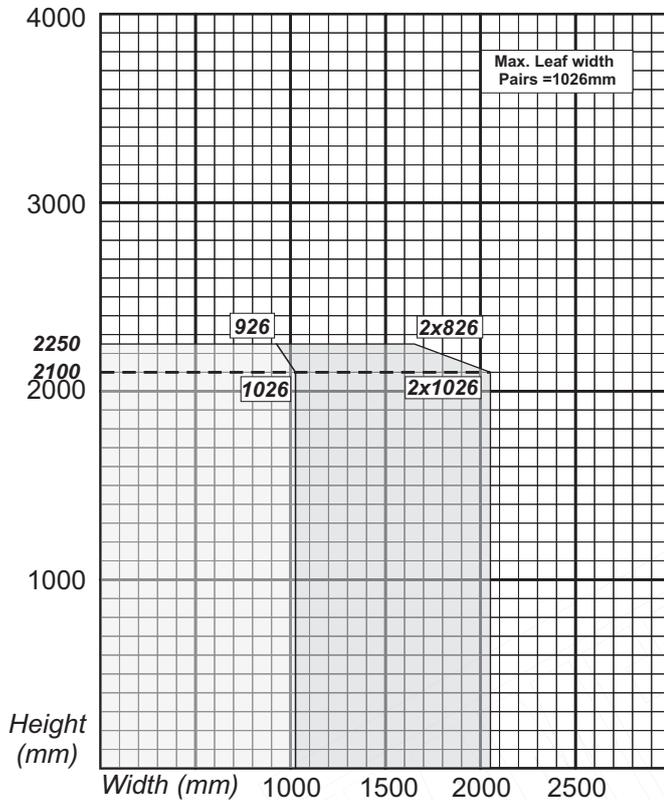


**FD60 - BS476 Pt.22 :1987**

**2x15x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2100	1026
	To	2250	926
Double Action Single Door (DASD)	From	2100	1026
	To	2250	926
Unlatched Single Action Double Door (ULSADD)	From	2100	1026
	To	2250	826
Double Action Double Door (DADD)	From	2100	1026
	To	2250	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<p><b>Intumescent Seals</b>                  2x15x4 + 20x4mm PVC                  encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals                  and                  Section 8 - Hardware</i></p>	<p><b>Head:</b> 2No. 15x4mm exposed and fitted centrally in the frame head with 10mm separation.  <b>Jamb:</b> 1No. 20x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting edges:</b>  <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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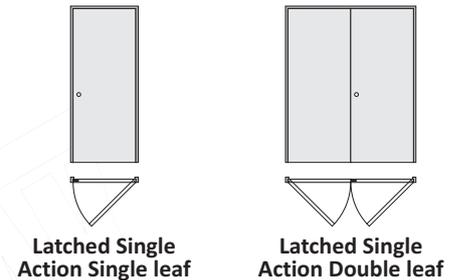
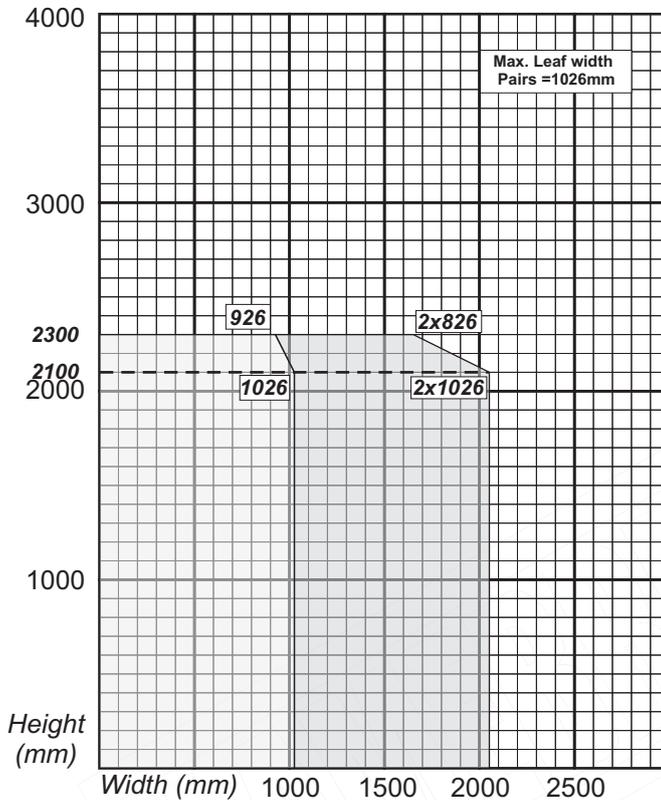


## FD60 - BS476 Pt.22 :1987

**2x20x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

### LATCHED DOORSETS

#### Door Height Assemblies



Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2100	1026
	To	2300	926
Latched Single Action Double Door (LSADD)	From	2100	1026
	To	2300	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<p><b>Intumescent Seals</b>                  2x20x4 + 20x4mm PVC encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 2No. 20x4mm exposed and fitted centrally in the frame head with 5mm separation.  <b>Jams:</b> 1No. 20x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting edges:</b>  <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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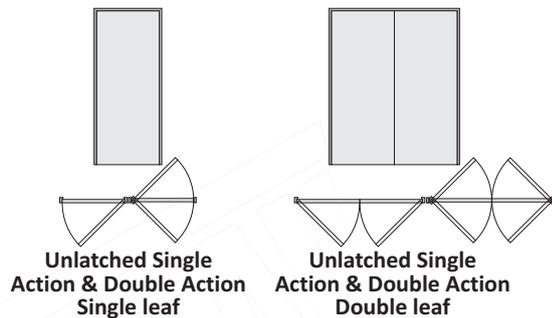
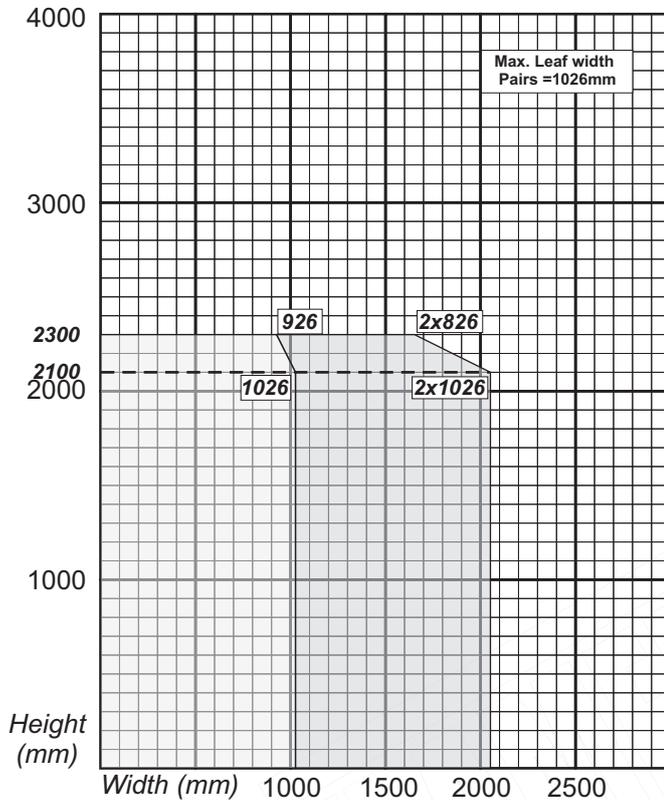


**FD60 - BS476 Pt.22 :1987**

**2x20x4mm PVC encased Lorient 617  
 +Yeoman Shield Door Edge Protector**

**UNLATCHED DOORSETS**

**Door Height Assemblies**



Configuration		Height (mm)	Width (mm)
Unlatched Single Action Single Door (ULSASD)	From	2100	1026
	To	2300	926
Double Action Single Door (DASD)	From	2100	1026
	To	2300	926
Unlatched Single Action Double Door (ULSADD)	From	2100	1026
	To	2300	826
Double Action Double Door (DADD)	From	2100	1026
	To	2300	826

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	NOT APPROVED
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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<p><b>Intumescent Seals</b>                  2x20x4 + 20x4mm PVC encapsulated <b>Lorient 617</b>                  +Yeoman Shield Door Edge Protector</p> <p><i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i></p>	<p><b>Head:</b> 2No. 20x4mm exposed and fitted centrally in the frame head with 10mm separation.  <b>Jamb:</b> 1No. 20x4mm fitted centrally in the Yeoman Shield / Lorient PVCu door edge protector.  <b>Meeting edges:</b>  <b>Square:</b> 1No. 20x4mm exposed and fitted centrally in the Yeoman Shield / Lorient edge protectors to both door leaf edges.</p>
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FLAMEBREAK

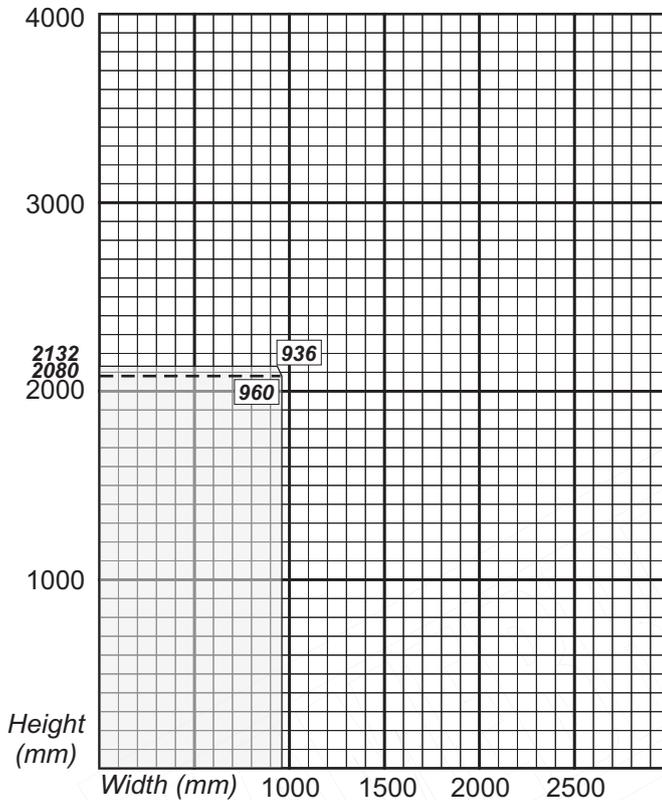


## FD60 - BS476 Pt.22 :1987

**2x15x4mm PVC encased Mann McGowan Pyrostrip 500P - 10mm separation**

### LATCHED DOORSETS

#### Door Height Assemblies & Storey Height Assemblies with Transom



Latched Single Action Single leaf



Latched Single Action Single leaf with transomed overpanel or fanlight

Configuration		Height (mm)	Width (mm)
Latched Single Action Single Door (LSASD)	From	2080	960
	To	2132	936
Latched Single Action Double Door (LSADD)	From	NOT APPROVED	NOT APPROVED
	To	NOT APPROVED	NOT APPROVED

Maximum Glazed Area <i>See Section 6 - Glazing</i>	Single door doorset Double door doorset	0.72m <sup>2</sup>	Maximum Overpanel height	Single door doorset Double door doorset	2000mm N/A
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Frame Specification <i>See Section 7 - Frames</i>	Single leaf door assembly Double leaf door assembly <i>NOTE: Glazed fanlights approved for door assemblies with 640kg/m<sup>3</sup> Hardwood frames only.</i>	640kg/m <sup>3</sup> Hardwood <i>(Excluding Beech)</i>
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Intumescent Seals 2x15x4mm PVC encapsulated with 10mm separation <b>Mann McGowan Pyrostrip 500P</b> <i>See Section 4 - Intumescent Seals and Section 8 - Hardware</i>	Head: 2No. 15x4mm exposed and fitted centrally in the leaf or frame head with 10 mm separation. Jambs & Overpanel: 2No. 15x4mm exposed and fitted centrally in the leaf or frame with 10 mm separation.
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FLAMEBREAK



### General:

FLAMEBREAK™ Door Blanks are supplied with mixed tropical hardwood stiles and rails as part of the core structure.

The stiles and bottom rail can be removed for the purpose of sizing the door core but the top rail should be retained.

**NOTE: The top rail must be retained for 'Q-Mark' fire door applications.**

For general purpose internal door applications the door cores should generally be hardwood lipped on two vertical edges.

**NOTE: Where a door core is reduced in width, the adjustment should be carried out equally from both vertical edges resulting in the retention of not less than 50% of the outer twin stiles, the door can be used to an 'edge banded' detail without the need for additional lipping. See Figs. 3.1 & 3.13.**

Where door assemblies with flush overpanels (i.e. without transom rails to the frame) are used the bottom edge of the overpanel and top edge of the door leaf must be lipped. For pairs of doors with overpanels (without transoms), lippings must be applied to the top edge of the door and bottom edge of the overpanel and rebated (Nom.12mm).

**NOTE 1: Not approved for FD60 'Q-Mark' fire rated door assemblies.**

**NOTE 2: Doors may be rebated to flush overpanels (where approved) OR, used with rebated meeting stiles (where approved) but not both. i.e. if door are rebated to overpanels then they cannot be provided with rebated meeting stiles.**

For external locations doors must be hardwood lipped on all edges. (See Section 13 External Locations).

It is recommended that doors made using FLAMEBREAK™ door blanks are lipped before applying facings. However, lippings may be applied after facings if required.

**NOTE 1: It is important to ensure that the lipping material and the cores are properly dried with similar moisture contents. Timber can shrink or grow by up to 1% across the grain for every 4% variation in moisture content. Differential movement between the core and lipping resulting from adverse environmental conditions or use of components with different moisture contents can give rise to a number of problems. e.g. cracking of paint at the junction between lipping and core structure and, in extreme circumstances, splitting of veneer facings. (See Handling & Storage advice - Section 1 & Appendix Section 16B).**

**NOTE 2: It is recommended that internal doors that are likely to be used in areas that may be washed down or, in areas of high humidity should be hardwood lipped on all edges.**

**NOTE 3: For optimum quality paint grade internal doors it is recommended that FLAMEBREAK™ Types FF630, or FF660 Door Blanks are used with paint grade veneers or painting foils extended over the lippings.**

Lippings, particularly lippings at the closing & meeting stiles may need to be profiled either at the time of manufacture or, on site at the time of installation, to ensure correct operation while maintaining operating gaps to the satisfaction of BS4787 Pt.1. The extent of the profiling may vary according to the configuration and dimensions of the door assembly and the choice of hardware (particularly hanging devices). A 2° bevel to the closing / meeting stiles of single action doors will satisfy most application requirements.

(See 'Growth Formula' - Section 8 Co-ordination & Section 5 Smoke Sealing).

### Q FD30 Fire Doors:

The minimum lippings specifications for 'Q-Mark' FD30 applications to be as follows:

**SQUARE - 6~18mm thick with maximum of 2mm profiling permitted at corners of lipping.**

**ROUNDED - 8 ~ 20mm thick profiled to suit the minimum radius necessary to suit the door hanging device.**

**REBATED - 20~30mm with equal 12mm deep rebate. Doors must be lipped on vertical edges as a minimum requirement.**

**NOTE 1: Doors may be rebated to overpanels OR rebated at meeting stiles but not both.**

**NOTE 2: Single leaf door assemblies and pairs may supplied to an 'edge banded' detail without the need for additional lippings. See page 3.6 & Section 1 1.7 & 1.8.**

**Lippings to be from hardwood with a minimum density of 640Kg/m<sup>3</sup> and must be straight grained, joinery quality, free from knots, splits and checks.**

**Lippings must be bonded to the door core Urea Formaldehyde, Resorcinol Formaldehyde or polyurethane (PU) adhesives.**

### Q FD60 Fire Doors:

The minimum lippings specifications for 'Q-Mark' FD60 applications to be as follows:

**SQUARE - 10~15mm thick with maximum of 2mm profiling permitted at corners of lipping.**

**ROUNDED - 12 ~ 17mm thick profiled to the minimum radius necessary to suit the door hanging device.**

**REBATED - Not approved.**

**NOTE: Single leaf door assemblies and pairs must be hardwood lipped on all edges.**

**Lippings to be from hardwood (excluding Beech - Fagus Sylvania) with a minimum density of 640Kg/m<sup>3</sup> and must be straight grained, joinery quality, free from knots, splits and checks.**

**Lippings must be bonded to the door core Urea Formaldehyde, Resorcinol Formaldehyde.**

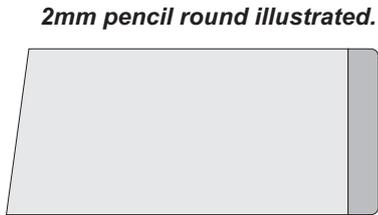
**NOTE: Polyurethane (PU) adhesives may be used for bonding lippings for door height single leaf door assemblies only.**



### Lippings - FD30 Applications:

#### Q Lippings - FD30 Applications:

Fig. 3.1



The profiling of lipping edges is recommended to provide for the following:

- a/ Reduced risk of injury to users in the event of accidental contact.
- b/ Improved resistance to impact.
- c/ The profiling will act as a lead when used with smoke or acoustic sealing systems thus enhancing seal life.
- d/ Provides for improved adhesion of paint and lacquer finishes.

#### **Vertical Lippings - FD30 Doorsets:**

Lippings must be in hardwood of 6mm minimum thickness.

Where shaped lippings for double action hanging stiles or rebates are required, the lipping thickness may be increased. (See: *Lippings & Facings Page 1 for 'Q' Mark approved dimensional limits*).

Except where the edge banding option applies (See **Fig. 3.12**), Lippings must be applied to the two vertical edges.

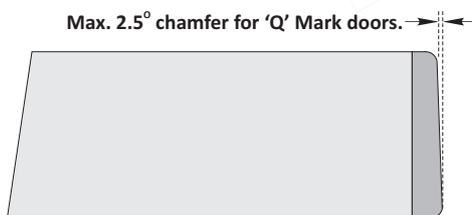
Use of top and bottom lippings is recommended but not essential for door height assembly fire door applications, except when used with certain hardware items. (See *Section 8 - Hardware*).

Lippings to be from hardwood with a minimum density of 640Kg/m<sup>3</sup> and must be straight grained, joinery quality, free from knots, splits and checks.

Lippings must be bonded to the core using Urea Formaldehyde, Polyurethane (PU) or Resorcinol Formaldehyde adhesives.

#### Q Vertical Lippings - Closing Stiles Leading Edge:

Fig. 3.2

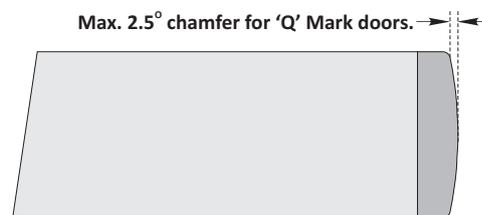


**Splayed Closing Stile (Leading Edge)** - To achieve correct operation of the doors while maintaining operating gaps to the dimensions recommended by reference to BS4787- Pt.1 it may be necessary to apply a leading edge to the closing stile of the door.

**NOTE:** 2° leading edge illustrated.

#### Q Vertical Lippings - Closing Stiles Slightly Rounded Stiles:

Fig. 3.3



**Slightly rounded closing stiles:** The same effect can be achieved by slightly rounding the closing stiles. The important thing being that the closing of the door should clear the frame during operation without detriment to operating gaps described in BS4787 - Pt.1.

**NOTE:** This is the recommended closing stile detail for double action doors.

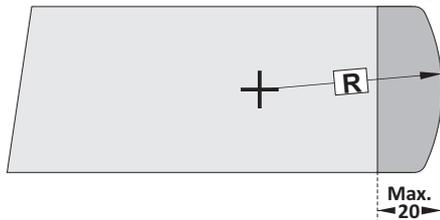


### Lippings - FD30 Applications:

#### Q Vertical Lippings - Hanging Stiles - Double Action Doors:

Fig. 3.4

R = Minimum radius necessary to suit pivot fixings.



**Hanging Stiles : Double Action Doors** - The radius to the hanging stiles for double action doors will generally be determined by the design of the hanging device with lippings rounded to suit the pivot centre. A 50mm radius to the door edges with a 52mm radius scallop to the frame will suit most applications.

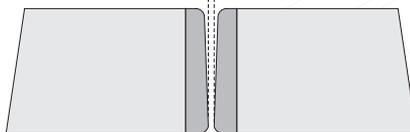
The lipping thickness must be 8~20mm for FD30 applications.

**NOTE:** For Closing and Meeting stiles use 'Slightly Rounded Closing / Meeting Stile' Details

#### Q Vertical Lippings - Meeting Stiles - Splayed:

Fig. 3.5

Max. 2.5° chamfer for 'Q' Mark doors.

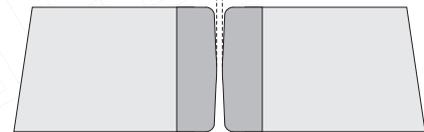


**Splayed Meeting Stiles:** To achieve correct operation of the doors while maintaining operating gaps to the dimensions recommended by reference to BS4787 - Pt.1 it may be necessary to splay the edges of the doors. Generally Fire doors should be capable of being opened and closed simultaneously.

#### Q Vertical Lippings - Meeting Stiles - Slightly Rounded:

Fig. 3.6

Max. 2.5° chamfer for 'Q' Mark doors.



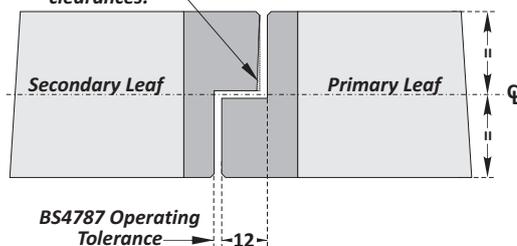
**Slightly rounded Meeting stiles:** The same effect can be achieved by slightly rounding the closing stiles. The important thing being that the closing face (*frame doorstep face*) of the door should clear the adjacent door during operation without detriment to operating gaps described in BS4787 - Pt.1 when opened or closed in any order.

**NOTE:** This is the recommended 'standard' meeting stile arrangement for double action pairs of doors.

#### Q Vertical Lippings - Meeting Stiles - Rebated:

Fig. 3.7

Ease lipping - as necessary to provide for operational clearances.



**Rebated meeting Stile:** The use of rebated meeting stiles is not recommended for fire doors that should generally provide for simultaneous opening. However, there are occasions where sequential opening is necessary, perhaps to provide for additional performances. (e.g. Acoustic performance).

Where the astragal detail (Fig.3.8) is not acceptable, (perhaps for aesthetic reasons), rebated meeting stiles may be used.

**NOTE 1:** For fire door applications rebated meeting stiles must not be used where the door leaf is rebated to a flush overpanel.

**NOTE 2:** Equal rebate illustrated. Offset rebates to accommodate sealing or hardware fittings may be used.



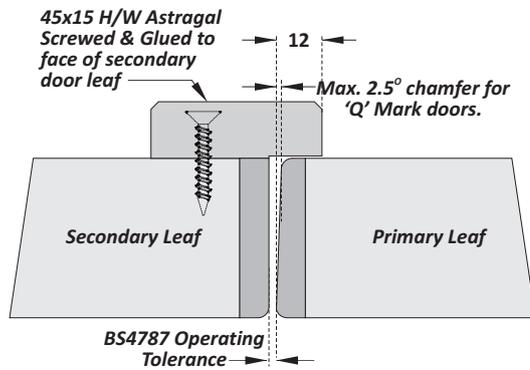
## 3.4 Lippings & Facings

# FLAMEBREAK

### Lippings - FD30 Applications:

#### Vertical Lippings - Meeting Stile - Astragals:

Fig. 3.8



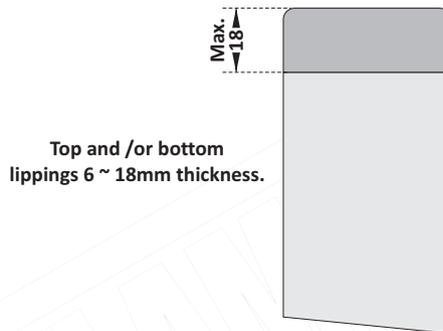
**Astragal Detail:** Generally fire doors should be capable of opening simultaneously. However, where additional performances are required, (e.g. Acoustic performances) it may be necessary to provide for sequential opening (e.g. To accommodate seals).

The astragal detail is recommended for maximum performance where these considerations apply and may be used without adverse influence on existing fire test / assessment data.

**NOTE:** Astragals can be applied to one or both door leaves and may be profiled for aesthetic effect.

#### Horizontal Lippings - Top & Bottom Door lippings:

Fig. 3.9



#### Top & Bottom Lippings :

a/ For FD30 fire door applications the use of top and bottom lippings is optional provided that the core structure head rail is not reduced by more than 3mm. The core structure bottom rail may be reduced or removed completely with the optional use of a bottom edge lipping.

b/ The use of top and bottom edge lippings is strongly recommended for use where door assemblies are to be used in external locations or in areas that may be subject to occasional wet cleaning *OR*, where used in high humidity areas.

b/ Use of top and bottom lippings is also recommended for use in severe duty locations with load bearing hanging devices e.g. pivot fixings.

c/ For FD30 fire door applications the lipping thickness must not be less than 6mm with a maximum thickness of 18mm.

d/ Vertical lippings must extend across the end grain of the horizontal lippings.

e/ For storey height door assemblies with flush overpanels the top edge of the door leaf and bottom edge of the overpanel must be hardwood lipped. For single leaf assemblies or pairs the top and bottom lippings may be square edged or rebated.

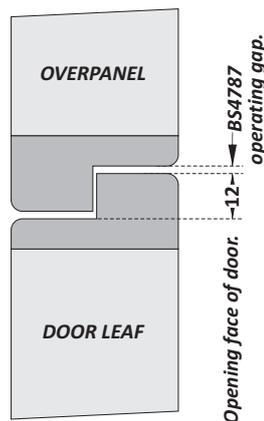
**NOTE 1:** For pairs of doors an alternative method to prevent swing through at the meeting stiles may be used e.g. planted door stop detail See Fig.3.11.

**NOTE 2:** For pairs of doors the meeting stiles may be rebated *OR* the door can be rebated to flush overpanels but the rebating of both meeting stiles and door to flush overpanels is not approved.

### Lippings - FD30 Applications:

#### Q Lippings - Rebated Door / Overpanel:

Fig. 3.10



**Rebated Door / Overpanel:** Rebating of the door to the overpanel is not essential, (*and not recommended*), for single leaf door assemblies.

Rebates are necessary for single action pairs of doors with flush overpanels unless astragals or other devices are used to prevent swing through.

For fire door applications the lipping thickness at the top of the door and bottom of the overpanel must not exceed 30mm thickness with a 12mm rebate located centre thickness of the door.

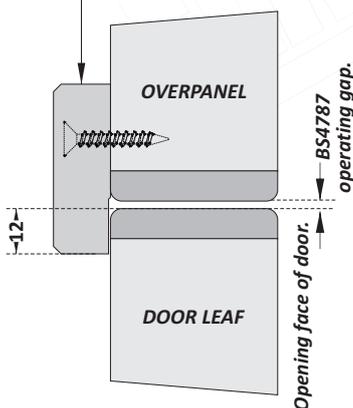
**NOTE 1:** For FD30 fire door applications rebating to overpanels is not approved where rebated meeting stiles are used.

**NOTE 2:** Equal rebate illustrated. Offset rebates to accommodate sealing or hardware fittings may be used.

#### Q Planted Door Stop - Flush Overpanels:

Fig. 3.11

45x15 H/W Planted stop  
Screwed & Glued to  
face of the over panel.



#### **Planted door stop - Flush Overpanel:**

Planted door stops may be screwed and glued to the closing face of the overpanel as an alternative to rebating to prevent swing through of single action pairs of doors.

The planted stop is required in the area of the meeting stiles (*covering the face of each door leaf by a minimum of 50mm*) but need not be to the full widths of the doors or the overpanel.

Provided that the particular design is otherwise approved with rebated meeting stiles; this option provides for a solution for use in conjunction with single swing pairs with flush overpanels for FD30 fire rated applications with rebated meeting stiles.

This planted stop detail is recommended for maximum performance where these considerations apply and may be used without adverse influence on existing fire test / assessment data.

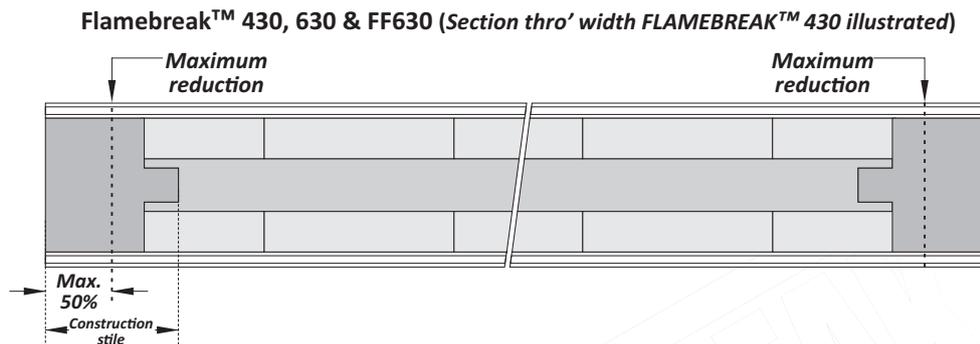
**NOTE:** Planted stops are applied to the closing face of the overpanel only and may be profiled for aesthetic effect.



### Lippings - FD30 Applications:

#### 🔍 Edge Banded - Flamebreak™ 430, 630 & FF630 cores:

Fig. 3.12



#### **Edge Banding:**

When using 2135x915mm or 2240x1220 standard construction Flamebreak™ door blanks for door height door assemblies only (without overpanels) Flamebreak™ 430, 630, FF630 cores can be reduced in width by removal of up to 50% equally from both sides of the outer stile of the core construction to provide for an 'edge banded' appearance (i.e. sub facings & facings extended to the full width of the door) without the need to apply additional lippings.

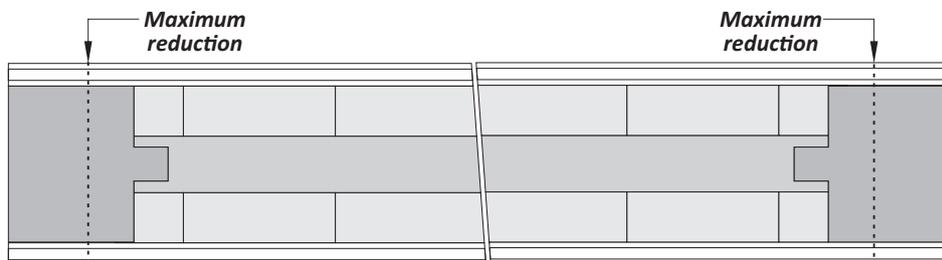
There are no restrictions with regard to the removal or adjustment of the bottom rail of the core construction but the rail at the head of the core must not be reduced by more than 3mm.

**NOTE: This option is only applicable to standard Flamebreak™ core constructions supplied with internal perimeter framing.**

### Lippings - FD60 Applications:

#### Edge Banded - Flamebreak™ 660 and FF660 cores: NOT APPROVED FOR FD60 FIRE DOOR APPLICATIONS

Fig. 3.13



Flamebreak™ 660 & FF660 (Section thro' width FLAMEBREAK™ 660 illustrated)

#### Edge Banding:

#### NOT APPROVED FOR FD60 FIRE DOOR APPLICATIONS

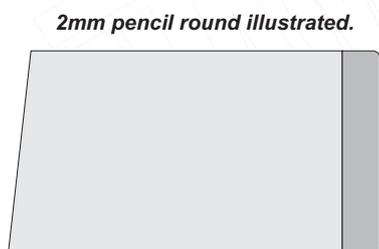
Flamebreak™ 660 and FF660 can be reduced in width by removal of up to 50% equally from both sides of the outer stile of the core construction to provide for an 'edge banded' appearance (i.e. sub facings & facings extended to the full width of the door) without the need to apply additional lippings.

There are no restrictions with regard to the removal or adjustment of the bottom rail of the core construction but the rail at the head of the core must not be reduced by more than 3mm.

**NOTE: This option is only applicable to standard Flamebreak™ core constructions supplied with internal perimeter framing and is not approved for FD60 fire door applications.**

### Q Lippings - FD60 Applications:

Fig. 3.14



The profiling of lipping edges is recommended to provide for the following:

- a/ Reduced risk of injury to users in the event of accidental contact.
- b/ Improved resistance to impact.
- c/ The profiling will act as a lead when used with smoke or acoustic sealing systems thus enhancing seal life.
- d/ Provides for improved adhesion of paint and lacquer finishes.

#### Lippings - FD60 Door Assemblies:

**NOTE: For uses excluding FD60 fire door applications, the use of lippings is optional provided that the core construction perimeter is retained as described for 'edge banded' details. However the use of lippings is recommended to for external use and for use in wet areas or, where required to suit hardware fittings. (See Section 8 - Hardware).**

For FD60 fire door applications the core construction perimeter stiles may be reduced or removed from one or both vertical edges.

For FD60 applications doors must be hardwood lipped on all edges.

Lippings must be in hardwood of 10mm minimum thickness.

Where shaped lippings for double action hanging stiles or rebates are required, the lipping thickness may be increased. (See: Lippings & Facings Page 3.1 for 'Q-Mark' approved dimensional limits).

Lippings to be from hardwood (excluding Beech - *Fagus Sylvatica*) with a minimum density of 640Kg/m<sup>3</sup> and must be straight grained, joinery quality, free from knots, splits and checks.

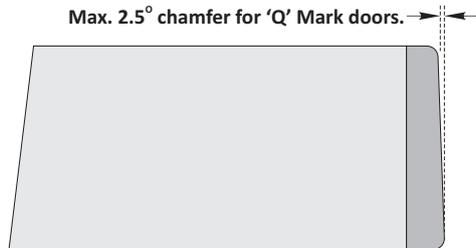
Lippings must be bonded to the core using Urea Formaldehyde, or Resorcinol Formaldehyde adhesives.

**NOTE: Polyurethane (PU) adhesives may be used for bonding lippings for door height single leaf door assemblies only.**



## Lippings - FD60 Applications:

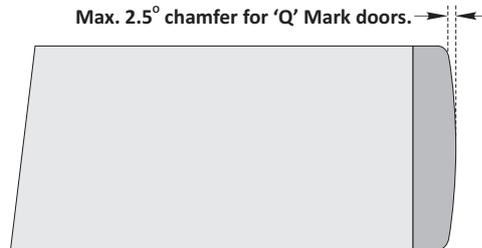
### Q Lippings - Closing Stiles Fig. 3.15 Leading Edge:



**Splayed Closing Stile (Leading Edge)** - To achieve correct operation of the doors while maintaining operating gaps to the dimensions recommended by reference to BS4787- Pt.1 it may be necessary to apply a leading edge to the closing stile of the door.

*NOTE: 2° leading edge illustrated.*

### Q Lippings - Closing Stiles Fig. 3.16 Slightly Rounded Stiles:

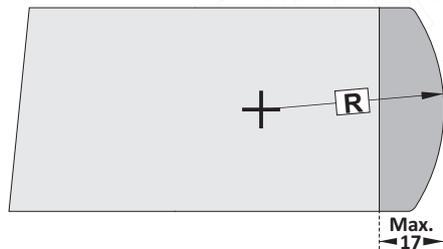


**Slightly rounded closing stiles:** The same effect can be achieved by slightly rounding the closing stiles. The important thing being that the closing of the door should clear the frame during operation without detriment to operating gaps described in BS4787 - Pt.1.

*NOTE: This is the recommended closing stile detail for double action doors.*

### Q Hanging Stiles - Fig. 3.17 Double Action Doors:

R = Minimum radius necessary to suit pivot fixings.

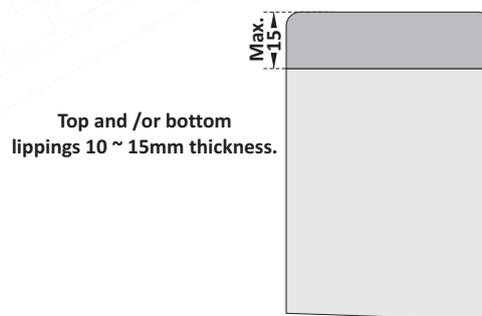


**Hanging Stiles : Double Action Doors** - The radius to the hanging stiles for double action doors will generally be determined by the design of the hanging device with lippings rounded to suit the pivot centre. A 50mm radius to the door edges with a 52mm radius scallop to the frame will suit most applications.

The lipping thickness must be 12~16mm for FD60 applications.

*NOTE: For Closing and Meeting stiles use 'Slightly Rounded Closing / Meeting Stile' Details*

### Q Top & Bottom Door lippings: Fig. 3.18



#### Top & Bottom Lippings :

For FD60 fire door applications the core construction perimeter framing top rail must be retained with a maximum trimming reduction of 3mm. (See Section 1 page 1.9)

The core construction perimeter framing bottom rail may be reduced or removed completely.

**For FD60 applications doors must be hardwood lipped on all edges.**

The lipping thickness must not be less than 10mm with a maximum thickness of 15mm.

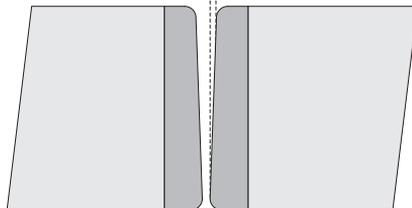
*See page 3.7 Fig. 3.14 for further specification requirements for lippings.*



### Lippings - FD60 Applications:

#### Meeting Stiles - Splayed: *Fig. 3.19*

Max. 2.5° chamfer for 'Q' Mark doors.

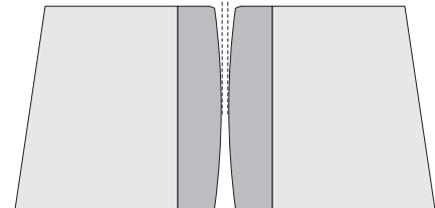


**Splayed Meeting Stiles:** To achieve correct operation of the doors while maintaining operating gaps to the dimensions recommended by reference to BS4787 - Pt.1 it may be necessary to splay the edges of the doors.

Generally Fire doors should be capable of being opened and closed simultaneously.

#### Meeting Stiles - Slightly Rounded: *Fig. 3.20*

Max. 2.5° chamfer for 'Q' Mark doors.

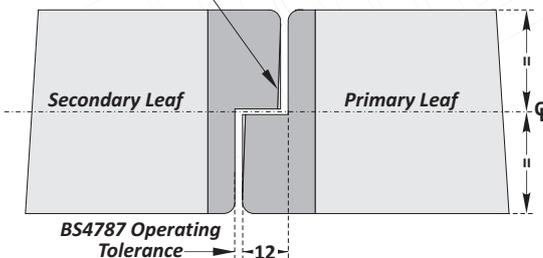


**Slightly rounded Meeting stiles:** The same effect can be achieved by slightly rounding the closing stiles. The important thing being that the closing face (*frame doorstep face*) of the door should clear the adjacent door during operation without detriment to operating gaps described in BS4787 - Pt.1 when opened or closed in any order.

**NOTE:** This is the recommended 'standard' meeting stile arrangement for double action pairs of doors.

#### Meeting Stiles - Rebated: *Fig. 3.21*

Ease lipping - as necessary to provide for operational clearances.



#### Rebated meeting stile:

**THE USE OF REBATED MEETING STILES IS NOT APPROVED FOR FD60 FIRE DOOR APPLICATIONS.**

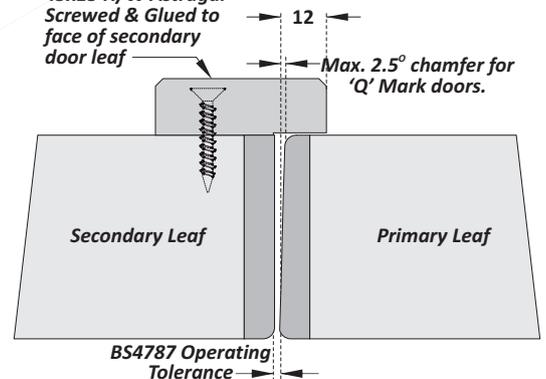
Fire doors should generally provide for simultaneous opening. However, there are occasions where sequential opening is necessary, perhaps to provide for additional performances. (e.g. Acoustic performance).

Where these considerations apply the astragal detail shown by reference to (Fig.3.11) may be used.

**NOTE:** This detail is not approved for FD60 'Q-Mark' applications with 54mm FLAMEBREAK™

#### Meeting Stile - Astragals: *Fig. 3.22*

45x15 H/W Astragal Screwed & Glued to face of secondary door leaf



**Astragal Detail:** Generally fire doors should be capable of opening simultaneously. However, where additional performances are required, (e.g. Acoustic performances) it may be necessary to provide for sequential opening (e.g. To accommodate seals).

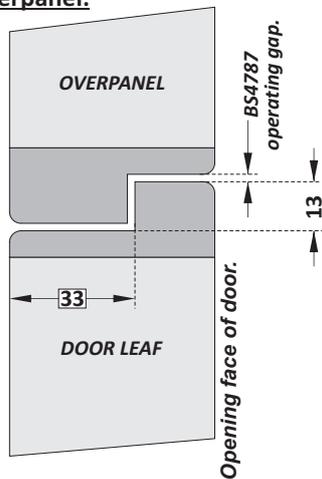
The astragal detail is recommended for maximum performance where these considerations apply and may be used without adverse influence on existing fire test / assessment data.

**NOTE:** Astragals can be applied to one or both door leaves and may be profiled for aesthetic effect.



### Lippings - Rebated Door / Overpanel:

Fig. 3.23



#### **Rebated Door / Overpanel:**

##### **REBATING DOORS TO FLUSH OVERPANELS IS NOT APPROVED FOR FD60 APPLICATIONS**

Rebating of the door to the overpanel is not essential, (*and not recommended*), for single leaf door assemblies.

Rebates are necessary for single action pairs of doors with flush overpanels unless astragals or other devices are used to prevent swing through.

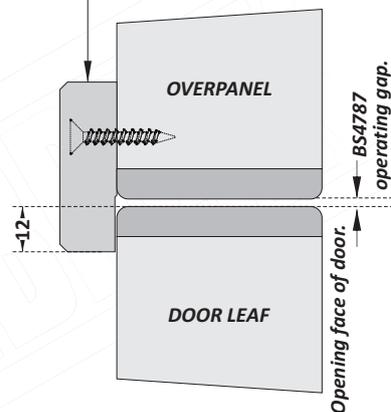
Rebating doors to flush overpanels is not approved for FD60 applications. For storey height door assemblies with overpanels the door must be separated from the overpanel by use of an approved detail transom rail in the frame. See *Section 7 Frames*.

**NOTE: This detail is not 'Q-Mark' approved for FD60 fire door applications.**

### Planted Door Stop - Flush Overpanels:

Fig. 3.24

45x15 H/W Planted stop  
Screwed & Glued to  
face of the over panel.



#### **Planted door stop - Flush Overpanel:**

##### **THIS DETAIL IS NOT APPROVED FOR FD60 FIRE DOOR APPLICATIONS.**

Planted door stops may be screwed and glued to the closing face of the overpanel as an alternative to rebating to prevent swing through of single action pairs of doors.

The planted stop is required in the area of the meeting stiles (*covering the face of each door leaf by a minimum of 50mm*) but need not be to the full widths of the doors or the overpanel.

This detail is not approved for FD60 fire door applications. For storey height door assemblies with overpanels the door must be separated from the overpanel by use of an approved detail transom rail in the frame. See *Section 7 Frames*.

**NOTE: This detail is not 'Q-Mark' approved for FD60 fire door applications.**

### Door Facings:

FLAMEBREAK™ door core constructions are supplied sub facings already applied as follows:

**FLAMEBREAK™ 430** = Nom. 44mm thickness faced with 4mm plywood.

**FLAMEBREAK™ 630** = Nom. 44mm thickness faced with 6mm plywood.

**FLAMEBREAK™ FF630** = Nom. 44mm thickness faced with 6mm Medium Density Fibreboard.

**FLAMEBREAK™ 660** = Nom. 54mm thickness faced with 4mm plywood.

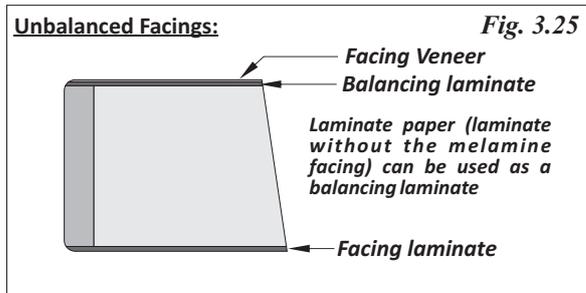
**FLAMEBREAK™ FF660** = Nom. 54mm thickness faced with 6mm Medium Density Fibreboard.

Additional facings / finishings can be applied to the base core constructions.

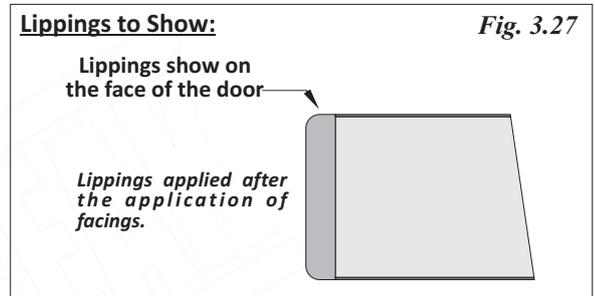
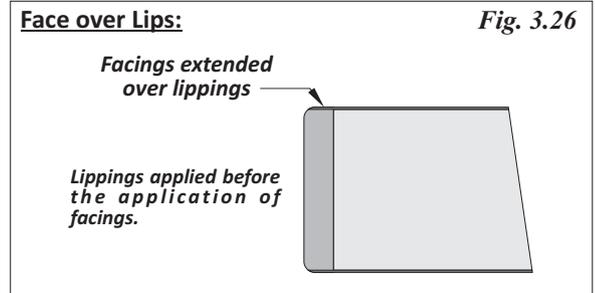
The adhesives used for the application of door facings should be suitable for use with the particular material for bonding onto a wood / MDF base.

FLAMEBREAK™ cores can be lightly sanded to permit the application of paint finishes direct onto the core material with grain filling or use of painting foils being recommended to achieve optimum quality finishes where plywood faced FLAMEBREAK™ cores are used.

Where different facing materials are used on each face of the door (e.g. Use of 1.3mm thickness laminate on one face and veneer on the other), it is recommended that consideration is given to the creation of a balanced structure to minimise the risk of distortion resulting from changes in environmental conditions. i.e. for the veneered face it is recommended that a balancing laminate paper is used on the veneered face (to balance the laminate face) before applying the thinner facing veneer. See Fig. 3.25



Facings can be applied after lipping i.e. 'face over lips'. OR, Lippings can be applied after facing the core, 'lippings to show on the face of the door'. See Fig. 3.26 & 27.



### Door Facings - Fire Doors:

Whereas for general purpose applications the core may be calibrated to provide for a constant finished door thickness when facing materials have been applied, for fire door applications the calibration should be limited to 1mm (0.5mm from each face).

For Fire Door Applications there are restrictions on the approved thickness of door finishes / facings as follows:

Facing Material	Max. Approved Thickness
Paint	0.5mm
Timber veneer	2mm
PVC / Plastic Laminate	2mm
Cellulosic foils	0.4mm

#### NOTES:

- Metallic facings are not approved (except for push / buffer and kick plates) See Section 8 Hardware.
- Core calibration is limited to 1mm (0.5mm from each face).
- Plastic laminates should not extend over door edges.
- Materials must not cover intumescent seals.

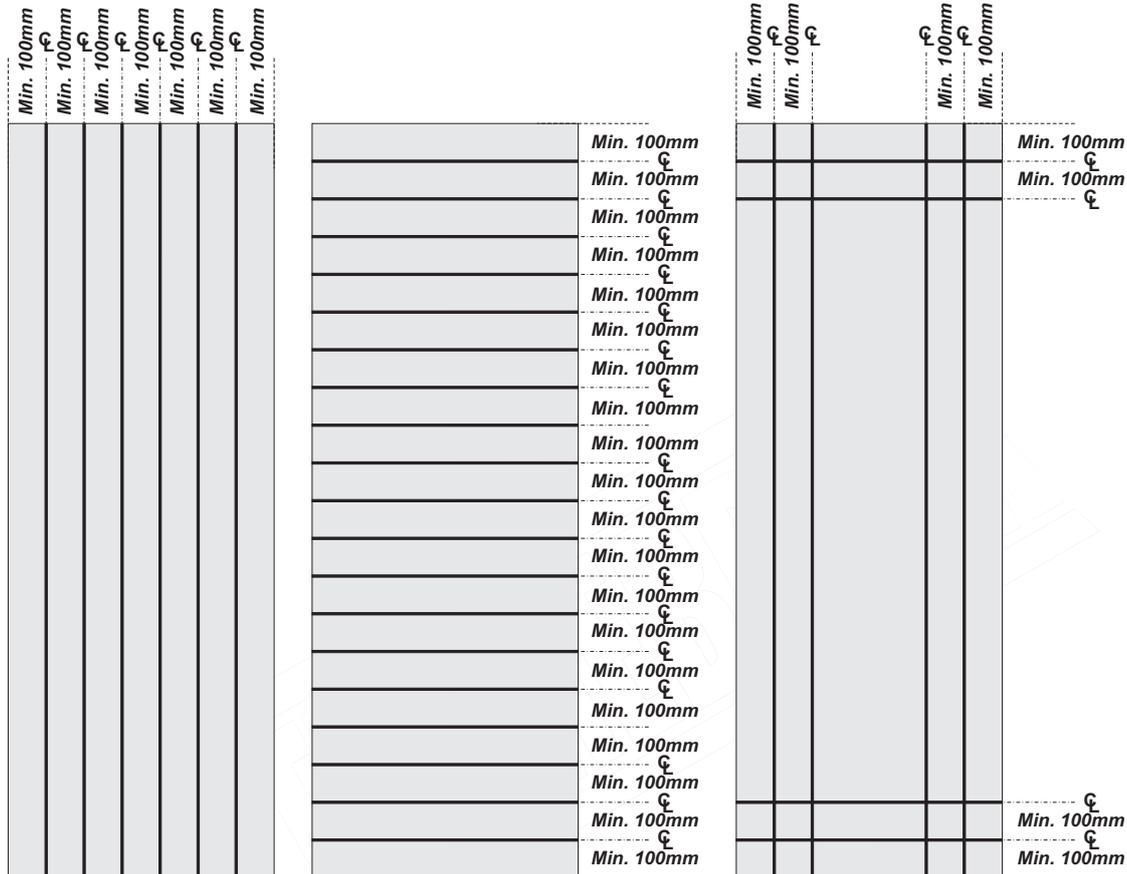


### 3.12 Lippings & Facings

**Decorative Grooves:**

Maximum approved grooving options for FD30 application using FLAMEBREAK™ 630 & FF630 core constructions only illustrated.

Fig. 3.28



**Decorative Grooves:**

FLAMEBREAK™ based doors, (including doors for FD30 fire rated applications) using 630 and FF630 cores only may be face machined to provide for decorative grooves.

The use of maximum 3mm x 3mm decorative grooves is approved for fire door applications for single leaf and double leaf configurations for FD30 fire door applications only.

Grooves may be painted or stained or may be filled with hardwood strips (or other material e.g. Laminate) to create desired aesthetic effects.

For vertical or horizontal grooving in fire doors the grooves may extend to the full height or width of the door leaf with an unlimited number of parallel grooves, subject to the minimum (100mm) approved margins shown in Fig. 3.28.

Where both horizontal and vertical grooves are required for the same fire rated door leaf, this decorative feature is limited to 4No. vertical and 4No. horizontal grooves. Subject to the minimum (100mm) approved margins shown in Fig. 3.28.

Grooves may be extended through to transomed overpanels (not flush overpanels) for storey height door assemblies and to the adjacent leaf for pairs of doors.



FLAMEBREAK



### Intumescent Seals:

**NOTE:** This section deals with the edge sealing of doors & frames only. Intumescent provisions for glazing and hardware are dealt with separately under 'Glazing' and 'Hardware'.

The use of intumescent seals is essential to achieve the potential fire performance of wood and wood based door assemblies.

FLAMEBREAK™ core doors have been tested with PVC encapsulated sodium silicate and Graphite based intumescent seals. Positive pressure seals of the types used for determining performances under test conditions are available from numerous sources. (See below).

**WARNING:** Intumescent seal materials must be of the types and sizes described in this manual and must be located as illustrated in this Section.

Intumescent seals should be carefully fitted in accordance with the seal manufacturer's recommendations.

It is particularly important that the seal at the head should extend to the full width of the door(s) (preferably, in the frame head) to ensure suitable sealing at the top joints of the frame that is a particular area of weakness under fire test conditions.

**NOTE 1:** See seal location drawings in this Section, some seals must essentially be fitted to the frame head.

**NOTE:** Concealed intumescent systems are not approved for 'Q' mark applications with FLAMEBREAK™ based doors.

#### Sources:

Proprietary Intumescent sealing systems, suitable for use with doors using FLAMEBREAK™ cores can be obtained from a number of sources including:

- Norseal Ltd.
- Intumescent Seals Ltd.
- Lorient Polyproducts Ltd.
- Mann McGowan Ltd.
- Pyroplex Ltd.
- Sealmaster Ltd.

**NOTE:** Further information with regard to intumescent sealing systems can be obtained from I.F.S.A. (Intumescent Fire Seals Association).

#### Extended Application:

**NOTE 1:** It may be possible to extend the dimensional applications envelope given by reference to Section 2 - Fire Door Applications Data by adjustment of the intumescent sealing. Requirements of this nature should be referred to Pacific Rim Wood Ltd. in the first instance together with details of the particular application requirement. Where necessary, additional base test data may be requested together with authority for use of such data for the purpose of assessment.

**Note 2:** Alternatively, it may be possible to consider the use of FD60 constructions for FD30 applications where the dimensional limits applicable to the FD30 constructions are not suitable for a particular project.

The extent to which it is possible to extend dimensional envelopes cannot be determined without the benefit of detailed knowledge of the intended application.

Where design requirements describe products that fall outside of the scope of the assessed dimensional applications envelopes described in Section 2 of this manual for any particular performance, full details of the requirement should be forwarded to:

#### Pacific Rim Wood Ltd.,

Ground Floor Suite, Block B,  
The Old Kelways  
Somerton Road  
Langport,  
Somerset TA10 9SJ

**Tel: +44 (0) 1458 252 305**

**E-mail: enquiries@prwuk.com**

**WARNING:** Various formulae are used in the manufacture of intumescent seals that may provide for different performance characteristics under fire conditions. The mixing of intumescent seal types for use in the same door assembly is not approved.



### FLAMEBREAK 430 FD30

#### 10x4mm Pyroplex Rigid Box

Q Single Leaf FD30 applications using 10x4mm Pyroplex Rigid Box Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom

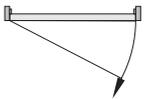


#### Latched Single leaf Single Action Door Assemblies:

Jams & Head = 10x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2040 x 919mm  
To: 2260 x 826mm

*NOTE: For storey height door assemblies use 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

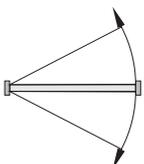


#### Unlatched Single leaf Single Action Door Assemblies:

Jams & Head = 10x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2040 x 894mm  
To: 2210 x 826mm

*NOTE: For storey height door assemblies use 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Double Action Single leaf Doorsets:

Jams & Head = 10x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2040 x 894mm  
To: 2210 x 826mm

*NOTE: For storey height door assemblies use 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



FLAMEBREAK 430

## FD30

**10x4mm Pyroplex Rigid Box**

*Fig. 4.1*

Q Single Action Single leaf  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

**NOTE:**  
 Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Intumescent seals must be located centrally in the door thickness and may be fitted to the frame or the door leaf.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

*Fig. 4.2*

Q Double Action Single leaf  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

**NOTE:**  
 Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Intumescent seals must be located centrally in the door thickness and may be fitted to the frame or the door leaf.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.



## 4.4 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK FF630 **FD30**

#### **10x4mm Pyroplex Rigid Box**

**Q** Single Leaf FD30 applications using 10x4mm Pyroplex Rigid Box Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### **Latched Single leaf Single Action Door Assemblies:**

**Jams & Head** = 10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf sizes:** From: 2040 x 1057mm  
To: 2300 x 826mm

*NOTE: For storey height door assemblies use 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

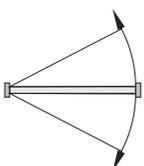


#### **Unlatched Single leaf Single Action Door Assemblies:**

**Jams & Head** = 10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf sizes:** From: 2040 x 1032mm  
To: 2300 x 826mm

*NOTE: For storey height door assemblies use 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### **Double Action Single leaf Doorsets:**

**Jams & Head** = 10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf sizes:** From: 2040 x 1032mm  
To: 2300 x 826mm

*NOTE: For storey height door assemblies use 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



## FLAMEBREAK FF630 **FD30**

### 10x4mm Pyroplex Rigid Box

*Fig. 4.3*

Q **Single Action Single leaf**  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

**NOTE:**  
*Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)*

- Intumescent seals must be located centrally in the door thickness and may be fitted to the frame or the door leaf.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

*Fig. 4.4*

Q **Double Action Single leaf**  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

**NOTE:**  
*Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)*

- Intumescent seals must be located centrally in the door thickness and may be fitted to the frame or the door leaf.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.



## 4.6 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

### 2x10x4mm Pyroplex Rigid Box

Q Single Leaf FD30 applications using 2No. 10x4mm Pyroplex Rigid Box Intumescent seals.

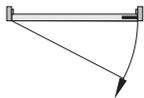
*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Single leaf Single Action Door Assemblies:

Jams & Head = 2No. 10x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2400 x 1358mm  
To: 3190 x 1000mm

*NOTE: For storey height door assemblies use 2No. 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

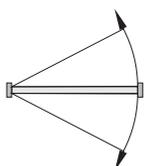


#### Unlatched Single leaf Single Action Door Assemblies:

Jams & Head = 2No. 10x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2400 x 1333mm  
To: 3140 x 1000mm

*NOTE: For storey height door assemblies use 2No. 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Double Action Single leaf Doorsets:

Jams & Head = 2No. 10x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2400 x 1333mm  
To: 3140 x 1000mm

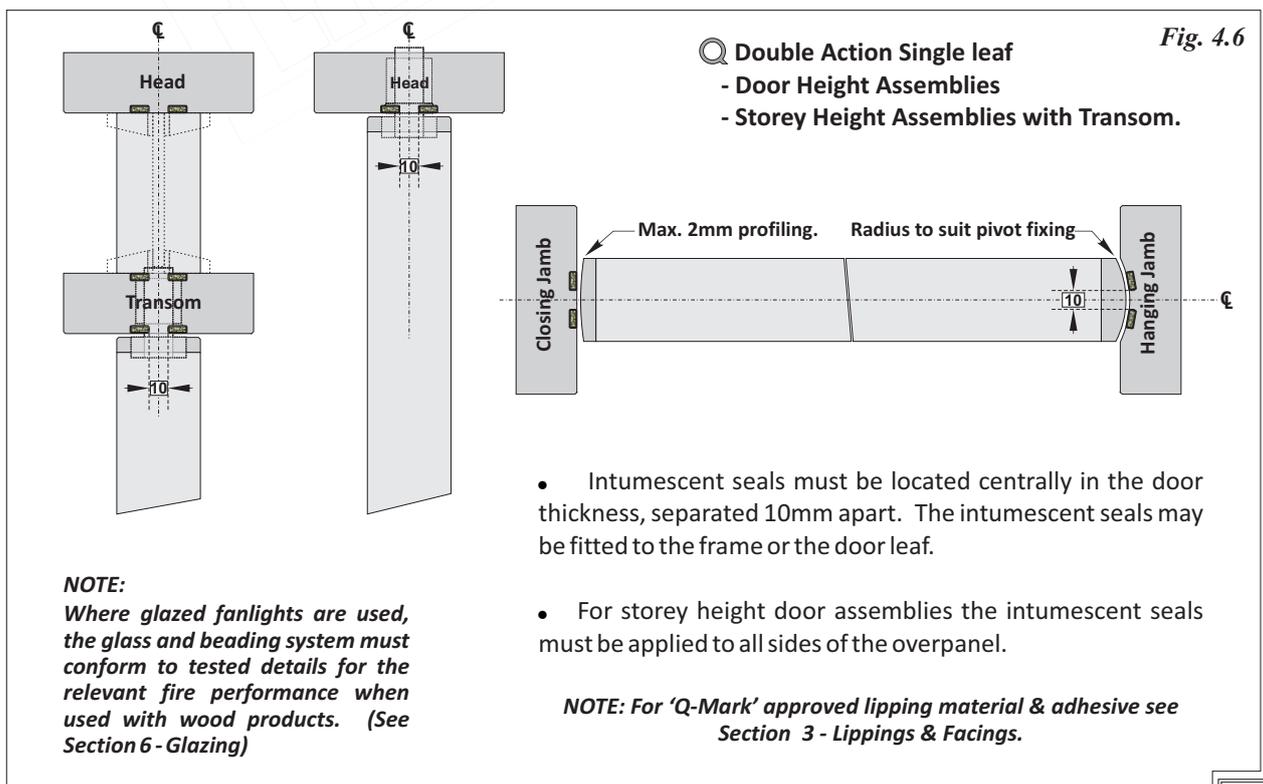
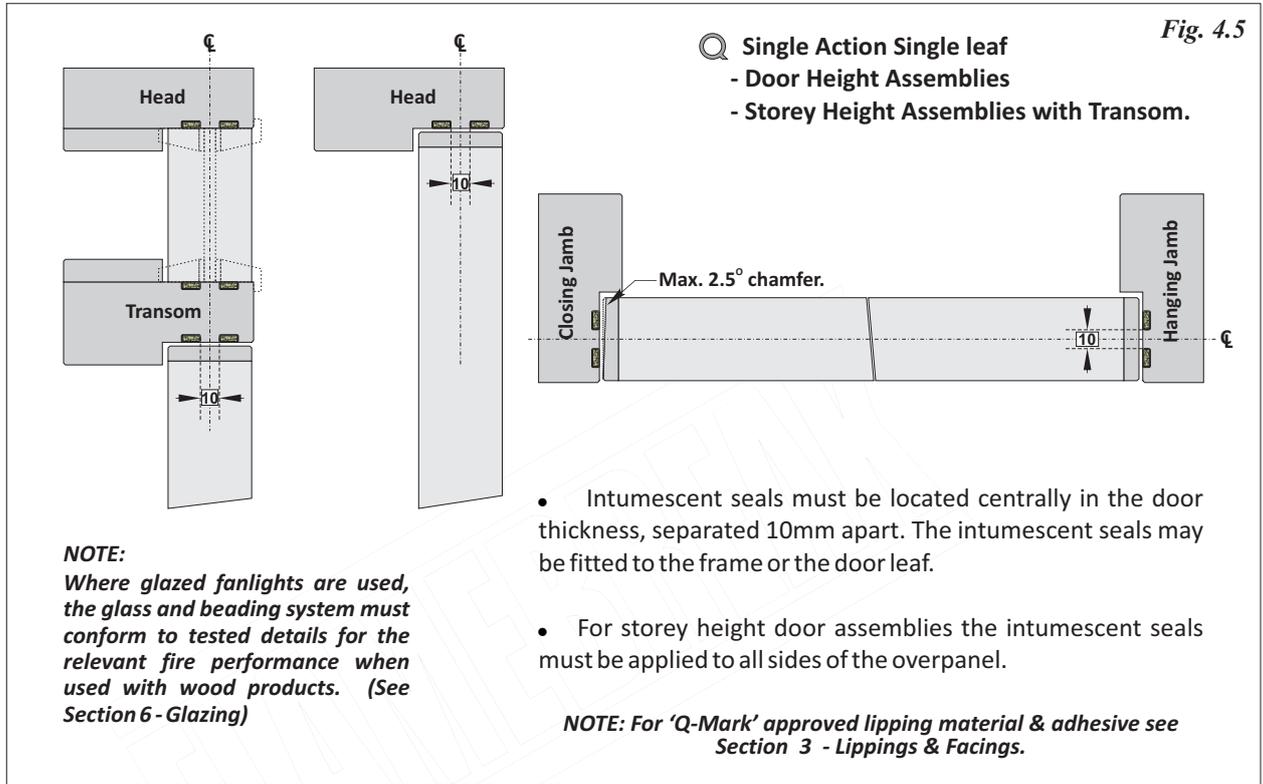
*NOTE: For storey height door assemblies use 2No. 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



### FLAMEBREAK 430 FLAMEBREAK 630 FLAMEBREAK FF630

# FD30

### 2x10x4mm Pyroplex Rigid Box



## 4.8 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

### 2x10x4mm Pyroplex Rigid Box

**Q** Double Leaf FD30 applications using 2No. 10x4mm Pyroplex Rigid Box Intumescent seals.

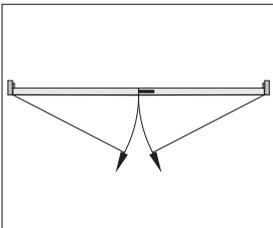
*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Double leaf Single Action Door Assemblies (Pairs):

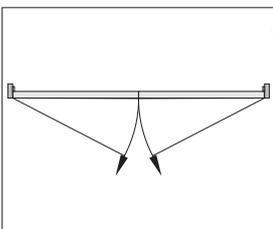
**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf sizes:** From: 2400 x 2x1258mm  
To: 2990 x 2x1000mm

*NOTE 1: For storey height door assemblies use 2No. 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

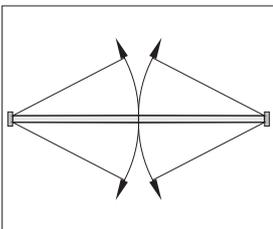
**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf sizes:** From: 2400 x 2x1233mm  
To: 2940 x 2x1000mm

*NOTE 1: For storey height door assemblies use 2No. 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Double Action Double leaf Door Assemblies (Pairs):

**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf sizes:** From: 2400 x 2x1233mm  
To: 2940 x 2x1000mm

*NOTE: For storey height door assemblies use 2No. 10x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Rebated Meeting Stiles:

*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630 **FD30**

***2x10x4mm Pyroplex Rigid Box***

**Q Single Action Double leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

*Fig. 4.7*

**NOTE:**  
*Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)*

- Perimeter intumescent seals must be located centrally in the door thickness, separated 10mm apart. The Intumescent seals may be fitted to the frame or the door leaf.
- At the meeting stiles, 2x10x4mm seals must be fitted to one leaf only, separated by 10mm centrally located in the door thickness.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

**Q Double Action Double leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

*Fig. 4.8*

**NOTE:**  
*Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)*

- Perimeter intumescent seals must be located centrally in the door thickness, separated 10mm apart. The Intumescent seals may be fitted to the frame or the door leaf.
- At the meeting stiles, 2x10x4mm seals must be fitted to one leaf only, separated by 10mm centrally located in the door thickness.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**



## 4.10 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 430 FD30

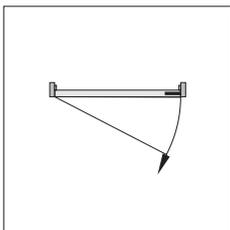
#### 2x10x4mm Pyroplex Rigid Box

Q Single Leaf FD30 applications using 2No. 10x4mm Pyroplex Rigid Box Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Storey Height Door Assemblies  
with Flush Overpanel



#### Latched Single leaf Single Action Storey Height Door Assembly with Flush Overpanel:

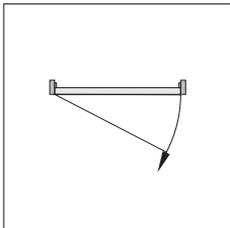
**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf / Overpanel - Square** = 2No.10x4mm PVC encased Pyroplex Rigid Box fitted to door leaf or overpanel.

**Door Leaf / Overpanel - Equal Rebated** = 2No.10x4mm PVC encased Pyroplex Rigid Box fitted to the rebate of the door leaf and the overpanel.

**Door Leaf sizes:** From: 2400 x 1308mm  
To: 3090 x 1000mm

*NOTE: Use 2No. 10x4mm PVC encased Pyroplex Rigid Box to top and sides of the overpanel - See details.*



#### Unlatched Single leaf Single Action Storey Height Door Assemblies with Flush Overpanel:

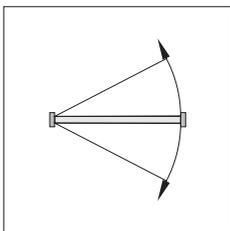
**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf / Overpanel - Square** = 2No.10x4mm PVC encased Pyroplex Rigid Box fitted to door leaf or overpanel.

**Door Leaf / Overpanel - Equal Rebated** = 2No.10x4mm PVC encased Pyroplex Rigid Box fitted to the rebate of the door leaf and the overpanel.

**Door Leaf sizes:** From: 2400 x 1283mm  
To: 3040 x 1000mm

*NOTE: Use 2No. 10x4mm PVC encased Pyroplex Rigid Box to top and sides of the overpanel - See details.*



#### Double Action Single leaf Storey Height Door Assemblies with Flush Overpanel:

**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf / Overpanel - Square** = 2No.10x4mm PVC encased Pyroplex Rigid Box fitted to door leaf or overpanel.

**Door Leaf sizes:** From: 2400 x 1283mm  
To: 3040 x 1000mm

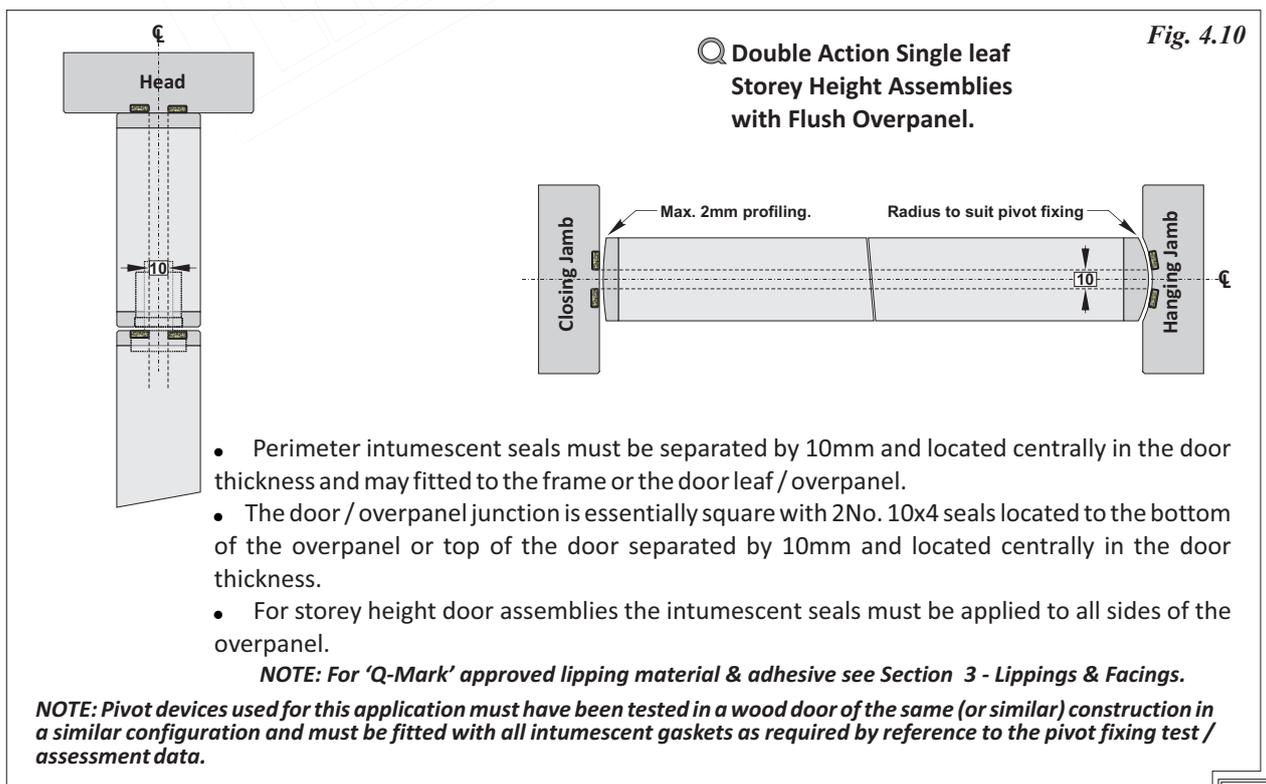
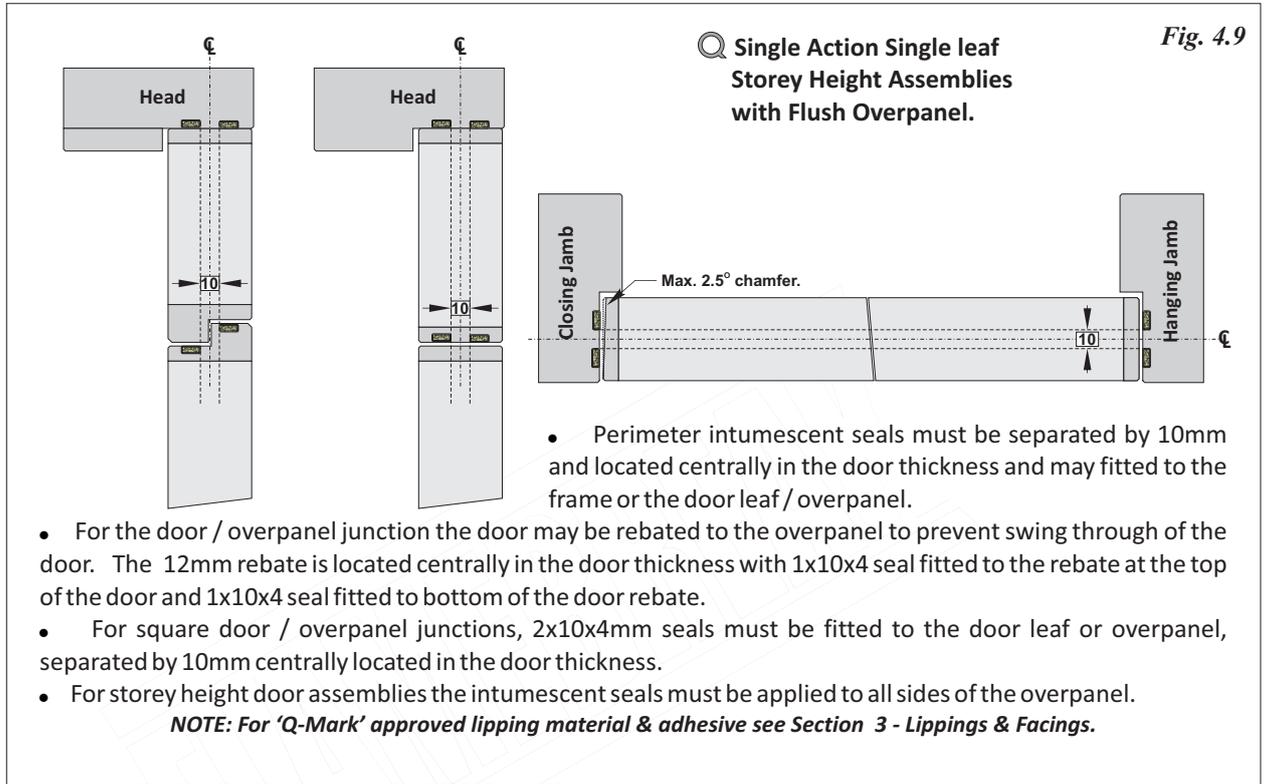
*NOTE: Use 2No. 10x4mm PVC encased Pyroplex Rigid Box to top and sides of the overpanel - See details.*



FLAMEBREAK 430

# FD30

**2x10x4mm Pyroplex Rigid Box**



## 4.12 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 430 FD30

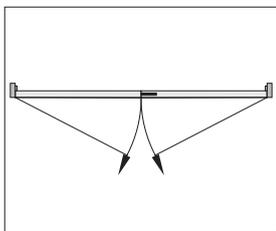
#### 2x10x4mm Pyroplex Rigid Box

Q Double Leaf FD30 applications using 2No. 10x4mm Pyroplex Rigid Box Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Double leaf Storey Height Door Assemblies with Flush Overpanel



#### Latched Double leaf Single Action Door Assemblies (Pairs) with Flush Overpanels:

**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

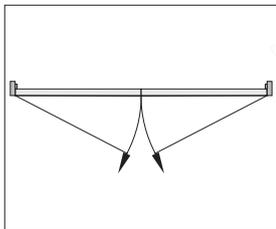
**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf / Overpanel - Equal Rebated** = 2No.10x4mm PVC encased Pyroplex Rigid Box fitted to the rebate of the door leaf and the overpanel.

**Door Leaf sizes:** From: 2400 x 2x1208mm  
To: 2890 x 2x1000mm

*NOTE 1: Use 2No. 10x4mm PVC encased Pyroplex Rigid Box to top and sides of the overpanel - See details.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Unlatched Double leaf Single Action Door Assemblies (Pairs) with Flush Overpanels:

**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

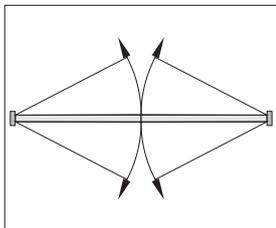
**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf / Overpanel - Equal Rebated** = 2No.10x4mm PVC encased Pyroplex Rigid Box fitted to the rebate of the door leaf and the overpanel.

**Door Leaf sizes:** From: 2400 x 2x1183mm  
To: 2840 x 2x1000mm

*NOTE 1: Use 2No. 10x4mm PVC encased Pyroplex Rigid Box to top and sides of the overpanel - See details.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Double Action Double leaf Door Assemblies (Pairs) with Flush Overpanels:

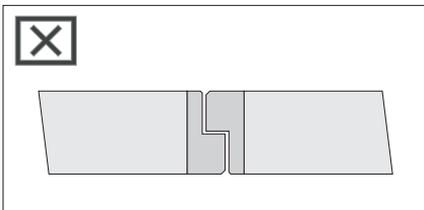
**Jamb & Head** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box.

**Door Leaf / Overpanel - Square** = 2No.10x4mm PVC encased Pyroplex Rigid Box fitted to door leaf or overpanel separated by 10mm centrally located to door / overpanel thickness.

**Door Leaf sizes:** From: 2400 x 2x1183mm  
To: 2840 x 2x1000mm

*NOTE: Use 2No. 10x4mm PVC encased Pyroplex Rigid Box to top and sides of the overpanel - See details.*



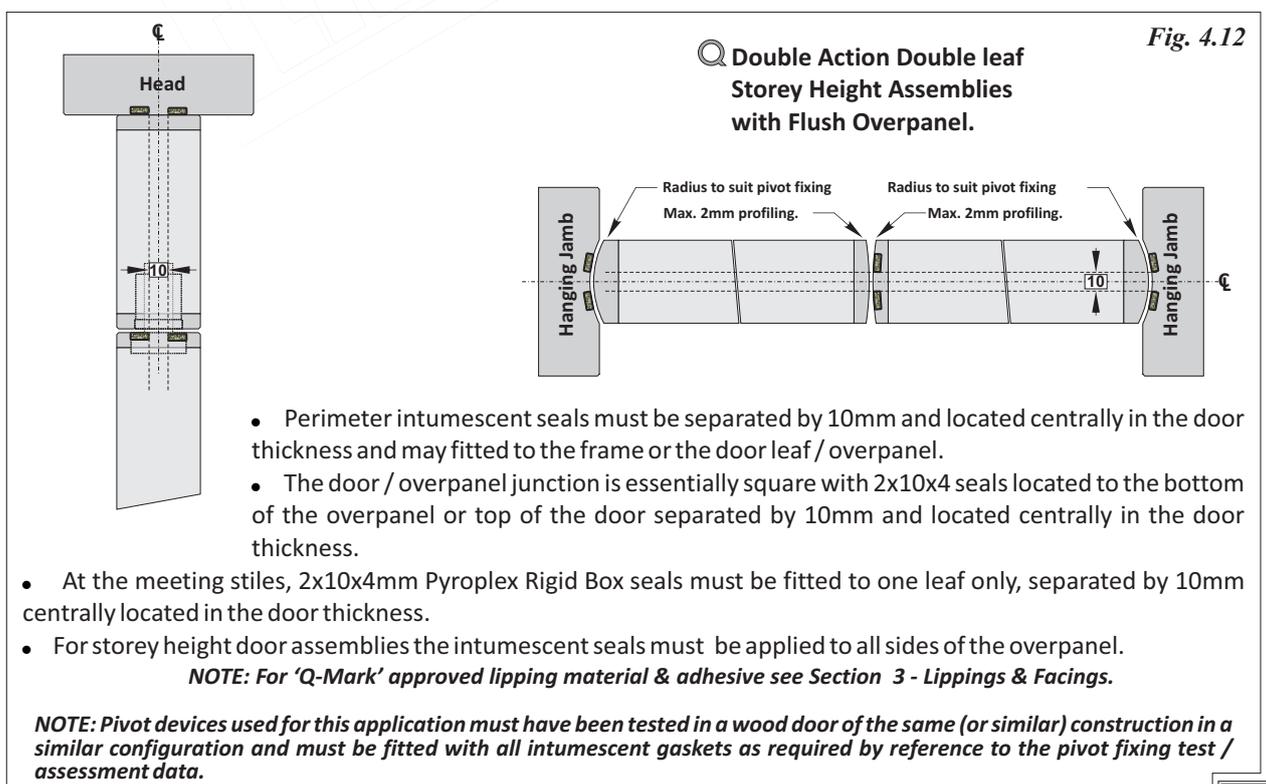
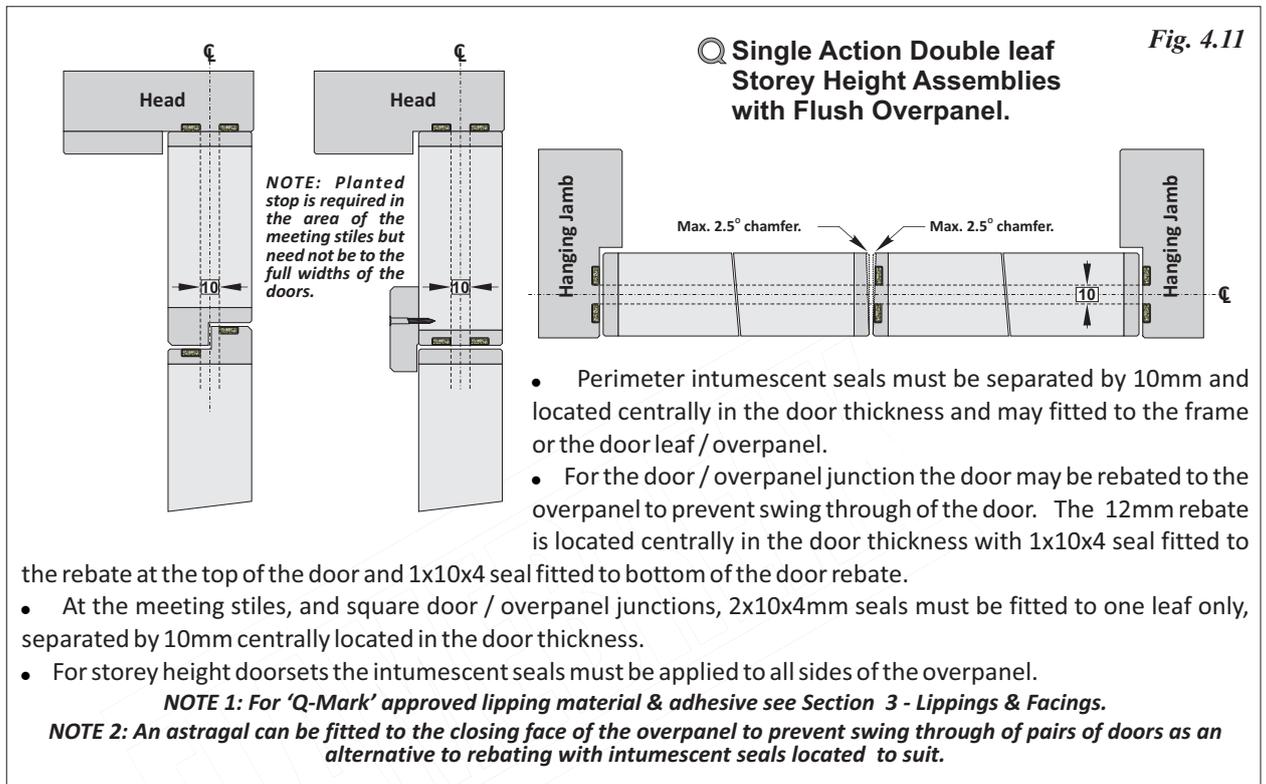
#### Rebated Meeting Stiles:

*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*

FLAMEBREAK 430

# FD30

**2x10x4mm Pyroplex Rigid Box**



## 4.14 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 430 FLAMEBREAK 630 **FD30**

#### 15x4mm Pyroplex Rigid Box

Q Single Leaf FD30 applications using 15x4mm Pyroplex Rigid Box Intumescent seals.

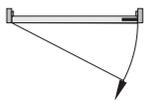
*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom

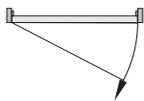


#### Latched Single leaf Single Action Door Assemblies:

Jamb & Head = 15x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2145 x 1067mm  
To: 2463 x 927mm

*NOTE: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

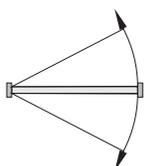


#### Unlatched Single leaf Single Action Door Assemblies:

Jamb & Head = 15x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2145 x 1042mm  
To: 2413 x 927mm

*NOTE: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Double Action Single leaf Door Assemblies:

Jamb & Head = 15x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2145 x 1042mm  
To: 2413 x 927mm

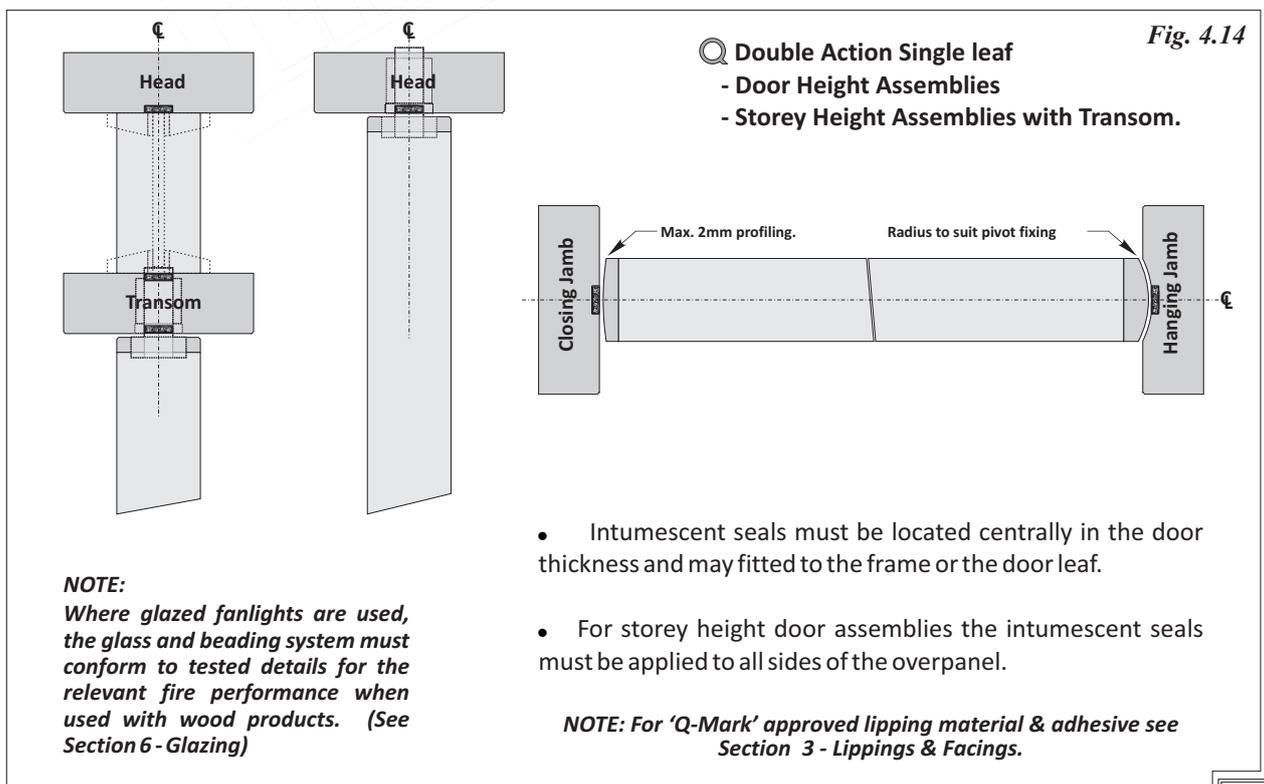
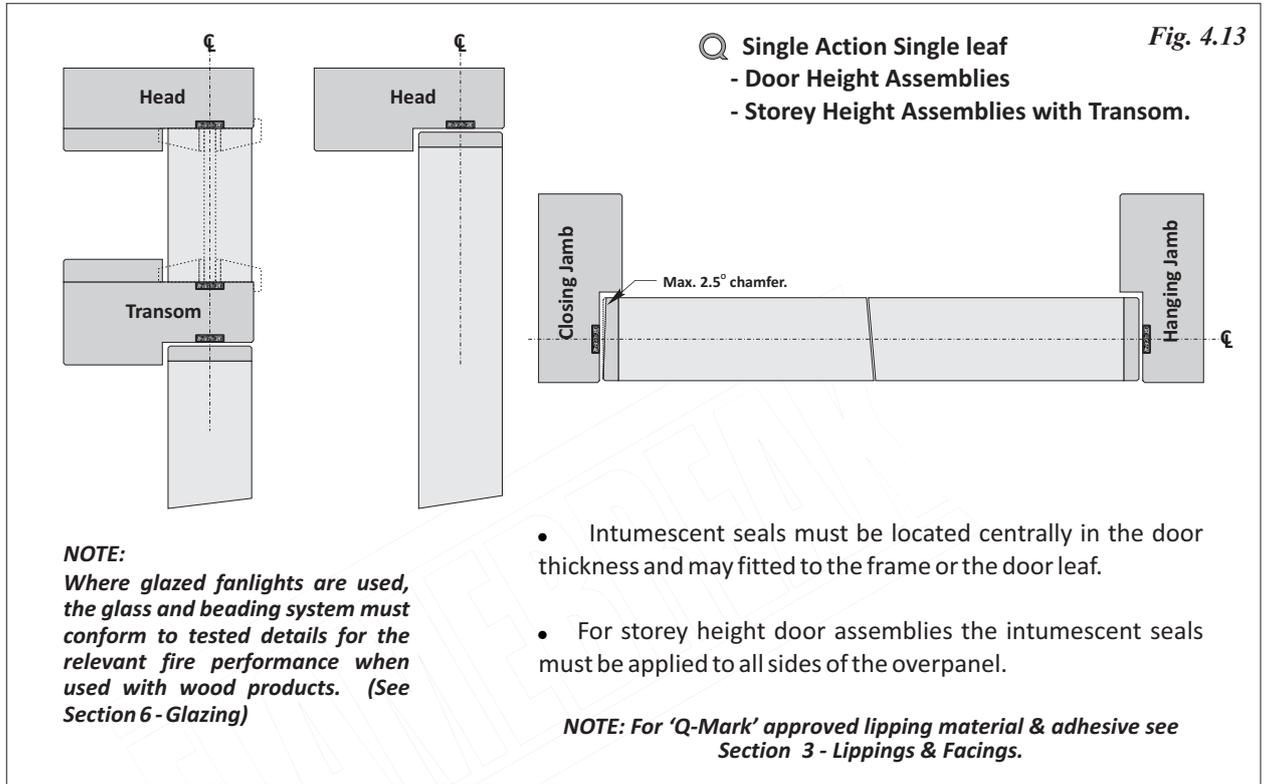
*NOTE: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



FLAMEBREAK 430  
FLAMEBREAK 630

# FD30

15x4mm Pyroplex Rigid Box



## 4.16 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK FF630 **FD30**

#### 15x4mm Pyroplex Rigid Box

Q Single Leaf FD30 applications using 15x4mm Pyroplex Rigid Box Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom

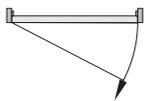


#### Latched Single leaf Single Action Door Assemblies:

Jams & Head = 15x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2145 x 1067mm  
To: 2600 x 826mm

*NOTE: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

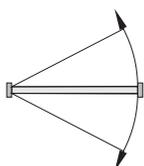


#### Unlatched Single leaf Single Action Door Assemblies:

Jams & Head = 15x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2145 x 1042mm  
To: 2550 x 826mm

*NOTE: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Double Action Single leaf Door Assemblies:

Jams & Head = 15x4mm PVC encased Pyroplex Rigid Box.

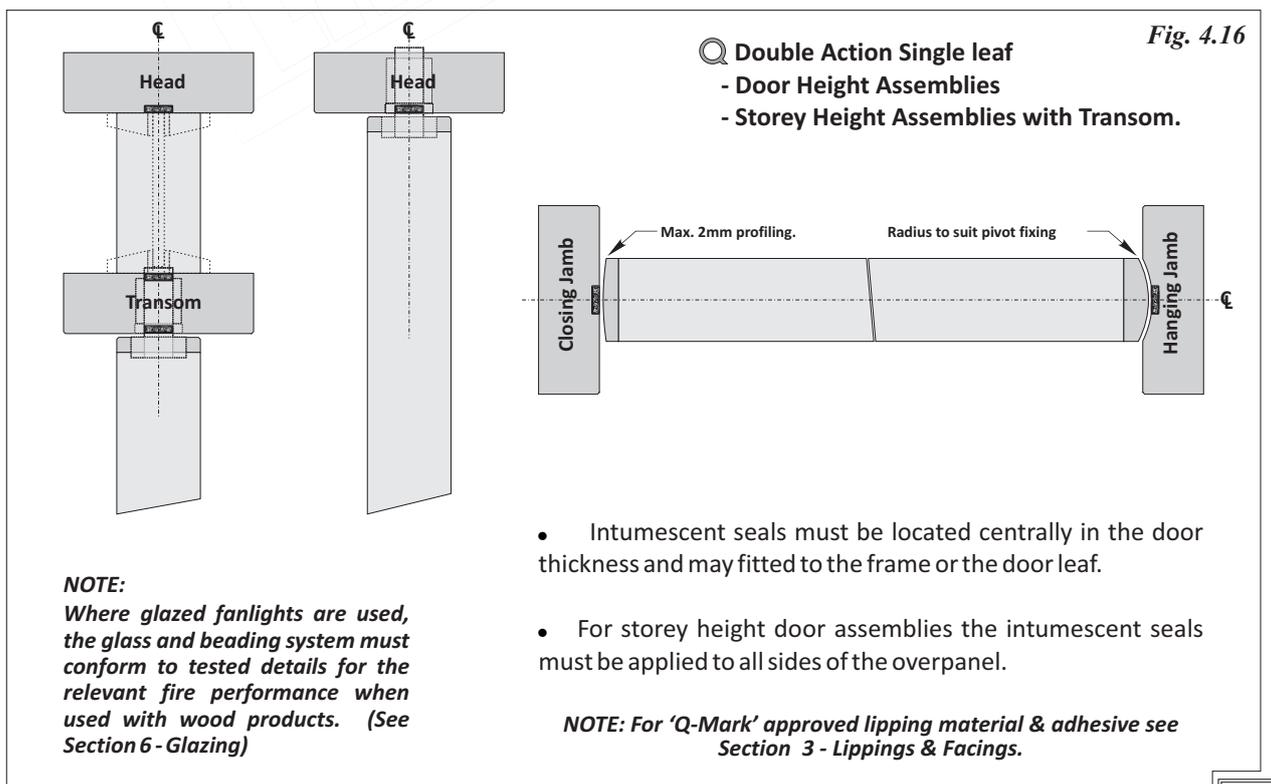
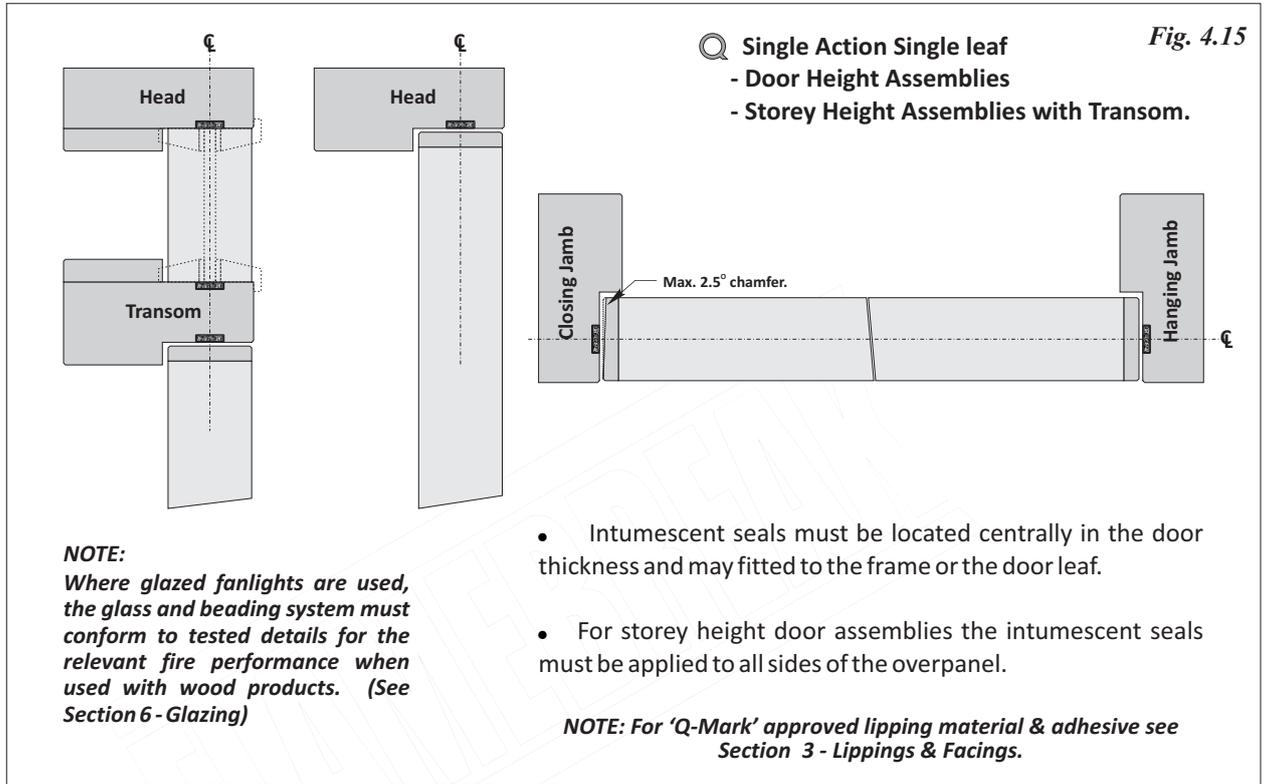
Door Leaf sizes: From: 2145 x 1042mm  
To: 2550 x 826mm

*NOTE: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



### FLAMEBREAK FF630 FD30

### 15x4mm Pyroplex Rigid Box



## 4.18 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

### 15x4mm Pyroplex Rigid Box

**Q** Double Leaf FD30 applications using 15x4mm Pyroplex Rigid Box Intumescent seals.

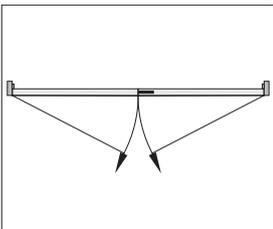
*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Double leaf Single Action Door Assemblies (Pairs):

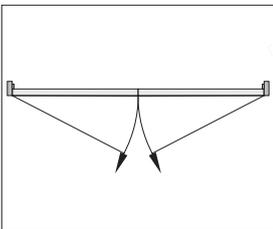
**Jamb & Head** = 15x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

**Door Leaf sizes:** From: 2145 x 2x1067mm  
To: 2463 x 2x927mm

*NOTE 1: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

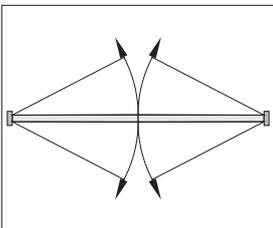
**Jamb & Head** = 15x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

**Door Leaf sizes:** From: 2145 x 2x1042mm  
To: 2413 x 2x927mm

*NOTE 1: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Double Action Double leaf Door Assemblies (Pairs):

**Jamb & Head** = 15x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

**Door Leaf sizes:** From: 2145 x 2x1042mm  
To: 2413 x 2x927mm

*NOTE: For storey height door assemblies use 15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Rebated Meeting Stiles:

*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

### 15x4mm Pyroplex Rigid Box

**Q Single Action Double leaf** Fig. 4.17  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Perimeter intumescent seals must be located centrally in the door thickness. The Intumescent seals may be fitted to the frame or the door leaf.
- At the meeting stiles, 2x10x4mm seals must be fitted to one leaf only, separated by 10mm centrally located in the door thickness.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

**Q Double Action Double leaf** Fig. 4.18  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Perimeter intumescent seals must be located centrally in the door thickness. The Intumescent seals may be fitted to the frame or the door leaf.
- At the meeting stiles, 2x10x4mm seals must be fitted to one leaf only, separated by 10mm centrally located in the door thickness.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**



## 4.20 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

**15x4mm Palusol 100 OR Type 617**

**Q** Single Leaf FD30 applications using  
15x4mm Palusol 100 OR Type 617  
Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved  
minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



### **Latched Single leaf Single Action Door Assemblies:**

**Jams & Head = 15x4mm PVC encased Palusol 100 OR Type 617.**

**Door Leaf sizes:** From: 2390 x 1100mm  
To: 2390 x 1100mm

*NOTE: For storey height door assemblies use 15x4mm PVC encased Palusol 100 OR Type 617  
to all sides of the overpanel.*

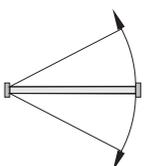


### **Unlatched Single leaf Single Action Door Assemblies:**

**Jams & Head = 15x4mm PVC encased Palusol 100 OR Type 617.**

**Door Leaf sizes:** From: 2390 x 1100mm  
To: 2390 x 1100mm

*NOTE: For storey height door assemblies use 15x4mm PVC encased Palusol 100 OR Type 617  
to all sides of the overpanel.*



### **Double Action Single leaf Door Assemblies:**

**Jams & Head = 15x4mm PVC encased Palusol 100 OR Type 617.**

**Door Leaf sizes:** From: 2390 x 1100mm  
To: 2390 x 1100mm

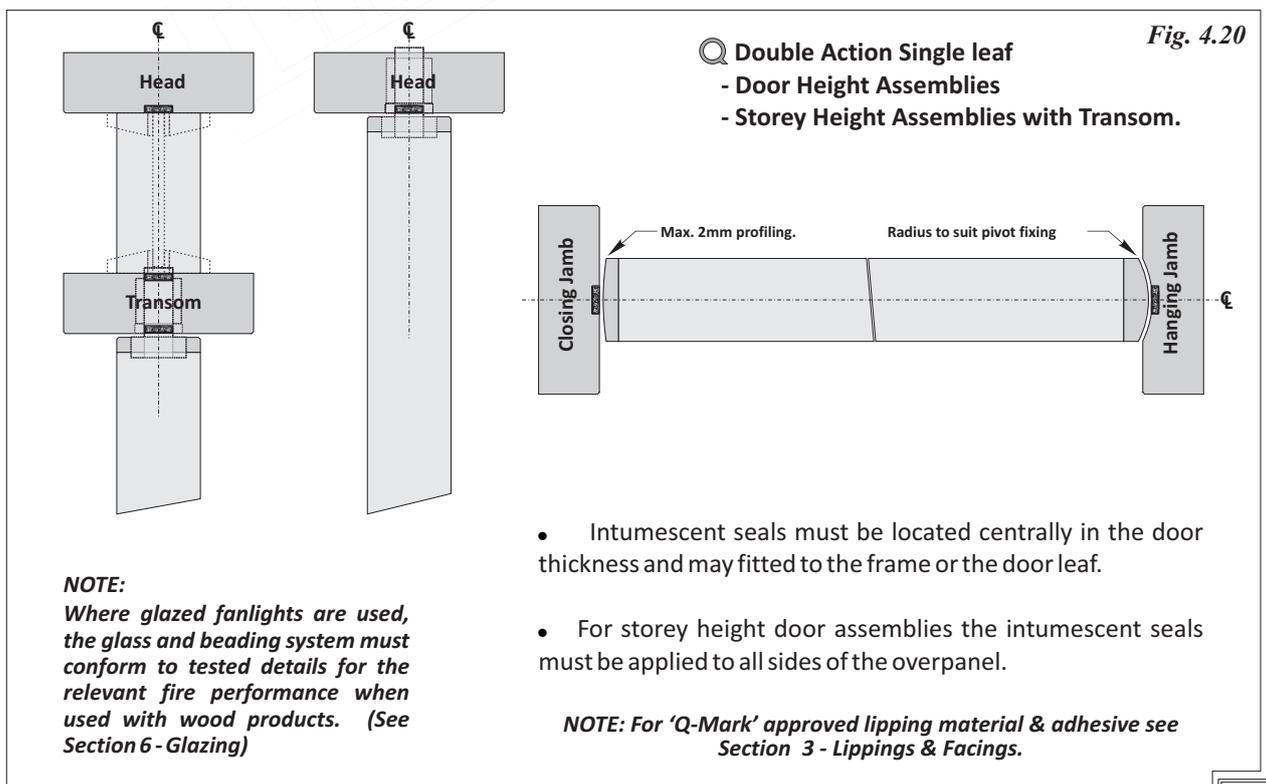
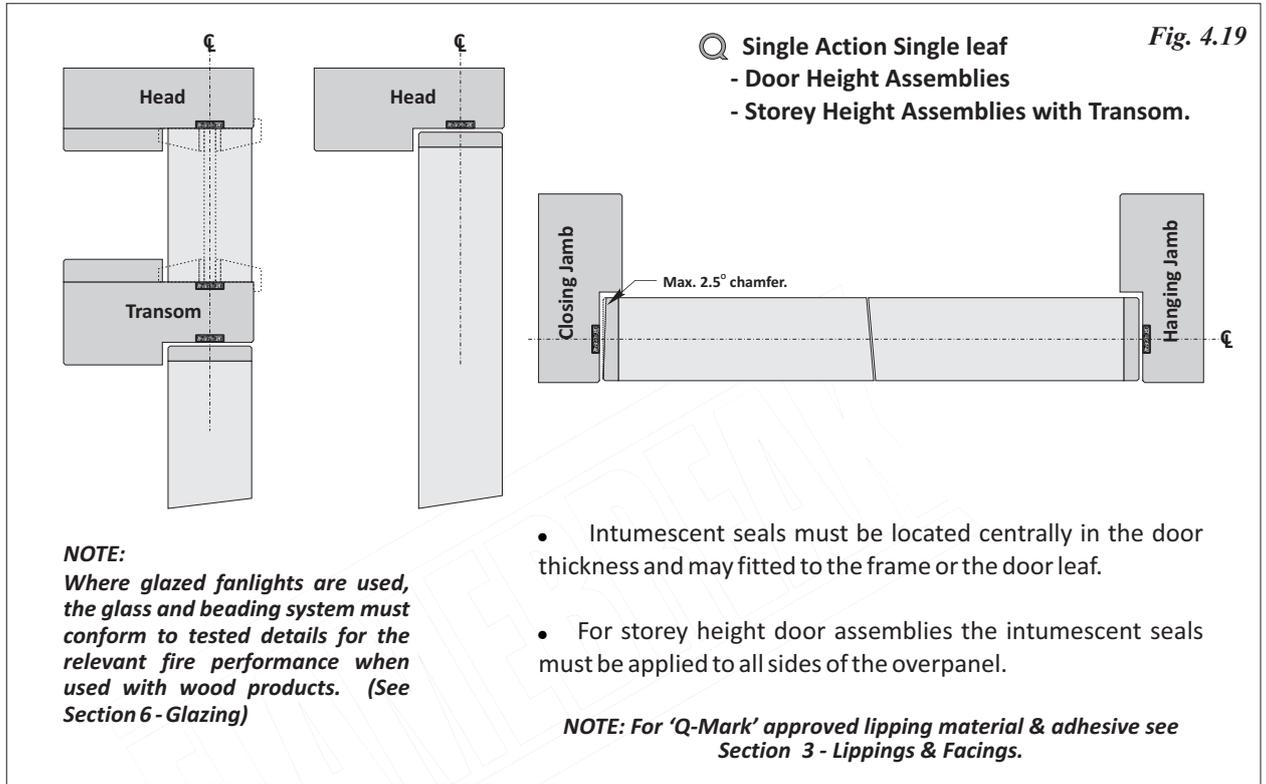
*NOTE: For storey height door assemblies use 15x4mm PVC encased Palusol 100 OR Type 617  
to all sides of the overpanel.*



FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

**15x4mm Palusol 100 OR Type 617**



## 4.22 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

### 20x4mm Pyroplex Rigid Box

Q Single Leaf FD30 applications using 15x4mm Pyroplex Rigid Box Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Single leaf Single Action Door Assemblies:

Jamb & Head = 20x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2145 x 1067mm  
To: 2463 x 927mm

*NOTE: For storey height door assemblies use 20x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

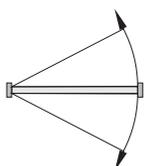


#### Unlatched Single leaf Single Action Door Assemblies:

Jamb & Head = 20x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2145 x 1042mm  
To: 2413 x 927mm

*NOTE: For storey height door assemblies use 20x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Double Action Single leaf Door Assemblies:

Jamb & Head = 20x4mm PVC encased Pyroplex Rigid Box.

Door Leaf sizes: From: 2145 x 1042mm  
To: 2413 x 927mm

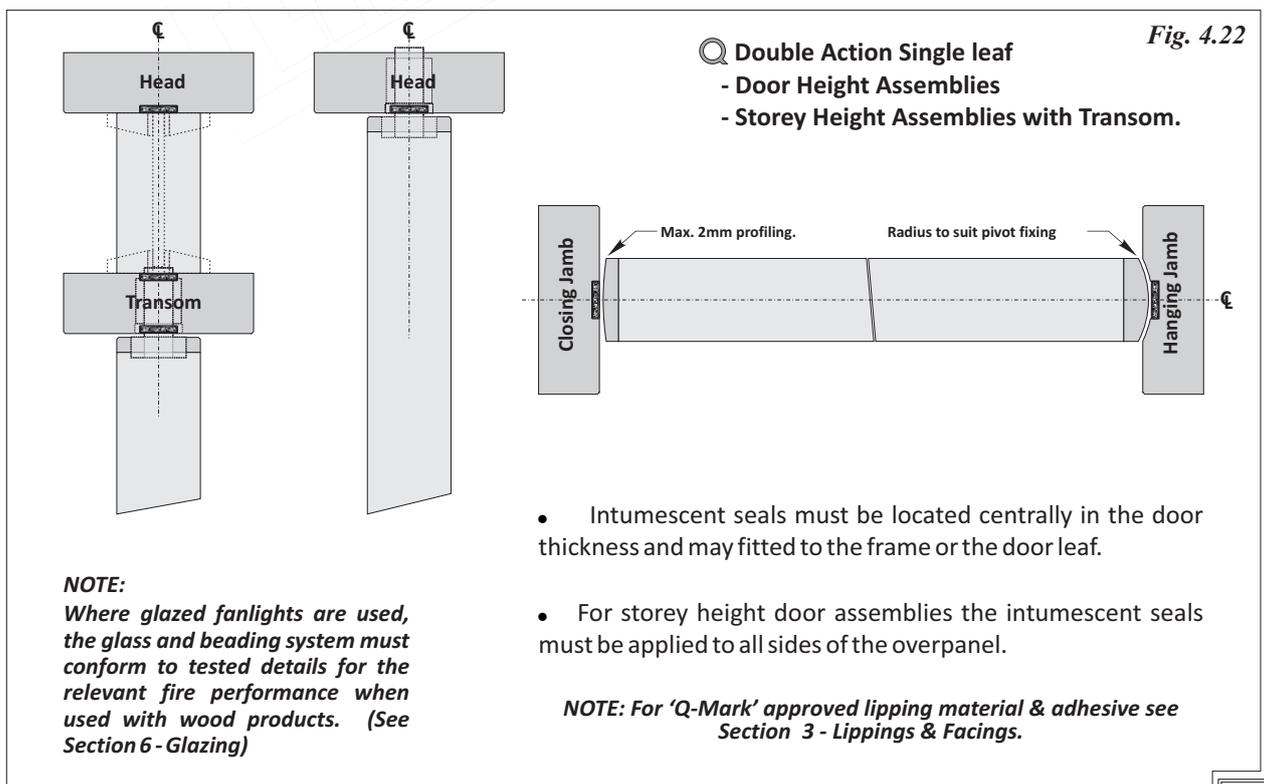
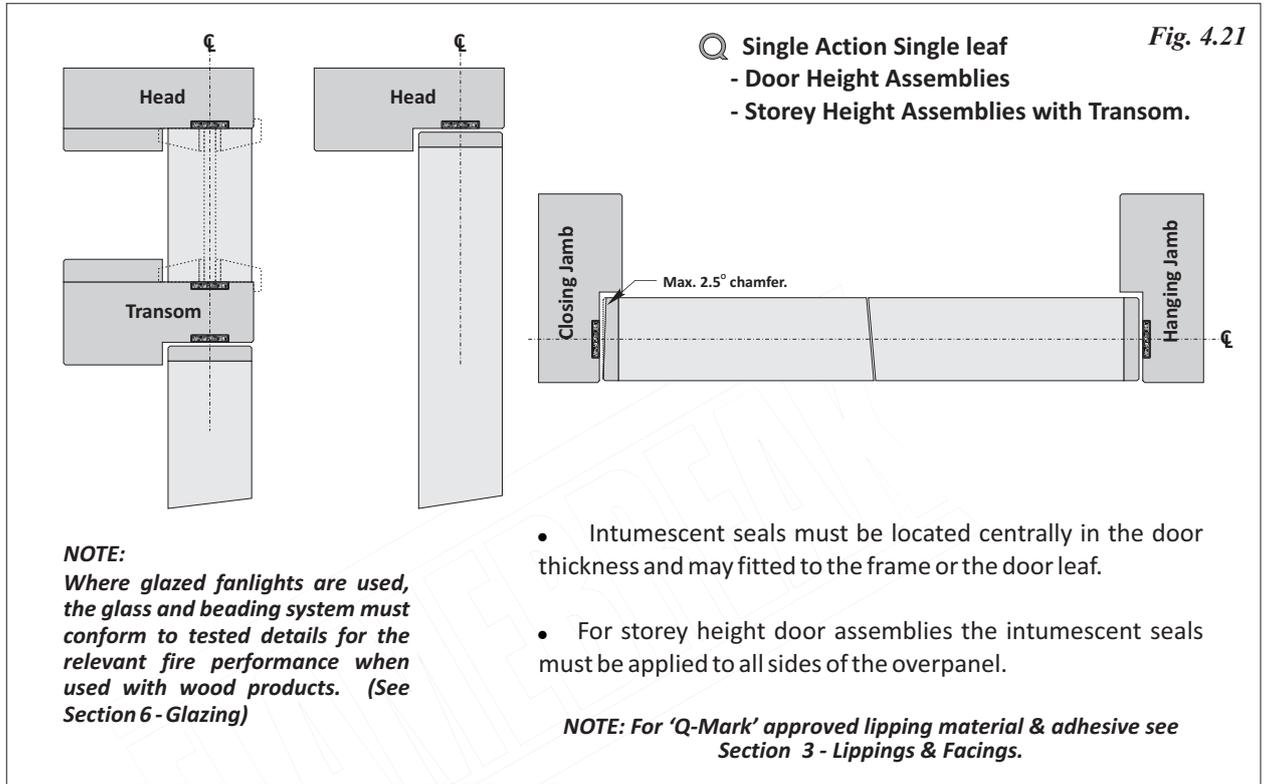
*NOTE: For storey height door assemblies use 20x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



### FLAMEBREAK 430 FLAMEBREAK 630 FLAMEBREAK FF630

# FD30

### 20x4mm Pyroplex Rigid Box



## 4.24 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

### 20x4mm Pyroplex Rigid Box

**Q** Double Leaf FD30 applications using 20x4mm Pyroplex Rigid Box Intumescent seals.

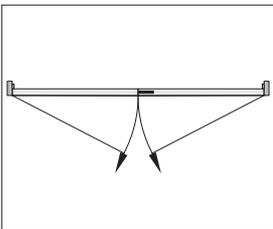
*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Double leaf Single Action Door Assemblies (Pairs):

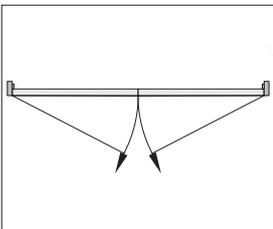
**Jamb & Head** = 20x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

**Door Leaf sizes:** From: 2145 x 2x1067mm  
To: 2463 x 2x927mm

*NOTE 1: For storey height door assemblies use 20x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

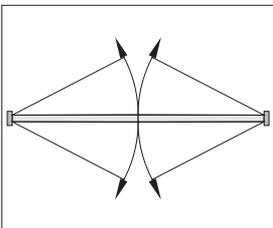
**Jamb & Head** = 20x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

**Door Leaf sizes:** From: 2145 x 2x1042mm  
To: 2413 x 2x927mm

*NOTE 1: For storey height door assemblies use 20x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Double Action Double leaf Door Assemblies (Pairs):

**Jamb & Head** = 20x4mm PVC encased Pyroplex Rigid Box.

**Meeting Stiles** = 2No.10x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

**Door Leaf sizes:** From: 2145 x 2x1042mm  
To: 2413 x 2x927mm

*NOTE: For storey height door assemblies use 20x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Rebated Meeting Stiles:

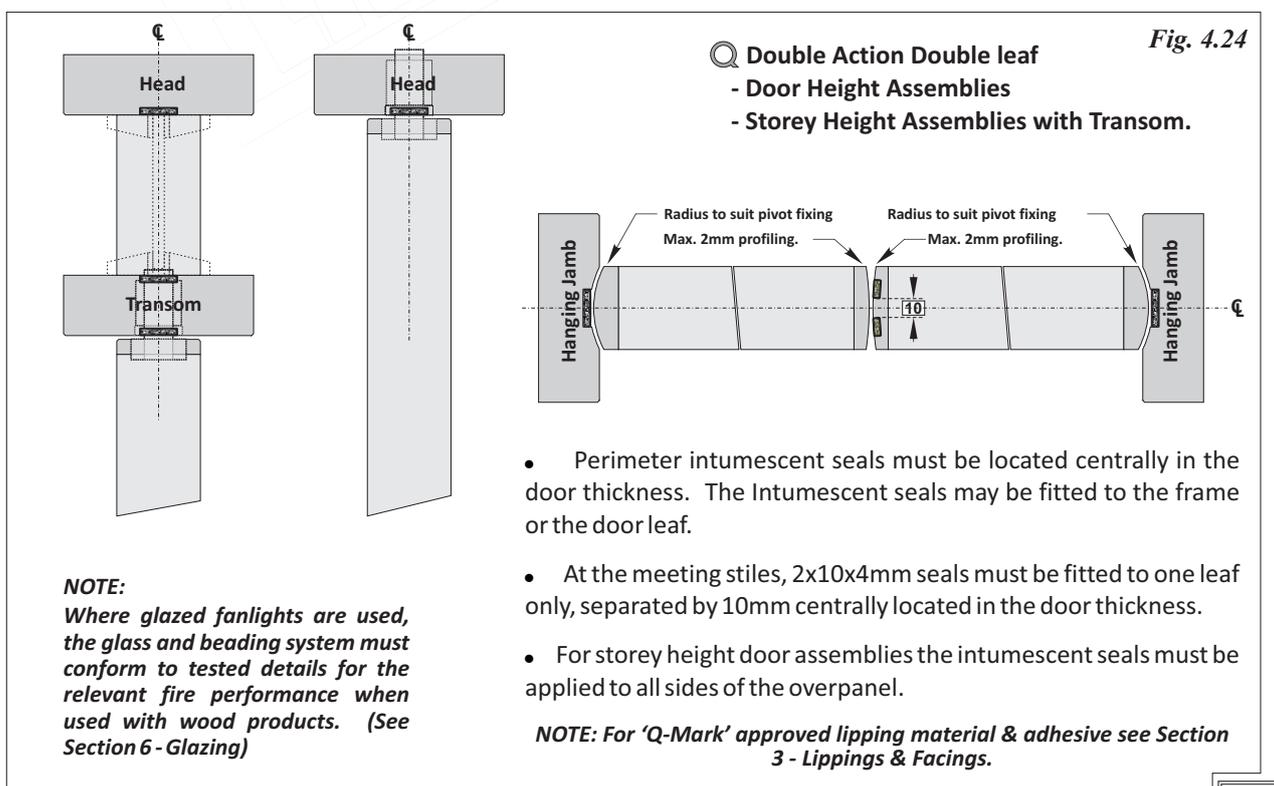
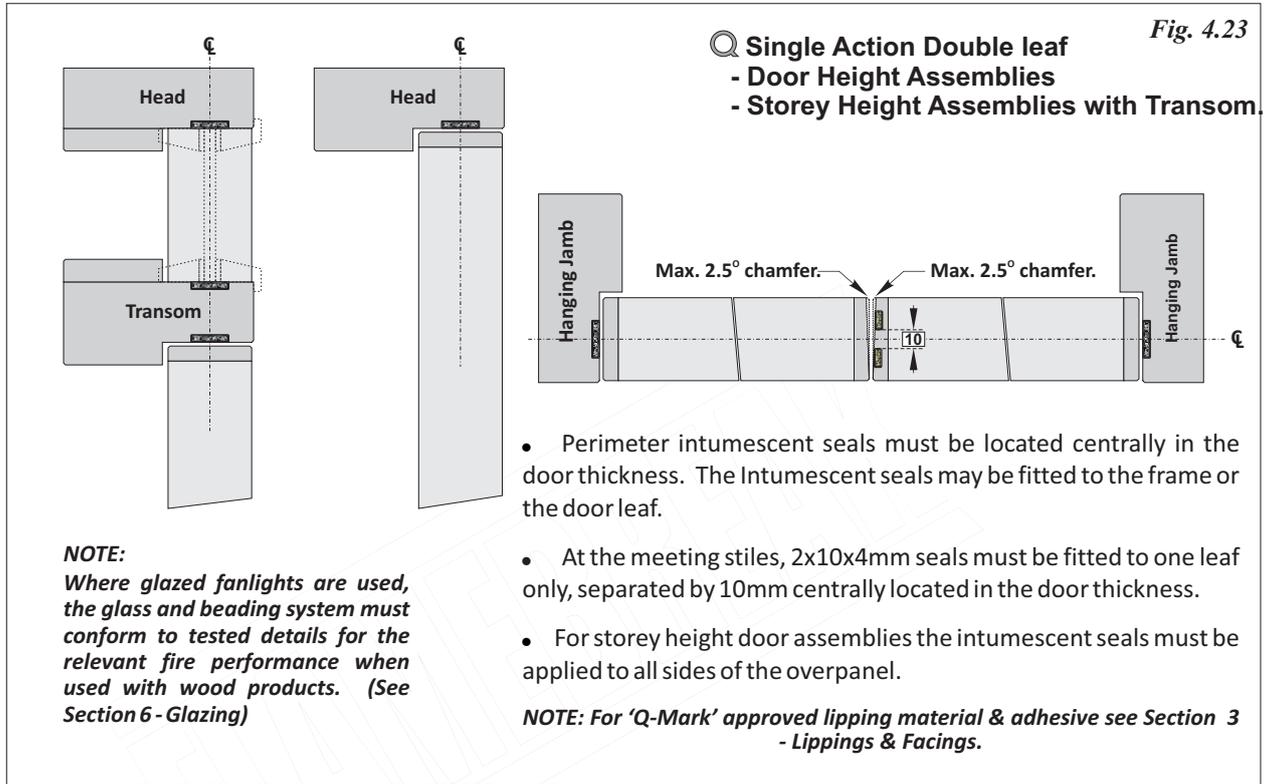
*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



### FLAMEBREAK 430 FLAMEBREAK 630 FLAMEBREAK FF630

# FD30

### 20x4mm Pyroplex Rigid Box



## 4.26 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

**20x4mm Palusol 100 OR Type 617**

**Q** Single Leaf FD30 applications using  
20x4mm Palusol 100 OR Type 617  
Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved  
minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



**Latched Single leaf Single Action Door Assemblies:**

Jambs & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

Door Leaf sizes: From: 2390 x 1100mm  
To: 2390 x 1100mm

*NOTE: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617  
to all sides of the overpanel.*

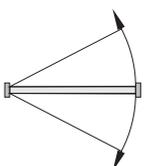


**Unlatched Single leaf Single Action Door Assemblies:**

Jambs & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

Door Leaf sizes: From: 2390 x 1100mm  
To: 2390 x 1100mm

*NOTE: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617  
to all sides of the overpanel.*



**Double Action Single leaf Door Assemblies:**

Jambs & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

Door Leaf sizes: From: 2390 x 1100mm  
To: 2390 x 1100mm

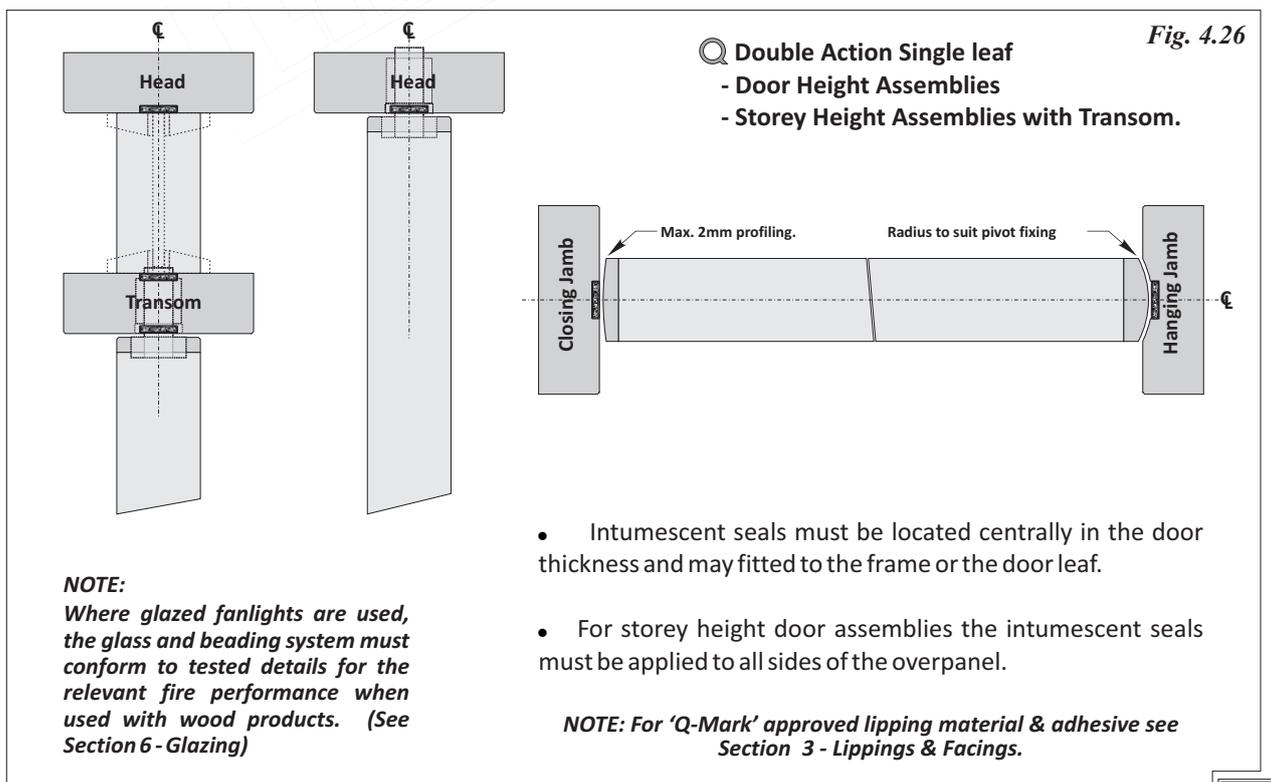
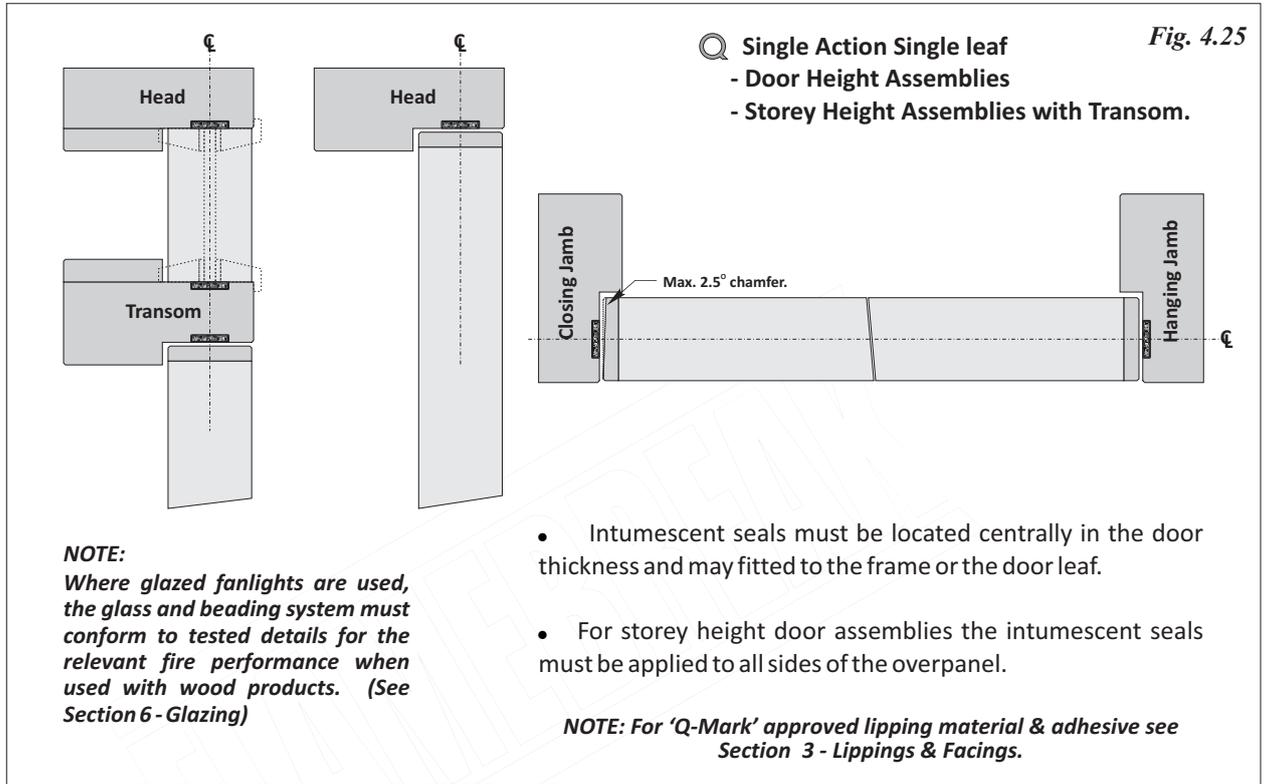
*NOTE: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617  
to all sides of the overpanel.*



FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

***20x4mm Palusol 100 OR Type 617***



## 4.28 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 430 **FD30**

#### 20x4mm Palusol 100 OR Type 617

Q Double Leaf FD30 applications using 20x4mm Palusol 100 OR Type 617 Intumescent seals.

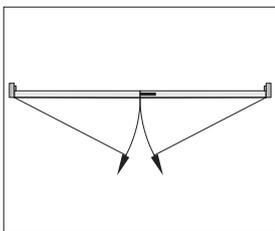
NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Double leaf Single Action Door Assemblies (Pairs):

Jamb & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

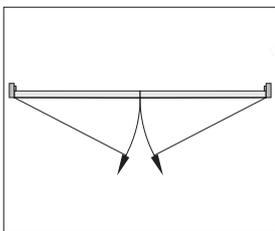
Meeting Stiles (Square) = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

(See below for rebated meeting stile option).

Door Leaf sizes: From: 2135 x 2x1047mm  
To: 2434 x 2x915mm

NOTE 1: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.

NOTE 2: Rebated Meeting stiles are 'Q-Mark' approved for this application.



#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

Jamb & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

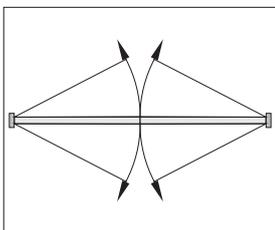
Meeting Stiles (Square) = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

(See below for rebated meeting stile option).

Door Leaf sizes: From: 2135 x 2x1022mm  
To: 2384 x 2x915mm

NOTE 1: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.

NOTE 2: Rebated Meeting stiles are 'Q-Mark' approved for this application.



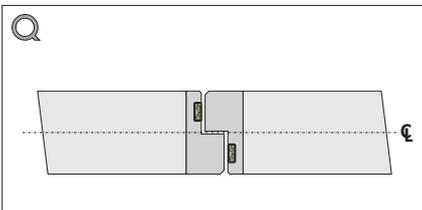
#### Double Action Double leaf Door Assemblies (Pairs):

Jamb & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

Meeting Stiles = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

Door Leaf sizes: From: 2135 x 2x1022mm  
To: 2384 x 2x915mm

NOTE 1: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.



#### Rebated Meeting Stiles:

Meeting Stiles (Rebated) = 1No.10x4mm PVC encased Palusol 100 OR Type 617 fitted centrally in the rebate of both door leaves.

FLAMEBREAK 430

# FD30

***20x4mm Palusol 100 OR Type 617***

**Q Single Action Double leaf** Fig. 4.27  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

**NOTE:**  
 Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Perimeter intumescent seals must be located centrally in the door thickness. The Intumescent seals may be fitted to the frame or the door leaf.
- For square meeting stiles a 20x4mm seals must be fitted to one leaf only centrally located in the door thickness. For rebated meeting stiles 1No.10x4mm seal must be fitted centrally in the rebate of both door leaves.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

**Q Double Action Double leaf** Fig. 4.28  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

**NOTE:**  
 Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Perimeter intumescent seals must be located centrally in the door thickness. The Intumescent seals may be fitted to the frame or the door leaf.
- For square meeting stiles a 20x4mm seals must be fitted to one leaf only centrally located in the door thickness.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.



## 4.30 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 630 FD30 FLAMEBREAK FF630

#### 20x4mm Palusol 100 OR Type 617

Q Double Leaf FD30 applications using 20x4mm Palusol 100 OR Type 617 Intumescent seals.

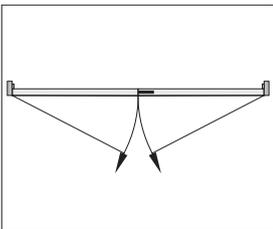
NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Double leaf Single Action Door Assemblies (Pairs):

Jamb & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

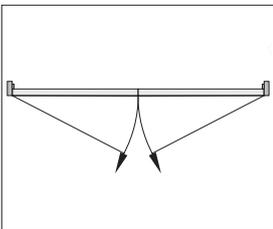
Meeting Stiles (Square) = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

(See below for rebated meeting stile option).

Door Leaf sizes: From: 2135 x 2x969mm  
To: 2252 x 2x915mm

NOTE 1: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.

NOTE 2: Rebated Meeting stiles are 'Q-Mark' approved for this application.



#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

Jamb & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

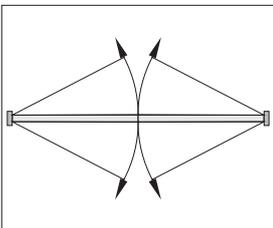
Meeting Stiles (Square) = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

(See below for rebated meeting stile option).

Door Leaf sizes: From: 2135 x 2x944mm  
To: 2202 x 2x915mm

NOTE 1: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.

NOTE 2: Rebated Meeting stiles are 'Q-Mark' approved for this application.



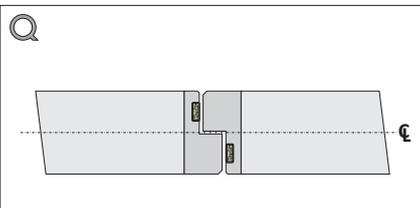
#### Double Action Double leaf Door Assemblies (Pairs):

Jamb & Head = 20x4mm PVC encased Palusol 100 OR Type 617.

Meeting Stiles = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

Door Leaf sizes: From: 2135 x 2x944mm  
To: 2202 x 2x915mm

NOTE 1: For storey height door assemblies use 20x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.

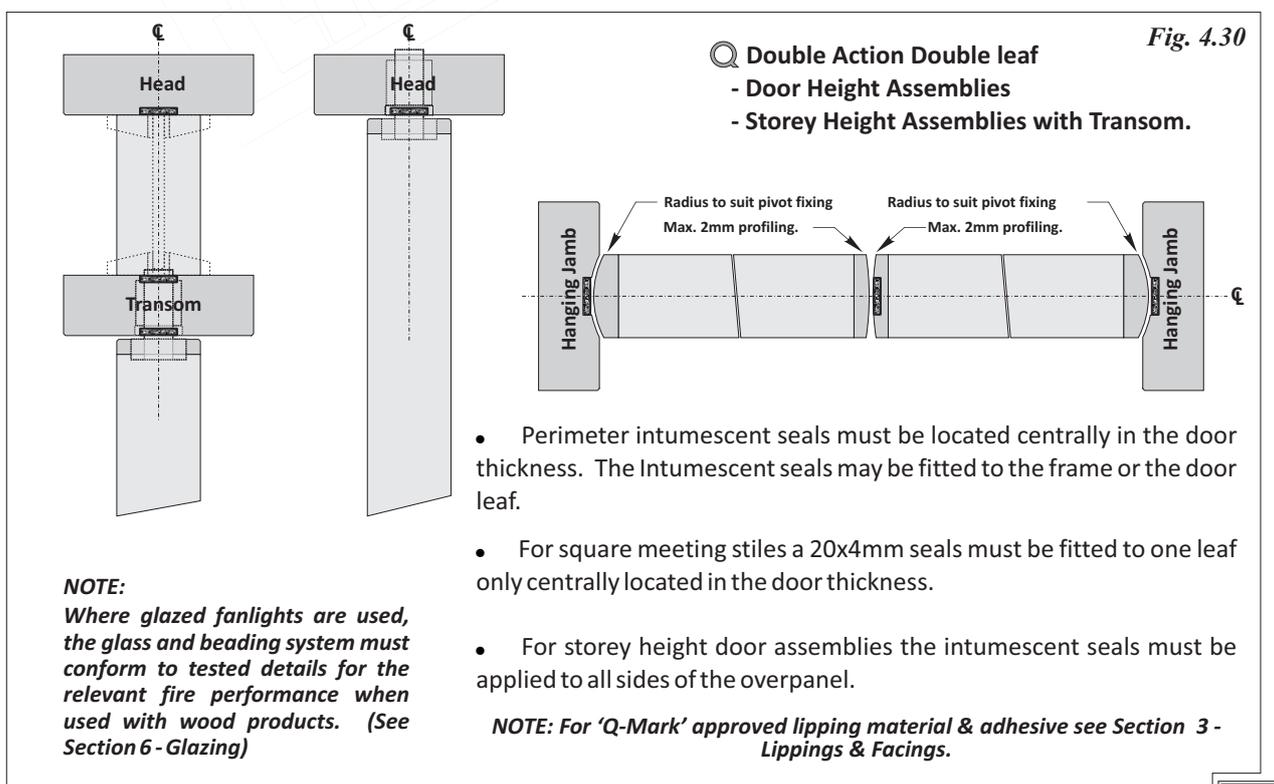
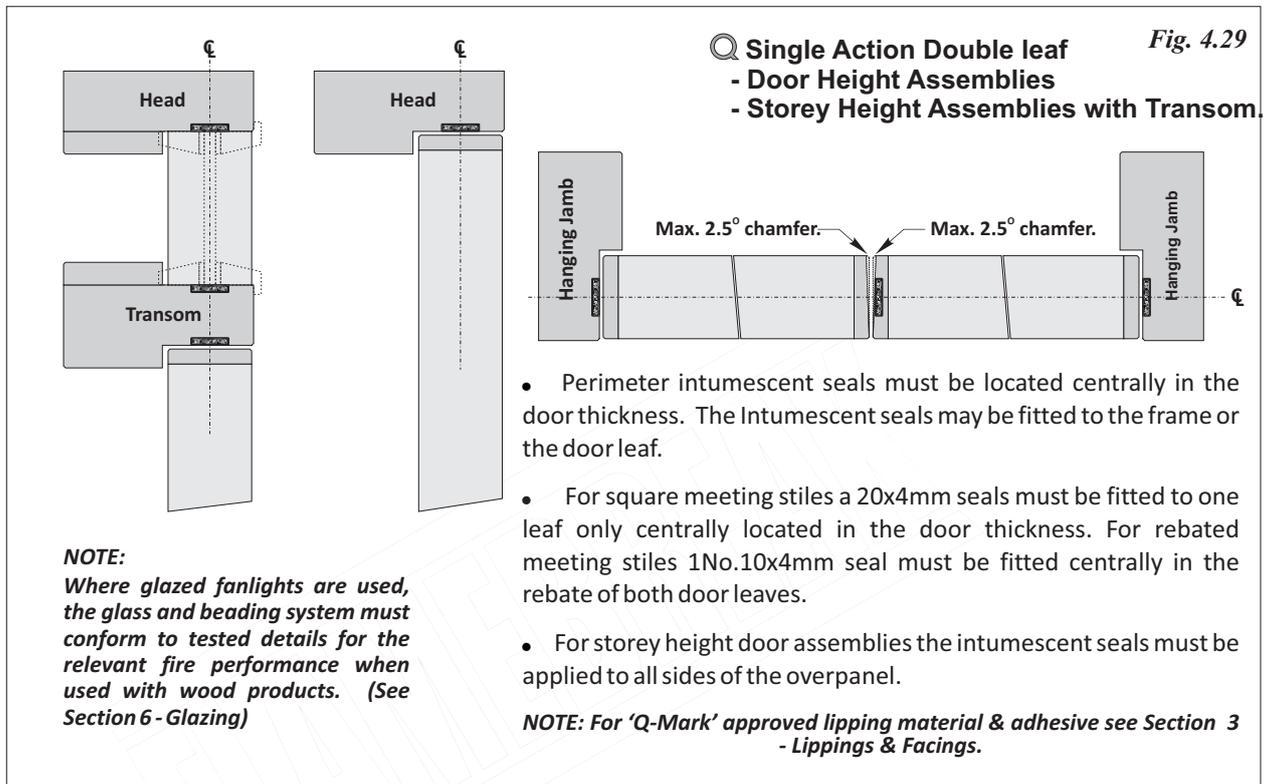


#### Rebated Meeting Stiles:

Meeting Stiles (Rebated) = 1No.10x4mm PVC encased Palusol 100 OR Type 617 fitted centrally in the rebate of both door leaves.

### FLAMEBREAK 630 FD30 FLAMEBREAK FF630

### 20x4mm Palusol 100 OR Type 617



## 4.32 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 430 **FD30**

#### 25x4mm Palusol 100 OR Type 617

**Q** Single Leaf FD30 applications using 25x4mm Palusol 100 OR Type 617 Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Single leaf Single Action Door Assemblies:

Jams & Head = 25x4mm PVC encased Palusol 100 OR Type 617.

Door Leaf sizes: From: 2390 x 1387mm  
To: 2870 x 1154mm

*NOTE: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*

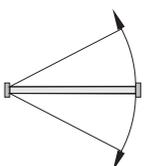


#### Unlatched Single leaf Single Action Door Assemblies:

Jams & Head = 25x4mm PVC encased Palusol 100 OR Type 617.

Door Leaf sizes: From: 2390 x 1362mm  
To: 2820 x 1154mm

*NOTE: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*



#### Double Action Single leaf Door Assemblies:

Jams & Head = 25x4mm PVC encased Palusol 100 OR Type 617.

Door Leaf sizes: From: 2390 x 1362mm  
To: 2820 x 1154mm

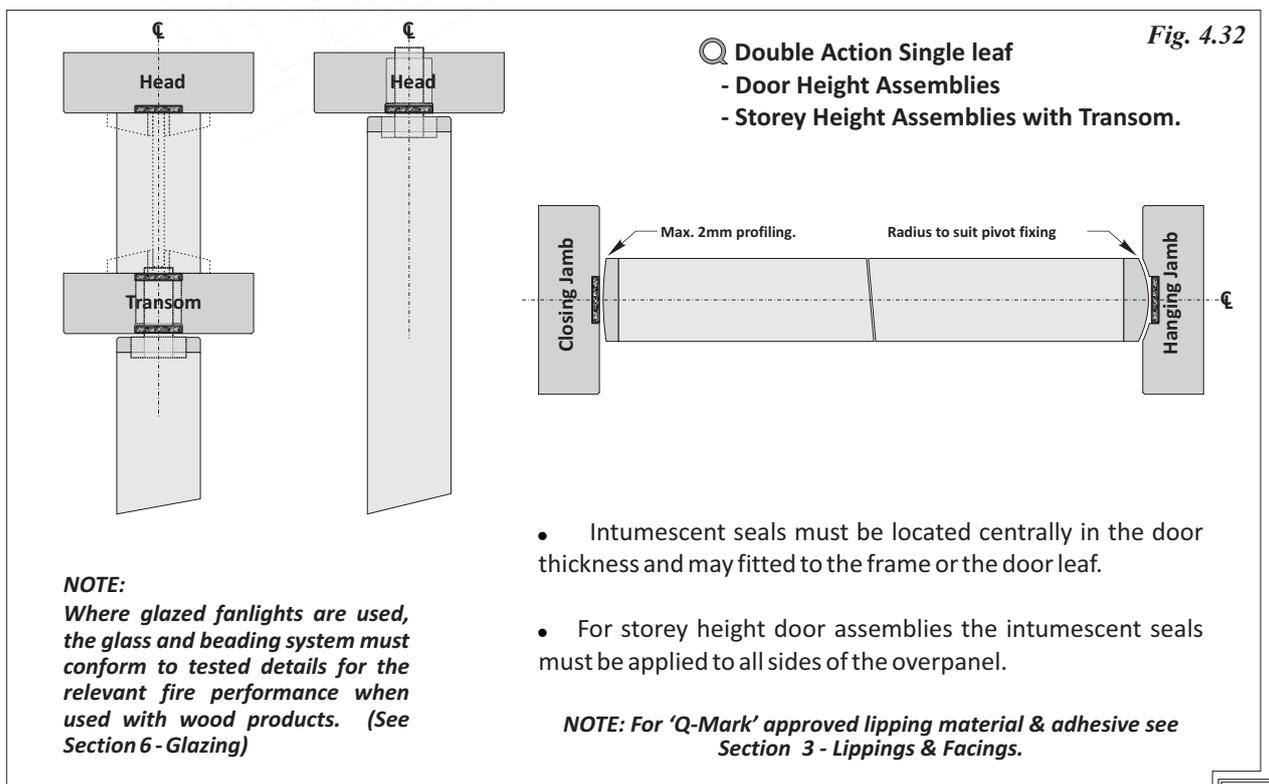
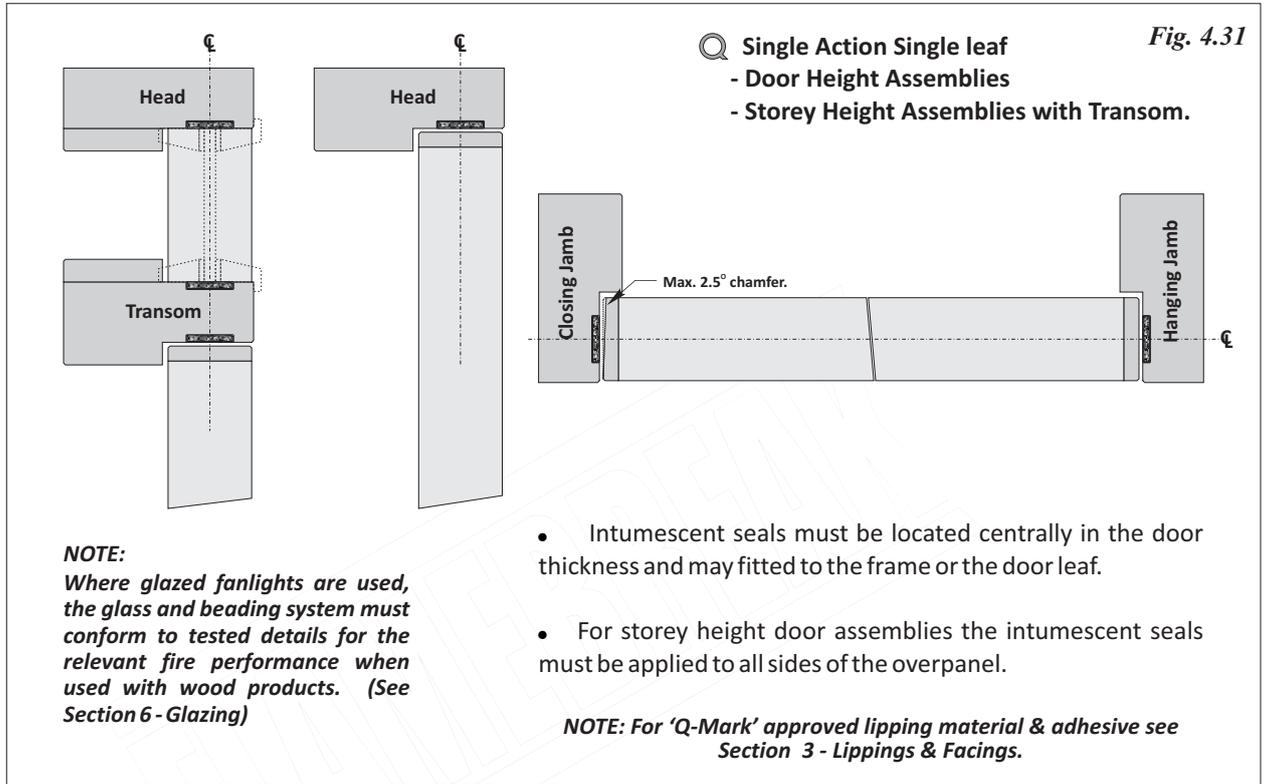
*NOTE: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*



FLAMEBREAK 430

# FD30

**25x4mm Palusol 100 OR Type 617**



## 4.34 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 430 **FD30**

#### 25x4mm Palusol 100 OR Type 617

**Q** Double Leaf FD30 applications using 25x4mm Palusol 100 OR Type 617 Intumescent seals.

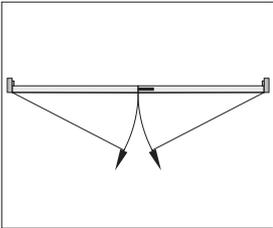
**NOTE:** See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



#### **Latched Double leaf Single Action Door Assemblies (Pairs):**

**Jamb & Head** = 25x4mm PVC encased Palusol 100 OR Type 617.

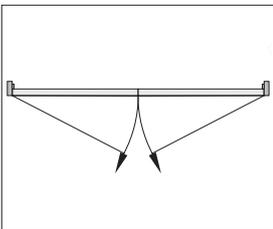
**Meeting Stiles (Square)** = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

(See below for rebated meeting stile option).

**Door Leaf sizes:** From: 2135 x 2x1047mm  
To: 2434 x 2x915mm

**NOTE 1:** For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.

**NOTE 2:** Rebated Meeting stiles are 'Q-Mark' approved for this application.



#### **Unlatched Double leaf Single Action Door Assemblies (Pairs):**

**Jamb & Head** = 25x4mm PVC encased Palusol 100 OR Type 617.

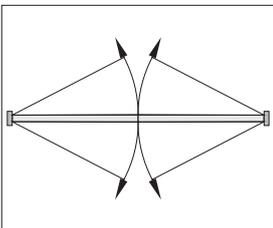
**Meeting Stiles (Square)** = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

(See below for rebated meeting stile option).

**Door Leaf sizes:** From: 2135 x 2x1022mm  
To: 2384 x 2x915mm

**NOTE 1:** For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.

**NOTE 2:** Rebated Meeting stiles are 'Q-Mark' approved for this application.



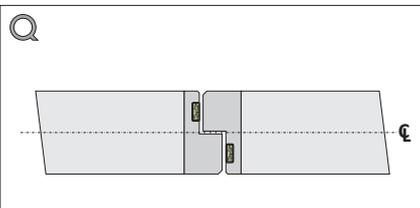
#### **Double Action Double leaf Door Assemblies (Pairs):**

**Jamb & Head** = 25x4mm PVC encased Palusol 100 OR Type 617.

**Meeting Stiles** = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

**Door Leaf sizes:** From: 2135 x 2x1022mm  
To: 2384 x 2x915mm

**NOTE 1:** For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.



#### **Rebated Meeting Stiles:**

**Meeting Stiles (Rebated)** = 1No.10x4mm PVC encased Palusol 100 OR Type 617 fitted centrally in the rebate of both door leaves.

FLAMEBREAK 430

# FD30

**25x4mm Palusol 100 OR Type 617**

**Q Single Action Double leaf** Fig. 4.33  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

- Perimeter intumescent seals must be located centrally in the door thickness. The Intumescent seals may be fitted to the frame or the door leaf.
- For square meeting stiles a 20x4mm seals must be fitted to one leaf only centrally located in the door thickness. For rebated meeting stiles 1No.10x4mm seal must be fitted centrally in the rebate of both door leaves.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

**NOTE:** Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

**Q Double Action Double leaf** Fig. 4.34  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

- Perimeter intumescent seals must be located centrally in the door thickness. The Intumescent seals may be fitted to the frame or the door leaf.
- For square meeting stiles a 20x4mm seals must be fitted to one leaf only centrally located in the door thickness.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

**NOTE:** Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)



## 4.36 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 630 FLAMEBREAK FF630 **FD30**

#### 25x4mm Palusol 100 OR Type 617

Q Single Leaf FD30 applications using 25x4mm Palusol 100 OR Type 617 Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Single leaf Single Action Door Assemblies:

Jams & Head = 25x4mm PVC encased Palusol 100 OR Type 617.

Door Leaf sizes: From: 2440 x 1220mm  
To: 2440 x 1220mm

*NOTE: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*

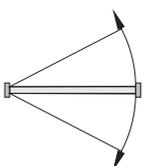


#### Unlatched Single leaf Single Action Door Assemblies:

Jams & Head = 25x4mm PVC encased Palusol 100 OR Type 617.

Door Leaf sizes: From: 2440 x 1220mm  
To: 2440 x 1220mm

*NOTE: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*



#### Double Action Single leaf Door Assemblies:

Jams & Head = 25x4mm PVC encased Palusol 100 OR Type 617.

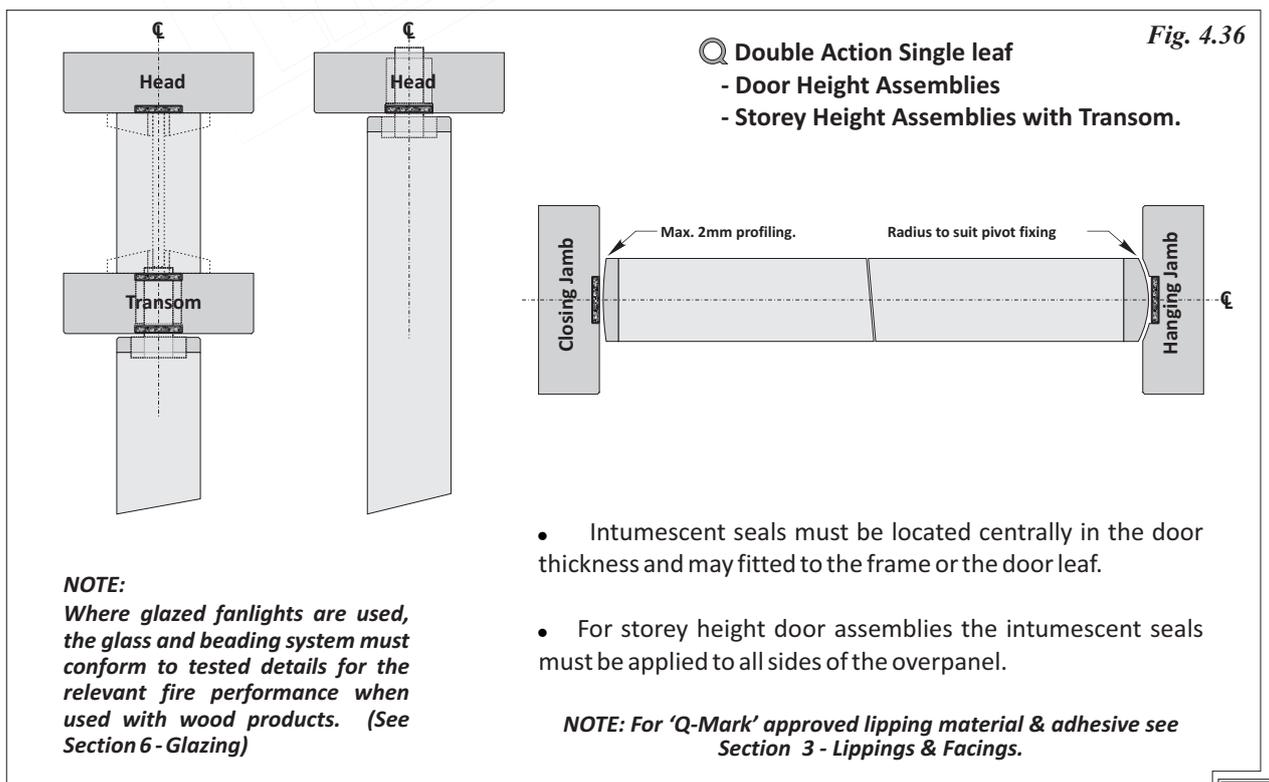
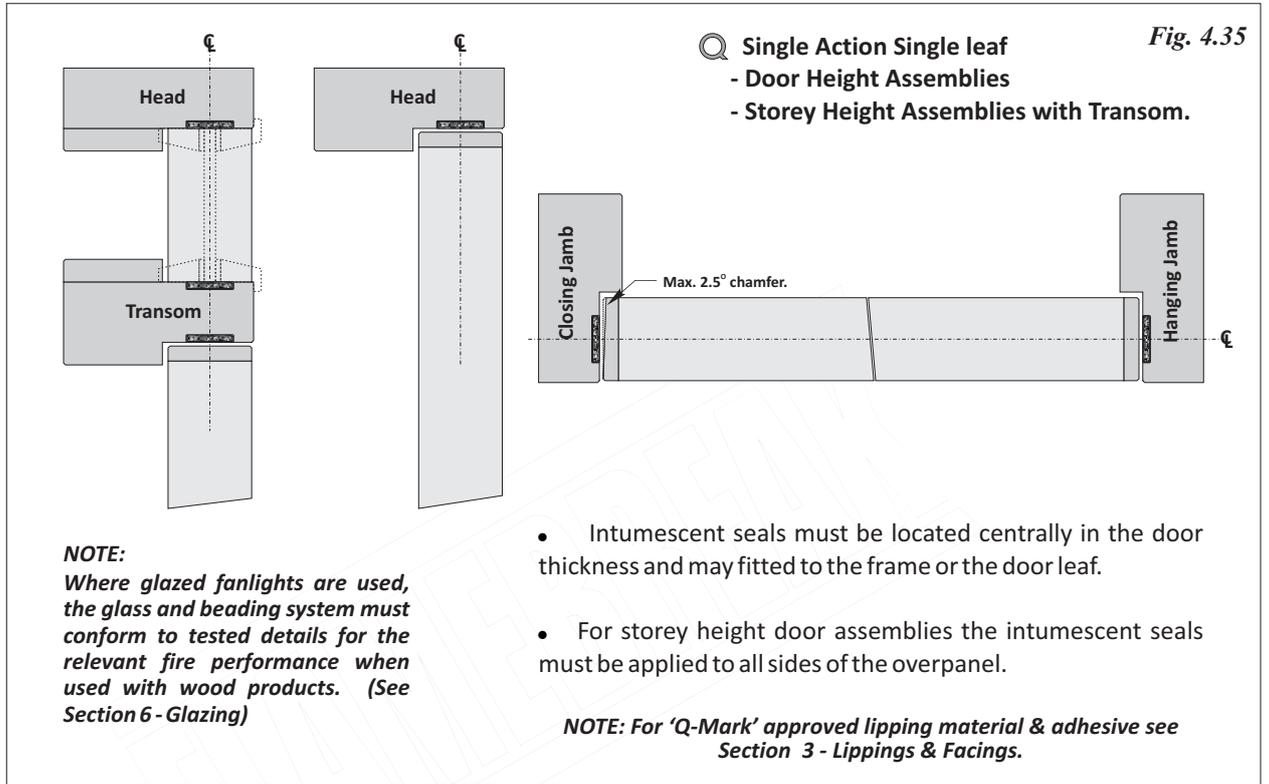
Door Leaf sizes: From: 2440 x 1220mm  
To: 2440 x 1220mm

*NOTE: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*



### FLAMEBREAK 630 FD30 FLAMEBREAK FF630

### 25x4mm Palusol 100 OR Type 617



## 4.38 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 630 FD30 FLAMEBREAK FF630

#### 25x4mm Palusol 100 OR Type 617

**Q** Double Leaf FD30 applications using 25x4mm Palusol 100 OR Type 617 Intumescent seals.

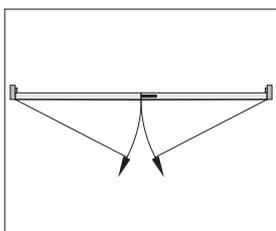
*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Double leaf Single Action Door Assemblies (Pairs):

**Jamb & Head** = 25x4mm PVC encased Palusol 100 OR Type 617.

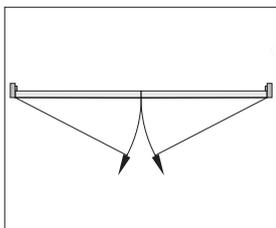
**Meeting Stiles (Square)** = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

*(See below for rebated meeting stile option).*

**Door Leaf sizes:** From: 2135 x 2x969mm  
To: 2252 x 2x915mm

*NOTE 1: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are 'Q-Mark' approved for this application.*



#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

**Jamb & Head** = 25x4mm PVC encased Palusol 100 OR Type 617.

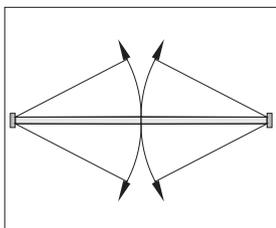
**Meeting Stiles (Square)** = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

*(See below for rebated meeting stile option).*

**Door Leaf sizes:** From: 2135 x 2x944mm  
To: 2202 x 2x915mm

*NOTE 1: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are 'Q-Mark' approved for this application.*



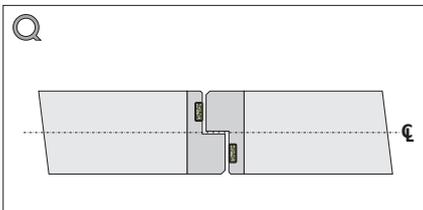
#### Double Action Double leaf Door Assemblies (Pairs):

**Jamb & Head** = 25x4mm PVC encased Palusol 100 OR Type 617.

**Meeting Stiles** = 20x4mm PVC encased Palusol 100 OR Type 617 centre thickness in one leaf only.

**Door Leaf sizes:** From: 2135 x 2x944mm  
To: 2202 x 2x915mm

*NOTE 1: For storey height door assemblies use 25x4mm PVC encased Palusol 100 OR Type 617 to all sides of the overpanel.*



#### Rebated Meeting Stiles:

**Meeting Stiles (Rebated)** = 1No.10x4mm PVC encased Palusol 100 OR Type 617 fitted centrally in the rebate of both door leaves.

### FLAMEBREAK 630 FD30 FLAMEBREAK FF630

### 25x4mm Palusol 100 OR Type 617

**Q Single Action Double leaf** Fig. 4.37  
**- Door Height Assemblies**  
**- Storey Height Assemblies with Transom.**

**NOTE:**  
 Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Perimeter intumescent seals must be located centrally in the door thickness. The Intumescent seals may be fitted to the frame or the door leaf.
- For square meeting stiles a 20x4mm seals must be fitted to one leaf only centrally located in the door thickness. For rebated meeting stiles 1No.10x4mm seal must be fitted centrally in the rebate of both door leaves.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

**Q Double Action Double leaf** Fig. 4.38  
**- Door Height Assemblies**  
**- Storey Height Assemblies with Transom.**

**NOTE:**  
 Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Perimeter intumescent seals must be located centrally in the door thickness. The Intumescent seals may be fitted to the frame or the door leaf.
- For square meeting stiles a 20x4mm seals must be fitted to one leaf only centrally located in the door thickness.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**



## 4.40 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 430 **FD30**

*NOTE: Using FLAMEBREAK™ 430 core only without core internal perimeter framing.*

#### **25x4mm Type 617**

**Q** Single Leaf FD30 applications using 25x4mm Type 617 Intumescent seals.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### **Latched Single leaf Single Action Door Assemblies:**

**Jamb & Head = 25x4mm PVC encased Type 617.**

**Door Leaf sizes:** From: 2761 x 1514mm  
To: 3382 x 1236mm

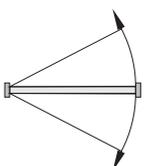
*NOTE: For storey height door assemblies use 25x4mm PVC encased Type 617 to all sides of the overpanel.*



#### **Unlatched Single leaf Single Action Door Assemblies:**

**Jamb & Head = 25x4mm PVC encased Type 617.**

**Door Leaf sizes:** From: *NOT APPROVED*  
To: *NOT APPROVED*



#### **Double Action Single leaf Door Assemblies:**

**Jamb & Head = 25x4mm PVC encased Type 617.**

**Door Leaf sizes:** From: *NOT APPROVED*  
To: *NOT APPROVED*



## FLAMEBREAK 430 **FD30**

**25x4mm Type 617**

*NOTE: Using FLAMEBREAK™ 430 core only without core internal perimeter framing.*

**Q Latched only Single Action Single leaf *Fig. 4.39***

- Door Height Assemblies
- Storey Height Assemblies with Transom.

**NOTE:**  
*Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)*

- Intumescent seals must be located centrally in the door thickness and may fitted to the frame or the door leaf.
- For storey height door assemblies the intumescent seals must be applied to all sides of the overpanel.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

Double Action Single leaf  
 - Door Height Assemblies  
 - Storey Height Assemblies with Transom.

# NOT APPROVED



## 4.42 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

### 15x4mm Type 617 with Acrovyn Door Edge protectors

Q Single Leaf FD30 applications using  
15x4mm Type 617 Intumescent seals with CS  
Acrovyn Wrap Door Edge Protectors.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved  
minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



#### Latched Single leaf Single Action Door Assemblies:

**Door Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Head** = 15x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1225mm  
To: 2850 x 900mm

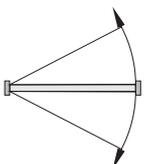


#### Unlatched Single leaf Single Action Door Assemblies:

**Door Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Head** = 15x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1200mm  
To: 2800 x 900mm



#### Double Action Single leaf Door Assemblies:

**Door Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Head** = 15x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1200mm  
To: 2800 x 900mm

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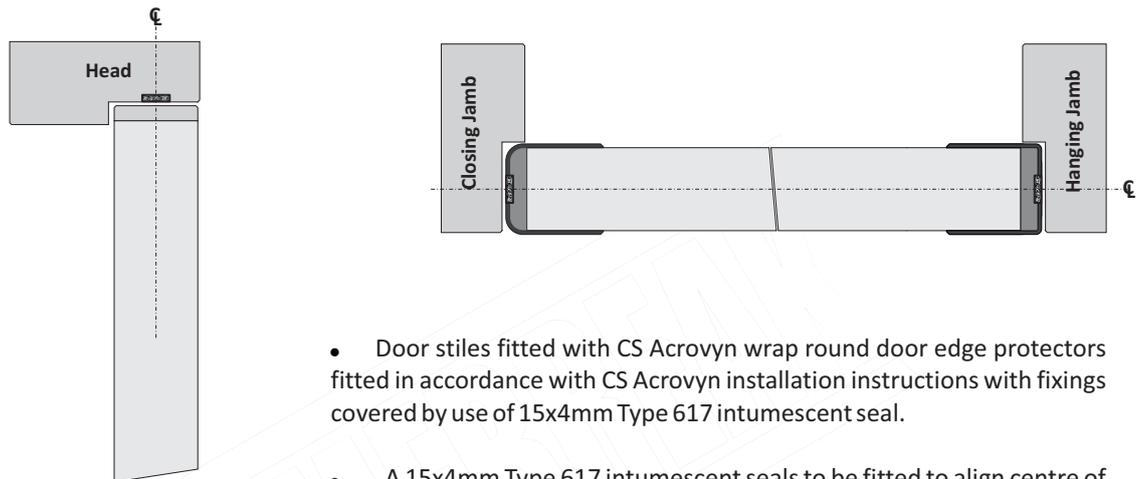
FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

## FD30

**15x4mm Type 617 with  
Acrovyn Door Edge protectors**

Q Single Action Single leaf  
- Door Height Assemblies

Fig. 4.40

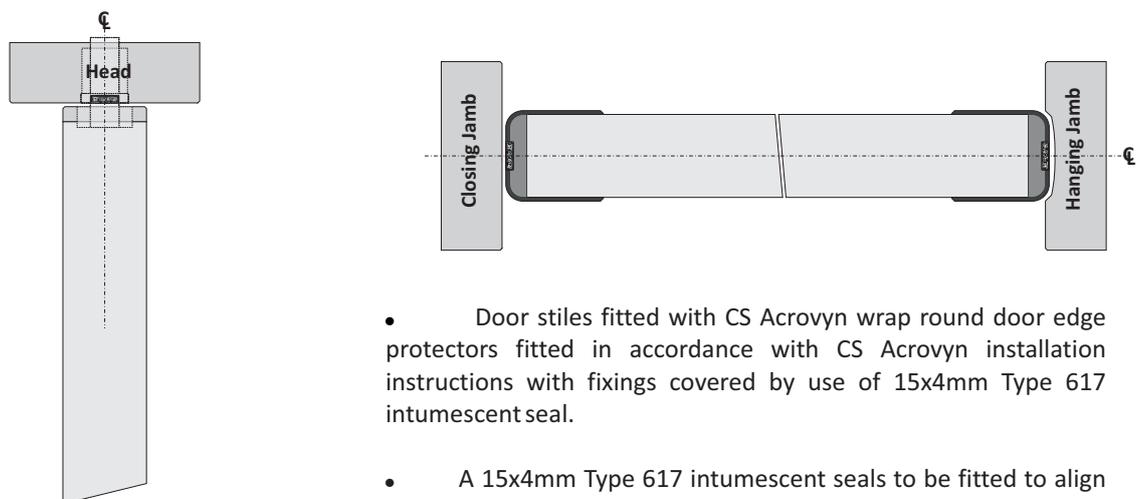


- Door stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal.
- A 15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

Q Double Action Single leaf  
- Door Height Assemblies

Fig. 4.41



- Door stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal.
- A 15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.



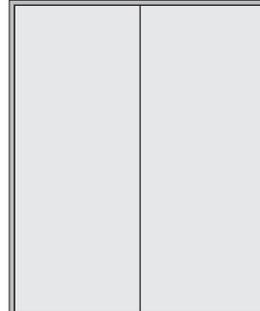
## 4.44 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

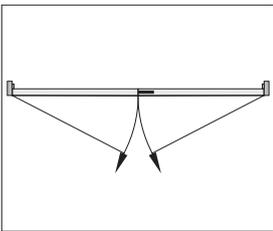
### 15x4mm Type 617 with Acrovyn Door Edge protectors



Double leaf  
Door Height  
Doorsets

Q Double Leaf FD30 applications using 15x4mm Type 617 Intumescent seals with CS Acrovyn Wrap Door Edge Protectors.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



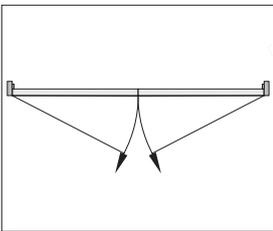
#### Latched Double leaf Single Action Door Assemblies (Pairs):

**Door Hanging Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Meeting Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seals in both leaves.

**Head** = 15x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1200mm  
To: 2800 x 900mm



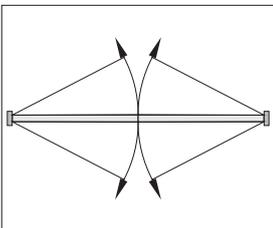
#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

**Door Hanging Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Meeting Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seals in both leaves.

**Head** = 15x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 2x1175mm  
To: 2750 x 2x900mm



#### Double Action Double leaf Door Assemblies (Pairs):

**Door Hanging Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Meeting Stiles** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seals in both leaves.

**Head** = 15x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 2x1175mm  
To: 2750 x 2x900mm



#### Rebated Meeting Stiles:

*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



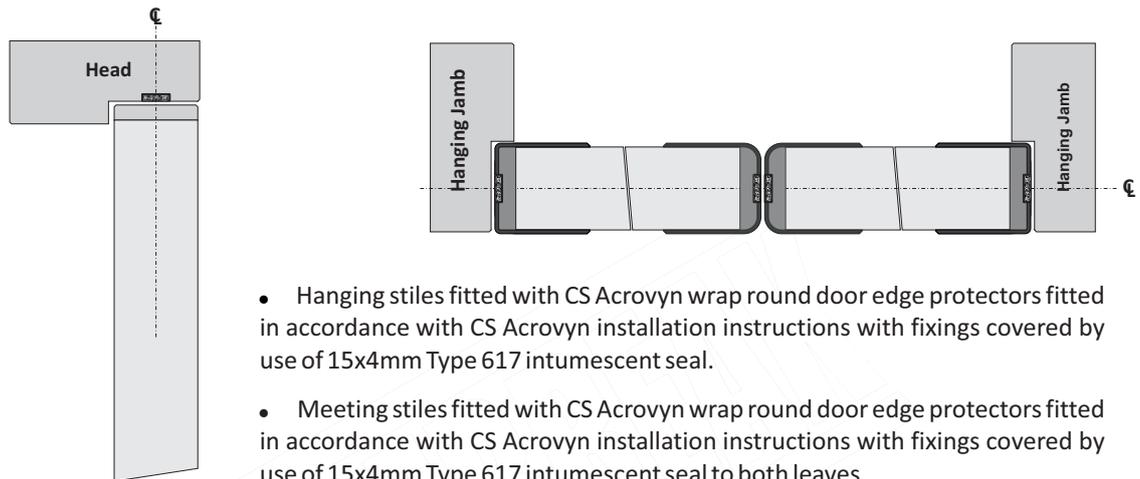
FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

**15x4mm Type 617 with  
Acrovyn Door Edge protectors**

Q Single Action Double Leaf  
- Door Height Assemblies

Fig. 4.42

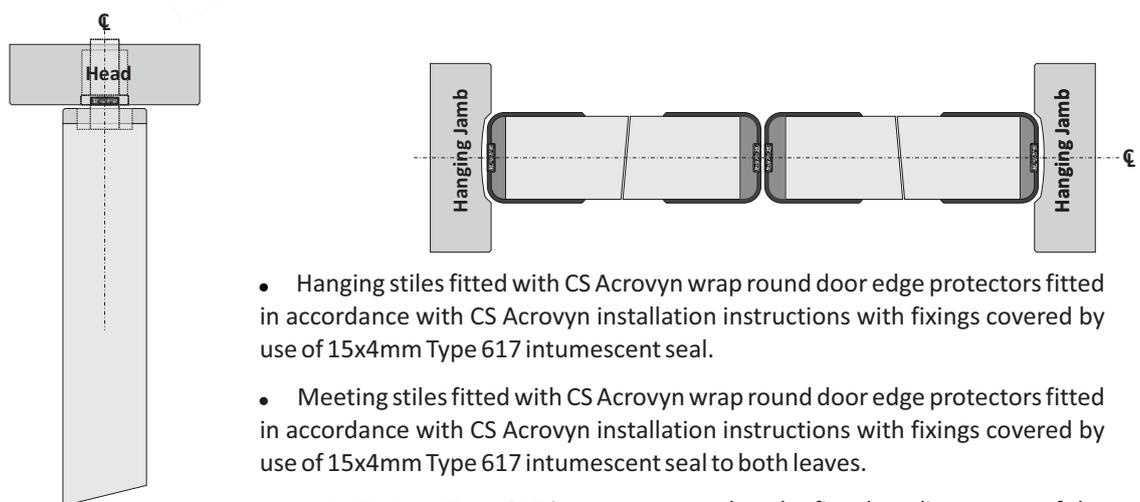


- Hanging stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal.
- Meeting stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal to both leaves.
- A 15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3  
- Lippings & Facings.**

Q Double Action Double leaf  
- Door Height Assemblies

Fig. 4.43



- Hanging stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal.
- Meeting stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal to both leaves.
- A 15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3  
- Lippings & Facings.**



## 4.46 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

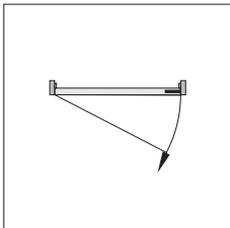
### 15x4+20x4mm Type 617 with Yeoman Shield Door Edge protectors

**Q** Single Leaf FD30 applications using  
15x4mm Type 617 Intumescent seals with  
Yeoman Shield Wrap Door Edge Protectors.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved  
minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets

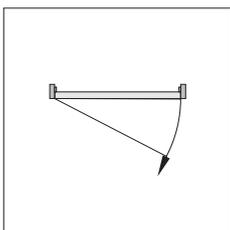


#### Latched Single leaf Single Action Door Assemblies:

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Head** = 20x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2400 x 1026mm  
To: 2600 x 926mm

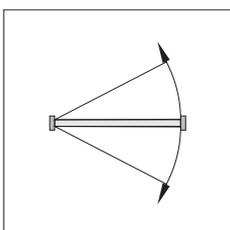


#### Unlatched Single leaf Single Action Door Assemblies:

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Head** = 20x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2400 x 1026mm  
To: 2600 x 926mm



#### Double Action Single leaf Door Assemblies:

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Head** = 20x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2400 x 1026mm  
To: 2600 x 926mm

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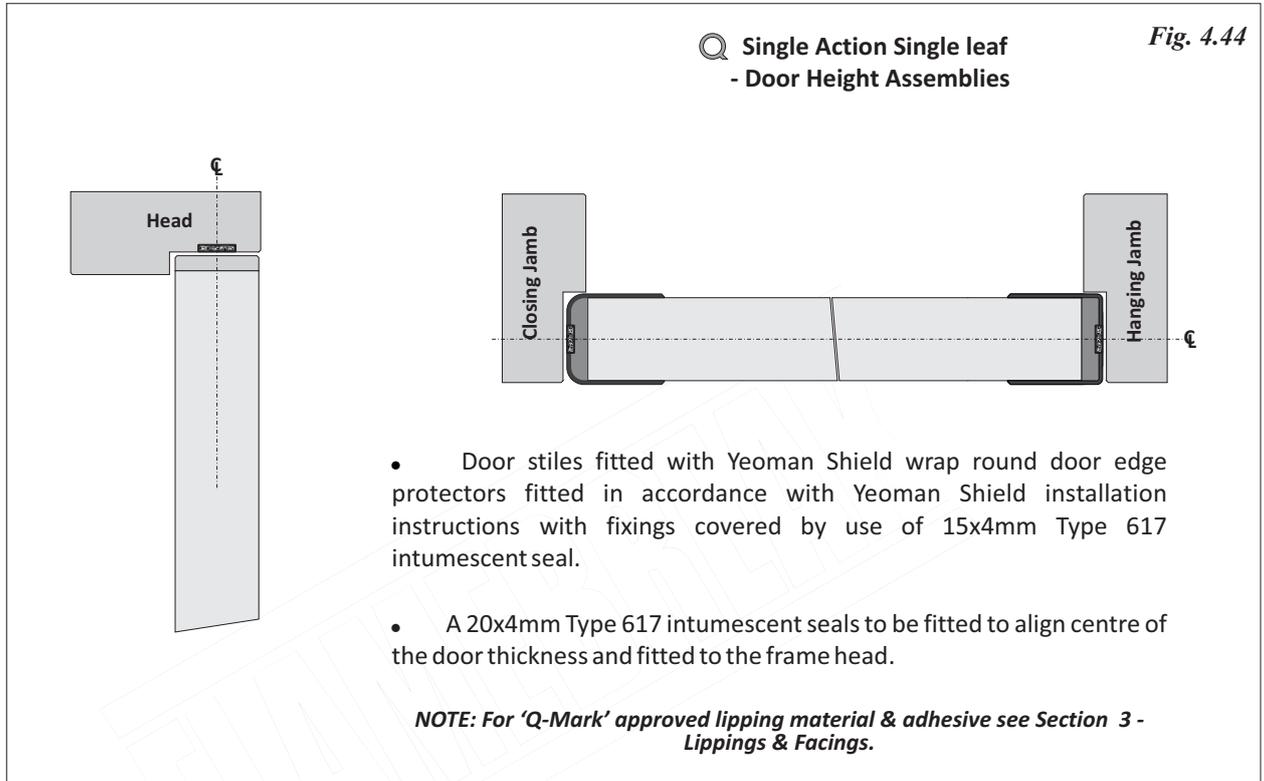
FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

**15x4+20x4mm Type 617 with  
Yeoman Shield Door Edge protectors**

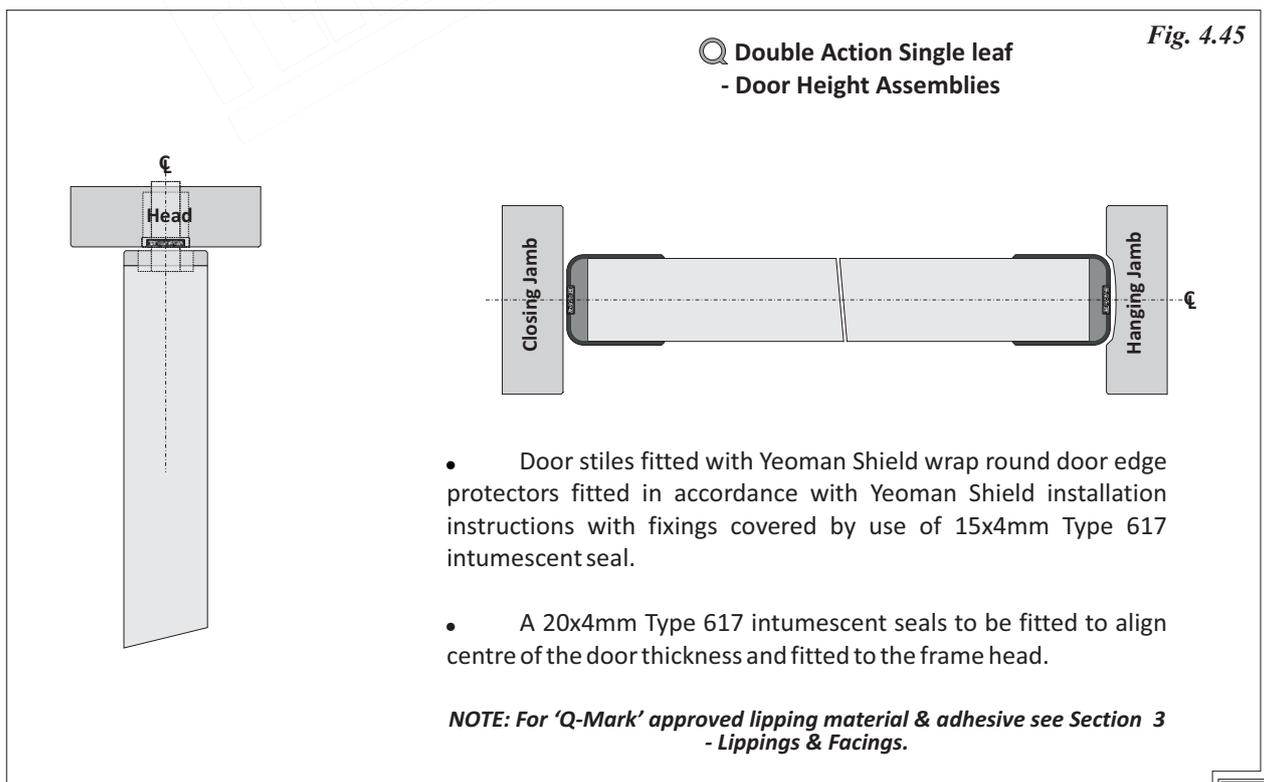
Q Single Action Single leaf  
- Door Height Assemblies

Fig. 4.44



Q Double Action Single leaf  
- Door Height Assemblies

Fig. 4.45



## 4.48 Intumescent Seals

# FLAMEBREAK

FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

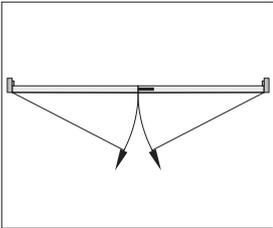
### 15x4+20x4mm Type 617 with Yeoman Shield Door Edge protectors

Q Double Leaf FD30 applications using  
15x4mm Type 617 Intumescent seals with  
Yeoman Shield Wrap Door Edge Protectors.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved  
minimum frame section dimensions for fire door applications.*



Double leaf  
Door Height  
Doorsets



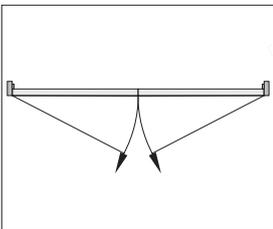
#### Latched Double leaf Single Action Door Assemblies (Pairs):

**Door Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Meeting Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seals in both leaves.

**Head** = 20x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2400 x 1026mm  
To: 2600 x 826mm



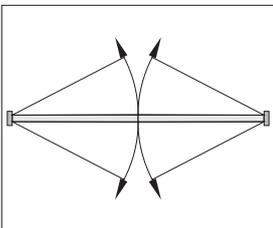
#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

**Door Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Meeting Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seals in both leaves.

**Head** = 20x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2400 x 1026mm  
To: 2600 x 826mm



#### Double Action Double leaf Door Assemblies (Pairs):

**Door Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal.

**Meeting Stiles** = Yeoman Shield Door Edge Wrapped with 15x4mm Type 617 Intumescent Seals in both leaves.

**Head** = 20x4mm Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2400 x 1026mm  
To: 2600 x 826mm



#### Rebated Meeting Stiles:

*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



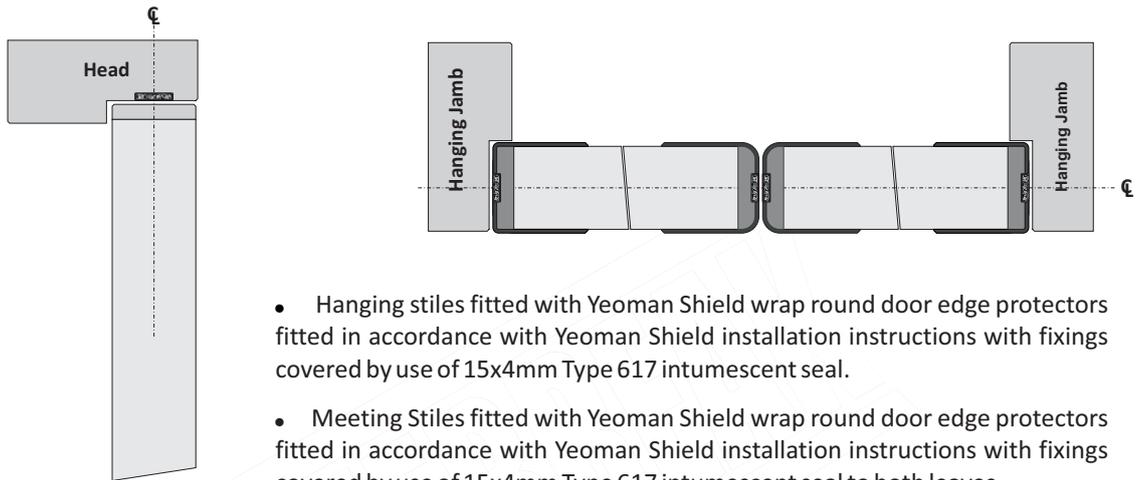
FLAMEBREAK 430  
FLAMEBREAK 630  
FLAMEBREAK FF630

# FD30

**15x4+20x4mm Type 617 with  
Yeoman Shield Door Edge protectors**

Q Single Action Double Leaf  
- Door Height Assemblies

Fig. 4.46

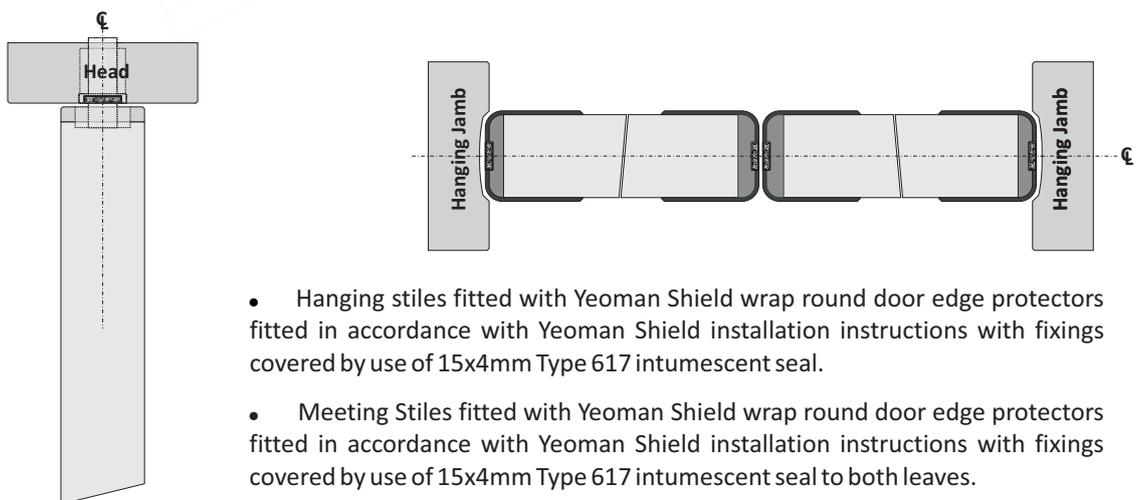


- Hanging stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal.
- Meeting Stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal to both leaves.
- A 20x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3  
- Lippings & Facings.**

Q Double Action Double leaf  
- Door Height Assemblies

Fig. 4.47



- Hanging stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal.
- Meeting Stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 15x4mm Type 617 intumescent seal to both leaves.
- A 20x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3  
- Lippings & Facings.**



## 4.50 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 660 **FD60**

#### 2x15x4mm Pyroplex Rigid Box

5mm separation

**Q** Single Leaf FD60 applications using 2x15x4mm Pyroplex Rigid Box Intumescent seals with 5mm separation.

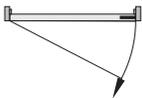
**NOTE:** See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Single leaf Single Action Door Assemblies:

**Jambs & Head** = 2x15x4mm PVC encased Pyroplex Rigid Box with 5mm separation.

**Door Leaf sizes:** From: 2156 x 1019mm  
To: 2323 x 936mm

**NOTE:** For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.

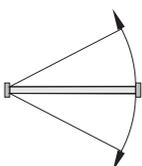


#### Unlatched Single leaf Single Action Door Assemblies:

**Jambs & Head** = 2x15x4mm PVC encased Pyroplex Rigid Box with 5mm separation.

**Door Leaf sizes:** From: 2156 x 994mm  
To: 2273 x 936mm

**NOTE:** For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.



#### Double Action Single leaf Door Assemblies:

**Jambs & Head** = 2x15x4mm PVC encased Pyroplex Rigid Box with 5mm separation.

**Door Leaf sizes:** From: 2156 x 994mm  
To: 2273 x 936mm

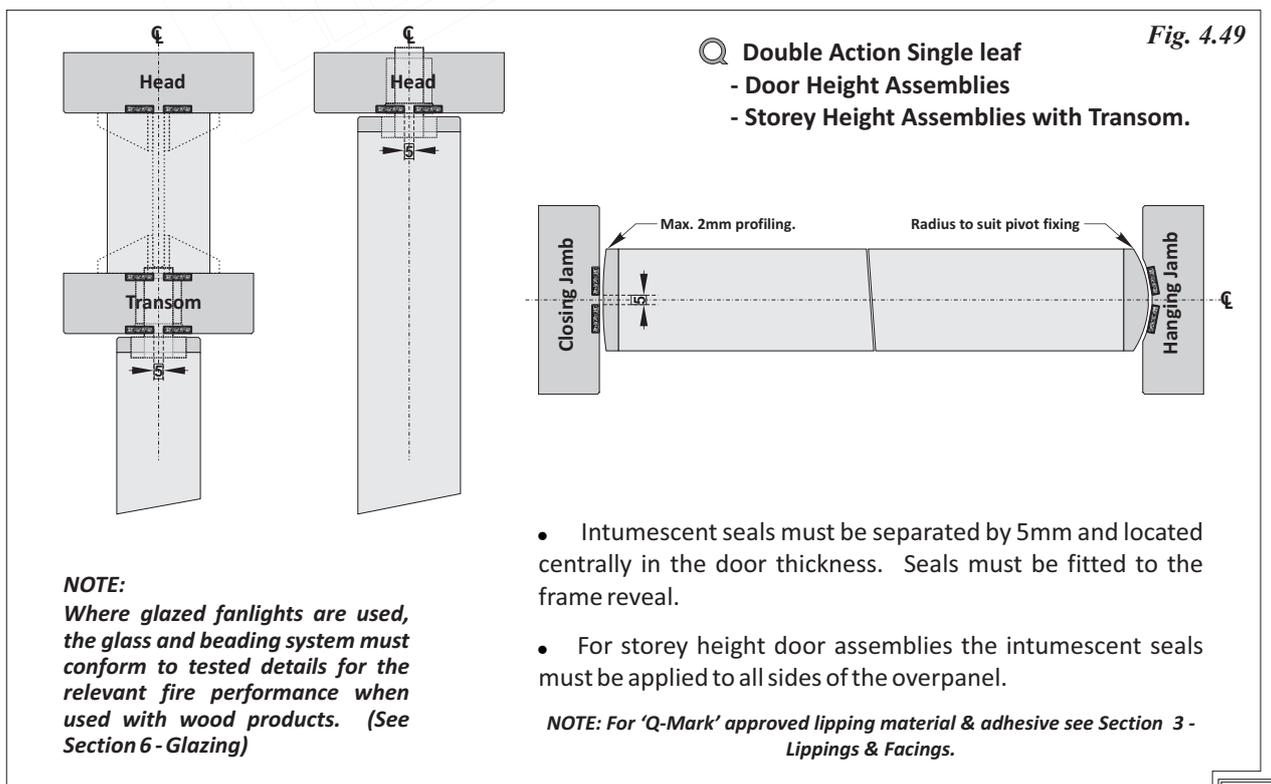
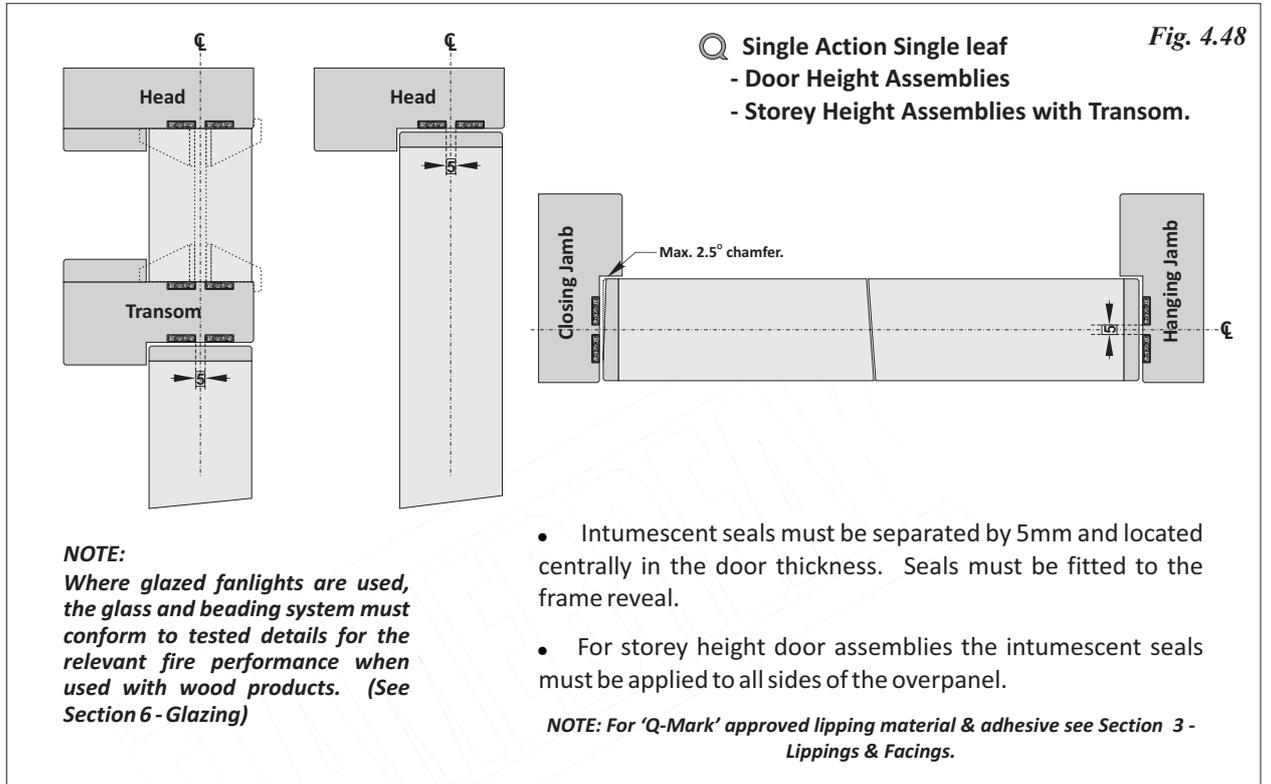
**NOTE:** For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.



### FLAMEBREAK 660

# FD60

### 2x15x4mm Pyroplex Rigid Box 5mm separation



## 4.52 Intumescent Seals

# FLAMEBREAK

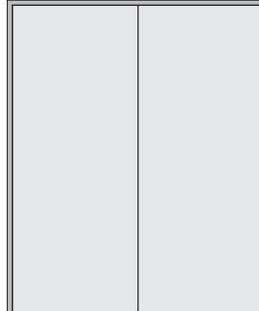
### FLAMEBREAK 660 FD60

#### 2x15x4mm Pyroplex Rigid Box

5mm separation

**Q** Double Leaf FD30 applications using 2x15x4mm Pyroplex Rigid Box Intumescent seals with 5mm separation.

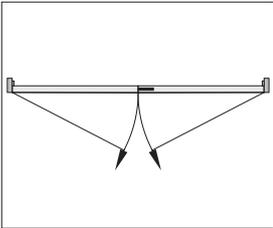
*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Double leaf Single Action Door Assemblies (Pairs):

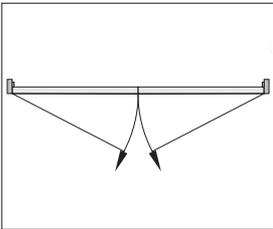
**Jamb & Head** = 2x15x4mm PVC encased Pyroplex Rigid Box with 5mm separation.

**Meeting Stiles (Square)** = 2x15x4mm PVC encased Pyroplex Rigid Box centre thickness in one leaf only with 5mm separation.

**Door Leaf sizes:** From: 2156 x 2x969mm  
To: 2223 x 2x936mm

*NOTE 1: For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Unlatched Double leaf Single Action Door Assemblies (Pairs):

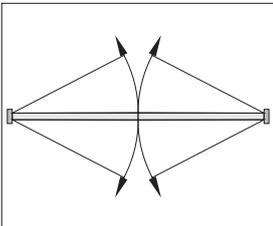
**Jamb & Head** = 2x15x4mm PVC encased Pyroplex Rigid Box with 5mm separation.

**Meeting Stiles (Square)** = 2x15x4mm PVC encased Pyroplex Rigid Box centre thickness in one leaf only with 5mm separation.

**Door Leaf sizes:** From: 2156 x 2x944mm  
To: 2173 x 2x936mm

*NOTE 1: For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

*NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### Double Action Double leaf Door Assemblies (Pairs):

**Jamb & Head** = 2x15x4mm PVC encased Pyroplex Rigid Box with 5mm separation.

**Meeting Stiles** = 2x15x4mm PVC encased Pyroplex Rigid Box centre thickness in one leaf only with 5mm separation.

**Door Leaf sizes:** From: 2156 x 2x944mm  
To: 2173 x 2x936mm

*NOTE 1: For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Rebated Meeting Stiles:

*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



### FLAMEBREAK 660

# FD60

### 2x15x4mm Pyroplex Rigid Box 5mm separation

**Q Single Action Double leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

**Fig. 4.50**

Max. 2.5° chamfer. Max. 2.5° chamfer.

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Intumescent seals must be separated by 5mm and located centrally in the door thickness. Seals must be fitted to the frame reveal.
- At the meeting stiles, 2x15x4mm Pyroplex Rigid Box seals must be fitted to one leaf only, separated by 5mm centrally located in the door thickness.
- For storey height doorsets 2No. 15x4mm Pyroplex Rigid Box intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

**Q Double Action Double leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

**Fig. 4.51**

Radius to suit pivot fixing Max. 2mm profiling. Radius to suit pivot fixing Max. 2mm profiling.

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Intumescent seals must be separated by 5mm and located centrally in the door thickness. Seals must be fitted to the frame reveal.
- At the meeting stiles, 2x15x4mm Pyroplex Rigid Box seals must be fitted to one leaf only, separated by 5mm centrally located in the door thickness.
- For storey height doorsets 2x15x4mm Pyroplex Rigid Box intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.



## 4.54 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 660 FD60

#### 2x15x4mm Pyroplex Rigid Box

10mm separation

Q Single Leaf FD60 applications using 2x15x4mm Pyroplex Rigid Box Intumescent seals with 10mm separation.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Single leaf Single Action Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

Door Leaf sizes: From: 2040 x 865mm  
To: 2124 x 826mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*

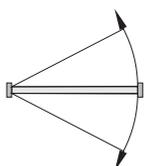


#### Unlatched Single leaf Single Action Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

Door Leaf sizes: From: 2040 x 840mm  
To: 2074 x 826mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



#### Double Action Single leaf Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

Door Leaf sizes: From: 2040 x 840mm  
To: 2074 x 826mm

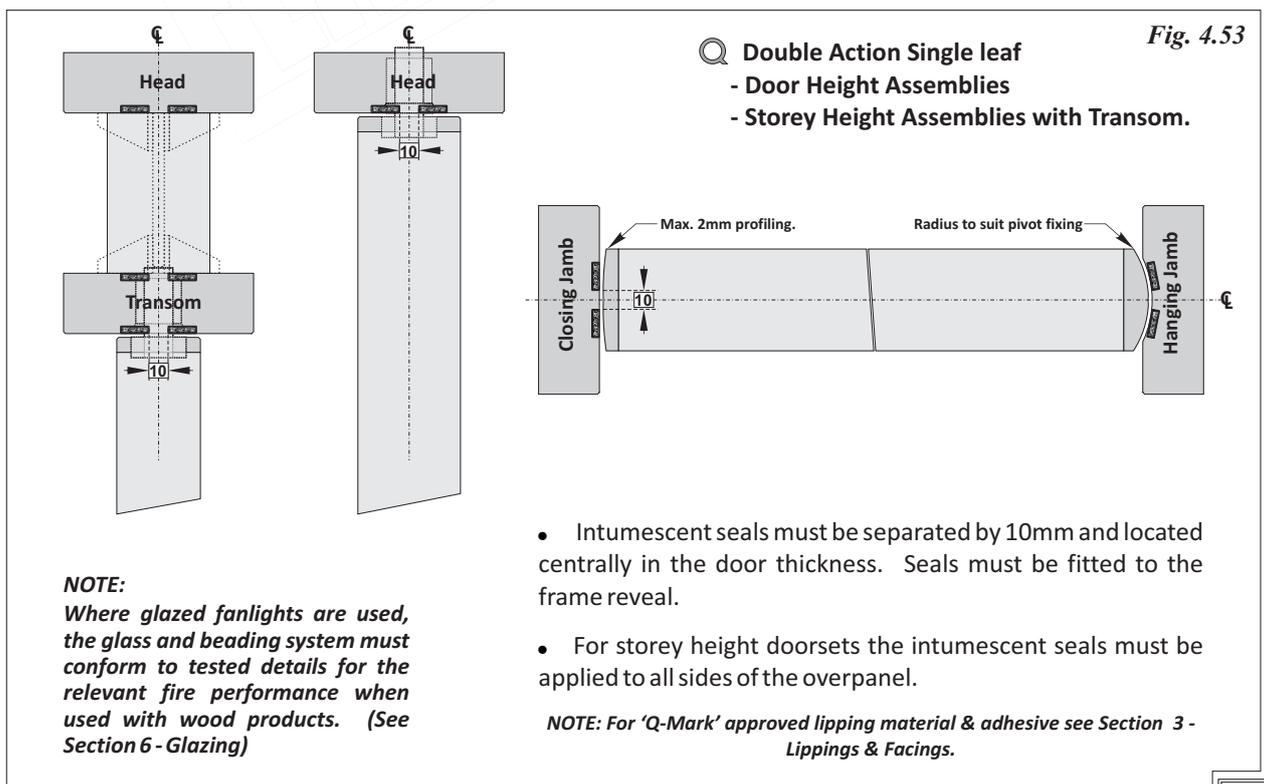
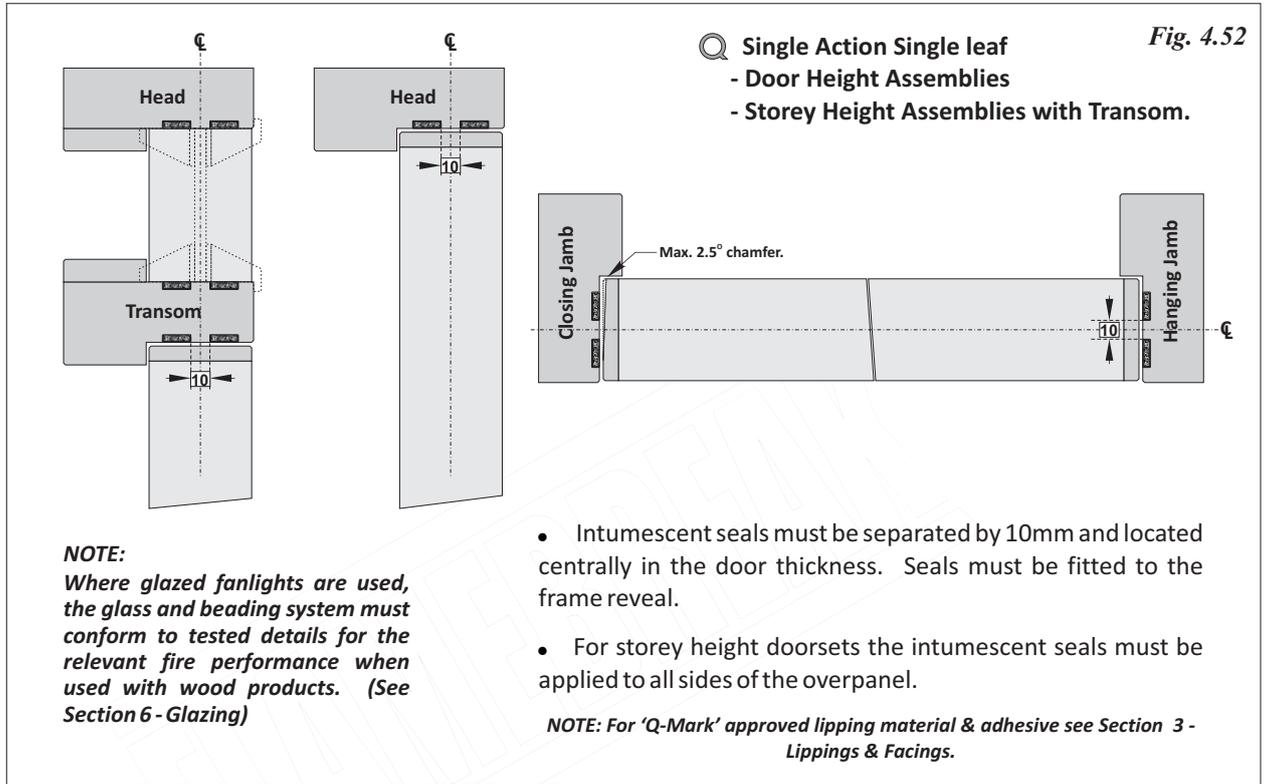
*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyroplex Rigid Box to all sides of the overpanel.*



### FLAMEBREAK 660

# FD60

### 2x15x4mm Pyroplex Rigid Box 10mm separation



## 4.56 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 660 FD60

#### 2x15x4mm Pyrostrip 500P

10mm separation

Q Single Leaf FD60 applications using 2x15x4mm Pyrostrip 500P Intumescent seals with 10mm separation.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Single leaf Single Action Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyrostrip 500P with 10mm separation.

Door Leaf sizes: From: 2380 x 1213mm  
To: 2450 x 1179mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*

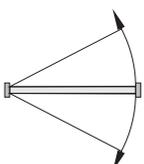


#### Unlatched Single leaf Single Action Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyrostrip 500P with 10mm separation.

Door Leaf sizes: From: 2380 x 1188mm  
To: 2400 x 1179mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*



#### Double Action Single leaf Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyrostrip P500 with 10mm separation.

Door Leaf sizes: From: 2380 x 1188mm  
To: 2400 x 1179mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*



### FLAMEBREAK 660

# FD60

**2x15x4mm Pyrostrip 500P**  
**10mm separation**

**Q Single Action Single leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

*Fig. 4.54*

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Intumescent seals must be separated by 10mm and located centrally in the door thickness. Seals must be fitted to the frame reveal.
- For storey height doorsets the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

**Q Double Action Single leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

*Fig. 4.55*

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Intumescent seals must be separated by 10mm and located centrally in the door thickness. Seals must be fitted to the frame reveal.
- For storey height doorsets the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.



## 4.58 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 660 **FD60**

**30x4 + 2x15x4mm Pyrostrip 500P**

10mm separation

Q Single Leaf FD60 applications using 30x4 at the head + 2x15x4mm at stiles Pyrostrip 500P Intumescent seals with 10mm separation.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



**Latched Single leaf Single Action Door Assemblies:**

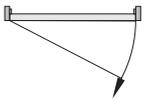
**Head** = 30x4mm PVC encased Pyrostrip 500P.

**Jambs** = 2x 15x4 PVC encased Pyrostrip 500P with 10mm separation.

**Door Leaf sizes:** From: 2155 x 1010mm

To: 2305 x 935mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*



**Unlatched Single leaf Single Action Door Assemblies:**

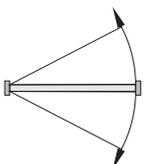
**Head** = 30x4mm PVC encased Pyrostrip 500P.

**Jambs** = 2x 15x4 PVC encased Pyrostrip 500P with 10mm separation.

**Door Leaf sizes:** From: 2155 x 985mm

To: 2255 x 935mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*



**Double Action Single leaf Door Assemblies:**

**Head** = 30x4mm PVC encased Pyrostrip 500P.

**Jambs** = 2x 15x4 PVC encased Pyrostrip 500P with 10mm separation

**Door Leaf sizes:** From: 2155 x 985mm

To: 2255 x 935mm

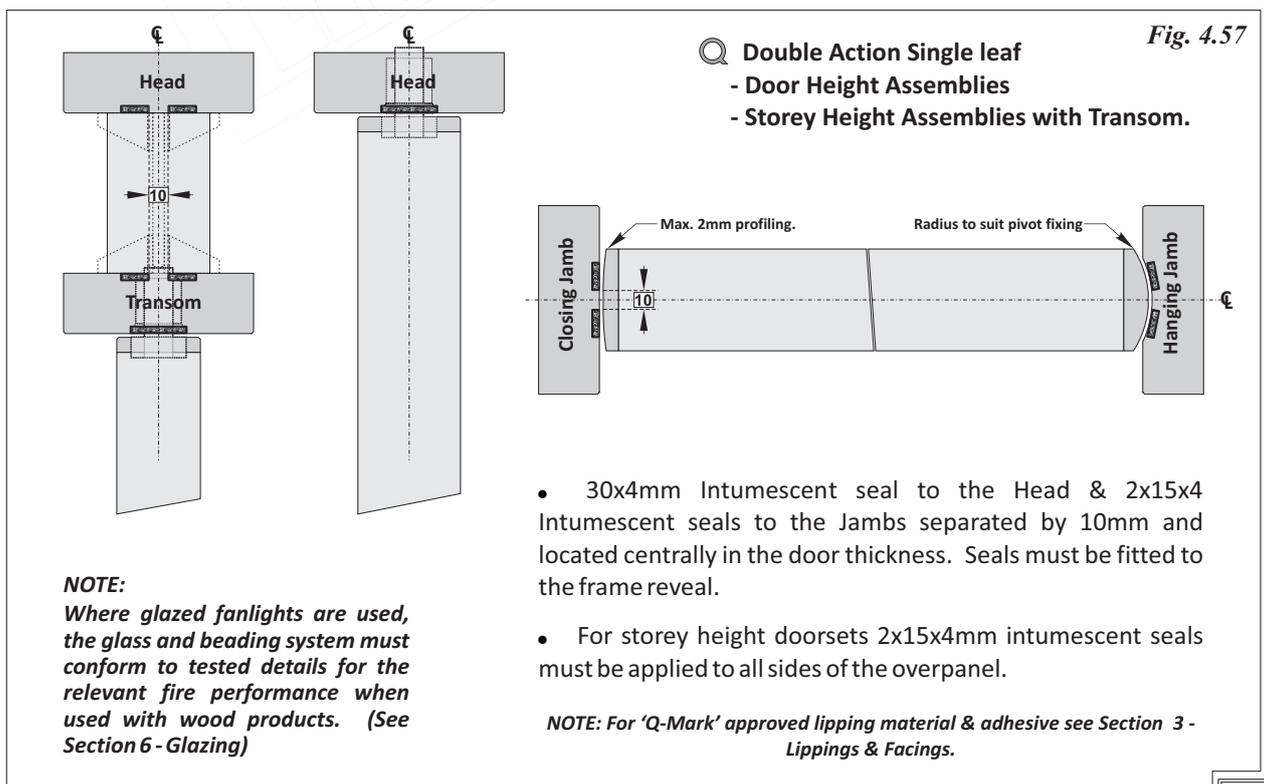
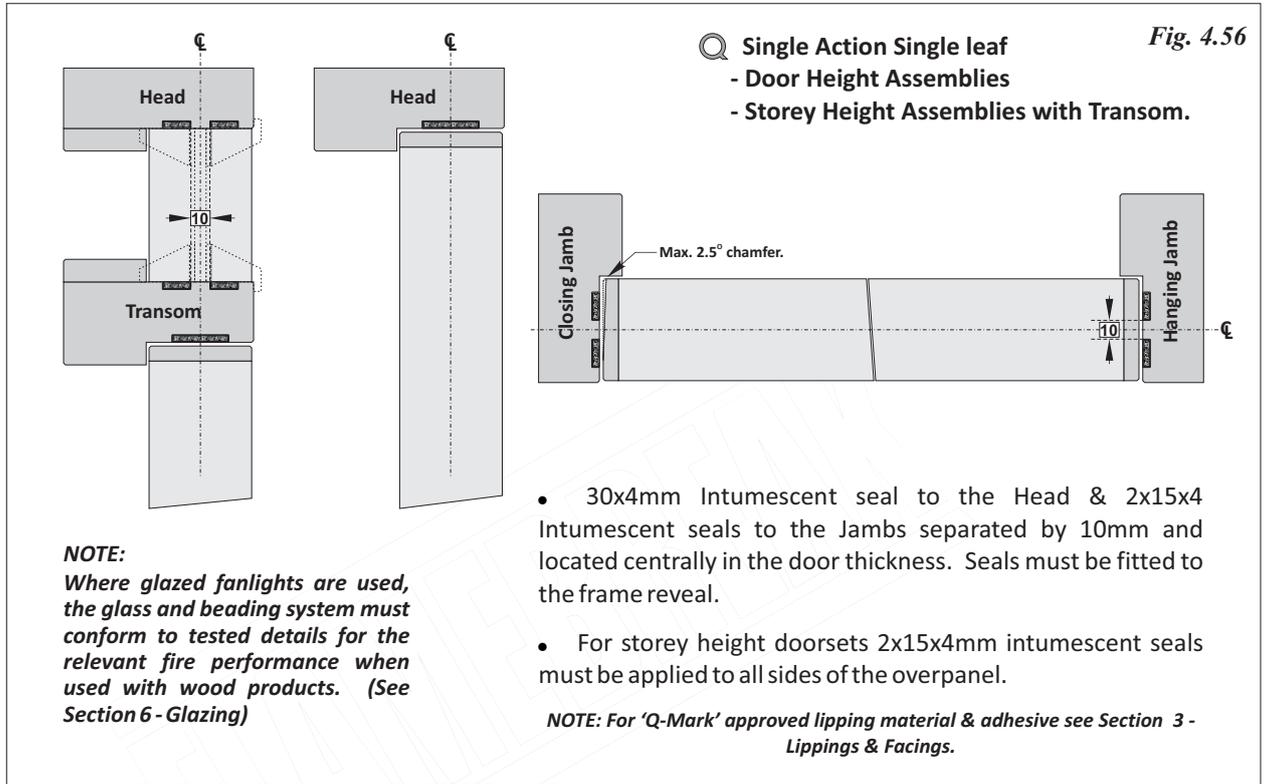
*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*



### FLAMEBREAK 660

# FD60

**30x4 + 2x15x4mm Pyrostrip 500P**  
10mm separation



## 4.60 Intumescent Seals

# FLAMEBREAK

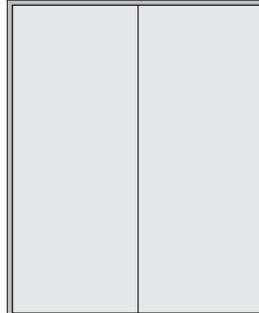
### FLAMEBREAK 660 **FD60**

**30x4 + 2x15x4mm Pyrostrip 500P**

10mm separation

Q Double Leaf FD30 applications using 30x4 at the head + 2x15x4mm at stiles Pyrostrip 500P Intumescent seals with 10mm separation.

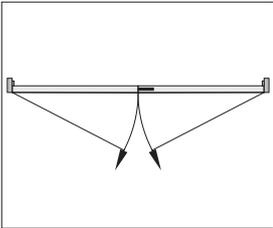
NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.



Double leaf  
Door Height  
Doorsets



Double leaf  
Storey Height  
Doorsets  
with Transom



**Latched Double leaf Single Action Door Assemblies (Pairs):**

**Head** = 30x4mm PVC encased Pyrostrip 500P with 5mm separation.

**Jamb**s = 2x15x4mm PVC encased Pyrostrip 500P with 10mm separation.

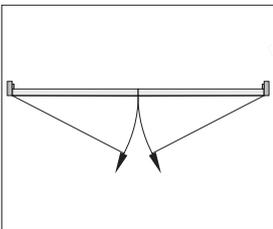
**Meeting Stiles (Square)** = 2x15x4mm PVC encased Pyrostrip 500P with 8mm separation.

**Door Leaf sizes:** From: 2155 x 2x960mm

To: 2205 x 2x935mm

NOTE 1: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.

NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.



**Unlatched Double leaf Single Action Door Assemblies (Pairs):**

**Head** = 30x4mm PVC encased Pyrostrip 500P with 5mm separation.

**Jamb**s = 2x15x4mm PVC encased Pyrostrip 500P with 10mm separation.

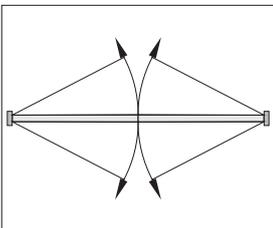
**Meeting Stiles (Square)** = 2x15x4mm PVC encased Pyrostrip 500P with 8mm separation.

**Door Leaf sizes:** From: 2155 x 2x935mm

To: 2155 x 2x935mm

NOTE 1: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.

NOTE 2: Rebated Meeting stiles are not 'Q-Mark' approved for this application.



**Double Action Double leaf Door Assemblies (Pairs):**

**Head** = 30x4mm PVC encased Pyrostrip 500P with 5mm separation.

**Jamb**s = 2x15x4mm PVC encased Pyrostrip 500P with 10mm separation.

**Meeting Stiles (Square)** = 2x15x4mm PVC encased Pyrostrip 500P with 8mm separation.

**Door Leaf sizes:** From: 2155 x 2x935mm

To: 2155 x 2x935mm

NOTE 1: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.



**Rebated Meeting Stiles:**

Rebated Meeting stiles are not 'Q-Mark' approved for this application.



### FLAMEBREAK 660

# FD60

### 30x4 + 2x15x4mm Pyrostrip 500P 10mm separation

**Q Single Action Double leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

**Fig. 4.58**

Max. 2.5° chamfer. Max. 2.5° chamfer.

Closing Jamb Hanging Jamb

- 30x4mm Intumescent seal to the Head & 2x15x4 Intumescent seals to the Jambs separated by 10mm and located centrally in the door thickness. Seals must be fitted to the frame reveal.
- At the meeting stiles, 2x15x4mm Pyrostrip 500P seals must be fitted to one leaf only, separated by 8mm centrally located in the door thickness.
- For storey height doorsets 2No. 15x4mm Pyrostrip 500P intumescent seals must be applied to all sides of the overpanel.

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

**Q Double Action Double leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

**Fig. 4.59**

Radius to suit pivot fixing Max. 2mm profiling. Radius to suit pivot fixing Max. 2mm profiling.

Hanging Jamb Hanging Jamb

- 30x4mm Intumescent seal to the Head & 2x15x4 Intumescent seals to the Jambs separated by 10mm and located centrally in the door thickness. Seals must be fitted to the frame reveal.
- At the meeting stiles, 2x15x4mm Pyrostrip 500P seals must be fitted to one leaf only, separated by 8mm centrally located in the door thickness.

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.



## FLAMEBREAK 660 FD60

**30x4 + 2x15x4mm Lorient Type 617**

10mm separation

Q Single Leaf FD60 applications using 30x4 at the head + 2x15x4mm at stiles Type 617 Intumescent seals with 10mm separation.

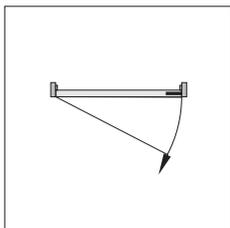
*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf Door Height Doorsets



Single leaf Storey Height Doorsets with Transom



**Latched Single leaf Single Action Door Assemblies:**

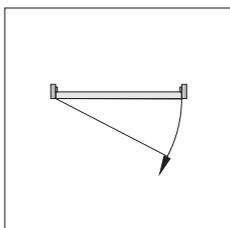
**Head** = 30x4mm PVC encased Lorient Type 617.

**Jambs** = 2x 15x4 PVC encased Lorient Type 617 with 10mm separation.

**Door Leaf sizes:** From: 2062 x 1067mm

To: 2112 x 927mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Lorient Type 617 to all sides of the overpanel.*



**Unlatched Single leaf Single Action Door Assemblies:**

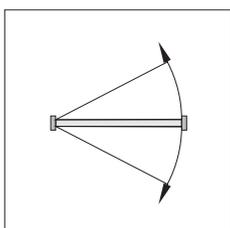
**Head** = 30x4mm PVC encased Lorient Type 617.

**Jambs** = 2x 15x4 PVC encased Lorient Type 617 with 10mm separation.

**Door Leaf sizes:** From: 2062 x 935mm

To: 2062 x 935mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Lorient Type 617 to all sides of the overpanel.*



**Double Action Single leaf Door Assemblies:**

**Head** = 30x4mm PVC encased Lorient Type 617.

**Jambs** = 2x 15x4 PVC encased Lorient Type 617 with 10mm separation

**Door Leaf sizes:** From: 2062 x 935mm

To: 2062 x 935mm

*NOTE: For storey height door assemblies use 2x15x4mm PVC encased Lorient Type 617 to all sides of the overpanel.*

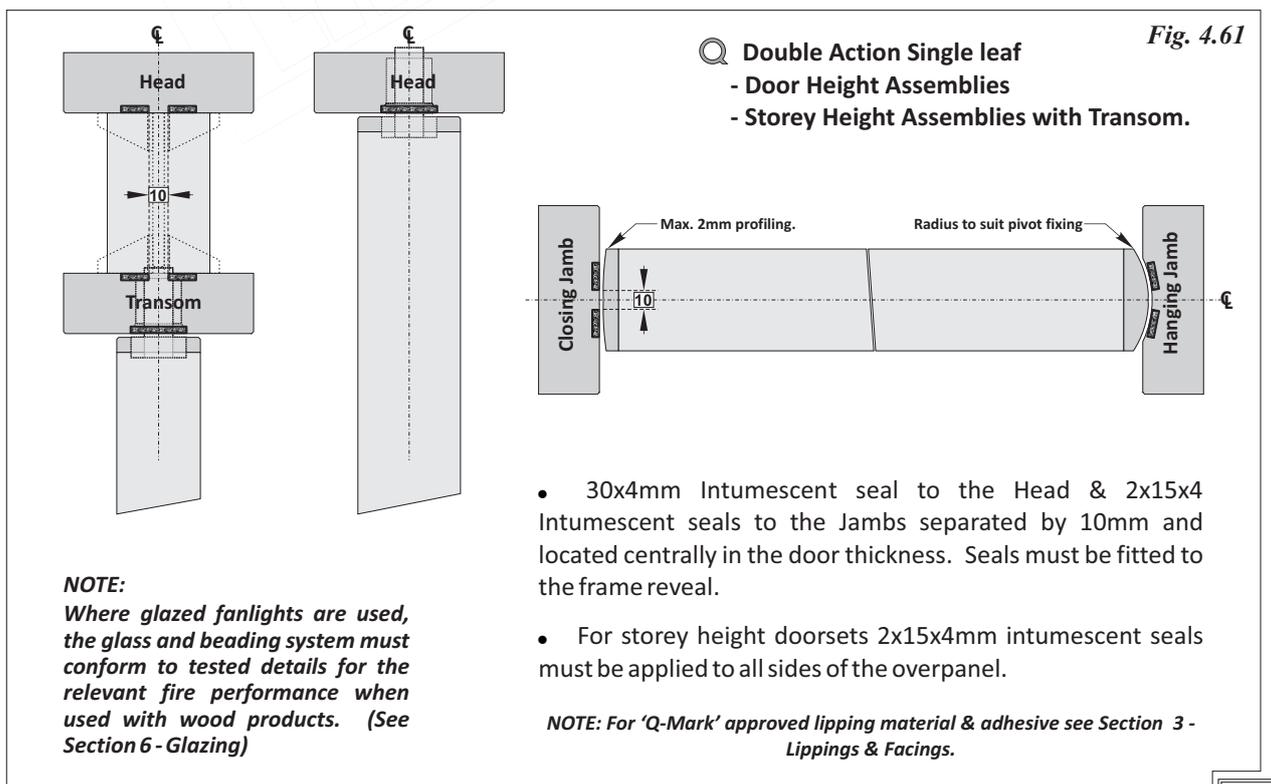
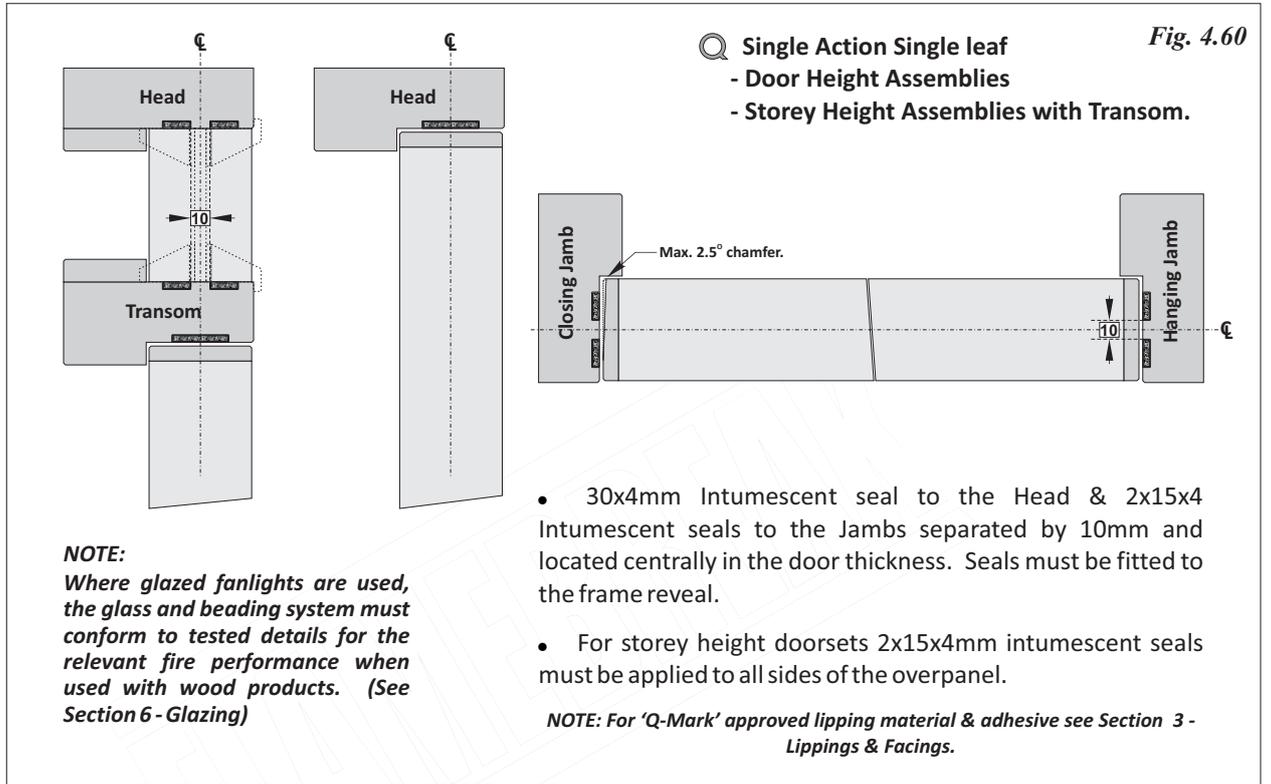


### FLAMEBREAK 660

# FD60

### 30x4 + 2x15x4mm Lorient Type 617

10mm separation



## FLAMEBREAK 660 **FD60**

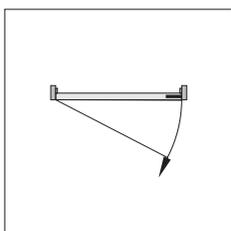
**2x15x4mm Type 617 with  
Acrovyn Door Edge protectors  
5mm separation**



Single leaf  
Door Height  
Doorsets

**Q Single Leaf FD60 applications using 15x4mm Type 617 Intumescent seals with 10mm separation used with CS Acrovyn Wrap Door Edge Protectors.**

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*

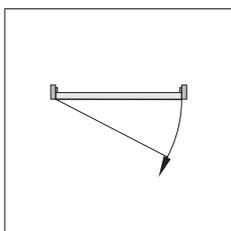


**Latched Single leaf Single Action Door Assemblies:**

**Door Stiles** = CS Acrovyn Door Edge Wrapped with 2x15x4mm with 10mm separation Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 970mm  
To: 2255 x 900mm

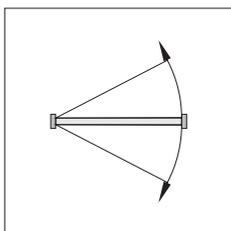


**Unlatched Single leaf Single Action Door Assemblies:**

**Door Stiles** = CS Acrovyn Door Edge Wrapped with 2x15x4mm with 10mm separation Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 970mm  
To: 2255 x 900mm



**Double Action Single leaf Door Assemblies:**

**Door Stiles** = CS Acrovyn Door Edge Wrapped with 2x15x4mm with 10mm separation Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 970mm  
To: 2255 x 900mm



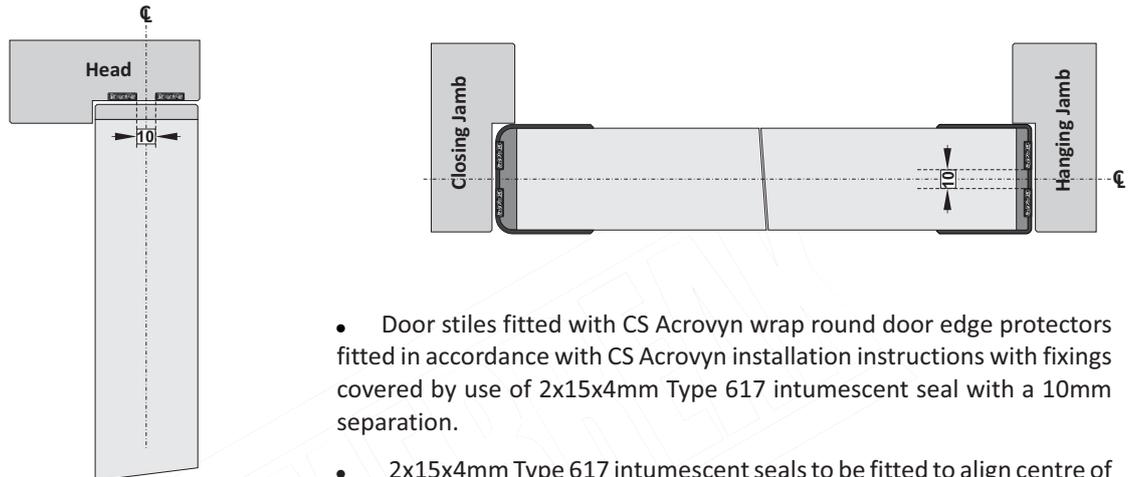
FLAMEBREAK 660

# FD60

**2x15x4mm Type 617 with Acrovyn Door Edge protectors**  
5mm separation

Q Single Action Single leaf  
- Door Height Assemblies

Fig. 4.62

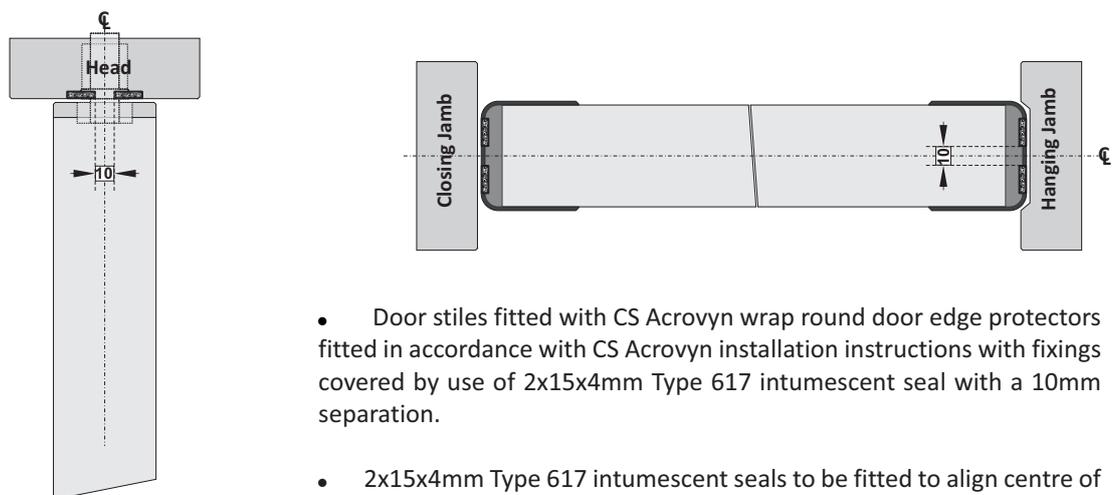


- Door stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 2x15x4mm Type 617 intumescent seal with a 10mm separation.
- 2x15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

Q Double Action Single leaf  
- Door Height Assemblies

Fig. 4.63



- Door stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 2x15x4mm Type 617 intumescent seal with a 10mm separation.
- 2x15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.



## 4.66 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 660 **FD60**

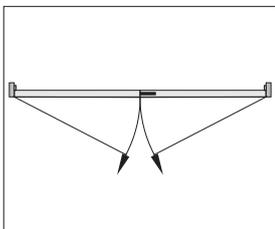
**2x15x4mm Type 617 with  
Acrovyn Door Edge protectors  
5mm separation**

Q Double Leaf FD30 applications using 2x15x4mm at stiles Type 617 Intumescent seals with 10mm separation used with CS Acrovyn Wrap Door Edge Protectors.

NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.



Double leaf  
Door Height  
Doorsets



#### **Latched Double leaf Single Action Door Assemblies (Pairs):**

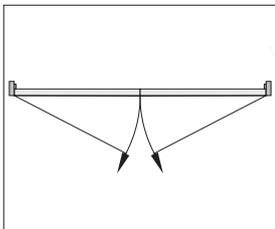
**Hanging Stiles** = CS Acrovyn Door Edge Wrapped with 2x15x4mm with 10mm separation Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal in both leaves.

**Door Leaf sizes:** From: 2100 x 2x945mm  
To: 2205 x 2x900mm

**NOTE : Rebated Meeting stiles are not 'Q-Mark' approved for this application.**



#### **Unlatched Double leaf Single Action Door Assemblies (Pairs):**

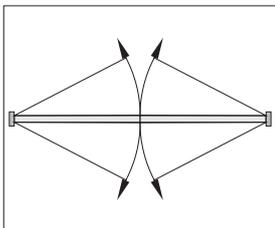
**Hanging Stiles** = CS Acrovyn Door Edge Wrapped with 2x15x4mm with 10mm separation Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal in both leaves.

**Door Leaf sizes:** From: 2100 x 2x945mm  
To: 2205 x 2x900mm

**NOTE : Rebated Meeting stiles are not 'Q-Mark' approved for this application.**



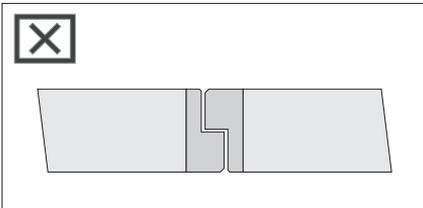
#### **Double Action Double leaf Door Assemblies (Pairs):**

**Hanging Stiles** = CS Acrovyn Door Edge Wrapped with 2x15x4mm with 10mm separation Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = CS Acrovyn Door Edge Wrapped with 15x4mm Type 617 Intumescent Seal in both leaves.

**Door Leaf sizes:** From: 2100 x 2x945mm  
To: 2205 x 2x900mm



#### **Rebated Meeting Stiles:**

**Rebated Meeting stiles are not 'Q-Mark' approved for this application.**

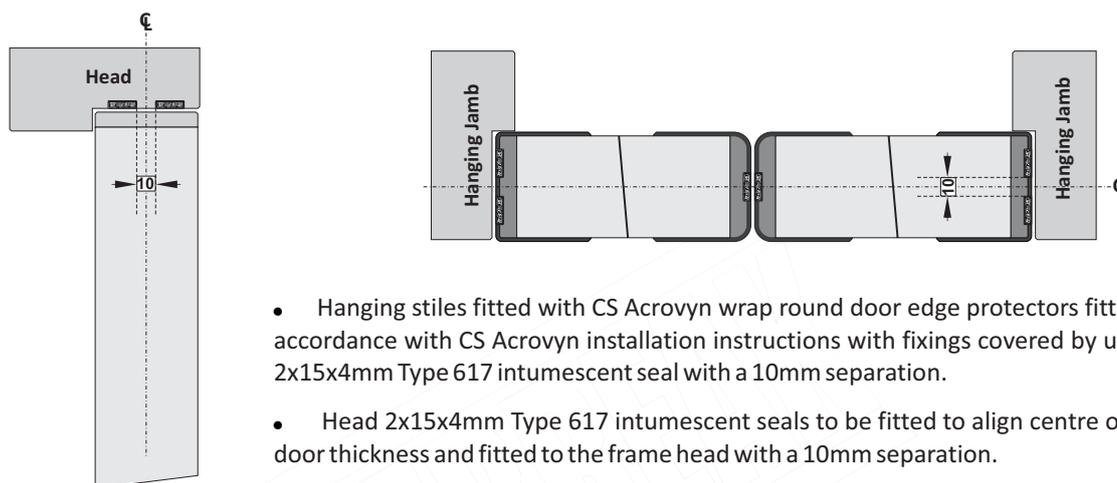
FLAMEBREAK 660

# FD60

**2x15x4mm Type 617 with**  
**Acrovyn Door Edge protectors**  
5mm separation

Q Single Action Double leaf  
 - Door Height Assemblies

Fig. 4.64

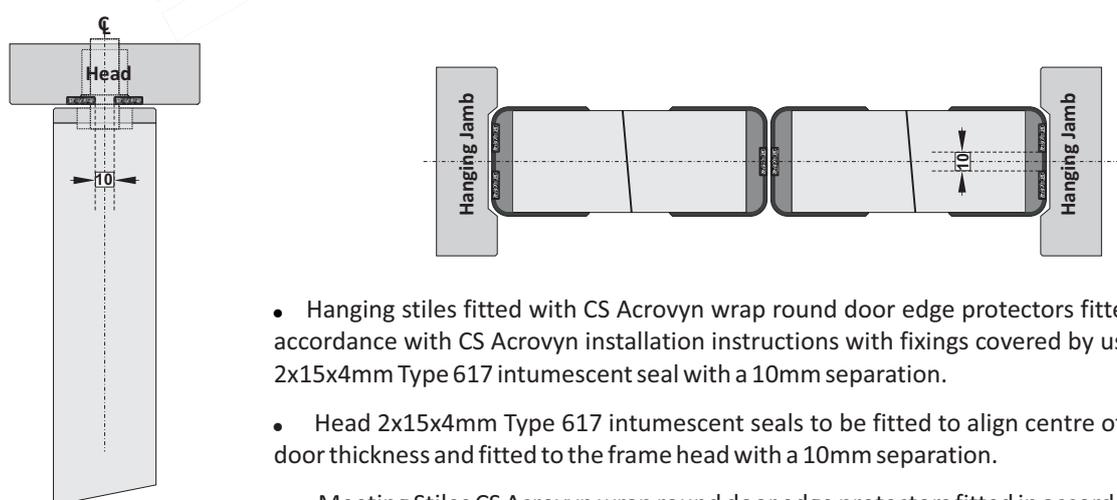


- Hanging stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 2x15x4mm Type 617 intumescent seal with a 10mm separation.
- Head 2x15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.
- Meeting Stiles CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 1 No. 15x4 Type 617 located centre thickness to both leaves.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

Q Double Action Double leaf  
 - Door Height Assemblies

Fig. 4.65



- Hanging stiles fitted with CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 2x15x4mm Type 617 intumescent seal with a 10mm separation.
- Head 2x15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.
- Meeting Stiles CS Acrovyn wrap round door edge protectors fitted in accordance with CS Acrovyn installation instructions with fixings covered by use of 1 No. 15x4 Type 617 located centre thickness to both leaves.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**



## FLAMEBREAK 660 **FD60**

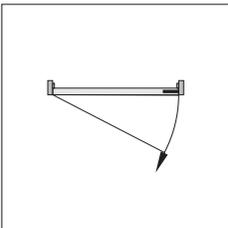
**20x4 + 2x15x4mm Type 617 with Yeoman Shield Edge protectors**  
10mm separation

Q Single Leaf FD60 applications using 20x4 + 2x15x4mm Type 617 Intumescent seals with 10mm separation used with Yeoman Shield Wrap Door Edge Protectors.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets

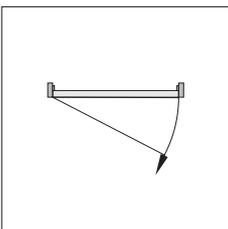


**Latched Single leaf Single Action Door Assemblies:**

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1026mm  
 To: 2250 x 926mm

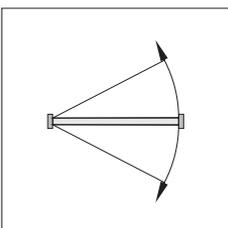


**Unlatched Single leaf Single Action Door Assemblies:**

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1026mm  
 To: 2250 x 926mm



**Double Action Single leaf Door Assemblies:**

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1026mm  
 To: 2250 x 926mm



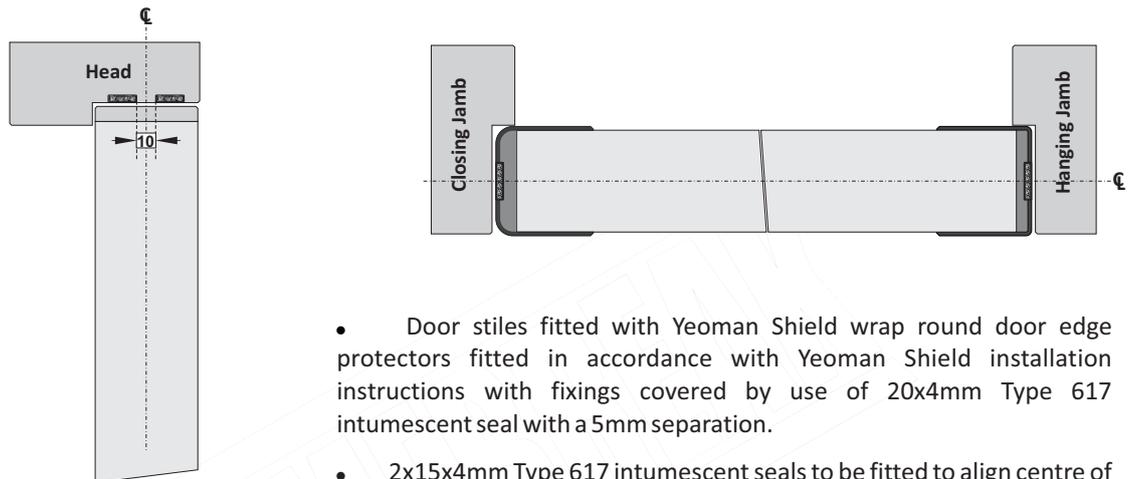
FLAMEBREAK 660

# FD60

**20x4 + 2x15x4mm Type 617 with Yeoman Shield Edge protectors**  
10mm separation

Q Single Action Single leaf  
- Door Height Assemblies

Fig. 4.66



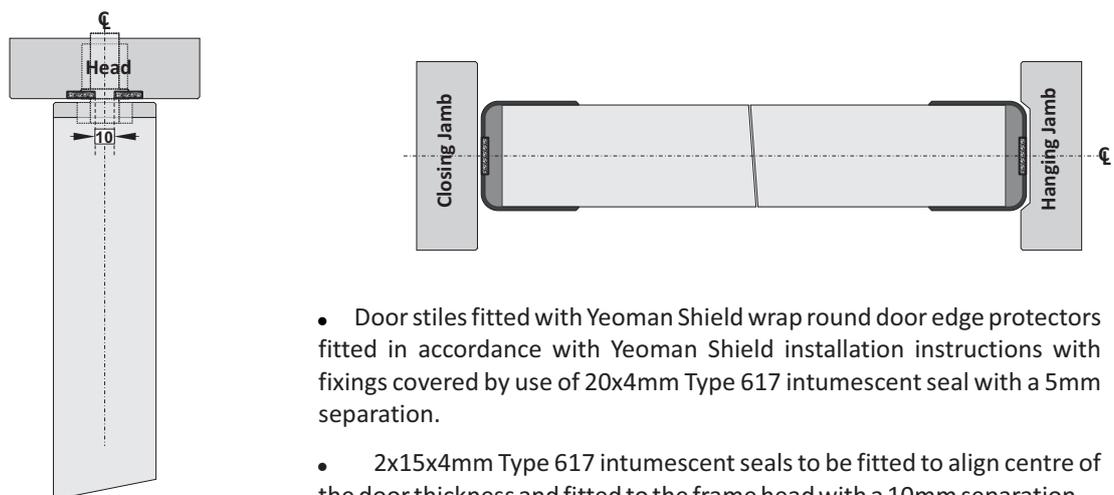
- Door stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal with a 5mm separation.

- 2x15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

Q Double Action Single leaf  
- Door Height Assemblies

Fig. 4.67



- Door stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal with a 5mm separation.

- 2x15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**



## 4.70 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 660 **FD60**

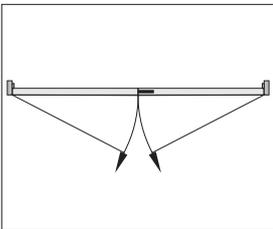
**20x4 + 2x15x4mm Type 617 with  
Yeoman Shield Edge protectors  
10mm separation**



Double leaf  
Door Height  
Doorsets

**Q Double Leaf FD60 applications using 20x4 + 2x15x4mm Type 617 Intumescent seals with 10mm separation used with Yeoman Shield Wrap Door Edge Protectors.**

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



#### **Latched Double leaf Single Action Door Assemblies (Pairs):**

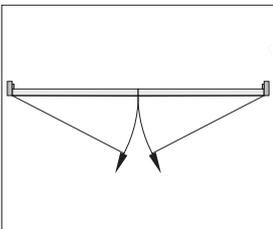
**Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = Yeoman Shield Door Edge Wrapped with 20x4mm Type 617 Intumescent Seal to both leaves.

**Door Leaf sizes:** From: 2100 x 2x1026mm  
To: 2250 x 2x826mm

*NOTE : Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### **Unlatched Double leaf Single Action Door Assemblies (Pairs):**

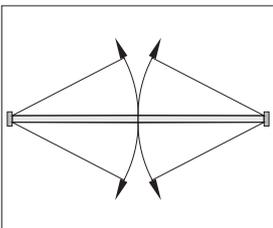
**Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = Yeoman Shield Door Edge Wrapped with 20x4mm Type 617 Intumescent Seal to both leaves..

**Door Leaf sizes:** From: 2100 x 2x1026mm  
To: 2250 x 2x826mm

*NOTE : Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### **Double Action Double leaf Door Assemblies (Pairs):**

**Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x 15x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = Yeoman Shield Door Edge Wrapped with 20x4mm Type 617 Intumescent Seal to both leaves..

**Door Leaf sizes:** From: 2100 x 2x1026mm  
To: 2250 x 2x826mm



#### **Rebated Meeting Stiles:**

*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



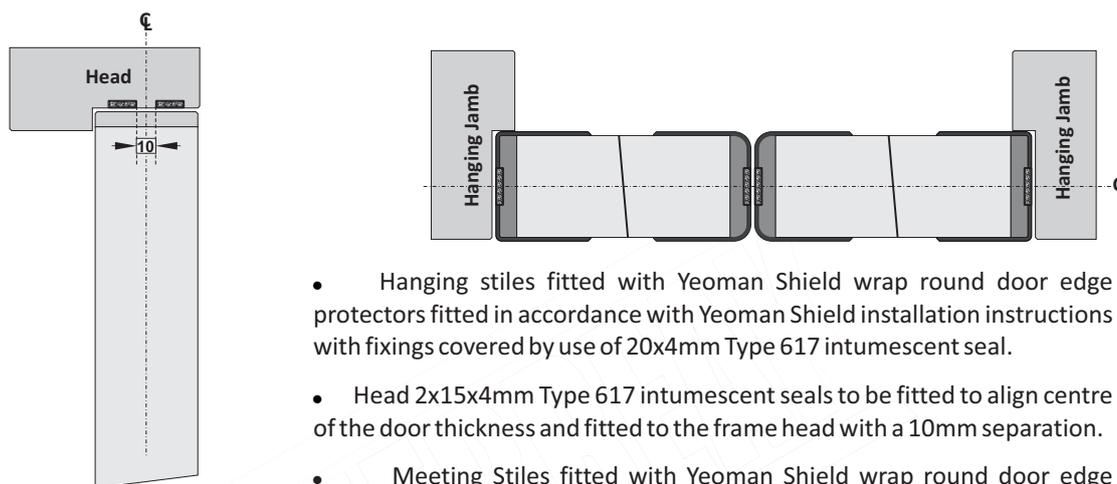
### FLAMEBREAK 660

# FD60

**20x4 + 2x15x4mm Type 617 with Yeoman Shield Edge protectors**  
10mm separation

Q Single Action Double leaf  
- Door Height Assemblies

Fig. 4.68

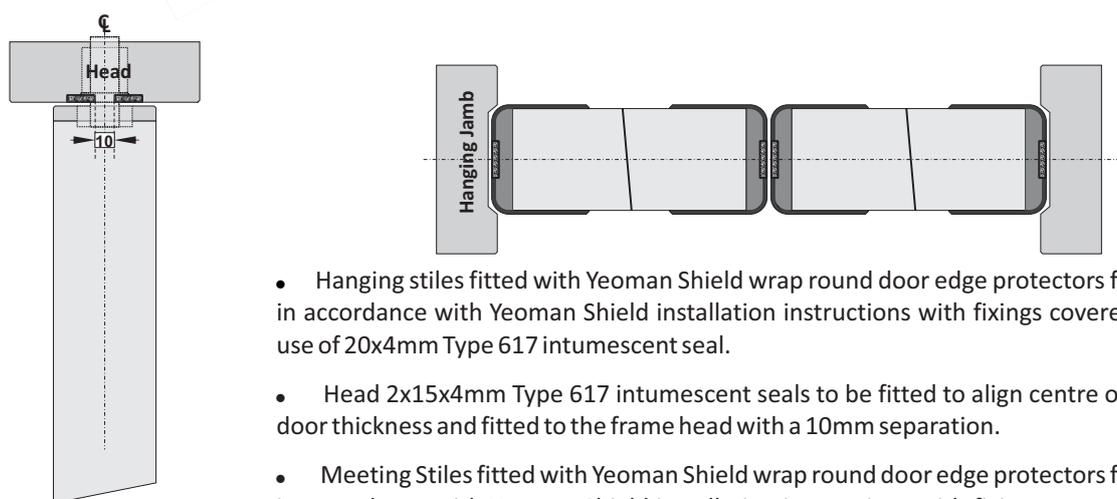


- Hanging stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal.
- Head 2x15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.
- Meeting Stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal to both leaves.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

Q Double Action Double leaf  
- Door Height Assemblies

Fig. 4.69



- Hanging stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal.
- Head 2x15x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.
- Meeting Stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal to both leaves.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**



## FLAMEBREAK 660 **FD60**

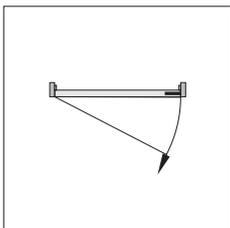
**20x4 + 2x20x4mm Type 617 with Yeoman Shield Edge protectors**  
10mm separation



Single leaf  
Door Height  
Doorsets

**Q** Single Leaf FD60 applications using 20x4 + 2x20x4mm Type 617 Intumescent seals with 10mm separation used with Yeoman Shield Wrap Door Edge Protectors.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*

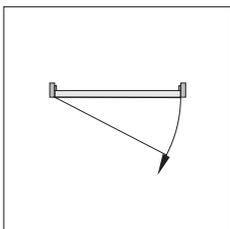


**Latched Single leaf Single Action Door Assemblies:**

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x20x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1026mm  
 To: 2300 x 926mm

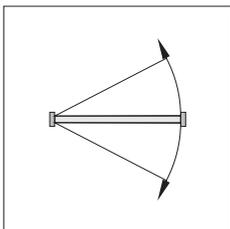


**Unlatched Single leaf Single Action Door Assemblies:**

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x20x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1026mm  
 To: 2300 x 926mm



**Double Action Single leaf Door Assemblies:**

**Door Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x20x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Door Leaf sizes:** From: 2100 x 1026mm  
 To: 2300 x 926mm



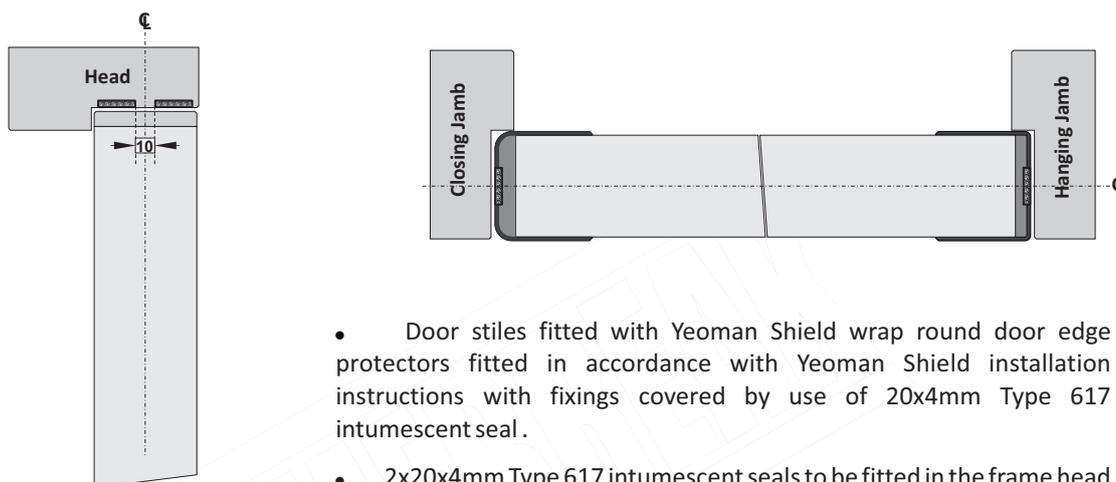
FLAMEBREAK 660

# FD60

**2x20x4 + 2x15x4mm Type 617 with  
Yeoman Shield Edge protectors**  
10mm separation

Q Single Action Single leaf  
- Door Height Assemblies

Fig. 4.70

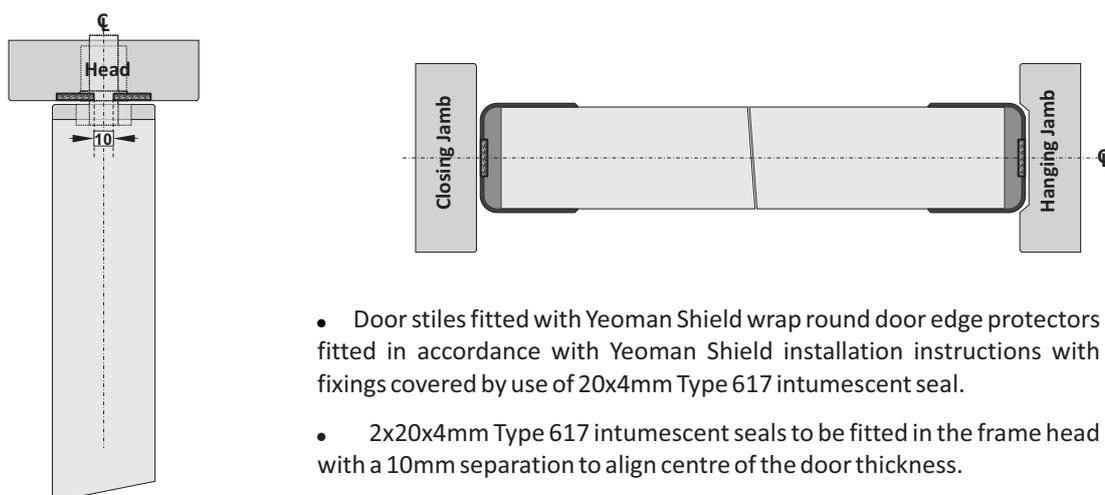


- Door stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal.
- 2x20x4mm Type 617 intumescent seals to be fitted in the frame head with a 10mm separation to align centre of the door thickness.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

Q Double Action Single leaf  
- Door Height Assemblies

Fig. 4.71



- Door stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal.
- 2x20x4mm Type 617 intumescent seals to be fitted in the frame head with a 10mm separation to align centre of the door thickness.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

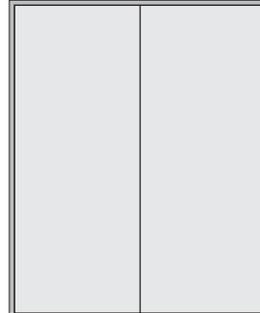


## 4.74 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK 660 **FD60**

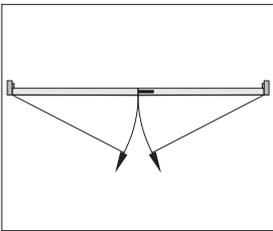
**20x4 + 2x20x4mm Type 617 with  
Yeoman Shield Edge protectors**  
10mm separation



Double leaf  
Door Height  
Doorsets

**Q** Double Leaf FD60 applications using 20x4 + 2x20x4mm Type 617 Intumescent seals with 10mm separation used with Yeoman Shield Wrap Door Edge Protectors.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



#### **Latched Double leaf Single Action Door Assemblies (Pairs):**

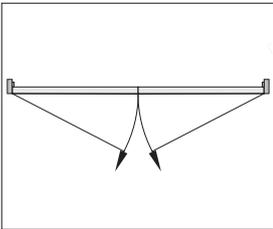
**Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x20x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = Yeoman Shield Door Edge Wrapped with 20x4mm Type 617 Intumescent Seal to both leaves.

**Door Leaf sizes:** From: 2100 x 2x1026mm  
To: 2300 x 2x826mm

*NOTE : Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### **Unlatched Double leaf Single Action Door Assemblies (Pairs):**

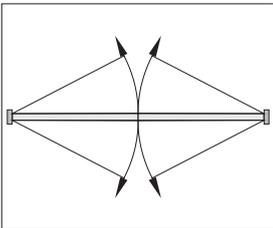
**Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x20x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = Yeoman Shield Door Edge Wrapped with 20x4mm Type 617 Intumescent Seal to both leaves.

**Door Leaf sizes:** From: 2100 x 2x1026mm  
To: 2300 x 2x826mm

*NOTE : Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



#### **Double Action Double leaf Door Assemblies (Pairs):**

**Hanging Stiles** = Yeoman Shield Door Edge Wrapped with 20x4mm with Type 617 Intumescent Seal.

**Head** = 2x20x4mm with 10mm separation Type 617 Intumescent Seal fitted in the frame head.

**Meeting Stiles (Square)** = Yeoman Shield Door Edge Wrapped with 20x4mm Type 617 Intumescent Seal to both leaves.

**Door Leaf sizes:** From: 2100 x 2x1026mm  
To: 2300 x 2x826mm



#### **Rebated Meeting Stiles:**

*Rebated Meeting stiles are not 'Q-Mark' approved for this application.*



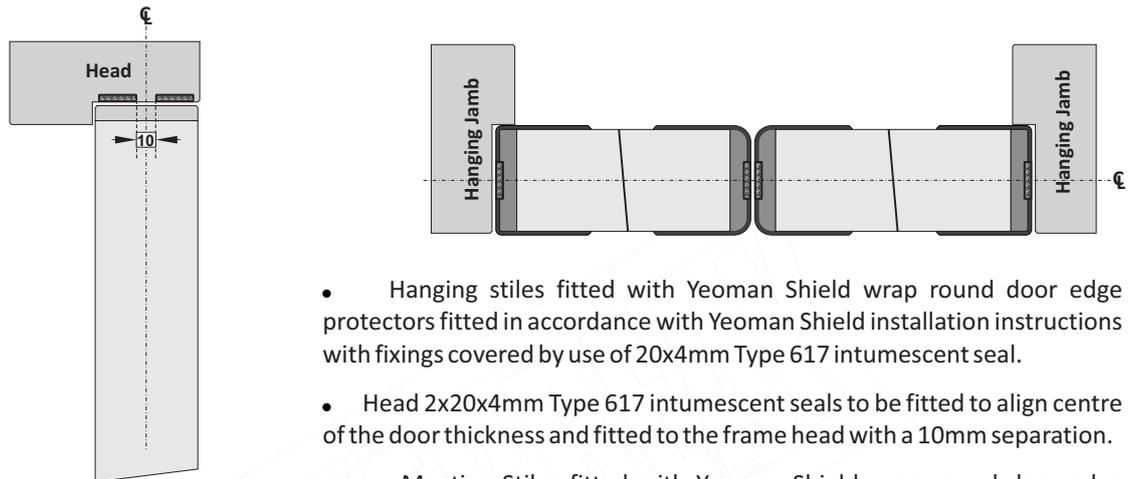
FLAMEBREAK 660

# FD60

**20x4 + 2x20x4mm Type 617 with  
Yeoman Shield Edge protectors**  
10mm separation

Q Single Action Double leaf  
- Door Height Assemblies

Fig. 4.72

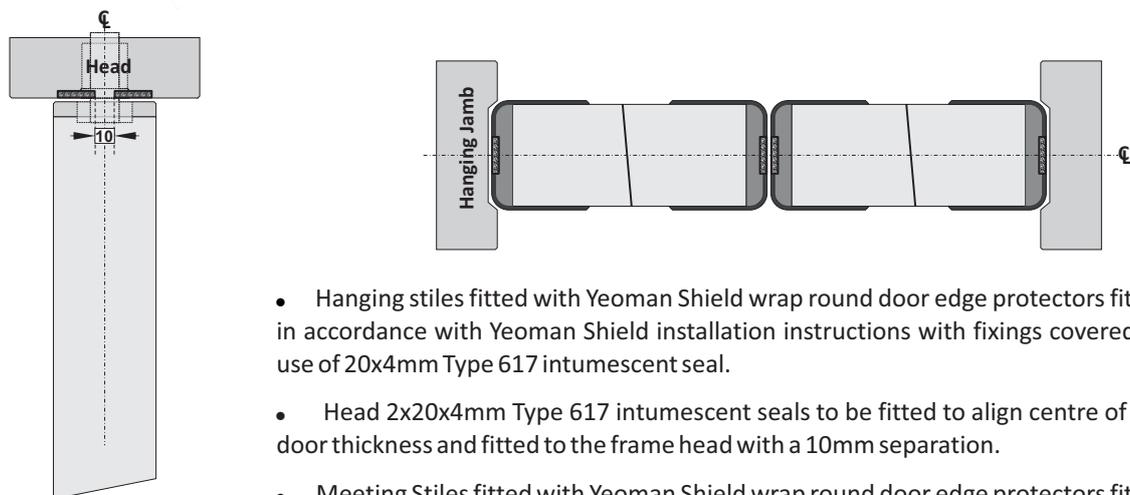


- Hanging stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal.
- Head 2x20x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.
- Meeting Stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal to both leaves.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**

Q Double Action Double leaf  
- Door Height Assemblies

Fig. 4.73



- Hanging stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal.
- Head 2x20x4mm Type 617 intumescent seals to be fitted to align centre of the door thickness and fitted to the frame head with a 10mm separation.
- Meeting Stiles fitted with Yeoman Shield wrap round door edge protectors fitted in accordance with Yeoman Shield installation instructions with fixings covered by use of 20x4mm Type 617 intumescent seal to both leaves.

**NOTE: For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.**



## 4.76 Intumescent Seals

# FLAMEBREAK

### FLAMEBREAK FF660 **FD60**

#### 2x15x4mm Pyrostrip 500P

10mm separation

Q Single Leaf FD60 applications using 2x15x4mm Pyrostrip 500P Intumescent seals with 10mm separation.

*NOTE: See Section 7 - Doorframes for 'Q-Mark' approved minimum frame section dimensions for fire door applications.*



Single leaf  
Door Height  
Doorsets



Single leaf  
Storey Height  
Doorsets  
with Transom



#### Latched Single leaf Single Action Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyrostrip 500P with 10mm separation.

Door Leaf sizes: From: 2080 x 960mm  
To: 2132 x 936mm

*.NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*

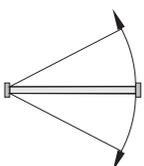


#### Unlatched Single leaf Single Action Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyrostrip 500P with 10mm separation.

Door Leaf sizes: From: 2080 x 960mm  
To: 2132 x 936mm

*.NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*



#### Double Action Single leaf Door Assemblies:

Jamb & Head = 2x15x4mm PVC encased Pyroplex Rigid Box with 10mm separation.

Door Leaf sizes: From: 2080 x 960mm  
To: 2132 x 936mm

*.NOTE: For storey height door assemblies use 2x15x4mm PVC encased Pyrostrip 500P to all sides of the overpanel.*



### FLAMEBREAK FF660 FD60

**2x15x4mm Pyrostrip 500P**  
10mm separation

**Q Single Action Single leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

*Fig. 4.74*

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Intumescent seals must be separated by 10mm and located centrally in the door thickness. Seals must be fitted to the frame reveal.
- For storey height doorsets the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.

**Q Double Action Single leaf**  
- Door Height Assemblies  
- Storey Height Assemblies with Transom.

*Fig. 4.75*

**NOTE:**  
Where glazed fanlights are used, the glass and beading system must conform to tested details for the relevant fire performance when used with wood products. (See Section 6 - Glazing)

- Intumescent seals must be separated by 10mm and located centrally in the door thickness. Seals must be fitted to the frame reveal.
- For storey height doorsets the intumescent seals must be applied to all sides of the overpanel.

**NOTE:** For 'Q-Mark' approved lipping material & adhesive see Section 3 - Lippings & Facings.





FLAMEBREAK



### 'Q-Mark' Requirements:

If the door set design is required to provide a smoke control function to comply with Building Regulations, in the absence of a suitable pressurisation system, the door set must meet one of the following criteria:

**(a) have a leakage rate not exceeding 3m<sup>3</sup>/m/hour (head and jambs only) when tested at 25Pa under BS 476 Fire tests on building materials and structures, Section 31.1 – Methods for measuring smoke penetration through door sets and shutter assemblies, Method of measurement under ambient temperature conditions; or**

**(b) meet the additional classification requirement of Sa when tested to BS EN 1634-3: 2004 – Fire resistance tests for door and shutter assemblies, Part 3 – Smoke control doors.**

Smoke seals or combined intumescent/smoke seals that are fitted to the door to achieve the performance requirements specified above, must have been tested in accordance with the associated test method. Providing the smoke seals, any interruptions, door gaps, and the type/configuration of the door set are consistent with the detail tested, the door set will comply with current smoke control legislation under Approved Document B; and a suffix 'S' or 'Sa', as appropriate, may be added to the designation. Any other components installed where smoke leakage may occur must also be taken into account.



### General:

Smoke sealing is a separate performance requirement to fire rating. i.e. there is no regulation that requires specifically that a fire rated door should also be a smoke sealed door. General purpose doors that are not fire rated may be specified as smoke sealed.

### Sealing Options:

The following provides for general guidance, descriptions and illustrations showing typical measures that can be taken to provide for smoke sealing performances.

**NOTE: Reference should be made to the particular seal manufacturer / supplier to obtain supporting test / assessment documentation and for further guidance with regard to installation recommendations.**

### Under Door (Threshold) Sealing:

Unless used with a sill (with a four sided frame), the under door gap cannot be controlled by the door set manufacturer who can only assemble door sets to provide for a nominal dimension from the bottom of the door to the bottom of the frame jamb (subject to BS4787 Pt. 1 tolerances). Similarly, it may be difficult for the Installation Contractor to control under door gaps as these are influenced to a major degree by the quality of the surrounding structure, and in particular the quality and nature of the floor preparation and finish.

Thresholds may be used to control under door gaps but these tend to be rejected where these might interfere with wheeled 'traffic' or create a trip hazard.

Mechanical drop seals (Automatic Door Bottoms) provide for an effective method for sealing the bottom edge of the doors (e.g. Norsound NOR810).

**NOTE 1: This is the preferred option for sealing the bottom edge of doors where the under door gap cannot be controlled to the precision required by reference to BS9999. These may be fitted on site as a variation to existing door assemblies as necessary, to suit particular location requirements.**

**NOTE 2: Mechanical drop seals (Automatic Door Bottoms) for use with fire doors must be supported by fire test / assessment data to the required performances for use in wood doors. See Section 8 - Hardware for 'Q-Mark' approved drop seals (Automatic Door Bottoms) for use with FLAMEBREAK™ based doors.**

Fixed elastomeric blade or brush seals may be used at the bottom edge of the door. However, the effectiveness of these will vary according to the variation in the operating gap during the swing of the door. i.e. They must essentially be set to suit the minimum gap through the swing of the door.

**NOTE: Fixed bottom edge door seals should generally be used with threshold strips to ensure that the seals clear the floor through the whole swing of the door.**

### Sealing Options contd.:

#### Edge Sealing:

Most intumescent seal manufacturers supply combined intumescent / smoke seals that have been tested to BS476 Section 31.1 or BS EN 1634-3 and that are suitable for smoke sealing stiles and heads.

Fundamentally there are two types of combined intumescent / smoke seal.

- 1/ Brush seals
- 2/ Elastomeric blade seals.

The force acting on the seals at the hanging stile is different to the force acting at the closing stile. The hanging stile seals will be subjected to a compression force with minimal shear force while the closing stile seals will be subjected to shear forces but with some compression force. The head seals will generally be subjected to shear forces with some compression force.

Brush seals subjected to compression forces will often retain their compressed state within a short time after fitting.

**NOTE: Some brush seals incorporate a plastic membrane that improves the life of the seal before settling at the compressed state.**

Brush seals subjected to shear and compression forces will generally retain the compressed state within a short period after fitting, the shear forces (*friction*) may also cause wear.

Combined intumescent / elastomeric blade seals tend to suffer less from compression forces. However, shear forces, particularly if applied at the joint between the blade and the intumescent carrier can result in separation of the blade from the carrier.

Shear loadings, if excessive, can influence operating forces. There is a tendency to 'wind up' closers to overcome seal and possibly latch resistance to the extent that the forces necessary to use the doors may exceed those required by reference to Building Regulations -(England & Wales) - Approved Document 'M' and BS8300.

The smoke sealing element of edge fixed seals may need to be removed to accommodate hardware. Further, when using edge fixed seals, it may difficult to accommodate variations in operating gap tolerances permitted by reference to BS4787. Variations in environmental conditions can affect the moisture content of the door or frame resulting in variations in the size of the operating gaps.

To overcome the problems identified above it is recommended that compression seals are applied to the doorstops to act at hanging stiles, head and the closing stiles of single leaf door assemblies. Multi blade type seals available from a number of sources are suitable for this application. Alternatively 'O' seals or single blade seals fitted to the face of the doorstop could be used. These act on the face of single action doors allowing for variations in operating gaps without detriment to the sealing. The seals remain unbroken when fitting hardware to the edge of the door.

**NOTE: It is recommended that the stiles and head of the doors (particularly to the closing face of the doors) are slightly rounded (2~3mmR) or splayed, to act as a lead for the compression of seals. This will provide for improved durability with a reduction in the operating forces necessary to use the doors.**

Single action pairs of fire doors should generally provide for simultaneous opening. It is also desirable to maintain a continuous seal, i.e. not interrupted to accommodate hardware, if possible. Use of combined intumescent seals with blades off set to one edge of the seal may be used for this application. It is recommended that the seal is recessed into the door edge such that the smoke seal blade overlaps the adjacent doors by 0.5 to 1mm. This has an added advantage in that the forces applied during operation are felt more on the flexible blade and less at the vulnerable blade / carrier joint. As the recommended frame seals overlap the face of the door, it is possible to adjust the meeting stile gap by use of packing at the hinge positions without detriment to the perimeter sealing. i.e. There is only one gap to adjust.

The meeting stiles of pairs of doors treated in this manner will need to be beveled (*provided with a 'leading edge' generally not greater than 2°*) to ensure that the doors may be opened simultaneously without damage to the smoke sealing blade and to ensure that the doors can be operated using acceptable forces.

It is recommended that the smoke sealing blade should be positioned as near to the opening face of the door as possible. This should allow for the fitting of hardware without the necessity to remove any of the smoke seal.

Rebating of meeting stiles is generally not recommended for fire doors as these then become sequential opening. However, where this is necessary, compression type seals as recommended for the frame jambs might be used.

### Sealing Options contd.:

#### Double Action Door Assemblies:

Double action doors where the pivot is located centrally within the door thickness do not suffer from the 'door growth' problem associated with single action door sets. Combined intumescent / smoke seals of either the brush or blade types can be used at the hanging and closing stiles. However, it is recommended that these seals are set to a position that provides for a 0.5 - 1mm overlap with the component that is to be sealed. This will ease the stress at the seal / carrier junction and make maximum use of the flexibility of the seal.

Smoke sealing at the top and bottom of a double action door may be more difficult due to possible conflicts with double action pivot fixings. This section illustrates a method for providing for optimum smoke sealing for double action door sets.

#### General Notes:

**NOTE 1:** For optimum performance seals should compress to approx. 50% of maximum. Over compression can lead to distortion of the seal with subsequent leakage and possible interference with the door operation.

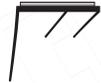
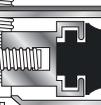
**NOTE 2:** Whereas it is desirable for smoke seals to be continuous and unbroken to accommodate hardware, some sealing systems have been successfully tested to provide for the performances described by reference to BS9999 with part of the seals removed to suit hardware items. Reference should be made to the seal manufacturer's / supplier's test data where this consideration applies.

**NOTE 3:** The fitting of smoke seals must not compromise the operation of the door.

### Typical Perimeter Seal Options

Fig. 5.1

#### Independent Perimeter Seals

	Frame Rebate fixed seal - adhesive backing & kerf fixing options. Elastomeric blade seals.
	Frame Rebate fixed seal - adhesive backing & kerf fixing options. Elastomeric blade seals.
	Frame fixed seal 'Tear Drop'- adhesive backing with kerf fixing carrier options.
	Multi blade kerf fixing elastomeric blade seals.
	Door stop face fixed carrier with seal. Can generally be added as an upgrade to existing installations.
	Adjustable door stop face fixed carrier with seal. Can generally be added as an upgrade to existing installations.

#### Combined Intumescent / Smoke Seals

	Single off-set Elastomeric blade Intumescent / smoke seal.
	Twin centre Elastomeric blade Intumescent / smoke seal.
	Twin end located Elastomeric blade Intumescent / smoke seal.
	Centre located Intumescent with Brush smoke seal.
	Centre located Intumescent / Brush smoke seal with centre plastic membrane.

There is an extensive range of tested seals that are suitable for use as perimeter smoke seals when used with Flamebreak™ doors.

The selection and positioning of perimeter smoke seals should be planned in advance with due regard to:

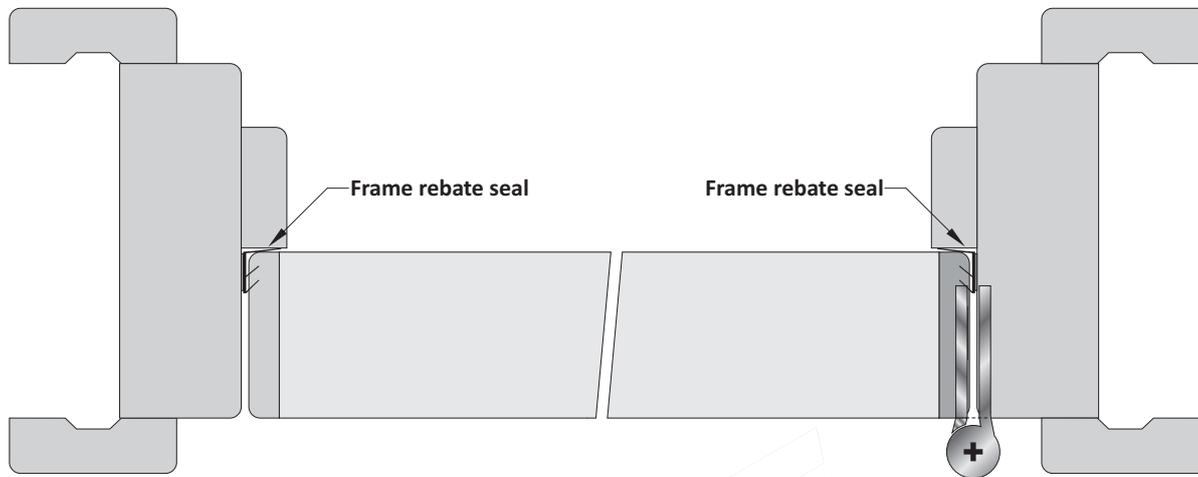
- Possible conflicts with other hardware.
- Durability (*anticipated frequency of use of the door*).
- Influence on door operating forces.

## 5.4 Smoke Sealing

### Smoke Sealing - Perimeter Sealing - Single Action - Jamb:

#### Independent Frame Rebate Seal

Fig. 5.2



Frame rebate seals can be fitted independently and located to suit the particular door location requirements.

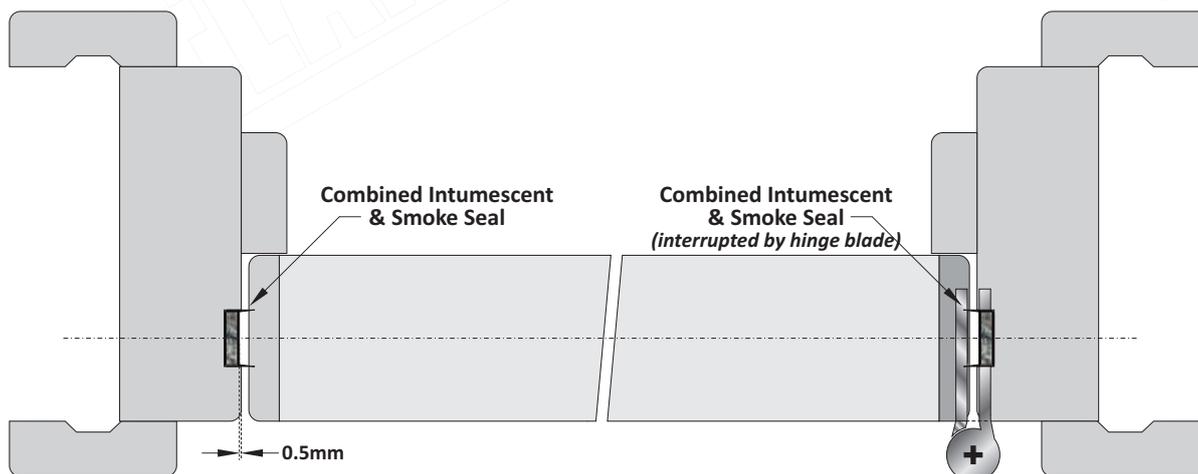
This detail illustrates the Norsound NOR710 perimeter seal that has been extensively tested for both smoke sealing and acoustic door applications. Similar tested frame rebate seal designs are available from a number of sources that are intended to be located in the frame rebate

Seals located in this position provide for optimum smoke sealing performances and are less likely to suffer from conflicts with hardware or other seals. They are likely to have a minimal influence on operating forces and can be easily replaced in the event of damage.

**NOTE :** The use of a 2~3mm R pencil round is recommended, to be applied to the closing edges of the door leaf to provide for a lead for the compression of seals and to improve seal durability.

#### Combined Intumescent / Smoke Seals

Fig. 5.3



Numerous designs of combined intumescent / smoke seals have been tested and proven to be capable of providing for compliance with BS9999 requirements. However their use should be carefully planned to minimise conflicts with hardware fittings.

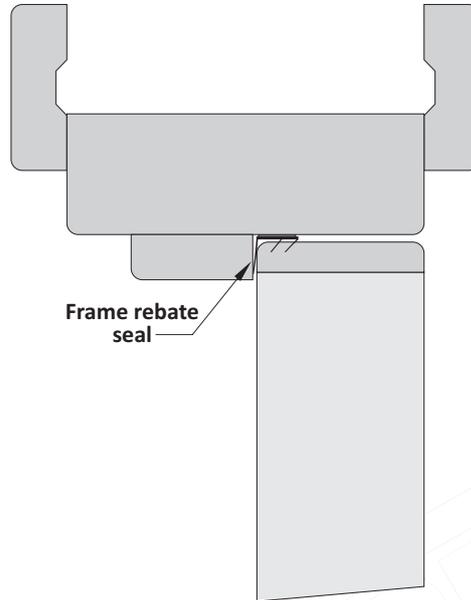
These types of perimeter seals can have an influence on operating forces depending upon the particular door width / thickness - See Section 10 - Door Assembly Coordination for further guidance.

**NOTE :** Over recessing the seal carrier by 0.5mm will relieve stress on the blade / carrier joint and the use of a 2~3mm R pencil round is recommended, to be applied to the closing edges of the door leaf to provide for a lead for the compression of seals and to improve seal durability.

### Smoke Sealing - Perimeter Sealing - Single Action - Head:

#### Independent Frame Rebate Smoke Seal.

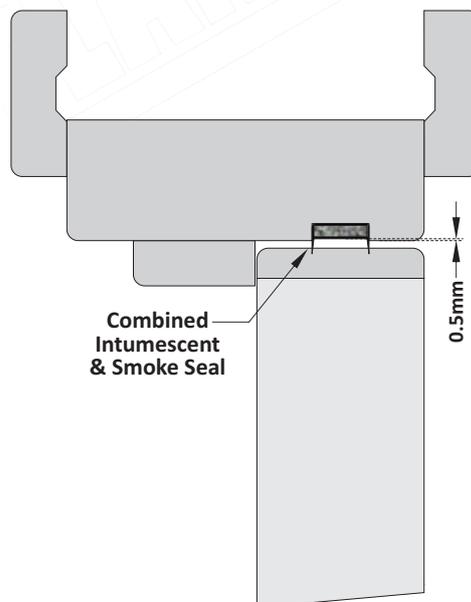
*Fig. 5.4*



Generally the smoke sealing fitted to the head (*and threshold if a 4 sided frame is used*) should be of the same type and size as the Jamb Seals and positioned to provide for continuous alignment in a single plane around the door.

#### Combined Intumescent / Smoke Seal.

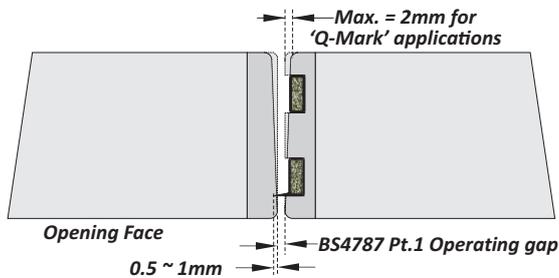
*Fig. 5.5*



Generally the smoke sealing fitted to the head (*and threshold if a 4 sided frame is used*) should be of the same type and size as the Jamb Seals and positioned to provide for continuous alignment in a single plane around the door.

### Smoke Sealing - Meeting Stiles - Single Action - Simultaneous Opening:

**Meeting Stiles - Square  
Combined Intumescent / Smoke Seals:** *Fig. 5.6*



#### **Combined Intumescent / Smoke Seals - Single Action - Simultaneous Opening:**

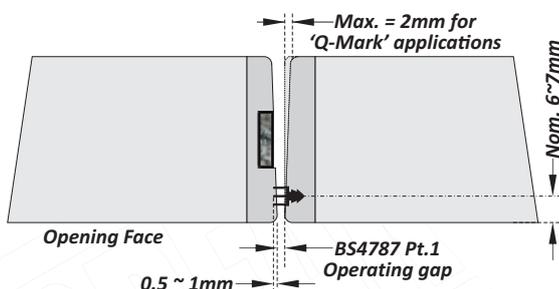
**NOTE:** For simultaneous opening an important consideration is that the closing face (frame doorstep face) of the door should clear the adjacent door during operation without detriment to operating gaps described in BS4787 - Pt.1 when the doors are opened or closed in any order. To achieve this it may be necessary to profile the lippings. The necessary adjustments for the leading edge will be determined by the door leaf width & thickness but should not exceed the maximum 2mm reduction for 'Q' marked fire door applications. (See 'Door Growth' Calculations - Section 9 page 9.32).

For single action doors the use of a combined intumescent seal / smoke seal often provides for the simplest solution for the smoke sealing of meeting stiles for fire door applications.

Use of seal designs using an elastomeric blade seal set to one side of the intumescent seal carrier will generally provide for reduced conflict with hardware fittings.

To provide for minimal influences on operating forces and to improve the durability of the smoke seal it is recommended that the seals are recessed such that the blade overlaps the adjacent door by 0.5 ~ 1mm.

**Meeting Stiles - Square  
Independent Smoke Seal:** *Fig. 5.7*



#### **Independent Smoke Seals - Single Action - Simultaneous Opening:**

**NOTE:** For simultaneous opening an important consideration is that the closing face (frame doorstep face) of the door should clear the adjacent door during operation without detriment to operating gaps described in BS4787 - Pt.1 when the doors are opened or closed in any order. To achieve this it may be necessary to profile the lippings. The necessary adjustments for the leading edge will be determined by the door leaf width & thickness but should not exceed the maximum 2mm reduction for 'Q' marked fire door applications. (See 'Door Growth' Calculations - Section 9 page 9.32).

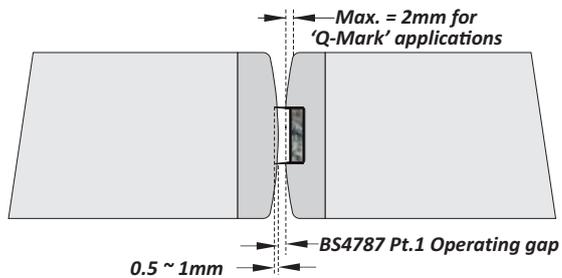
For non fire rated doors or as an alternative to the use of combined intumescent / smoke seals, the smoke sealing performance can be provided by the use of an independent smoke seal.

This option can often be considered where conflicts with hardware might otherwise apply and provides for the independent replacement of the smoke seal without the need to change the intumescent provisions.

To provide for minimal influences on operating forces and to improve the durability of the smoke seal it is recommended that the seals are recessed such that the blade overlaps the adjacent door by 0.5 ~ 1mm.

### Smoke Sealing - Meeting Stiles - Single & Double Action - Simultaneous Opening:

**Meeting Stiles - Square  
Combined Intumescent / Smoke Seals:** Fig. 5.8



**Combined Intumescent / Smoke Seals - Single  
Action & Double Action - Simultaneous Opening:**

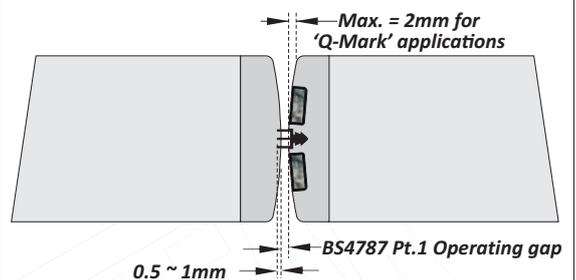
**NOTE:** For simultaneous opening an important consideration is that the closing face (frame doorstep face) of the door should clear the adjacent door during operation without detriment to operating gaps described in BS4787 - Pt.1 when the doors are opened or closed in any order. To achieve this it may be necessary to profile the lippings. The necessary adjustments for the leading edge will be determined by the door leaf width & thickness but should not exceed the maximum 2mm reduction for 'Q' marked fire door applications. (See 'Door Growth' Calculations - Section 9 page 9.32).

For single and double action doors the use of a combined intumescent seal / smoke seal often provides for the simplest solution for the smoke sealing of meeting stiles for fire door applications.

A combined intumescent / smoke seal located centre thickness at the meeting stiles of single action double leaf door assemblies (*pairs*) can often give rise to conflicts with other hardware fittings e.g. latches / flush bolts / automatic door bottoms (*drop seals*) etc. These potential problems are less likely to apply to double action doors.

To provide for minimal influences on operating forces and to improve the durability of the smoke seal it is recommended that the seals are recessed such that the blade overlaps the adjacent door by 0.5 ~ 1mm.

**Meeting Stiles - Square  
Independent Smoke Seal:** Fig. 5.9



**Independent Smoke Seals - Single Action -  
Simultaneous Opening:**

**NOTE:** For simultaneous opening an important consideration is that the closing face (frame doorstep face) of the door should clear the adjacent door during operation without detriment to operating gaps described in BS4787 - Pt.1 when the doors are opened or closed in any order. To achieve this it may be necessary to profile the lippings. The necessary adjustments for the leading edge will be determined by the door leaf width & thickness but should not exceed the maximum 2mm reduction for 'Q' marked fire door applications. (See 'Door Growth' Calculations - Section 9 page 9.32).

For non fire rated doors or as an alternative to the use of combined intumescent / smoke seals, the smoke sealing performance can be provided by the use of an independent smoke seal.

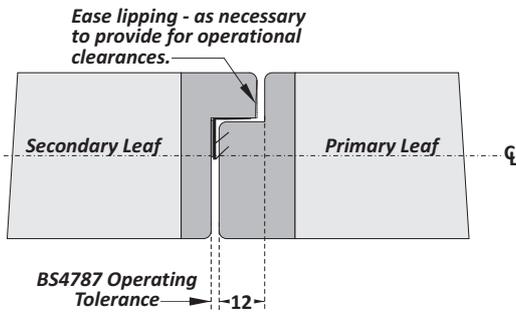
This option can often be considered where conflicts with hardware might otherwise apply and provides for the independent replacement of the smoke seal without the need to change the intumescent provisions.

To provide for minimal influences on operating forces and to improve the durability of the smoke seal it is recommended that the seals are recessed such that the blade overlaps the adjacent door by 0.5 ~ 1mm.

## Smoke Sealing - Meeting Stiles - Single Action - Sequential Opening:

### Meeting Stiles - Rebated Independent Smoke Seal:

Fig. 5.10



### Rebated Meeting Stiles - Smoke Seals - Single Action - Sequential Opening:

For single action doors sequential opening double door assemblies (*pairs*), the use of frame rebate seals of the types illustrated by reference to **page 5.4** can be considered.

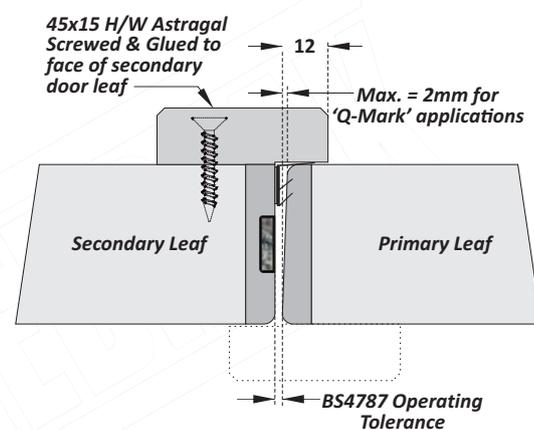
For 'Q' Marked fire rated door assemblies the use of rebates must be approved with the required intumescent seals positioned to suit.

Use of off-set rebates as illustrated may be considered to accommodate other hardware considerations. e.g. latches / flush bolts / automatic door bottoms (*drop seals*) etc.

**NOTE:** This details is not approved for 'Q-Mark' fire door applications with Flamebreak™ based door constructions.

### Meeting Stiles - Square Independent Smoke Seal:

Fig. 5.11



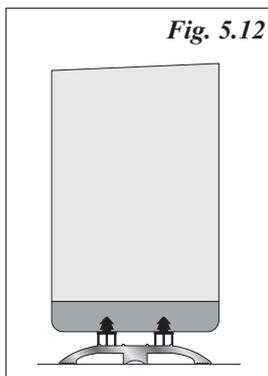
### Astragal Meeting Stiles - Smoke Seals - Single Action - Sequential Opening:

For single action doors sequential opening double door assemblies (*pairs*), the use of frame rebate seals of the types illustrated by reference to **page 5.4** can be considered for use with an astragal.

The astragal can be applied to the closing face of the secondary leaf. In this event the astragal needs to be scribed to the underside of the head door stop. Alternatively the astragal can be applied to the full door leaf height to the opening face of the primary leaf. If required, astragals can be applied to both leaves.

Meeting stiles using astragals are 'Q-Mark' approved for fire door applications and this option is recommended for use with multi performance door assemblies e.g. Fire / Smoke Sealed & Acoustic as the possibility of conflicts with other hardware is minimal.

### Smoke Sealing - Single Action - Fixed Threshold Sealing:



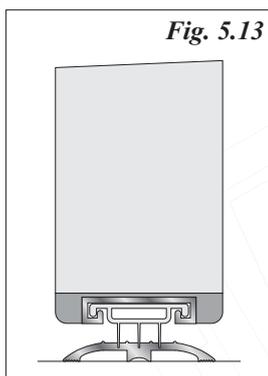
#### Fixed Bottom Edge Seals:

Brush or elastomeric blade seals can be used at the bottom edge of the door to provide for smoke sealing.

All fixed size bottom edge seals should be used with a threshold strip to ensure that the doors are effectively sealed when the door is in the closed position but that the seals clear the floor during the whole swing of the door.

A 4~5mm threshold plate height is generally sufficient to ensure the doors clear the floor when operated.

**NOTE:** Seals need to be located within the door thickness with due regard to the location of other hardware to minimise the risk of conflicts and the consequent interruption of the sealing provisions.



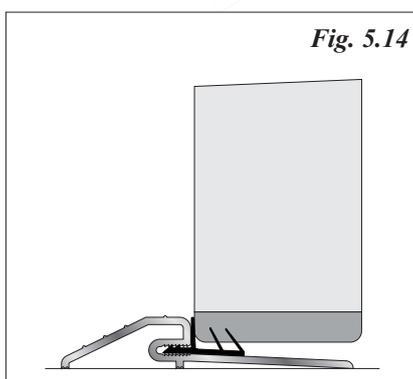
#### Door Shoes:

Provides for the same function as Fixed Bottom Edge seals but using a dedicated design with scope for some adjustment.

Door Shoes should be used with a threshold strip to ensure that the doors are effectively sealed when the door is in the closed position but that the seals clear the floor during the whole swing of the door.

A 4~5mm threshold plate height is generally sufficient to ensure the doors clear the floor when operated.

**NOTE:** Due consideration must be given to the location of other hardware to minimise the risk of conflicts and the consequent interruption of the sealing provisions.



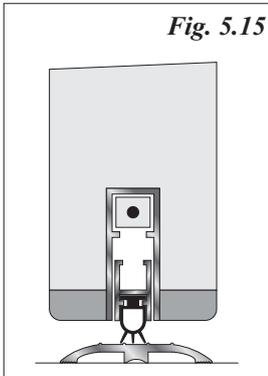
#### Combined Threshold with Seal:

These devices do not require the removal of any part of the door leaf and can generally be used with a minimal risk of conflict with other hardware.

Some designs provide for the alignment of the sealing element with related perimeter seal designs for optimum sealing performances.

**NOTE:** Reference should be made to Building Regulations (England & Wales) Approved Document 'M' and BS8300 when selecting these devices as they can create a trip hazard.

### Smoke Sealing - Automatic Door Bottoms (Drop Seals) - Threshold Sealing:



#### **Mortised Automatic Door Bottoms - (Drop Seals):**

When the door closes, the sealing element is activated by a plunger such that the seal is retracted into the bottom edge of the door when opened and only becomes effective when the door is in the closed position.

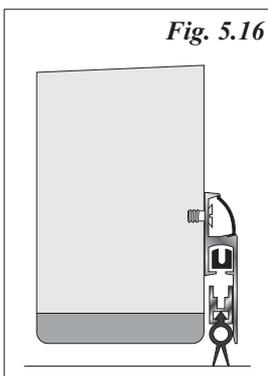
Most designs are operated by a plunger in contact with the hanging jamb but there are some designs that are activated by contact with the closing jamb or by both the hanging and closing jambs (*stiles*).

Whereas these are generally intended for single action use there are some designs (*usually positioned off set in the door thickness*) that can be used for double action applications.

Other designs are available that incorporate 'dedicated' edge fixed flush bolts for use with pairs of doors where both leaves need to be secured.

Whereas these devices can work with soft floor finishes e.g. carpet, the durability of the seal may be reduced, it is therefore generally recommended that these devices are used with low level threshold strips unless they are used with smooth floor finishes e.g. vinyl flooring.

**NOTE: A number of Automatic Door Bottom designs are 'Q-Mark' approved for fire door applications when used with Flamebreak™ based door constructions - See Section 8 - Hardware.**



#### **Surface Mounted Automatic Door Bottoms - (Drop Seals):**

Surface mounted Automatic Door Bottoms (*Drop Seals*) are also available. These are generally fixed to the closing face of the door(s).

In this case (*for most designs*) the sealing element is operated by a plunger in contact with the hanging jamb door stop. i.e. the seal does not extend to the full width of the door.

**NOTE: There are a limited number of designs that can be face fixed to the opening face of the door(s).**

The use of surface mounted Automatic Door Bottoms results in a minimal risk of conflict with other hardware or sealing provisions.

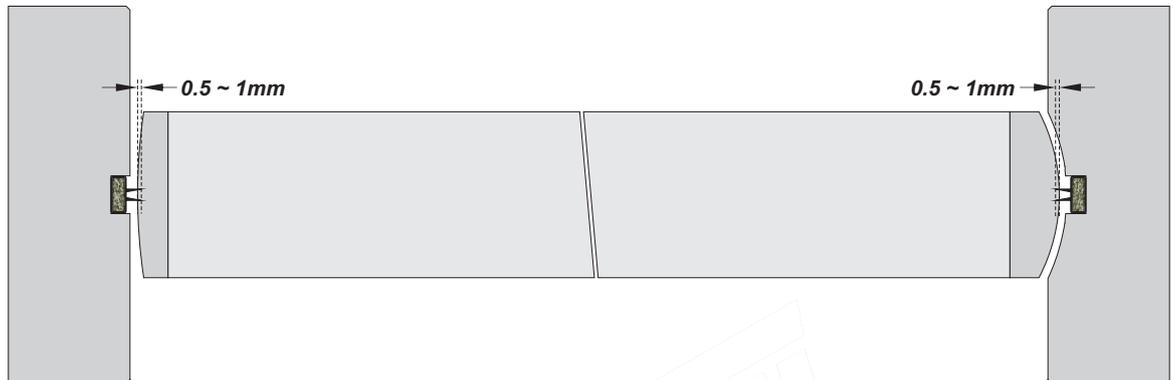
Surface mounted Automatic Door Bottoms can generally be used for fire door applications including as an added item for an existing installation to provide for compliance with BS9999 smoke sealing requirements for threshold smoke sealing.

Whereas these devices can work with soft floor finishes e.g. carpet, the durability of the seal may be reduced, it is therefore generally recommended that these devices are used with low level threshold strips unless they are used with smooth floor finishes e.g. vinyl flooring.

### Smoke Sealing - Double Action - Hanging & Closing Jambs:

Smoke Sealing - Double Action - Hanging & Closing Jambs - OPTION 1:

Fig. 5.17



The use of a combined intumescent seal / smoke seal often provides for the simplest solution for the sealing at the hanging and closing stiles for double action doors that are generally unlatched. i.e. there is little risk of conflict with hardware items.

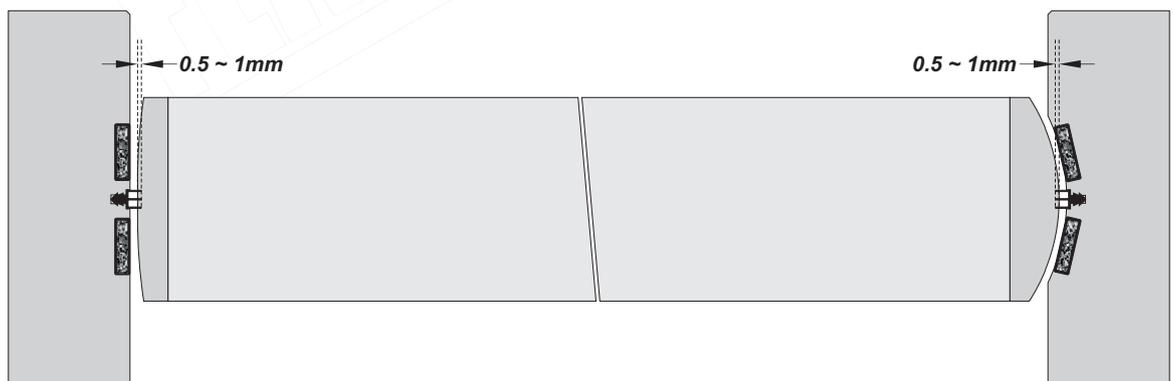
Seals of this type can generally be fitted to the frame (*as illustrated*) or to the door stiles.

Use of seal designs using an elastomeric blade or brush seal set central in an intumescent seal carrier will generally provide for reduced conflict with hardware fittings.

To provide for minimal influences on operating forces and to improve the durability of the smoke seal it is recommended that the seals are recessed such that the blade overlaps the door by 0.5 ~ 1mm.

Smoke Sealing - Double Action - Hanging & Closing Jambs - OPTION 2:

Fig. 5.18



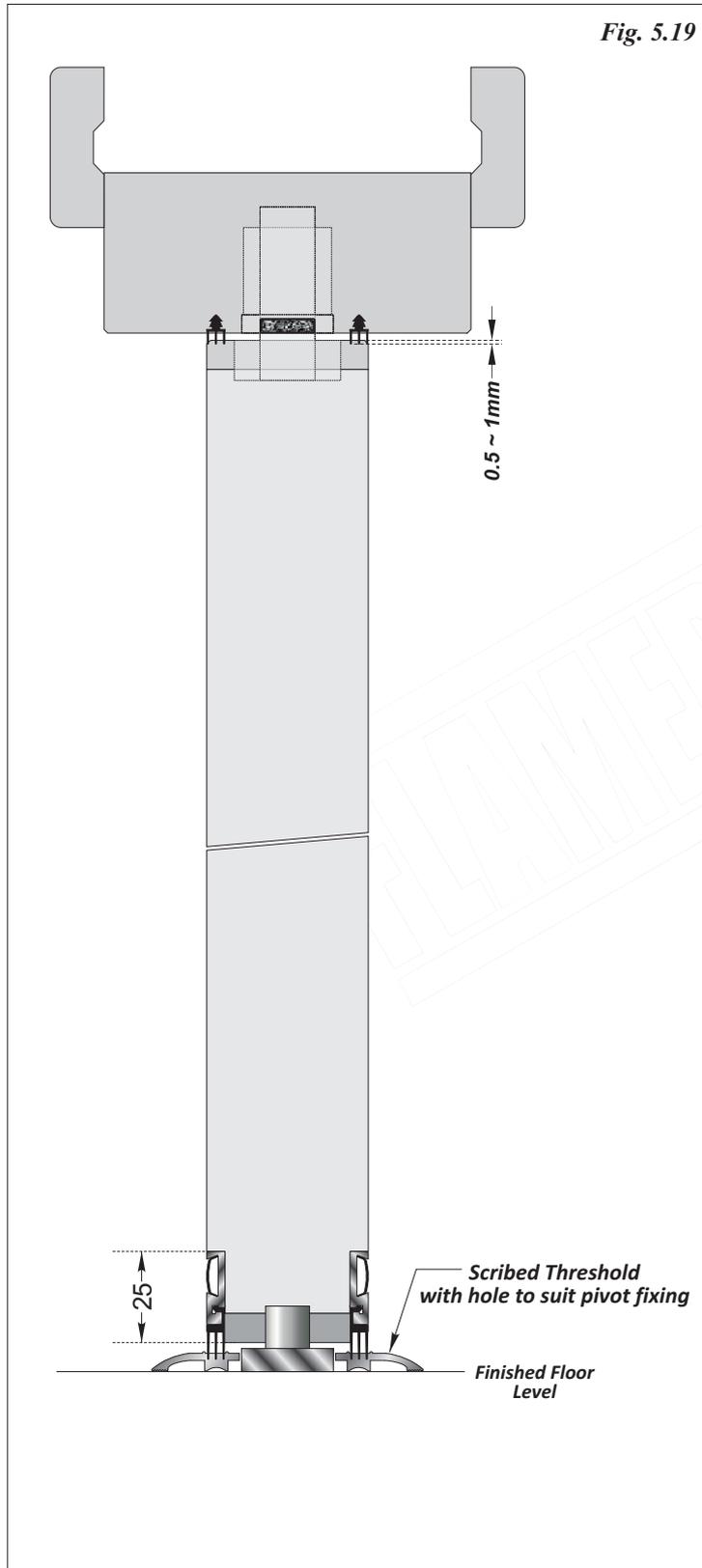
Where appropriate (*e.g. to suit intumescent seal requirements for the required performance*) a separate brush or elastomeric blade type seal may be used to seal at the hanging and closing stiles for double action doors. The seals should be located to ensure minimal conflict with hardware items.

To provide for minimal influences on operating forces and to improve the durability of the smoke seal it is recommended that the seals are recessed such that the blade overlaps the door by 0.5 ~ 1mm.

Seals of this type can generally be fitted to the frame (*as illustrated*) or to the door stiles.

## Smoke Sealing - Double Action - Head & Threshold:

Fig. 5.19



### Double Action Head & Threshold Sealing:

It is more difficult to provide for uninterrupted sealing at the head and threshold for double action doors due to the location of pivot fixings.

Whereas a single seal might be used at the head to align with the centre door thickness jamb / stile seals, it is necessary to remove a section of the sealing to allow for the fitting of the top pivot fixings.

For some bottom edge door fixings, the pivot straps need to be located approx. 8mm above the floor mounted closer.

**NOTE: To achieve a maximum 3mm gap above the finished floor level it may, in some cases, require that strap fittings are over recessed into the bottom edge of the door.**

This illustration shows a method for achieving maximum smoke sealing performances in a manner that provides for uninterrupted sealing systems that does not conflict with operating hardware.

The frame head is fitted with 2 rows of Norsound NOR720 (as illustrated) located to clear the top centre fittings. Whereas one strip is sufficient for smoke sealing purposes, the use of 2 strips is recommended to provide for an equal influence on both sides of double action doors that are generally unlatched.

For the threshold, it is recommended that a wide, low level threshold strip is used. This should be pre machined to suit the Floor Mounted Closer pivot locations.

**NOTE 1: Alternatively, a split threshold can be used to allow fitting of the threshold from both faces of the door.**

The faces of the door leaf at the bottom of the door are recessed to receive flexible seals such as the Norsound NOR855. The carriers must essentially be recess flush with the door and profiled at the hanging edges to suit the profile of the door.

FLAMEBREAK



## General:

Doors are glazed primarily for the safety of users of a building. However, glazing is often used as a means for expressing aesthetic considerations.

Flamebreak™ provides for a stable core construction that offers wide scope for glazing.

It would be an almost impossible task for one manufacturer or supplier to test every conceivable variation in glass type and beading system. This section sets out some options but other options may be considered subject to supporting fire test / assessment documentation.

**NOTE 1:** Further general information with regard to glass and glazing systems for fire rated door assemblies can be obtained by reference to 'A Guide to Best Practice in the Specification and Use of Fire Resistant Glazed Systems' (2011) published by the GGF (Glass & Glazing Federation).

**NOTE 2:** Proprietary glazing systems can only be used under 'Q-Mark' certification where they are included within the scope of certification for use with FLAMEBREAK™ based doors.

**NOTE 3:** Unless otherwise approved for the particular glazing system, all timber beading used for fire rated door assemblies must be straight grained, joinery quality hardwood, free from knots, splits and checks and with a density of not less than 640kg/m<sup>3</sup>. (Excluding Beech - *Fagus Sylvatica*). See page 6.2.

## Glass Types:

Generally glass will fall into one of two categories:

**Uninsulated:** Glass in this category would include 6mm Georgian Wired e.g. Pilkington's Pyroshield 2; Borosilicate glass e.g. Shott Glass Pyran; Ceramic glass e.g. Southern Ceramics Firelite. These glass types have the potential to provide for integrity performances referred to in this manual when used with appropriate intumescent beading systems but they do not stop the transfer of heat from the fire side to the non fire side of the door.

To reduce the risk of ignition on the non fire side of the door due to heat transmission, the bead profiles should generally be splayed unless there is fire test / assessment data to support the use of non splayed beads.

**Insulated:** Glass in this category is generally made up of multiple layers of float glass interleaved with clear hydrated sodium silicate intumescent material.

Glass types in this category include: Pyrobel (AGC Flat Glass Europe) and Pyrostop (Pilkington Glass Ltd.)

**NOTE:** These glass types should be handled and fitted with care and in strict conformity with the glass manufacturers recommendations. Exposure of the edges of the glass can cause a breakdown in the intumescent interlayers visible as discolouration on the face of the glass.

Wood doors, including doors made using Flamebreak™ cores provide for insulating properties that generally equal the integrity performance when used as flush doors. Unless used with insulating glass types, the insulation performance is generally reduced when doors are glazed.

BS 476 Pt.22 provides for tests of fully insulated or partially insulated specimens.

For fully insulated performances an insulating glass must be used to prevent the temperature on the non fire face from rising above (average) 140°C above ambient temperature or 180°C above ambient temperature at any point.

For partially insulated specimens the 140°C average may be exceeded to an unspecified level over an area not exceeding 20% of the area of the test specimen.

If full insulation is required, the insulation performance of the glass should be at least equal to the insulation performance of the door construction. However, for most applications, an insulation performance equal to 50% of the integrity performance is satisfactory.

Where the insulation performance of the glass is 50% (or more) than the integrity performance of the door, the risk of ignition on the non fire face of the door due to heat transmission is considerably reduced providing for greater scope in the design of the bead profile.

## BS 6206 (BS EN 12600) Safety Class:

In addition to fire performances, consideration must also be given to the BS 6206 Safety Performance. The Safety Class will vary according to the location of the glass aperture in the door leaf (assembly). (See Building Regulations - [England & Wales] - Approved Document 'K'). In addition, certain projects (e.g. Schools) may require special Safety Class requirements.

**NOTE:** Building Regulations (England & Wales) Approved Document 'K' makes reference to BS 6206 and BS EN 12600 safety classes. Impact performances determined by reference to BS EN 12600 may be substituted for the BS 6206 Classes by reference to the following:

BS6206		BS EN 12600
Class 'A'	=	Class 1
Class 'B'	=	Class 2
Class 'C'	=	Class 3

## General Notes:

**NOTE 1:** Building Regulations - (England & Wales) - Approved Document 'K' requires that a safety glass (BS 6206 Class C for pane widths up to 900mm - Class B for pane widths over 900mm) is used for the glazing of doors up to a height of 1500mm above floor level.

**NOTE 2:** Building Regulations - (England & Wales) - Approved Document 'B' (Table A4 note 5) requires that fire-resisting glass should be marked with the manufacturer and product name.

**NOTE 3:** BS 6262-4:2005 (clauses 7.1 & 7.2) requires that safety glass should be indelibly marked to be visible after beading.



## 6.2 Glass & Glazing General

# FLAMEBREAK

### Beading Systems for Fire Doors:

To perform correctly, the glass must be retained in a beading system that incorporates intumescent sealing.

**NOTE:** All glass types must be fitted fully in accordance with the manufacturers tested details and installation requirements, particularly in respect of edge cover and expansion clearance.

#### FD30:

Fire performances up to FD30, generally require beading using Min. 640kg/m<sup>3</sup> @ 15% moisture content hardwood. Bolection bead (*splayed beads with nibs that extend over the face of the door*) may be used with either non insulating or insulating glass types. Flush beads (*square section glazing beads that do not project beyond the face of the door*) are generally limited for use with insulating and partially insulated glass types. (See details)

#### FD60:

Fire performances up to FD60, generally require beading using Min. 640kg/m<sup>3</sup> @ 15% moisture content hardwood. (Excluding Beech - *Fagus Sylvatica*). Bolection bead (*splayed beads with nibs that extend over the face of the door*) may be used with either non insulating or insulating glass types. Flush beads (*square section glazing beads that do not project beyond the face of the door*) are generally limited for use with insulating glass types. (See details)

### Proprietary Intumescent Glazing Systems:

Various Intumescent Seal manufacturers offer proprietary systems for glazing fire doors.

**WARNING:** It is important to ensure that the system selected for beading fire doors has been tested or assessed to the required level of performance in a wood door. Test / assessment data relating to the beading of metal doors or glazed screens should not be applied to wood doors.

Manufacturers / suppliers offering Intumescent Glazing Systems for use with fire doors include:

Norsound Ltd.  
Lorient Polyproducts Ltd.  
Mann McGowan Ltd.  
Intumescent Seals Ltd.  
Sealmaster Ltd.  
Pyroplex Ltd.

These systems should be used strictly in accordance with the seal manufacturers fitting instructions.

### Dimensions and Margins:

When glazing doors manufactured from FLAMEBREAK™ cores for fire door applications, the total clear glass area of the glazing must not exceed the area permitted by reference to this manual.

**WARNING:** Maximum approved glazed areas given by reference to page 6.5 are reduced where required by reference to the glazing systems data.

Further, the glass apertures must be located to ensure an adequate margin between the nearest edge of the door and the sight line of the aperture in the door to receive glazing and between the sight line of adjacent glazing apertures.

**NOTE:** This data is constantly changing as a consequence of on going fire test programmes.

### Bead Fixings:

**FD30:** Generally beads must be fixed using Min. 50mm long x 2mm diameter steel pins or 40mm long No.6~8 screws, inserted at 35~40° to the vertical at no more than 50mm from each corner and at 150mm max. centres. The use of Pneumatically fired pins is permitted, see page 6.3 for further details.

**FD60:** Generally beads must be fixed using Min. 60mm long x 2mm diameter steel pins or 60mm long No.6~8 screws, inserted at 35~40° to the vertical at no more than 50mm from each corner and at 150mm max. centres. The use of Pneumatically fired pins is permitted, see page 6.3 for further details.

**NOTE 1:** Fixings for beading must pass from the bead fixing position through to a point that is beyond the centre thickness of the door leaf.

**NOTE 2:** Where removable screw fixed beads are required, (e.g. provision for glass replacement) the screws should be to one face only, steel cups & screws should be used for this purpose. The non removable bead can be fixed using screw or pin fixing as described above. Glass replacement must only be carried out by a qualified glazier.

**NOTE 3:** Any damaged intumescent glazing system or hardwood beading must be replaced using the same system as originally used when replacing damaged glass.

### Security:

Some specifications require a security performance in addition to a fire performance. The bead may be designed to restrict removal from one face by use of a combined lining and bead. The combined lining / bead must be glue and screw fixed (*with the reinforcing screw fixing located centre thickness of the door*) such that there are no visible fixings on the secure face. A removable pinned or screw fixed bead can then be applied to the non secure face.

**NOTE:** Laminated glass providing for security performances use polymer interlayers and not intumescent interlayers. These glasses are generally not suitable for use with fire rated doorsets.

### Technical Support:

Where design requirements describe glazing that falls outside of the scope of the assessed applications envelopes described in this manual for any particular performance, details of the requirement should be forwarded for further comment to:

Pacific Rim Wood Ltd.,  
Ground Floor Suite, Block B,  
The Old Kelways  
Somerton Road  
Langport,  
Somerset TA10 9SJ  
Tel: +44 (0) 1458 252 305  
E-mail: enquiries@prwuk.com



**Q Pneumatically Fired Pins - Approved Specifications:**

Timber glazing bead otherwise conforming with approved material specifications and fixing positions may be fixed using pneumatically fired pins conforming to the following specifications:

**Minimum length:**

FD30 applications = 50mm

FD60 applications = 60mm

**Round and oval pins:**

Minimum Standard Wire Gauge (SWG) = 16.

Minimum cross section area = 2.03mm<sup>2</sup>

Minimum linear dimension in any direction = 1.6mm.



**Rectangular Pins:**

Minimum Standard Wire Gauge (SWG) = 16.

Minimum cross section area = 2.24mm<sup>2</sup>

Minimum linear dimension in any direction = 1.4mm.

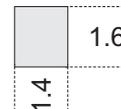
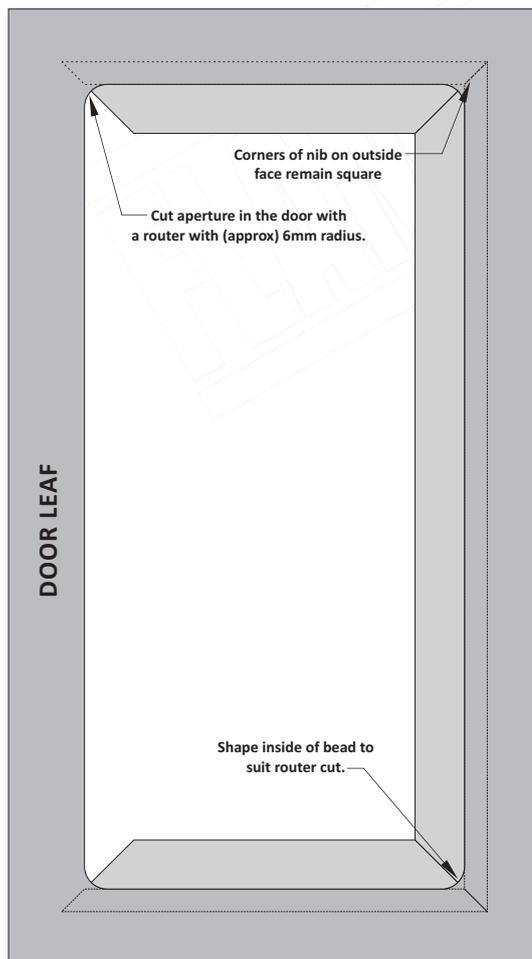


Fig. 6.1

**Recommended Aperture preparation and Beading for Laminate (and brittle material) faced Doors:**

Fig. 6.2



FLAMEBREAK™ is essentially a wood based product. Whereas this material demonstrates a high degree of stability, some movement can be expected where the core is subjected to significant changes in environmental conditions and in particular, where such changes take place over a short period of time.

When used with plastic laminates (*or facing materials with similar properties*), differential movement between the facing material and the core can lead to stresses that may become evident by cracking of the facing material with the cracks generally originating from apertures in the face of the door.

The risk of this occurrence can be significantly reduced where the corners of the apertures are left rounded. This can be achieved in two ways:

1/ When used with a bolection bead, round the back of the beads at the corners to match the router cut in the aperture. (*The appearance of the cover nib on the face of the door remains square.*)

2/ Subject to sufficient bead nib cover, line the aperture with a suitable 3mm material (*say plywood*) to create square corners to receive the beading.

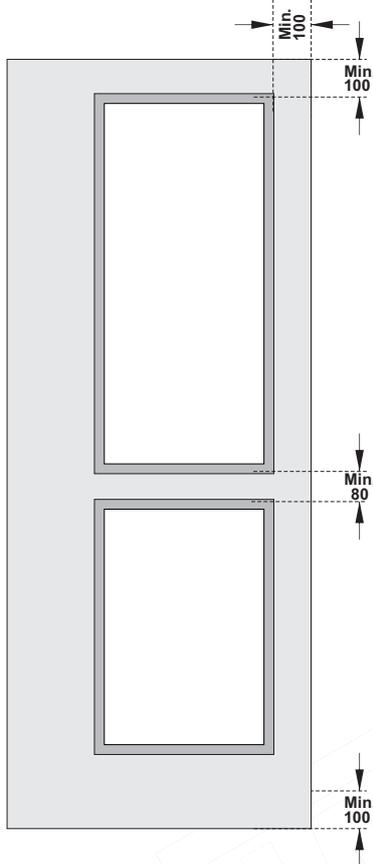
**NOTE:** *This detail is not approved for 'Q-Mark' fire door applications.*

**NOTE:** *When used with flush beads, it is recommended that the aperture is lined with hardwood with the corners of the lining shaped to match the routered corners in the door leaf.*

## 6.4 Glass & Glazing General

# FLAMEBREAK

**Q** FD30 - 'Q-Mark' approved  
Glazing margins. *Fig. 6.3*



### FLAMEBREAK™ 430, 630 & FF630

#### FD30 Glazing Rules:

- The maximum approved area for glazing is 1.15m<sup>2</sup> (subject to maintenance of minimum margin requirements).
- The recommended minimum margins for locating apertures to be not less than 100mm from any edge of the door.
- Where multiple apertures are used, the separation between each glazed aperture must not be less than 80mm.
- Multiple apertures are acceptable provide the total glazed area does not exceed the maximum approved area for the particular application.
- The aperture shape is not restricted providing that glazing systems and beading are compatible with that shape.

**WARNING:** The maximum permitted aperture dimension may be reduced according to the selected glass type and glazing system. See 'Q-Mark' approved Glass Types and Glazing systems for FD30 applications.

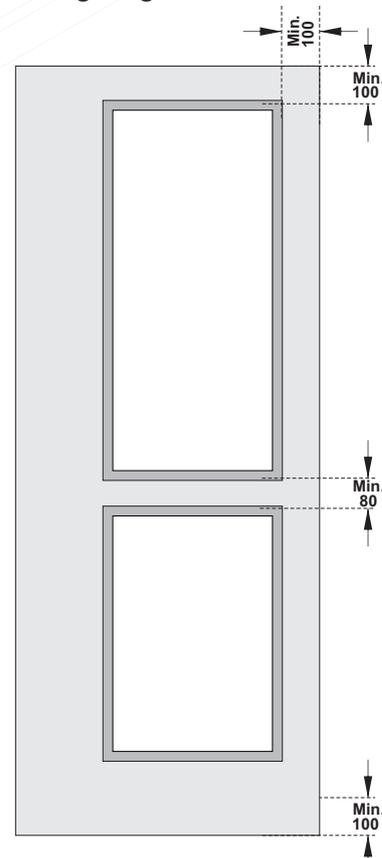
### FLAMEBREAK™ 660 & FF660

#### FD30 Glazing Rules:

- The maximum recommended area for glazing is 0.72m<sup>2</sup> (subject to maintenance of minimum margin requirements).
- The recommended minimum margins for locating apertures to be not less than 100mm from any edge of the door.
- Where multiple apertures are used, the separation between of each glazed aperture must not be less than 80mm.
- Multiple apertures are acceptable provide the total glazed area does not exceed the maximum approved area for the particular application.
- The aperture shape is not restricted providing that glazing systems and beading are compatible with that shape.

**WARNING:** The maximum permitted aperture dimension may be reduced according to the selected glass type and glazing system. See 'Q-Mark' approved Glass Types and Glazing systems for FD60 applications.

**Q** FD60 - 'Q Mark' approved  
Glazing margins. *Fig. 6.4*



## FD30 Approved Glass Types

			Max. Approved Glazed Area	Nom. Thickness
	1	PYROSHIELD 2 - Pilkington Glass Ltd.	1.15m <sup>2</sup>	6&7 mm
	2	PYRAN S - Schott Glass Ltd.	1.15m <sup>2</sup>	6mm
	3	PYROSTEM - Pyroguard UK Ltd.	1.15m <sup>2</sup>	6mm
	4	PYROGUARD EW30 - CGI Ltd.	0.87m <sup>2</sup>	7mm
	5	PYROBELITE 7 - AGC Flat Glass Europe.	1.15m <sup>2</sup>	7mm
	6	PYRODUR 30-104 - Pilkington Group Ltd.	1.15m <sup>2</sup>	7mm
	7	PYRODUR 60-10 - Pilkington Group Ltd.	1.15m <sup>2</sup>	10mm
	8	PYROGUARD EW MAXI - Pyroguard UK Ltd.	0.52m <sup>2</sup>	11mm
	9	PYRANOVA 15-s2.0 - Schott Glass Ltd.	1.15m <sup>2</sup>	11mm
	10	PYROBELITE 12 - AGC Flat Glass Europe.	1.15m <sup>2</sup>	12mm
	11	PYROSTOP 30-10 - Pilkington Group Ltd.	1.15m <sup>2</sup>	15mm
	12	PYROBEL 16 - AGC Flat Glass Europe.	1.15m <sup>2</sup>	16mm

### FLAMEBREAK™

#### FD30 'Q-Mark' Approved Glass Types:

This table lists the 'Q-Mark' approved glass types for use with FLAMEBREAK™ FD30 fire door constructions that may be used with all suitable approved glazing systems.

Additional glass type options for FD30 applications requiring the use of dedicated glazing systems are listed on page **6.6**.

Further glass types may be used in reliance upon further fire test / assessment data to be provided by the glass manufacturer (*supplier*) and, where the glass type is approved for use in timber doors.

It is essential to use the correct beading system to suit the fire performance and the glass type.

**NOTE: Users must consult glass suppliers / manufacturers to determine heat radiation, insulation and impact resistance properties together with any other glass performance attributes that may be required for particular projects.**

### FLAMEBREAK™

#### FD60 'Q-Mark' Approved Glass Types:

This table lists the 'Q-Mark' approved glass types for use with FLAMEBREAK™ FD60 fire door constructions that may be used with all suitable approved glazing systems

Additional glass type options for FD60 applications requiring the use of dedicated glazing systems are listed on page **6.6**.

Further glass types may be used in reliance upon further fire test / assessment data to be provided by the glass manufacturer (*supplier*) and, where the glass type is approved for use in timber doors.

It is essential to use the correct beading system to suit the fire performance and the glass type.

**NOTE: Users must consult glass suppliers / manufacturers to determine heat radiation, insulation and impact resistance properties together with any other glass performance attributes that may be required for particular projects.**

## FD60 Approved Glass Types

			Max. Approved Glazed Area	Nom. Thickness
	1	PYROSHIELD 2 - Pilkington Group Ltd.	0.72m <sup>2</sup>	6&7 mm
	2	PYRAN S - Schott Glass Ltd.	0.72m <sup>2</sup>	6mm
	3	PYROSTEM - Pyroguard UK Ltd.	0.6m <sup>2</sup>	6mm
	4	PYRODUR 60-10 - Pilkington Group Ltd.	0.72m <sup>2</sup>	10mm
	5	PYROBELITE 12 - AGC Flat Glass Europe.	0.72m <sup>2</sup>	12mm
	6	CONTRAFLAM - Vetrotech Saint Gobain	0.72m <sup>2</sup>	14mm
	7	PYROSTOP 30-10 - Pilkington Group Ltd.	0.72m <sup>2</sup>	15mm
	8	PYROBEL 16 - AGC Flat Glass Europe.	0.72m <sup>2</sup>	16mm



### FD30 'Q-Mark' Approved Glass Types with Dedicated Glazing Systems:

The glass types listed below are 'Q Mark' approved for use with FLAMEBREAK™ FD30 fire door constructions only when used with the dedicated glazing systems listed in the following table.

FD30 Approved Glass Types		Max. Approved Glazed Area	Nom. Thickness	Dedicated Glazing System
	13 PYROCLEAR 30-001 - Pilkington Group Ltd.	0.43m <sup>2</sup>	6mm	Pilkington Pyroclear Glazing System

### FD60 'Q' Mark Approved Glass Types with Dedicated Glazing Systems:

The glass types listed below are 'Q-Mark' approved for use with FLAMEBREAK™ FD60 fire door constructions only when used with the dedicated glazing systems listed in the following table.

FD60 Glass Type		Max. Approved Glazed Area	Nom. Thickness	Dedicated Glazing System
	9 PYROCLEAR 60-001 - Pilkington Group Ltd.	0.72m <sup>2</sup>	6mm	Pilkington Pyroclear Glazing System
	10 PYROSTOP 60-101 - Pilkington Group Ltd.	0.72m <sup>2</sup>	23mm	Pilkington Pyrostop Glazing System
	11 PYROGUARD 60-23 - Pyroguard UK Ltd.	0.72m <sup>2</sup>	23mm	Lorient Flexible Fig. 1
	12 PYROBEL 25 - AGC Flat Glass Europe.	0.72m <sup>2</sup>	25mm	AGC Pyrobel 25 Glazing System

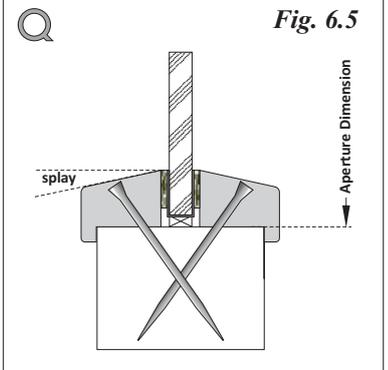
**NOTE:** This manual illustrates 'Q-Mark' approved glazing systems for use with FLAMEBREAK™ FD30 & FD60 fire rated door. However this information is published for guidance only and reference must be made to glazing system supplier / manufacturer details that take precedence over the details shown in this manual in the event of any conflict.



## Splayed Section Hardwood Glazing Bead - FD30 - General

### Hardwood Splayed Bolection Bead

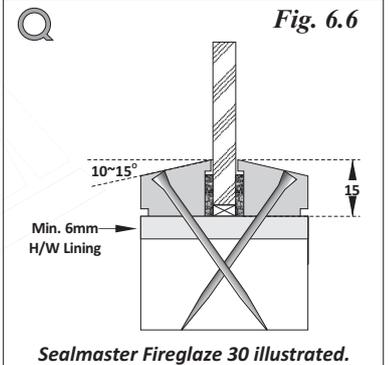
- Generally Hardwood splayed bolection beads are approved for use with FD30 Glass Types 1 ~ 12 (*See page 6.5*) when used with approved FD30 glazing systems. (*See page 6.9*).
- Unless otherwise approved timber for glazing beads (*including aperture linings where applicable*) must be hardwood, straight grained, joinery quality, free from knots, splits and checks.
- Unless otherwise approved, glazing bead must be retained in position with min. 50mm long x 2mm dia. steel pins and / or min. 40mm long No. 6 ~ 8 screws, inserted at 35~40° to the vertical. Fixings must be located within 50mm from each corner and otherwise located equi-spaced at not more than 150mm centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.



### Splayed Flush Bead:

A splayed flush bead may be used with Sealmaster Ltd. Fireglaze 30 and Intumescent Seals Ltd Therm-A-Strip (*See page 6.9*) glazing systems subject to the following:

- *The aperture in the door must be lined using min. 6mm thickness hardwood of min. 640kg/m<sup>3</sup> density (@ 15% moisture content).*
  - *The profile of the bead shall generally be the same as that approved for the corresponding bolection bead detail.*
- It is important to maintain splay angle shown for approved glazing systems when used with non insulating glass.*
- *A small rebate (not exceeding 2x2mm) may be used to the bead or the lining accommodate door thickness tolerances.*

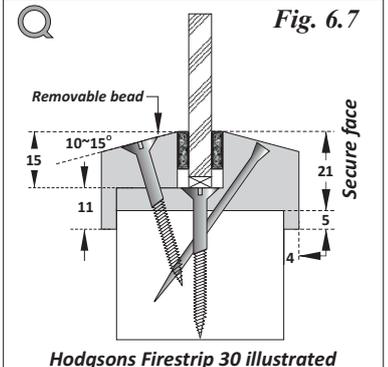


Sealmaster Fireglaze 30 illustrated.

### Improved Security Bead:

A combined bead and lining can be used with all approved FD30 glass types and glazing systems (*See pages 6.5 & 6.9*) to deny access to fixings from one side of the door leaf for improved security applications.

- *The aperture in the door must be lined using min. 26mm thickness combined bead and lining in hardwood otherwise complying with Fig. 6.5 requirements.*
- *The combined beading and lining is bonded to the aperture in the door using adhesives approved for lippings and reinforced using screw fixings located centre thickness of the door.*
- *The bead to the non secure face is fixed as described by reference to Fig. 6.5.*



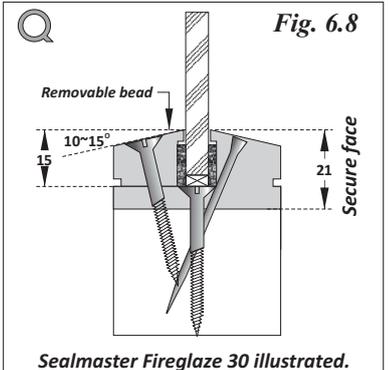
Hodgsons Firestrip 30 illustrated

### Splayed Flush Security Bead:

The splayed flush bead system illustrated in Fig. 6.6 may also be adapted (*using Sealmaster Ltd. Fireglaze 30 or Intumescent Seals Ltd Therm-A-Strip glazing systems*) to provide for improved security applications by using a combined lining / bead to the secure face.

- *Lining / bead fixing must comply with Fig. 6.6 requirements.*

*NOTE: Glass types with insulating properties FD30 Glass Types 8~13 by reference to page 6.5 may use intumescent interlayers to provide for performances under fire attack. These glass types are not intended to provide for any particular security performance. The security enhancement resulting from the use of designs indicated by reference to Figs. 6.7 & 6.8 results simply from the denial of access to bead fixings from the secure face.*



Sealmaster Fireglaze 30 illustrated.



## Square Section Hardwood Glazing Bead - FD30 - General

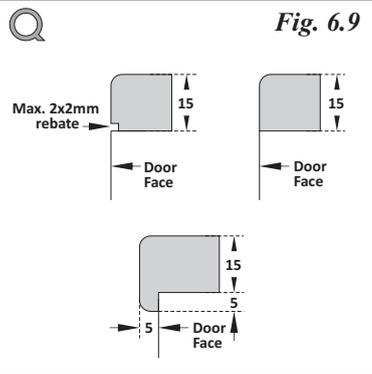


Fig. 6.9

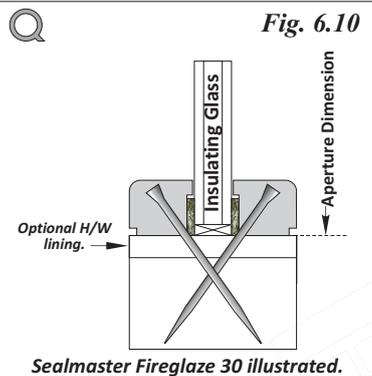


Fig. 6.10

### Hardwood Flush & Square Beads:

- The use of flush beading systems using square section beads is approved when using *Sealmaster Ltd. Fireglaze 30*, *Intumescent Seals Ltd. Therm-A-Strip* and *Hodgsons Sealants Ltd Firestrip 30* in conjunction FD30 Glass Types 7 ~ 12 only. See *FD30 Glass Types - page 6.5*.
- Maximum aperture dimensions remain as described for the particular glass type or glazing system. See *pages 6.5 & 6.9 for 'Q-Mark' approved maximum aperture dimensions for FD30 applications*.
- Whereas it is not essential for fire performance reasons, it is recommended that apertures are lined with hardwood when using square section flush beads, particularly where a 2x2mm feature rebate is used. In any event apertures must be lined when using flush beading systems where the doors are likely to be used in a high humidity environment or are likely to be subjected to wet cleaning.
- Timber used to manufacture the glazing bead and method of fixing remains as described by reference to *page 6.7 for Hardwood Splayed Belection Beads*.

## Square Section Hardwood Glazing Bead - FD30 - Security

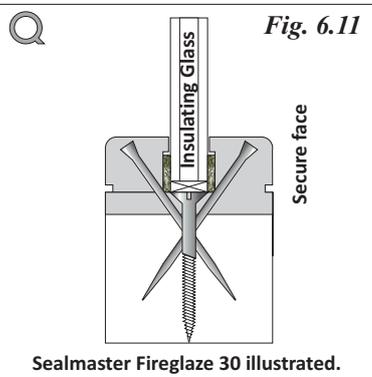


Fig. 6.11

### Square Flush Security Bead:

The splayed flush bead system illustrated in *Fig. 6.8* may also be adapted for improved security applications using square beads with glass types that provide for an insulation performance by using a combined lining / bead to the secure face.

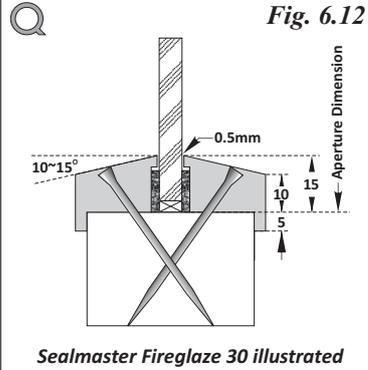
Lining / bead fixing must comply with *Fig. 6.7* requirements. (*See page 6.7*)

**NOTE:** Thicker glass types with insulating properties listed by reference to *page 6.5* may use intumescent interlayers to provide for performances under fire attack. These glass types are not intended to provide for any particular security performance. The security enhancement resulting from the use of designs indicated by reference to *Fig. 6.11* results simply from the denial of access to bead fixings from the secure face.



## Approved FD30 Glazing Systems - General

(See pages 6.18 ~ 6.24 for approved Norsound Ltd. Glazing Systems)

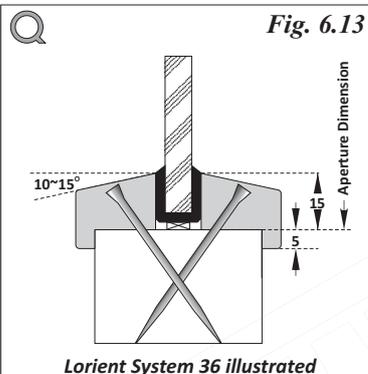


### Intumescent Seals Ltd. - 'Therm-a-Strip' Sealmaster Ltd. - 'Fireglaze 30'

- Hardwood glazing bead to be splayed 10~15°.
- Bead to be fixed using 40mm long x 2mm dia. steel pins OR 40mm long No.6~8 screws inserted at 35~40° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

**Maximum approved glazed area - Therm-A-Strip = 1.15m<sup>2</sup>**

**Maximum approved glazed area - Fireglaze 30 = 1.15m<sup>2</sup>**



### Lorient Polyproducts Ltd. - '36/6 Plus' Glazing Channel

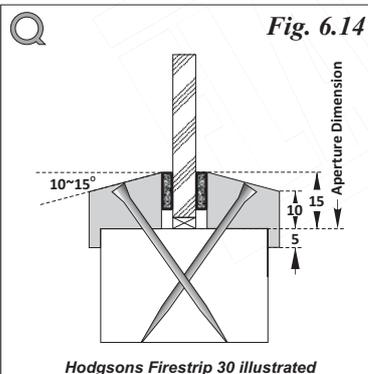
#### Pyroplex Ltd. - R8193 Glazing Channel

- Hardwood glazing bead to be splayed 10~15°.
- Bead to be fixed using 40mm long x 2mm dia. steel pins OR 40mm long No.6~8 screws inserted at 35~40° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

*NOTE: Suitable for use with circular apertures*

**Maximum approved glazed area - System 36 = 0.72m<sup>2</sup>**

**Maximum approved glazed area - Pyroplex 8193 = 0.72m<sup>2</sup>**



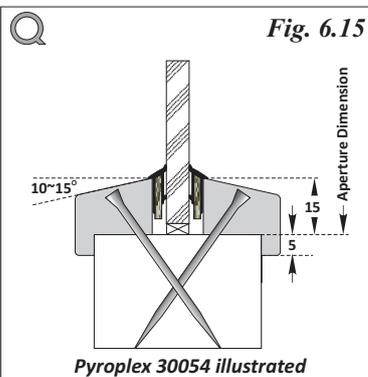
### Mann McGowan Ltd. - Pyroglaze 30

#### Hodgsons Sealants Ltd. - Firestrip 30

- Hardwood glazing bead to be splayed 10~15°.
- Bead to be fixed using 40mm long x 2mm dia. steel pins OR 40mm long No.6~8 screws inserted at 35~40° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

**Maximum approved glazed area - Pyroglaze 30 = 0.72m<sup>2</sup>**

**Maximum approved glazed area - Firestrip 30 = 1.15m<sup>2</sup>**



### Lorient Polyproducts Ltd. - 'System FF1'

#### Pyroplex Ltd. - System 30049

#### Pyroplex Ltd. - 30054 Glazing Gasket.

- Hardwood glazing bead to be splayed 10~15°.
- Bead to be fixed using 40mm long x 2mm dia. steel pins OR 40mm long No.6~8 screws inserted at 35~40° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

**Maximum approved glazed area - Lorient FF1 = 0.72m<sup>2</sup>**

**Maximum approved glazed area - Pyroplex 30049 = 0.72m<sup>2</sup>**

**Maximum approved glazed area - Pyroplex 30054 = 0.72m<sup>2</sup>**



## Dedicated FD30 Glazing Systems

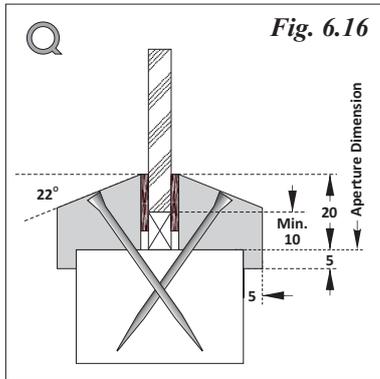


Fig. 6.16

### 6mm Pyroclear 30-001 - Pilkington Pyroclear Glazing System

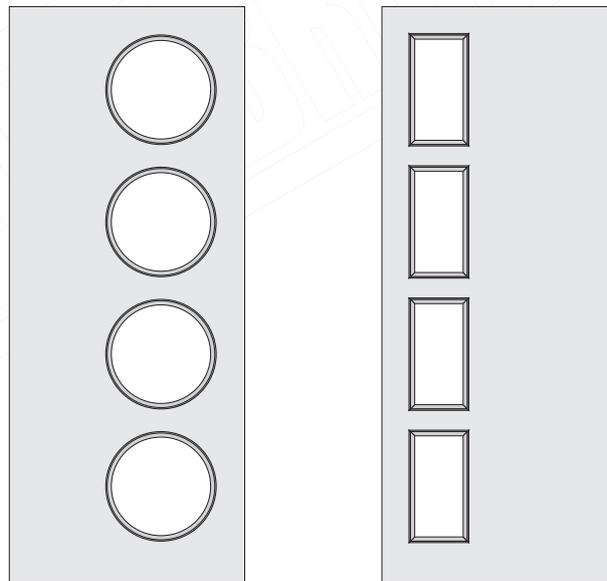
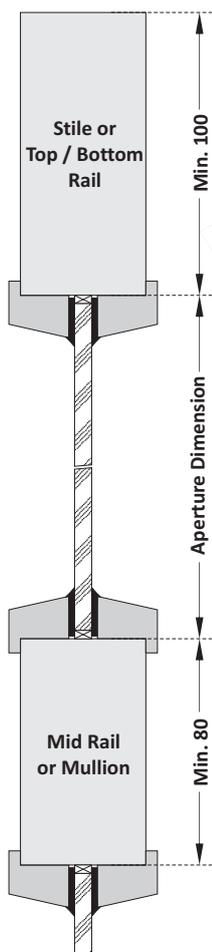
- Hardwood glazing bead to be splayed 22°.
- Bead to be fixed using 50mm long x 2mm dia. steel pins *OR* 50mm long No.6~8 screws inserted at 45° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- The glass must be fitted allowing for 10mm expansion on all edges.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.
- This glass type is limited for use with the following glazing systems:  
**Pyroglaze 30 (Fig.6.14), Pyroplex 30049, (Fig.6.15), Lorient System 36 Plus (Fig.6.13) & Lorient FF1 (Fig. 6.15).**

**Maximum approved glazed area - Pyroclear 30-001 = 0.43m<sup>2</sup>**

## FD30 Multi Aperture Glazing

### Multi Aperture Glazing

Fig. 6.17



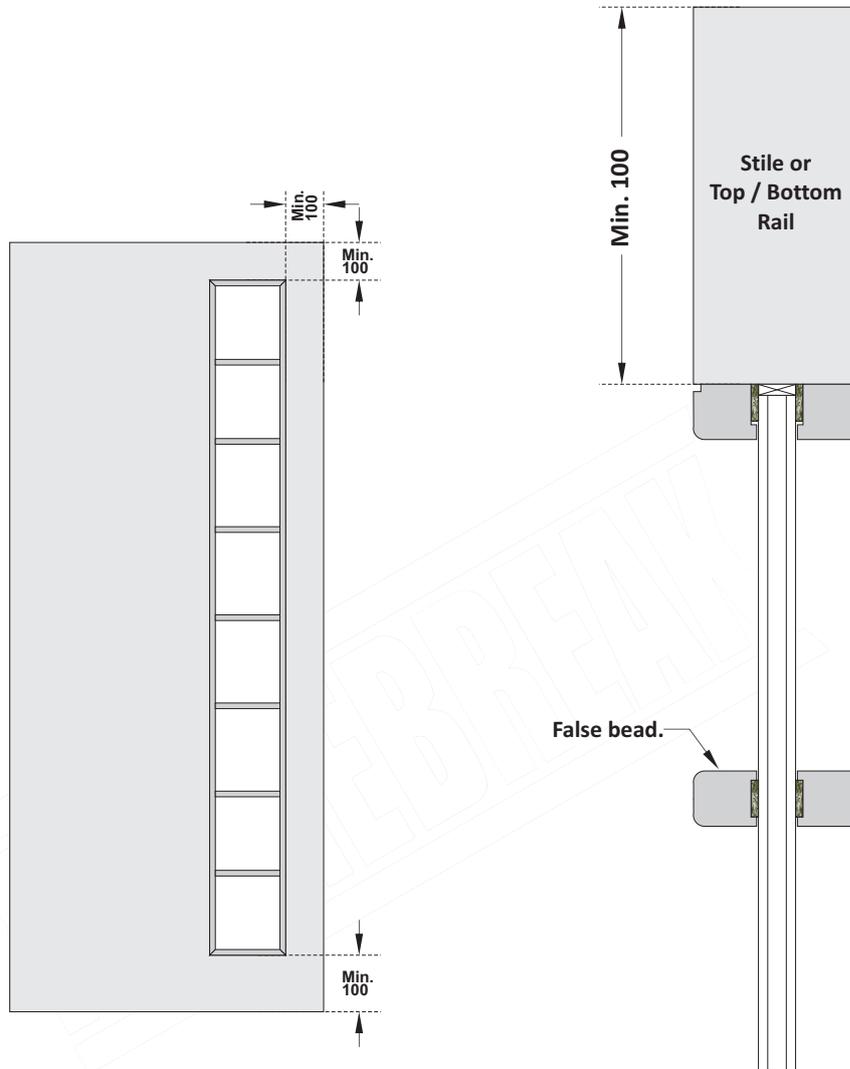
- Subject to limitations with respect of glazed areas and use of suitable glazing systems, there are no limits with regard to the quantity or shape of glazed apertures.
- The minimum dimension from any edge of the door to the nearest sight line of the aperture must not be less than 100mm.
- The dimension between adjacent apertures must not be less than 80mm.



## FD30 Multi Aperture Glazing

### Multi Aperture Glazing - Option 2.

Fig. 6.18



The appearance of multi aperture glazing can be created by the use of a single sheet of glass used with false beads that are bonded to the glass with an intumescent mastic / silicon, or an 0.5~2mm thick self adhesive intumescent tape / strip.

Mechanical fixings (*screws / pins*) must not be used for fixing the false beads.

This detail is approved for use with FD30 Glass Types 5 ~ 13 only - *See page 6.5.*

**NOTE:** This option is limited for use with the following glazing systems.

Glazing System	Manufacturer
Therm-A-Strip 30	Intumescent Seals Ltd.
Fireglaze 30	Sealmaster Ltd.
Firestrip 30	Hodgsons Sealants Ltd.
Envirograf Product 77 - G10/10	Intumescent Seals Ltd.

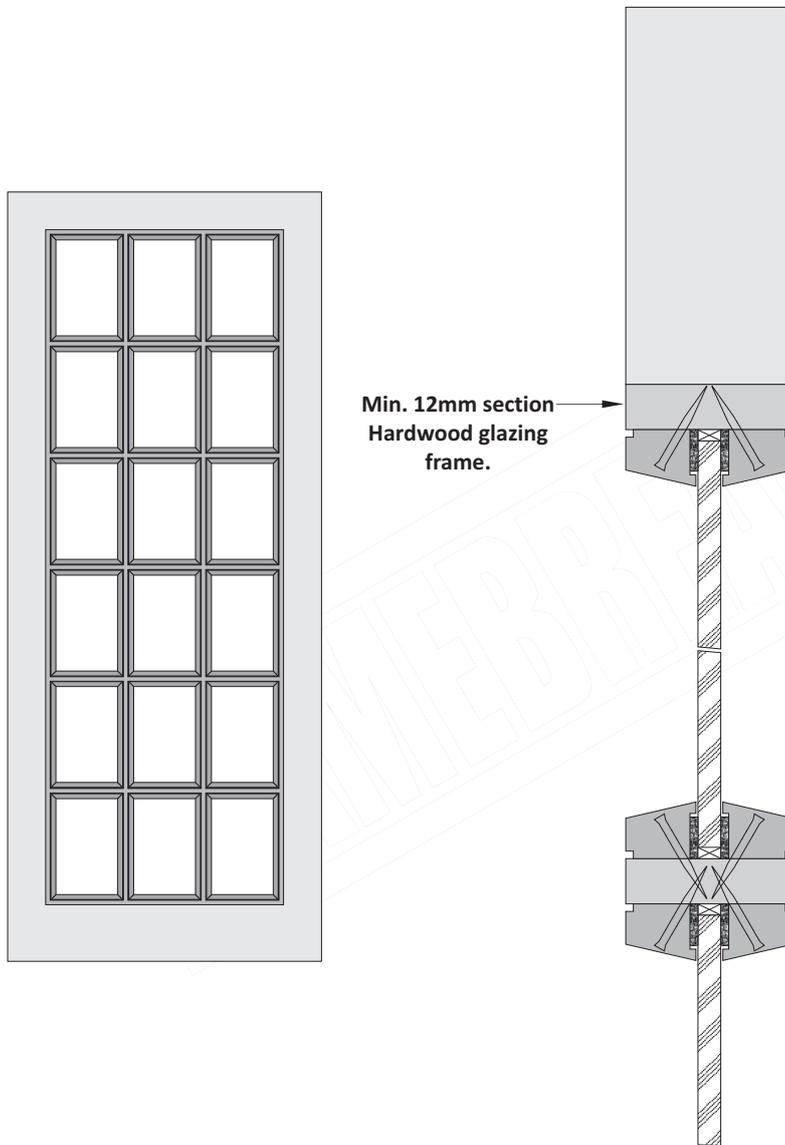
**NOTE:** Seals for bonded glazing beads must be a minimum 10mm wide x 0.5 ~ 3mm thick. Preformed strip systems listed above may be self adhesive and grooved into the rear of glazing bars.



### Multi Aperture Glazing - Not fire rated.

#### **Multi Aperture Glazing 3. NOT SUITABLE FOR FIRE DOOR APPLICATIONS**

Fig. 6.19



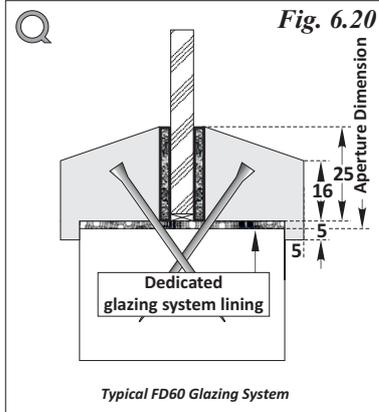
Glazing is often used in doors to provide for a means for achieving aesthetic objectives.

FLAMEBREAK™ provides for a stable door core product for this purpose.

Hardwood glazing frames can be created to suit almost unlimited pattern designs with beading fixed to the glazing frame.

**NOTE: This detail is not approved for 'Q-Mark' fire door applications.**

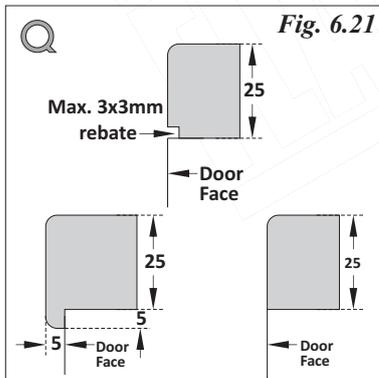
## Splayed Section Hardwood Glazing Bead - FD60 - General



### Hardwood Splayed Belection Bead

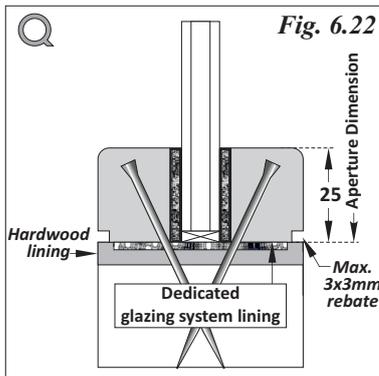
- Generally Hardwood splayed bolection beads are approved for use with FD60 Glass Types 1 ~ 8 (*See page 6.5*) when used with approved FD60 glazing systems. (*See page 6.15*).
- Unless otherwise approved timber for glazing beads (*including timber aperture linings where applicable*) must be Min. density 640kg/m<sup>3</sup> hardwood, - (*Excluding Beech - Fagus Sylvatica*) - straight grained, joinery quality, free from knots, splits and checks.
- Unless otherwise approved, glazing bead must be retained in position with min. 60mm long x 2mm dia. steel pins and / or min. 60mm long No. 6 ~ 8 screws, inserted at 35~40° to the vertical. Fixings must be located within 50mm from each corner and otherwise located equi-spaced at not more than 150mm centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

## Square Section Hardwood Glazing Bead - FD60 - General



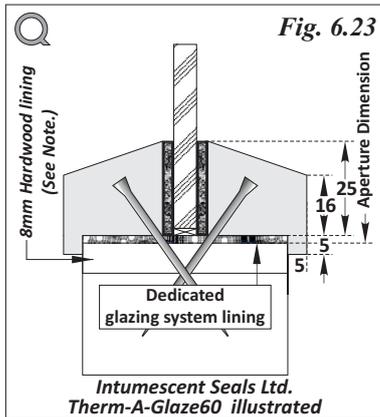
### Flush & Square Beads:

- The use of flush beading systems using square section beads is approved when using *Sealmaster Ltd. Fireglaze 60, Intumescent Seals Ltd. Therm-A-Glaze 60 and Lorient Polyproducts Ltd. System 90 Plus* with FD60 glass types 4 ~ 8 *only*. (*See page 6.5*)
- Maximum aperture dimensions remain as described for the particular glass type or glazing system. *See pages 6.5 & 6.15 for 'Q' Mark approved maximum aperture dimensions for FD60 applications.*
- Apertures must be lined with 6 ~ 10mm thickness min. 640kg/m<sup>3</sup> density hardwood - (*Excluding Beech - Fagus Sylvatica*) - when using square section flush beads with the liner glued into position using a UF (*Urea Formaldehyde*) adhesive. The hardwood aperture liner may be recessed to receive intumescent (*or similar*) liners required by the particular glazing system.
- Timber used to manufacture the glazing bead and method of fixing remains as described by reference to page 6.14 - *Fig. 6.23 for Hardwood Splayed Bolection Beads. See above.*



## Approved FD60 Glazing Systems - General

(See pages 6.18 ~ 6.24 for approved Norsound Ltd. Glazing Systems)



**Intumescent Seals Ltd. - Therm-A-Glaze 60**  
**Sealmaster Ltd. - Fireglaze 60**  
**Pyroplex - Pyroplex System FG60**  
**Mann McGowan Ltd. - Pyroglaze 60**

- These systems must be used with its dedicated intumescent lining to the aperture (Refer to manufacturers details).
- Bead to be fixed using 60mm long x 2mm dia. steel pins OR 60mm long No.8 screws inserted at 35~40° to the vertical at no more than 50mm from each corner and at 150mm maximum centres.
- Excluding Pyroplex FG 60 (where beads must be secured using 60mm long steel screws). Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

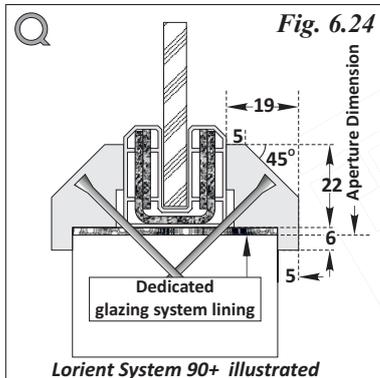
**Maximum approved glazed area - Therm-A-Glaze 60 = 0.72m<sup>2</sup>**

**Maximum approved glazed area - Fireglaze Mastic = 0.72m<sup>2</sup>**

**Maximum approved glazed area - Pyroglaze 60 = 0.72m<sup>2</sup>**

**Maximum approved glazed area - Pyroplex System FG60 = 0.64m<sup>2</sup>**

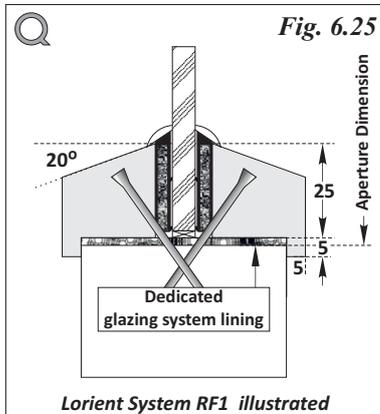
**NOTE: Min. 640kg/m<sup>3</sup> 8mm Hardwood - (Excluding Beech - Fagus Sylvatica) - aperture lining must be used with Pyroplex System FG60.**



**Lorient Polyproducts Ltd. - 'System 90 PLUS'**

- This system must be used with its dedicated intumescent lining to the aperture (Refer to manufacturers details).
- Bead to be fixed using 60mm long x 2mm dia. steel pins OR 60mm long No.8 screws inserted at 45° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

**Maximum approved glazed area - System 90 PLUS = 0.72m<sup>2</sup>**



**Lorient Polyproducts Ltd. - Lorient RF1**

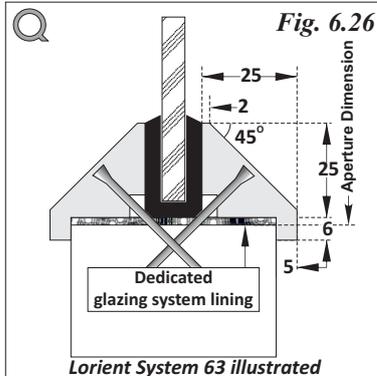
- This system must be used with its dedicated intumescent lining to the aperture (Refer to manufacturers details).
- Bead to be fixed using 60mm long x 2mm dia. steel pins OR 60mm long No.8 screws inserted at 45° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

**Maximum approved glazed area - Lorient RF1 = 0.72m<sup>2</sup>**



## Approved FD60 Glazing Systems - General

(See pages 6.18 ~ 6.24 for approved Norsound Ltd. Glazing Systems)

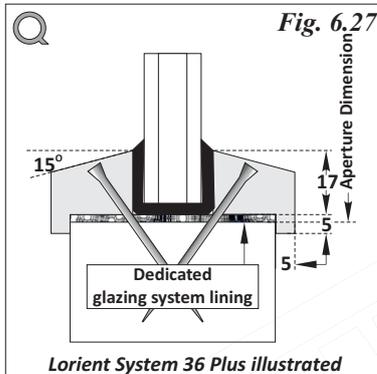


### Lorient Polyproducts Ltd. - 'System 63' Flexible Gasket

- This system must be used with its dedicated intumescent lining to the aperture (*Refer to manufacturers details*).
- Bead to be fixed using 60mm long x 2mm dia. steel pins *OR* 60mm long No.8 screws inserted at 45° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

**Maximum approved glazed area - Lorient System 63 = 0.72m<sup>2</sup>**

**NOTE: Only suitable for use with circular apertures and Pyroshield 2 glass.**



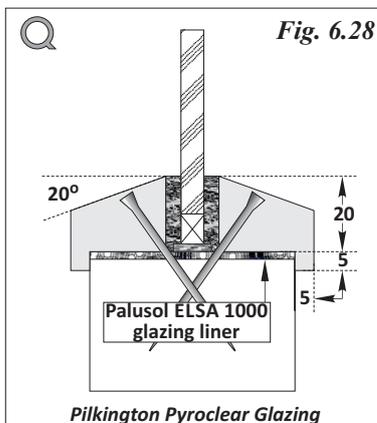
### Lorient Polyproducts Ltd. - 'System 36 Plus' Flexible Gasket

- This system must be used with its dedicated intumescent lining to the aperture (*Refer to manufacturers details*).
- Bead to be fixed using 60mm long x 2mm dia. steel pins *OR* 60mm long No.8 screws inserted at 35~40° to the vertical bead at no more than 50mm from each corner and at 150mm maximum centres.
- Pneumatically fired pins otherwise complying with the specifications defined by reference to page 6.3. may be used.

**Maximum approved glazed area - Lorient System 36 Plus = 0.72m<sup>2</sup>**

**Only suitable for use 14 ~ 16mm thickness glass types See page 6.5.**

## Dedicated FD60 Glazing Systems



### 6mm Pyroclear 60-001 - Pilkington Pyroclear Glazing System

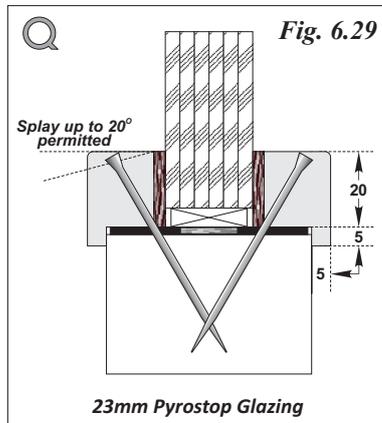
- 25x25mm Hardwood bead - (*Excluding Beech - Fagus Sylvatica*) - straight grained, joinery quality, free from knots, splits and checks. 5x5mm bolection with 20° chamfer.
- Beads must be retained in position using 50mm long 2mm dia. steel pins or 50mm long # 6~8 steel screws inserted at 45° to the vertical within 50mm from each corner and at 150mm maximum centres.
- Aperture lined with 54x2mm Palusol ELSA 1000 glazing liner with additional 10x2 Interdens located on top of the liner and central in the thickness of the door between beads.
- The glass must be fitted to allow for an 8mm expansion on all edges.
- 20x5 Kerafix Flexit seal compressed to 4mm fitted between the bead and the glass on both faces.

**NOTE: Minimum approved dimension between adjacent apertures for multi aperture applications = 100mm**

**Maximum approved glazed area Pyroclear 60-100 Glazing = 0.72m<sup>2</sup>**



## Dedicated FD60 Glazing Systems

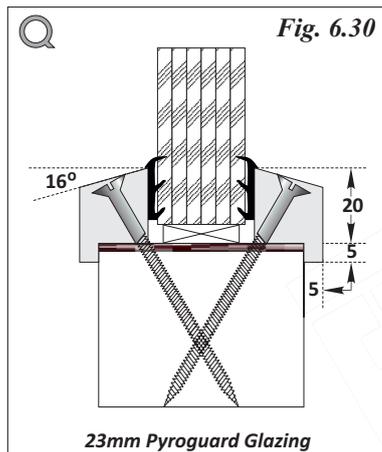


### **23mm Pyrostop 60-101 - Pilkington 23mm Pyrostop Glazing System**

- 25x17.5mm Hardwood bead - (*Excluding Beech - Fagus Sylvatica*) - straight grained, joinery quality, free from knots, splits and checks. 5x5mm bolection square or with a chamfer up to 20°.
- Beads must be retained in position using 60mm long # 6 ~ 8 steel screws inserted at 30° to the vertical within 50mm from each corner and at 150mm maximum centres.
- 52x2mm Norsound 5202 flexible aperture liner fitted around the perimeter of the aperture.
- 20x3mm Hodgsons Sealants Firestrip 60 between the bead and face of the glass on both sides.

**NOTE: Minimum approved dimension between adjacent apertures for multi aperture applications = 100mm**

**Maximum approved glazed area = 0.72m<sup>2</sup>**

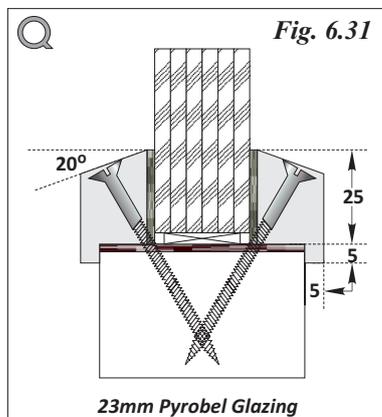


### **23mm Pyroguard - Lorient 23mm Pyroguard Glazing System**

- 25x18mm Hardwood bead - (*Excluding Beech - Fagus Sylvatica*) - straight grained, joinery quality, free from knots, splits and checks. 5x5mm bolection with a 16° chamfer.
- Beads must be retained in position using 70mm long # 6 ~ 8 steel screws inserted at 30~45° to the vertical within 50mm from each corner and at 150mm maximum centres.
- 54x2mm Lorient Polyproducts Ltd. glazing liner fitted around the perimeter of the aperture.
- 13x3.5mm Lorient Polyproducts Ltd. Flexible Figure 1 glazing gasket fitted between the bead and the glass on both faces.

**NOTE: Minimum approved dimension between adjacent apertures for multi aperture applications = 100mm**

**Maximum approved glazed area = 0.72m<sup>2</sup>**



### **AGC Flat Glass Europe 25mm Pyrobel - 25mm Pyrobel Glazing System**

- 30x16.5mm Hardwood bead - (*Excluding Beech - Fagus Sylvatica*) - straight grained, joinery quality, free from knots, splits and checks. 5x5mm bolection with a 20° chamfer.
- Beads must be retained in position using 60mm long # 6 ~ 8 steel screws inserted at 30° to the vertical within 50mm from each corner and at 150mm maximum centres.
- 54x2mm Sealmaster GL60 intumescent glazing liner fitted around the perimeter of the aperture.
- 25x2mm Superwool X607 fitted between the bead and the glass on both faces.

**NOTE: Minimum approved dimension between adjacent apertures for multi aperture applications = 100mm**

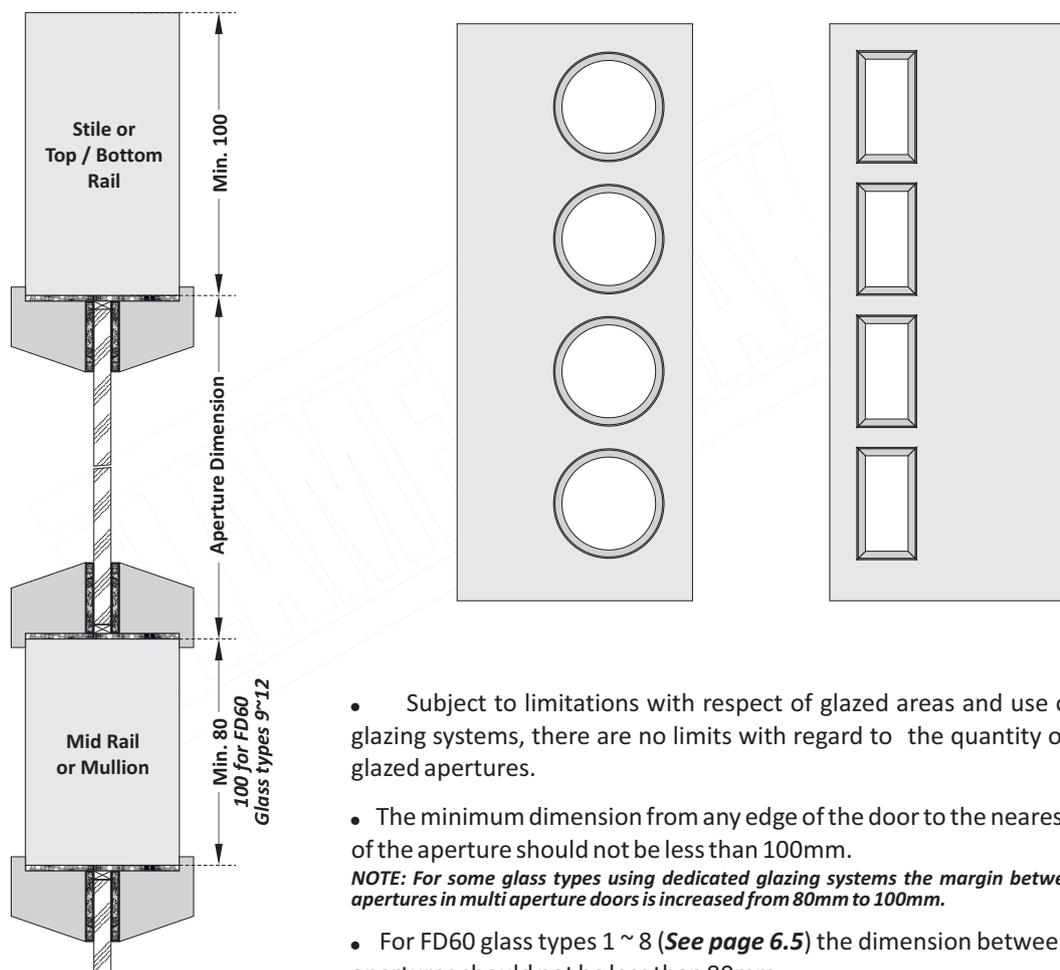
**Maximum approved glazed area = 0.72m<sup>2</sup>**



## FD60 Multi Aperture Glazing

### Multi Aperture Glazing

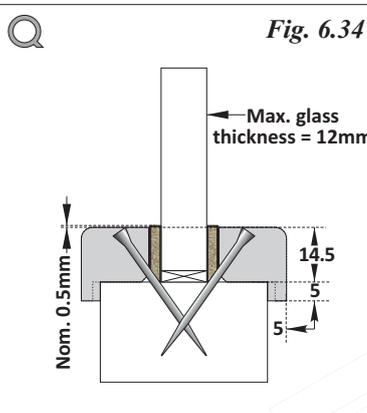
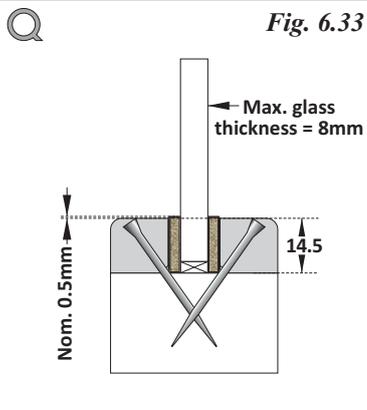
Fig. 6.32



- Subject to limitations with respect of glazed areas and use of suitable glazing systems, there are no limits with regard to the quantity or shape of glazed apertures.
- The minimum dimension from any edge of the door to the nearest sight line of the aperture should not be less than 100mm.  
*NOTE: For some glass types using dedicated glazing systems the margin between adjacent apertures in multi aperture doors is increased from 80mm to 100mm.*
- For FD60 glass types 1 ~ 8 (*See page 6.5*) the dimension between adjacent apertures should not be less than 80mm.
- For FD60 glass types 9 ~ 12 (*See page 6.6*) the dimension between adjacent apertures should not be less than 100mm.



## Norsound Vision 30 Glazing Systems



Refer to Norsound Ltd. for further guidance & patent information concerning Norsound Glazing Systems

### Norsound Vision 30B & 30T

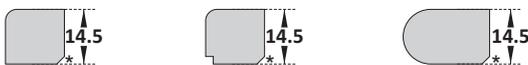
- The Norsound Vision 30 systems, using a square section flush bead detail can be used with FD30 Glass Types 1 ~ 6. (See page 6.5).
- Where bolection bead profiles are used the Norsound Vision 30 systems can be used with FD30 Glass Types 1 ~ 10. (See page 6.5).
- The bead material must satisfy the following specifications:  
*Straight grained joinery quality Softwood or Hardwood, free from knots, splits or checks. Min. density = 510kg/m<sup>3</sup>. OR MDF Min. density 700kg/m<sup>3</sup>.*
- The bead height must be nominally 14.5mm. For bolection style beads, the bolection returns should be a minimum of 5mm high and project a minimum of 3mm from the leaf face
- The 15mm high Norsound Vision 30 intumescent seal component is required to project Nom. 0.5mm above the sight line of the bead.
- Glazing beads must be retained in position with min. 40mm long x 1.5mm dia. steel pins, OR 40mm long No. 6~8 screws, inserted at 35~40° to the vertical at not more than 40mm from each corner, otherwise equi-spaced between at not more than 150mm centres.
- Pneumatically fired pins are acceptable providing the pins meet the specification given by reference to page 6.3.
- Norsound Vision 30B seals are fixed to the beads using self adhesive tape. The Norsound Vision 30T seals are fixed using a 'plug in' system into the bead that must be accurately profiled to receive the seal. The 30T seal has been specifically designed to allow for the seal to be fitted to the beading before final cutting for size and mitre jointing.

Maximum approved glazed area = 1.15m<sup>2</sup>

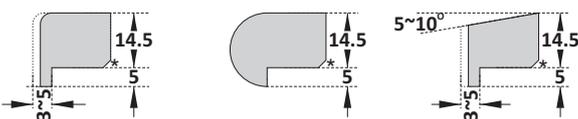
### Norsound Vision 30B Bead Profiles Fig. 6.35

\* = 2mm splay applicable to all bead profiles

#### Typical Flush Bead Types:



#### Typical Bolection Bead Types:



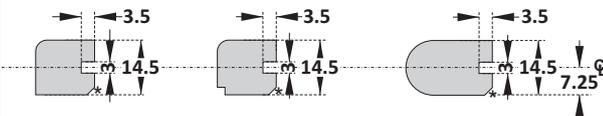
The Norsound Vision 30'B' intumescent seal is affixed to the face of the bead with self adhesive tape. It is important to ensure that the seal projects above the bead by Nom. 0.5mm.

Beads can be to any profile provided that they are not smaller than the minimum dimensions shown in this detail with the 14.5mm height being a critical dimension.

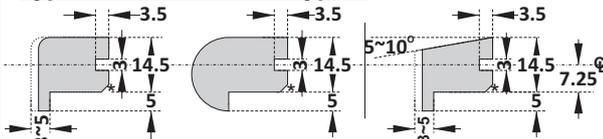
### Norsound Vision 30T Bead Profiles Fig. 6.36

\* = 2mm splay applicable to all bead profiles

#### Typical Flush Bead Types:



#### Typical Bolection Bead Types:



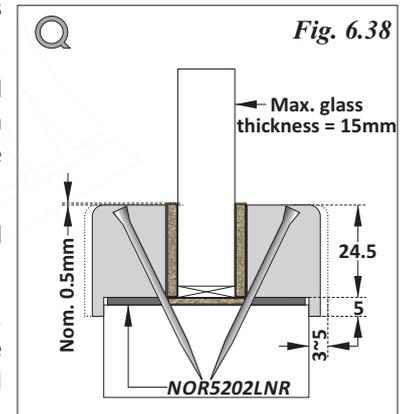
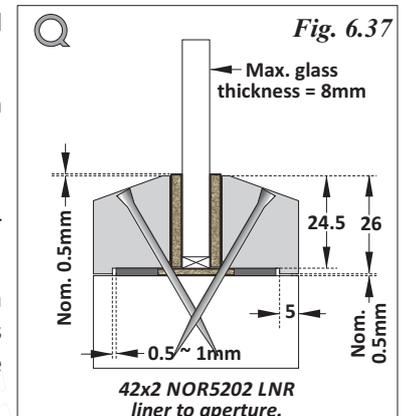
The Norsound Vision 30 'T' intumescent seal is fixed to the bead using a plug in feature. It is important to ensure that the seal projects above the bead by Nom. 0.5mm.

Beads can be to any profile provided that they are not smaller than the minimum dimensions shown in this detail with the 14.5mm height being a critical dimension.

## Norsound Vision 60 Glazing Systems

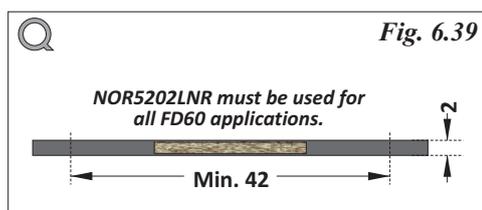
### Norsound Vision 60B & 60T

- The Norsound Vision 60 systems, using a square section flush bead detail can be used with FD60 Glass Types 1 ~ 3. (See page 6.5).
- Where bolection bead profiles are used the Norsound Vision 60 systems can be used with FD60 Glass Types 1 ~ 3 and 5 ~ 8 (excluding type 4). (See page 6.5).
- The bead material must satisfy the following specifications:  
*Straight grained joinery quality Hardwood, - (Excluding Beech - Fagus Sylvatica) - free from knots, splits or checks. Min. density = 640kg/m<sup>3</sup>.*
- For flush style beads, the bead height must be nominally 26mm with a minimum rebate of 1.5mm. For bolection style beads, the bolection returns must be a minimum of 5mm high and project a minimum of 3mm from the leaf face.
- The 25mm high Norsound Vision 60 intumescent seal component is required to project Nom. 0.5mm above the sight line of the bead.
- Apertures must be lined using the Norsound 5202LNR aperture liner fitted centrally in the door leaf thickness. The aperture liner can be reduced in width from the standard 52x2mm to a minimum of 42mm wide with the reduction being carried out equally on both edges of the liner.
- When used with flush style beads, a nominal gap of 0.5mm must be allowed between the bead and the aperture in the door leaf.
- Glazing beads must be retained in position with min. 50mm long x 2mm dia. steel pins, OR 50mm long # 6~8 steel screws, inserted at 35~40° to the vertical at not more than 50mm from each corner, otherwise equi-spaced between at not more than 150mm centres.
- Pneumatically fired pins are acceptable providing the pins meet the specification given by reference to page 6.3.
- Norsound Vision 60B seals are fixed to the beads using self adhesive tape. The Norsound Vision 60T seals are fixed using a 'plug in' system into the bead that must be accurately profiled to receive the seal. The 60T seal has been specifically designed to allow for the seal to be fitted to the beading before final cutting for size and mitre jointing.



**Maximum approved glazed area = 0.72m<sup>2</sup>**

### Norsound 5202LNR FD 60 Aperture Liner



For FD60 fire door applications the aperture for glazing must be lined with the Norsound NOR5202LNR that must be located centrally in the door thickness. The aperture liner is held in position using self adhesive tape with the fixing reinforced by the bead pin / screw fixings.

The NOR5202LNR is supplied in a standard width of 52mm but can be reduced in width to suit particular application requirements provided that the liner is reduced equally from each edge and that

Refer to Norsound Ltd. for further guidance & patent information concerning Norsound Glazing Systems

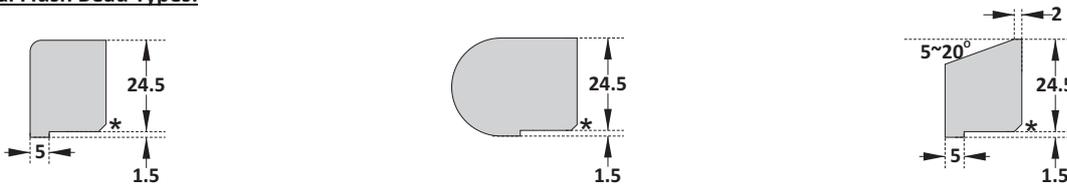
## Norsound Vision 60 Glazing Systems

### Norsound Vision 60B Bead Profiles

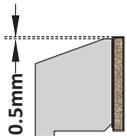
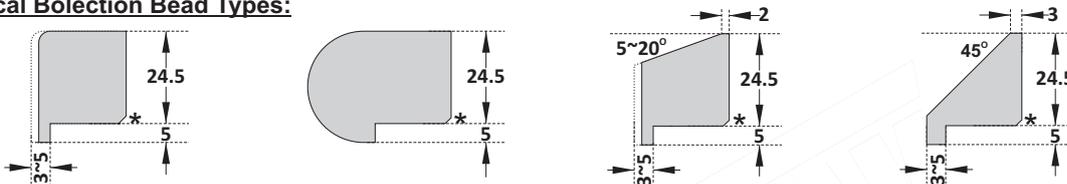
Fig. 6.40

\* = 2mm splay applicable to all bead profiles

#### Typical Flush Bead Types:



#### Typical Bolection Bead Types:



The Norsound Vision 60 'B' intumescent seal is affixed to the face of the bead with self adhesive tape. It is important to ensure that the seal projects above the bead by Nom. 0.5mm.

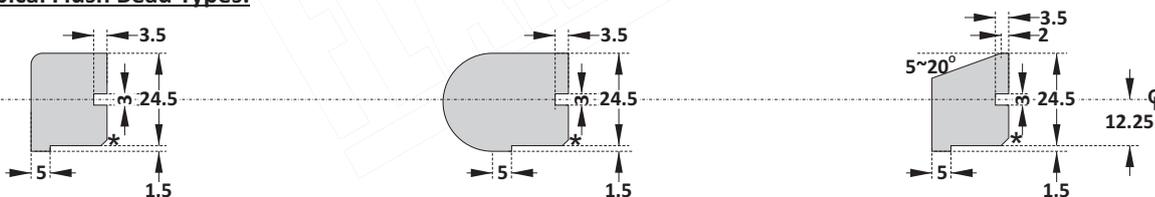
Beads can be to any profile provided that they are not smaller than the minimum dimensions shown in this detail with the 24.5mm height being a critical dimension..

### Norsound Vision 60T Bead Profiles

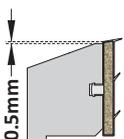
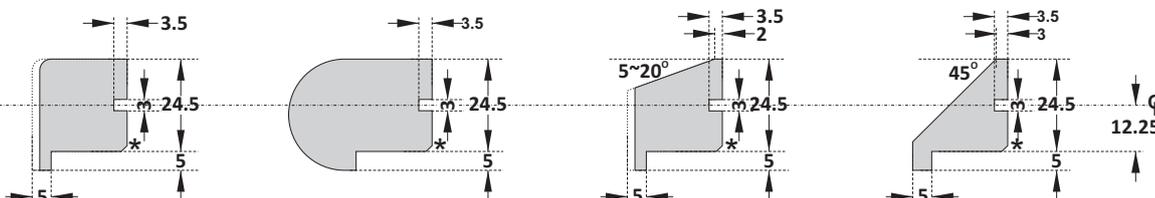
Fig. 6.41

\* = 2mm splay applicable to all bead profiles

#### Typical Flush Bead Types:



#### Typical Bolection Bead Types:



The Norsound Vision 60 'T' intumescent seal is affixed to the face of the bead using a 'plug in' feature. It is important to ensure that the seal projects above the bead by Nom. 0.5mm.

Beads can be to any profile provided that they are not smaller than the minimum dimensions shown in this detail with the 24.5mm height being a critical dimension..

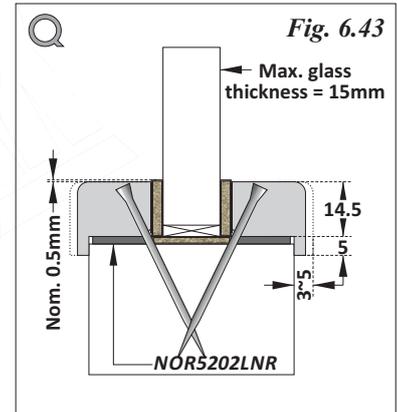
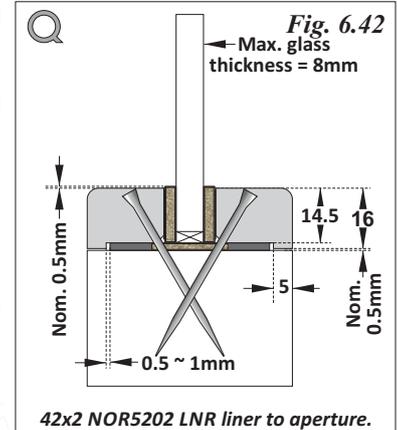
Refer to Norsound Ltd. for further guidance & patent information concerning Norsound Glazing Systems



## Norsound Vision 60 Glazing Systems

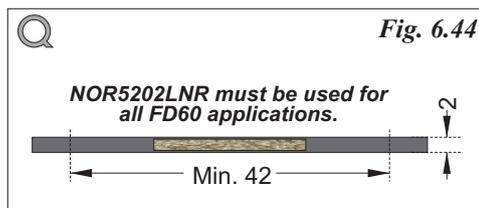
### Norsound Vision 60 - Slimline

- The Norsound Vision 60 Slimline systems, using a square section flush bead detail can be used with FD60 Glass Types 1 ~ 3. (See page 6.5).
- Where bolection bead profiles are used the Norsound Vision 60 systems can be used with FD60 Glass 1 ~ 3 and 5 ~ 8 (excluding type 4). (See page 6.5).
- The bead material must satisfy the following specifications:  
*Straight grained joinery quality Hardwood, - (Excluding Beech - Fagus Sylvatica) - free from knots, splits or checks. Min. density = 640kg/m<sup>3</sup>.*
- For flush style beads, the bead height must be nominally 16mm with a minimum rebate of 1.5mm. For bolection style beads, the bolection returns must be a minimum of 5mm high and project a minimum of 3mm from the leaf face
- The 15mm high Norsound Vision 60 Slimline intumescent seal component is required to project Nom. 0.5mm above the sight line of the bead.
- Apertures must be lined using the Norsound 5202LNR aperture liner fitted centrally in the door leaf thickness. The aperture liner can be reduced in width from the standard 52x2mm to a minimum of 42mm wide with the reduction being carried out equally on both edges of the liner.
- When used with flush style beads, a nominal gap of 0.5mm must be allowed between the bead and the aperture in the door leaf.
- Glazing beads must be retained in position with min. 50mm long x 2mm dia. steel pins, OR 50mm long No. 6~8 screws, inserted at 35~40° to the vertical at not more than 50mm from each corner, otherwise equi-spaced between at not more than 150mm centres.
- Pneumatically fired pins are acceptable providing the pins meet the specification given by reference to page 6.3.
- Norsound Vision 60B Slimline seals are fixed to the beads using self adhesive tape. The Norsound Vision 60T Slimline seals are fixed using a 'plug in' system into the bead that must be accurately profiled to receive the seal. The 60T Slimline seal has been specifically designed to allow for the seal to be fitted to the beading before final cutting for size and mitre jointing.



**Maximum approved glazed area = 0.72m<sup>2</sup>**

### Norsound 5202LNR FD 60 Aperture Liner



For FD60 fire door applications the aperture for glazing must be lined with the Norsound NOR5202LNR that must be located centrally in the door thickness. The aperture liner is held in position using self adhesive tape with the fixing reinforced by the bead pin / screw fixings.

The NOR5202LNR is supplied in a standard width of 52mm but can be reduced in width to suit particular application requirements provided that the liner is reduced equally from each edge and that the finished width is not less than 42mm.

Refer to Norsound Ltd. for further guidance & patent information concerning Norsound Glazing Systems

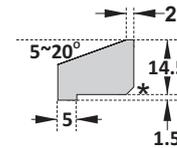
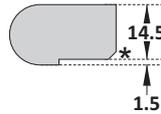
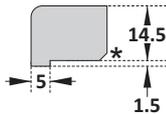
## Norsound Vision 60 Slimline Glazing Systems

### Q Norsound Vision 60B Slimline Bead Profiles

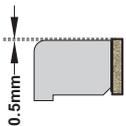
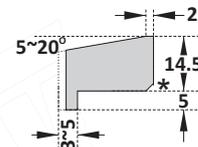
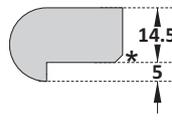
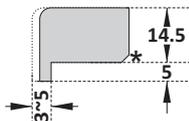
Fig. 6.45

\* = 2mm splay applicable to all bead profiles

#### Typical Flush Bead Types:



#### Typical Bolection Bead Types:



The Norsound Vision 60 'B' Slimline intumescent seal is affixed to the face of the bead with self adhesive tape. It is important to ensure that the seal projects above the bead by Nom. 0.5mm.

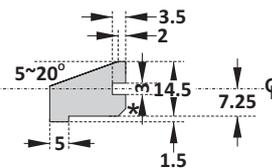
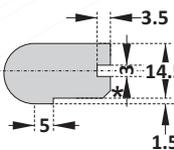
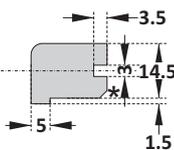
Beads can be to any profile provided that they are not smaller than the minimum dimensions shown in this detail with the 14.5mm height being a critical dimension.

### Q Norsound Vision 60T Slimline Bead Profiles

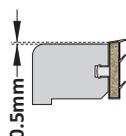
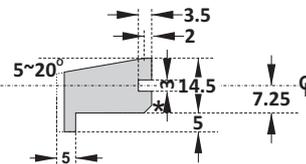
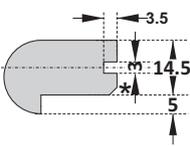
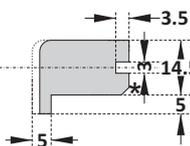
Fig. 6.46

\* = 2mm splay applicable to all bead profiles

#### Typical Flush Bead Types:



#### Typical Bolection Bead Types:



The Norsound Vision 60 'T' Slimline intumescent seal is affixed to the face of the bead using a 'plug in' feature. It is important to ensure that the seal projects above the bead by Nom. 0.5mm.

Beads can be to any profile provided that they are not smaller than the minimum dimensions shown in this detail with the 14.5mm height being a critical dimension.

Refer to Norsound Ltd. for further guidance & patent information concerning Norsound Glazing Systems



## Norsound Universal Glazing Systems

### Norsound Universal - General

The Norsound Universal glazing system provides for identical appearance beading systems for a wide range of performance doors, including fire rated doors from FD20 (20min.) through to FD120 (2hr.).

The aluminium cladding used with the Norsound Universal glazing systems is available ex stock in an SAA (*Satin Anodised Aluminium*) finish.

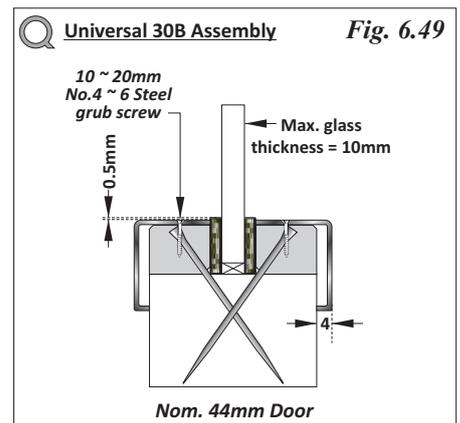
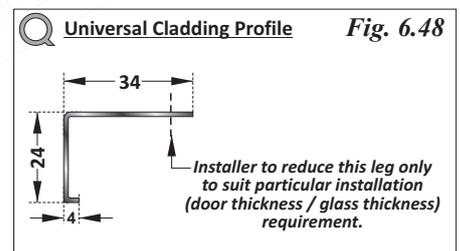
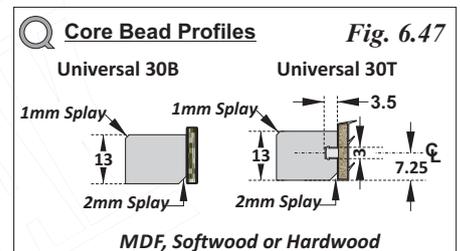
Other finishes are available either ex stock or to special order. Finishing options include:

- Powder coated - any BS or RAL colour.
- Metallic finishes including Bronze, Brass, Chrome etc.
- Woodgrain finishes to match any timber species.
- Phosphorescent that glow in the dark.
- Dual or multi colour pattern finishes to suit a Client's particular design requirements.

### Norsound Universal - FD30 Application

The Norsound Universal 30 Glazing system is 'Q-Mark' approved for use with FLAMEBREAK™ 430, 630 & FF630 door constructions for FD30 applications, subject to the following:

- The Norsound Universal 30 systems, using a core square flush bead detail can be used with FD30 Glass Types 1 ~ 7. (*See page 6.5*).
- The core bead material must satisfy the following specifications:  
*Straight grained joinery quality Softwood or Hardwood, free from knots, splits or checks. Min. density = 510kg/m<sup>3</sup>. OR MDF Min. density 700kg/m<sup>3</sup>.*
- The core bead height must be 13mm.
- The 15mm high Norsound Universal 30 intumescent seal component is required to project Nom. 0.5mm above the sight line of the aluminium cladding bead when installed.
- Core glazing beads must be retained in position with min. 40mm long x 1.5mm dia. steel pins, OR 40mm long #6~8 steel screws, inserted at 35~40° to the vertical at not more than 40mm from each corner, otherwise equi-spaced between at not more than 150mm centres.
- Pneumatically fired pins are acceptable providing the pins meet the specification given by reference to page 6.3.
- Norsound Universal 30B seals are fixed to the core beads using self adhesive tape. The Norsound Universal 30T seals are fixed using a 'plug in' system into the bead that must be accurately profiled to receive the seal. The 30T seal has been specifically designed to allow for the seal to be fitted to the core beading before final cutting for size and mitre jointing.
- The Norsound Universal aluminium cladding must be secured to the core bead by use of 3No. 10~12mm long # 4 ~ 6 grub screws per length.



**Maximum approved glazed area = 1.15m<sup>2</sup>**

Refer to Norsound Ltd. for further guidance & patent information concerning Norsound Glazing Systems



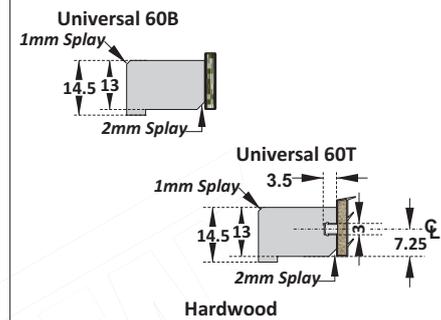
## Norsound Universal Glazing Systems

### Norsound Universal - FD60 Application

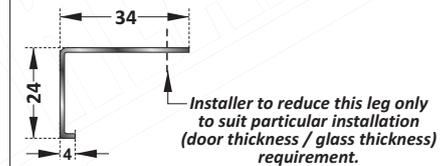
The Norsound Universal 60 Glazing system is 'Q-Mark' approved for use with FLAMEBREAK™ 660 & FF660 door constructions, subject to the following:

- The Norsound Universal 60 systems, using a core square section flush bead detail can be used with FD60 Glass Types 1 ~ 3 and 5 ~ 8 (excluding type 4). (See page 6.5).
- The core bead material must satisfy the following specifications: *Straight grained joinery quality Hardwood, - (Excluding Beech - Fagus Sylvatica) - free from knots, splits or checks. Min. density = 640kg/m<sup>3</sup>.*
- The core bead height must be 14.5mm with a 1.5mm rebate.
- The glazing aperture must be lined using the Norsound NOR5202LNR reduced equally from each edge to finish 42x2mm.
- The 15mm high Norsound Universal 60 intumescent seal component is required to project Nom. 0.5mm above the sight line of the aluminium cladding bead when installed.
- Core glazing beads must be retained in position with min. 50mm long x 2mm dia. steel pins, OR 50mm long # 6~8 steel screws, inserted at 35~40° to the vertical at not more than 40mm from each corner, otherwise equi-spaced between at not more than 150mm centres.
- Pneumatically fired pins are acceptable providing the pins meet the specification given by reference to page 6.3.
- Norsound Universal 60B seals are fixed to the core beads using self adhesive tape. The Norsound Universal 60T seals are fixed using a 'plug in' system into the bead that must be accurately profiled to receive the seal. The 60T seal has been specifically designed to allow for the seal to be fitted to the core beading before final cutting for size and mitre jointing.
- The Norsound Universal aluminium cladding must be secured to the core bead by use of 3No. 10~12mm long # 4~6 grub screws per length.

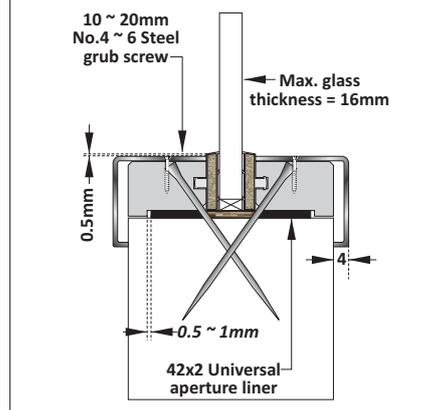
**Q Core Bead Profiles** Fig. 6.50



**Q Universal Cladding Profile** Fig. 6.51



**Q Universal 60T Assembly** Fig. 6.52



**Maximum approved glazed area = 0.72m<sup>2</sup>**

Refer to Norsound Ltd. for further guidance & patent information concerning Norsound Glazing Systems

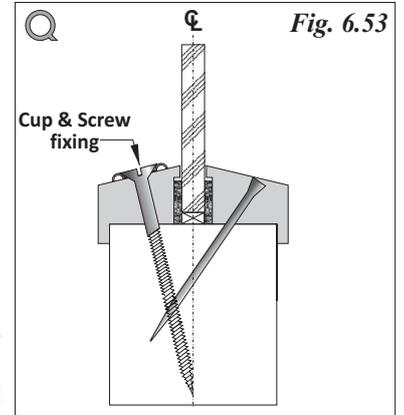


## Glass Replacement

### Glass Replacement

Glass is perhaps the most vulnerable component of a doorset and may be damaged or broken during transit, installation or later when the building is in use.

- Provision can be made to ease the replacement of glass by the use of cup and approved screw fixings to one side of the door the bead to the other side being secured with approved pins or screws according to performance.
- Damaged glass must be replaced by a qualified glazier.
- For fire door applications the fixing screws for a removable bead must be of the approved length according to performance and pass to (*or through*) the centre of the thickness of the door.
- When replacing glass in fire rated door assemblies, the replacement glass must be of the same type and thickness as the glass used for the original installation.
- Provided that the intumescent sealing system and hardwood bead is not damaged during removal, the beading system and intumescent sealing system may be refitted. However, in the event of damage, these components must be replaced using the same system that was used for the original installation.
- Documents describing project related glazing provisions in fire doors should be handed over to the Client on hand over of the building for possible reference by the 'Responsible Person' if required to satisfy their duties in accordance with the Regulatory Reform (Fire Safety) Order 2005.





FLAMEBREAK



### Frame Materials & Specifications:

Details in this section show minimum dimensions for frames for use with fire rated door assemblies.

Frame materials for use with fire doors should comply with the recommendations to be found by reference to BS8214 : 2008.

Frame material for FD30 door assemblies may be softwood or hardwood of not less than 510kgs/m<sup>3</sup> density @15% moisture content. OR, Min. 700kgs/m<sup>3</sup> MDF.

**NOTE: MDF frames are not approved for storey height frames with transoms.**

Frame material for FD60 door assemblies must be hardwood (*Excluding Beech - Fagus Sylvatica*) of not less than 640kgs/m<sup>3</sup> @ 15% moisture content.

The minimum quality standard for frames for fire door assembly applications is defined in the following terms:

**All timber used for fire rated door assemblies including frames, lippings & beading, must be straight grained, joinery quality, free from knots, splits and checks. Any defects should be repaired and, as far as possible, orientated away from areas of intumescent seal activation.**

Frames must be installed plumb and square and assembled with mortice and tenon, mitred, butt or half lap joints with mechanical assembly fixings (e.g. screwed). All joints must be of a tight fit.

**NOTE: Joints may be glued and screwed.**

Unless otherwise stated in project specifications: The moisture content of material used for frames should be 9 - 13% average. moisture content before the application of finishes for internal joinery designed for use in heated buildings providing room temperatures of 12°C to 21°C.

**NOTE: For 'Q-Mark' fire rated door assemblies refer to 'Section 2 - FLAMEBREAK™ Fire Door Applications'.**



The mark of  
responsible forestry

*Pacific Rim Wood Ltd., recommends the use of timber obtained from FSC approved sources.*

### Structures:

It is the Designers responsibility to ensure that structures to receive fire door assemblies comply with National and Local Regulations and that they are suitable for the design performance.

**NOTE: Refer to the various parts of BS9999 for further guidance.**

The fire test / assessment data applicable to FLAMEBREAK™ based door assemblies anticipates that the assemblies will be fitted into blockwork, brickwork, concrete, (or similar). **OR**, timber stud partitioning.

Where door assemblies are to be fitted into metal stud partitioning, the hollow metal stud at the door assembly positions must be filled with softwood unless the partitioning manufacturer can provide for fire test / assessment data to demonstrate that this is not necessary.

The finished partition thickness shall not be less than the partition thickness described for the door frame.

The gap between the frame and the surrounding structure must be treated in accordance with the recommendations to be found by reference to BS 8214 : 2016 according to performance. OR, as recommended by reference to: *Section 14 - Fire Door Installation*.

### Architrave:

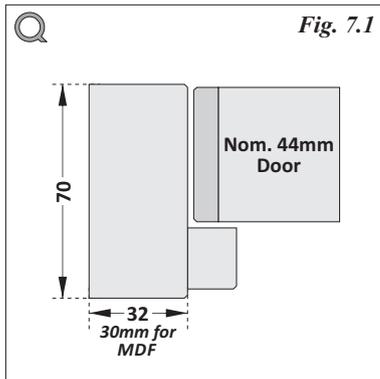
The use of architrave is recommended for fire doors. These should be Min. 15mm thickness and conform with the material specifications applicable to frames for the relevant fire performance. The architrave must cover the gap between the frame and the surrounding structure. (See *Section 14 - Fire Door Installation*).

Where the door assembly is fitted within the partition thickness, the architrave should be scribed on site to suit the wall conditions.

Intumescent mastics, ceramic cords and similar products may be used in lieu of architrave where these have a proven performance under fire test conditions with wood door assemblies. These materials must be used strictly in accordance with the manufacturers handling and use instructions.



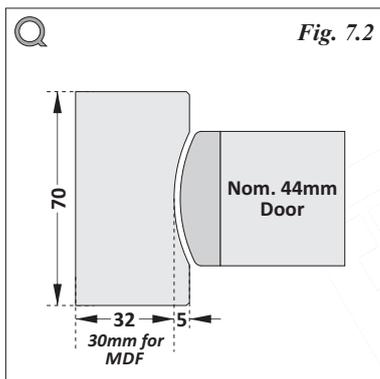
## Minimum Recommended Frame Dimensions FD30 Door Assemblies.



### Recommended minimum frame dimensions for FD30 Single Action Doorsets.

- Frame material to be softwood or hardwood of minimum 450kg/m<sup>3</sup> density (@15% moisture content), straight grained, joinery quality, free from knots, splits and checks.
- 700kg/m<sup>3</sup> density MDF.

**NOTE:** The 32mm section dimension for the frame is reduced from 32mm to 30mm for use with MDF frames.

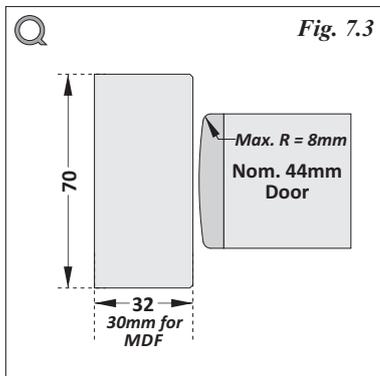


### Recommended minimum frame dimensions for FD30 Double Action - Hanging Jamb

- Frame material to be softwood or hardwood of minimum 450kg/m<sup>3</sup> density (@15% moisture content), straight grained, joinery quality, free from knots, splits and checks.
- 700kg/m<sup>3</sup> density MDF.

**NOTE 1:** The 32mm section dimension for the frame is reduced from 32mm to 30mm for use with MDF frames.

**NOTE 2:** The radius at the hanging stile will usually be determined by the location of the double action pivot centre. A 50mm radius to the door edge will suit most popular brands of double action fittings, with a 52mm radius scallop in the frame.



### Recommended minimum frame dimensions for FD30 Double Action - Closing Jamb

- Frame material to be softwood or hardwood of minimum 450kg/m<sup>3</sup> density (@15% moisture content), straight grained, joinery quality, free from knots, splits and checks.
- 700kg/m<sup>3</sup> density MDF.

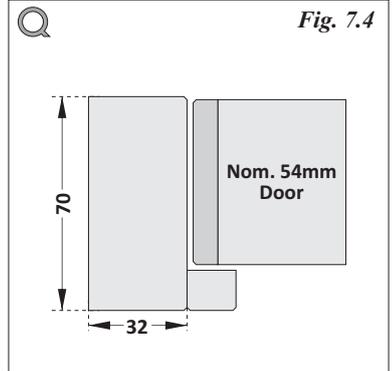
**NOTE:** The 32mm section dimension for the frame is reduced from 32mm to 30mm for use with MDF frames.



### Minimum Recommended Frame Dimensions FD60 Door Assemblies.

#### Recommended minimum frame dimensions for FD60 Single Action Doorsets.

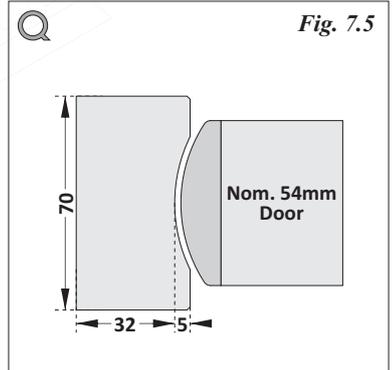
- Frame material for FD60 door assemblies must be hardwood (*Excluding Beech - Fagus Sylvatica*) of not less than 640kgs/m<sup>3</sup> @ 15% moisture content straight grained, joinery quality, free from knots, splits and checks.



#### Recommended minimum frame dimensions for FD60 Double Action - Hanging Jambes

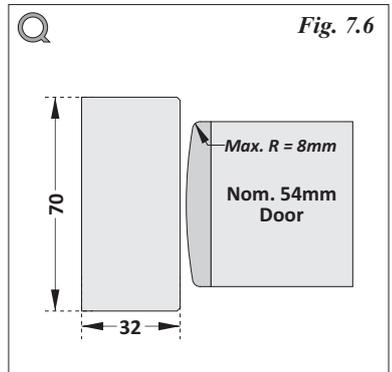
- Frame material for FD60 door assemblies must be hardwood (*Excluding Beech - Fagus Sylvatica*) of not less than 640kgs/m<sup>3</sup> @ 15% moisture content straight grained, joinery quality, free from knots, splits and checks.

*NOTE: The radius at the hanging stile will usually be determined by the location of the double action pivot centre. A 50mm radius to the door edge will suit most popular brands of double action fittings, with a 52mm radius scallop in the frame.*



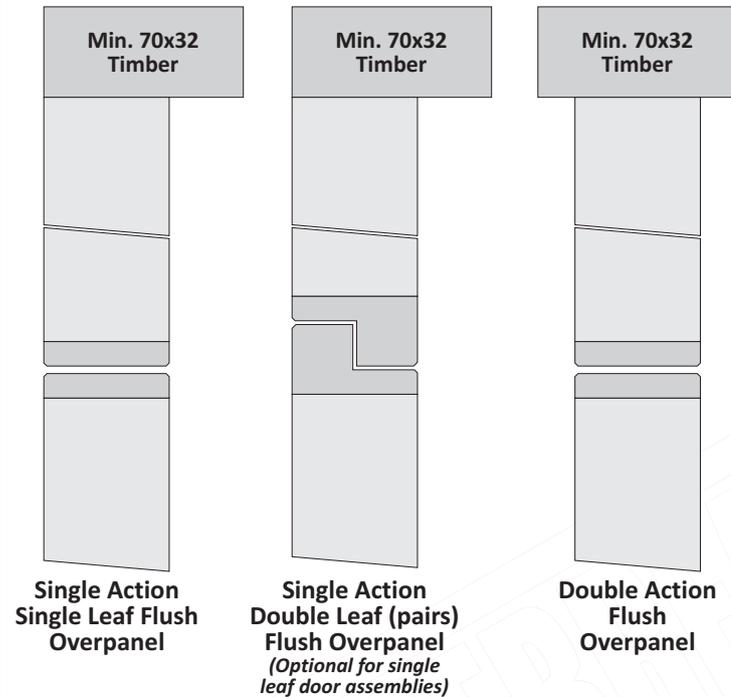
#### Recommended minimum frame dimensions for FD60 Double Action - Closing Jambes

- Frame material for FD60 door assemblies must be hardwood (*Excluding Beech - Fagus Sylvatica*) of not less than 640kgs/m<sup>3</sup> @ 15% moisture content straight grained, joinery quality, free from knots, splits and checks.



## Storey Height Door Assemblies with Overpanels:

### Q Door Assemblies with Transomed Overpanels: *Fig. 7.7* *FLAMEBREAK™ 430 constructions only.*



### Flush Overpanels:

Overpanels must be of the same construction as the door leaves and must be fully contained within the door frame.

**NOTE:** Use of flush overpanels used without a transom is only approved for FLAMEBREAK™ 430 designs only. See Sections 2 & 4.

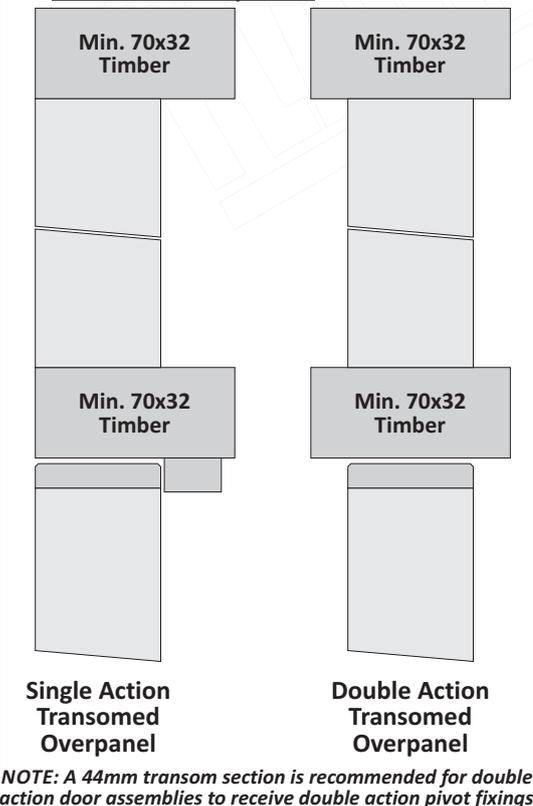
The overpanel must be located to align with the centre thickness of the door leaf and secured using a minimum of three steel screw fixings per length passing through the rear of the frame to align centre thickness of the panel to a minimum depth of 30mm into the panel. Fixings must be located not more than 50mm from each corner and at not more than 250mm centres.

Overpanels must be fitted tight to the frame with no gaps.

**Maximum over panel heights for fire rated flush or transomed overpanels:**

Single leaf door assemblies = 2000mm.  
Double leaf (pairs) door assemblies = 1500mm.

### Q Door Assemblies with Transomed Overpanels: *Fig. 7.8*



### Transomed Overpanels:

Overpanels must be of the same construction as the door leaves and must be fully contained within the door frame.

The overpanel must be located to align with the centre thickness of the door leaf and secured using a minimum of two steel screw fixings per length passing through the rear of the frame to align centre thickness of the panel to a minimum depth of 30mm into the panel. Fixings must be located not more than 100mm from each corner and at not more than 250mm centres.

Transom rails for door assembly designs using overpanels for either FD30 or FD60 applications are to be of a minimum 70x32mm section and manufactured using hardwood with a minimum density of 640kg/m<sup>3</sup> (@15% moisture content). **Use of Beech - (*Fagus Sylvatica*) is not approved for FD60 applications.**

A maximum 2mm gap between the overpanel and the frame components is approved where intumescent seals for the required performance are applied to all edges of the overpanel fitted to either the frame or the overpanel.

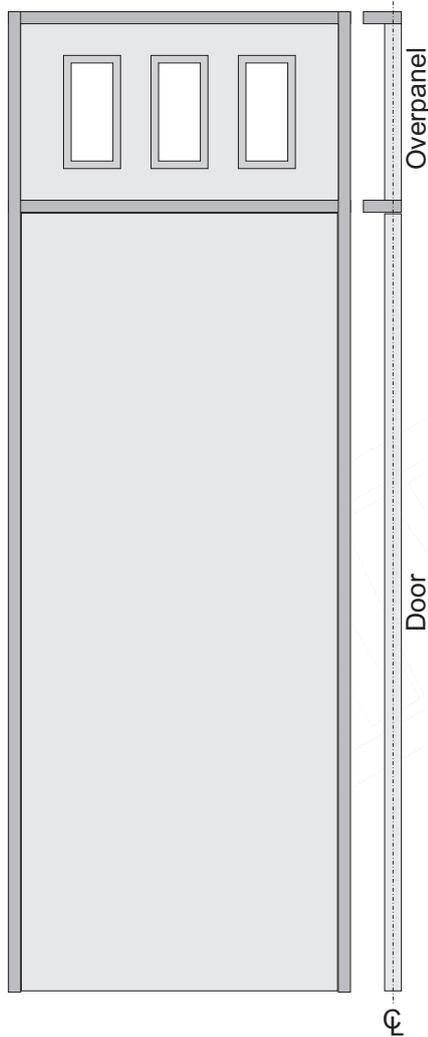
**NOTE 1:** The use of MDF frames is not approved for the storey height door assemblies with transomed overpanels.

**NOTE 2:** The use of frame designs using transom rails are not approved for fire rated door assemblies using metal frames.

## Storey Height Door Assemblies with Glazed Overpanels:

### Glazed Overpanel

*Fig. 7.9*



#### **Glazed Overpanel:**

For door assemblies with transomed overpanels the overpanels can be glazed as approved for door leaves.

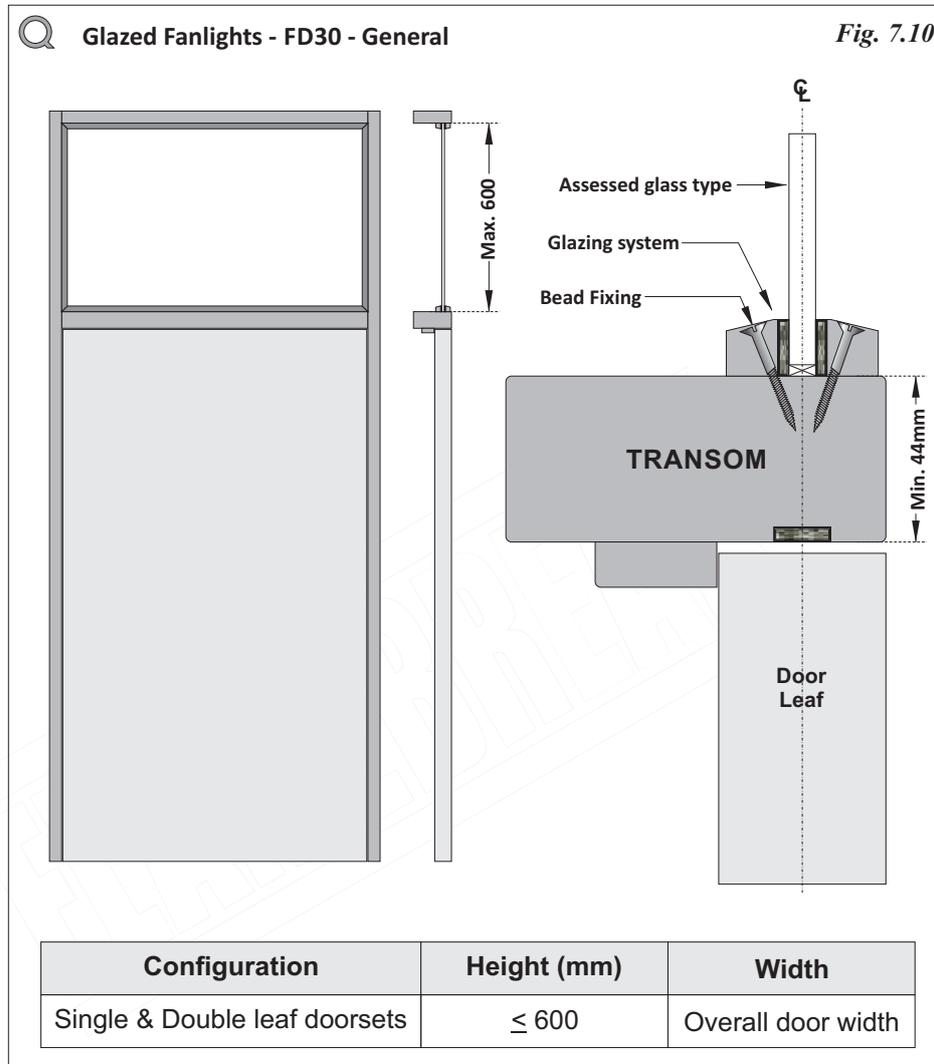
The overpanels must be constructed and fitted as described by reference to page **7.4**.

The glass type and glazing system must be of approved types for use with FLAMEBREAK™ door constructions by reference to Section **6**.

The glass apertures must be located in accordance with approved details as described for door leaves by reference to Section **6**.



### Glazed Fanlights - FD30 - General



#### Glazed Fanlights - FD30 - General

Unless otherwise approved by reference to 'dedicated' glazing and glazing system details - See pages 7.10 ~ 7.19 - fanlights for use with FD30 fire rated FLAMEBREAK™ based door assemblies must comply with the following:

**Frame & Beading Material:** The timber frame and glazing beads must be hardwood with a minimum density of 640kg./m<sup>3</sup> whilst the frame section for the transom must be a minimum of 70x44mm.

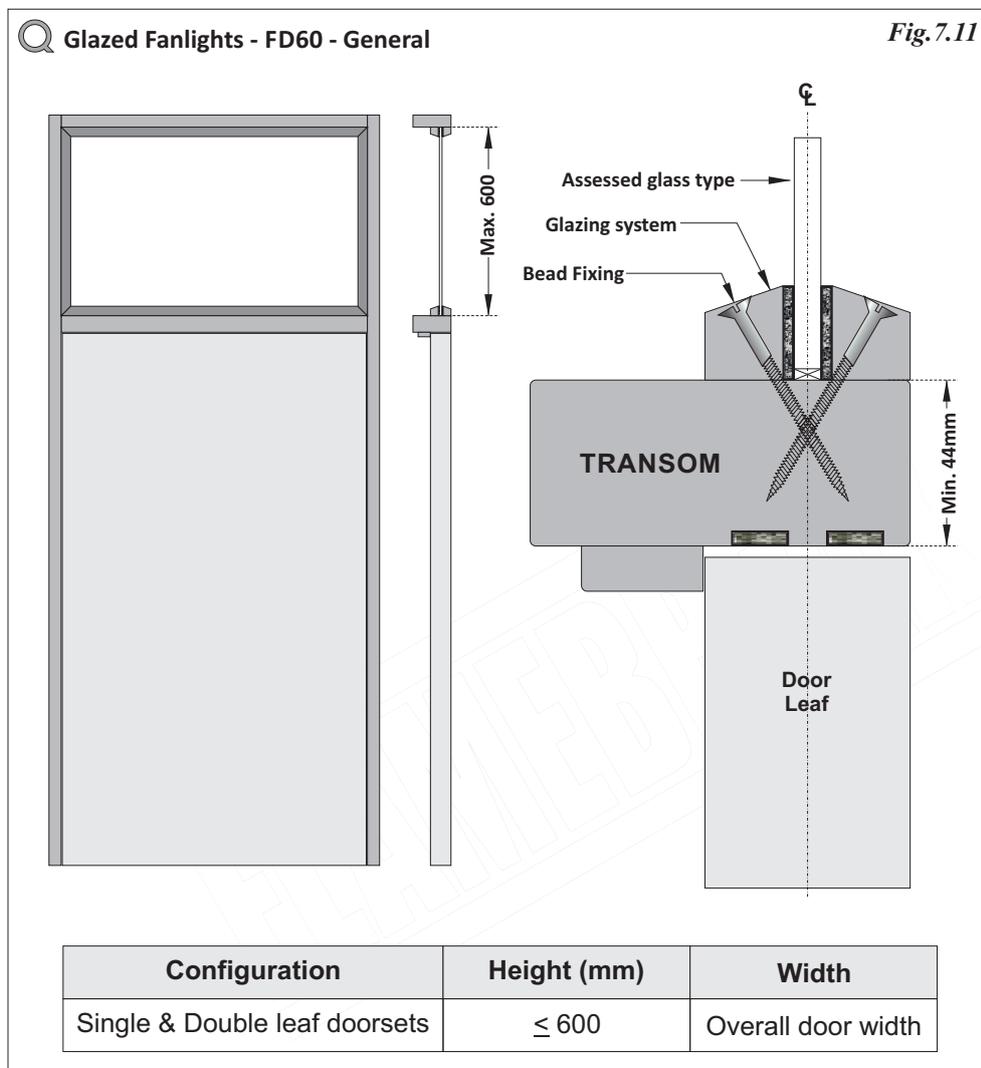
**Frame Material:** The timber door frame must comply with the specifications described by reference to pages 7.2.

**Glass & Glazing System:** The glass must be located to align as far as possible with the centre thickness of the door leaf and fitted to the assembly using a glass type and glazing system that has been tested as a window or a screen in accordance with BS 476 Pt.22 : 1987 or BS EN 1634-1 for the required pane dimensions.

**NOTE:** The use of steel or MDF frames is not approved for this application.



## Glazed Fanlights - FD60 - General



### Glazed Fanlights - FD60 - General

Unless otherwise approved by reference to 'dedicated' glazing and glazing system details - See pages 7.20 ~ 7.23 - fanlights for use with FD60 fire rated FLAMEBREAK™ based door assemblies must comply with the following:

**Frame & Beading Material:** The timber frame and glazing beads must be hardwood - (*Excluding Beech - Fagus Sylvatica*) - with a minimum density of 640kg./m<sup>3</sup> whilst the frame section for the transom must be a minimum of 70x44mm.

**Frame Material:** The timber door frame must comply with the specifications described by reference to: 7.3. The use of steel or MDF frames is **not** approved for this application.

**Glass & Glazing System:** The glass must be located to align as far as possible with the centre thickness of the door leaf and fitted to the assembly using a glass type and glazing system that has been tested as a window or a screen in accordance with BS 476 Pt.22 : 1987 or BS EN 1634-1 for the required pane dimensions.

**NOTE:** The use of steel or MDF frames is **not** approved for this application.



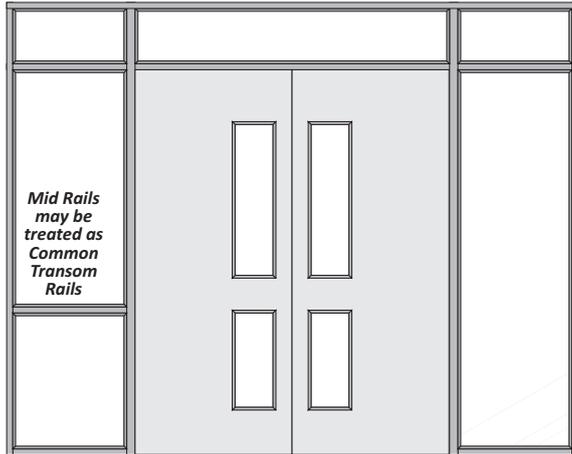
## Glazed Fanlights & Side Screens - General

### Q Transom & Rails - General.

Fig. 7.12

FLAMEBREAK™ based door constructions may be used with FD30 and FD60 door assembly designs with glazed side screens and fanlights.

Where a common transom rail is used, the sectional dimensions of the frame components shall not be less than that approved for the particular door assembly or the screen / fanlight construction - whichever is the greater.



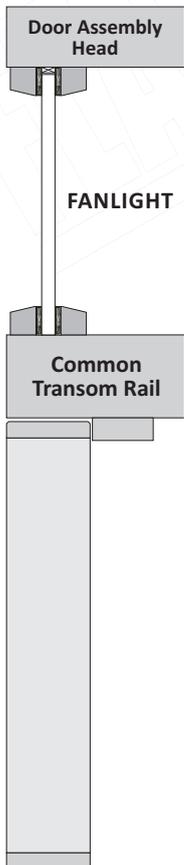
Where separate fanlights and door assemblies are joined together (*with or without a decorative spacer*) the frame section dimensions for the door assembly shall not be less than that approved for the particular door assembly design and the screen frame dimensions shall not be less than that approved for the particular screen design.

The door assemblies and fanlights to be connected using appropriate steel screw fixings and glued using Urea Formaldehyde or polyurethane adhesives. Screws must be positioned within 100mm of each corner and otherwise located equi-spaced at not more than 600mm centres and to a depth of approximately 2/3 depth of the adjacent timber section.

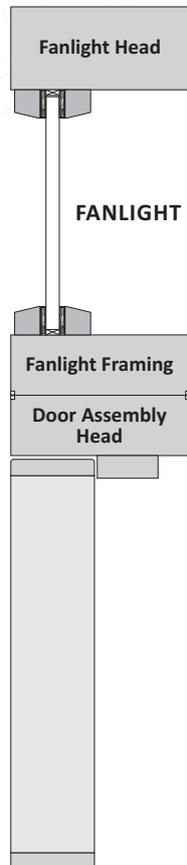
### Q Glazed Fanlights - General

Fig. 7.13

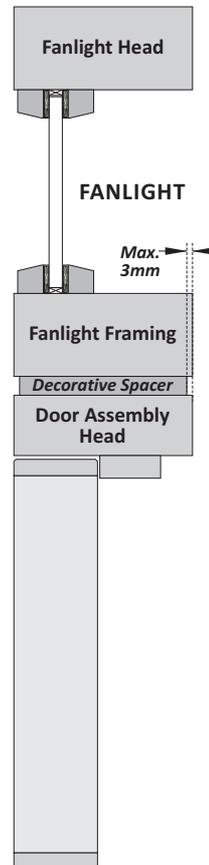
Option 1 - Common Transom



Option 2 - Back to Back Frame Sections



Option 3 - Back to Back Frame Sections with Decorative Spacer



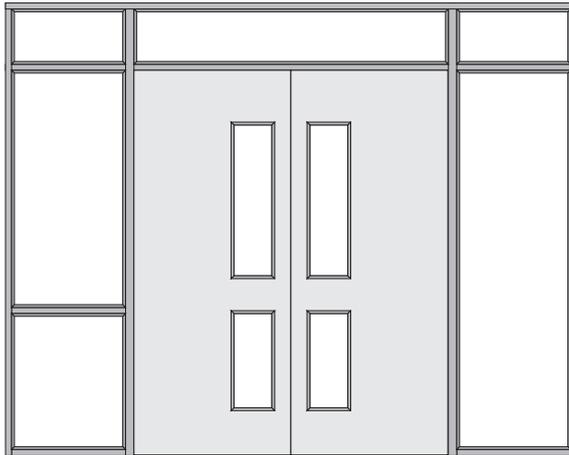
## Glazed Fanlights & Side Screens - General

### Q Side Screens - General:

Fig. 7.14

FLAMEBREAK™ based door constructions may be used with FD30 and FD60 door assembly designs with glazed side screens.

Where a common mullion is used, the sectional dimensions of the common frame components shall not be less than that approved for the particular door assembly or the screen design - whichever is the greater.



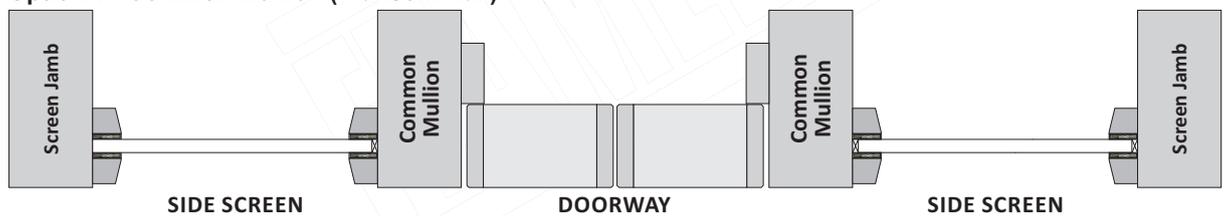
Where separate screen and door assemblies are joined together (*with or without a decorative spacer*) the frame section dimensions for the door assembly shall not be less than that approved for the particular door assembly design and the screen frame dimensions shall not be less than that approved for the particular screen design.

The door assemblies and side screens to be connected using appropriate steel screw fixings and glued using Urea Formaldehyde or polyurethane adhesives. Screws must be positioned within 100mm of each corner and otherwise located equi-spaced at not more than 600mm centres and to a depth of approximately 2/3 depth of the adjacent timber section.

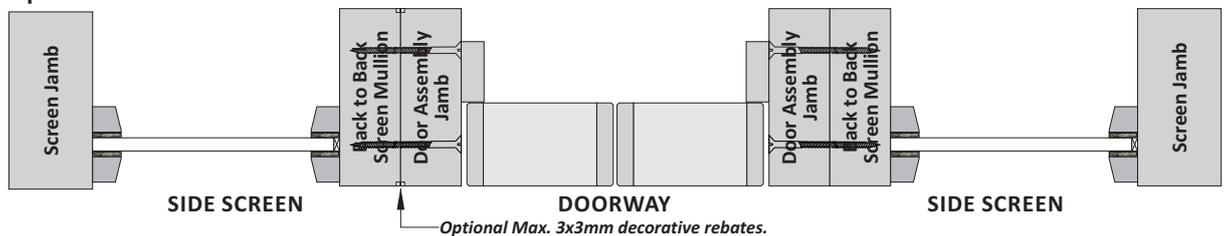
### Q Side Screens - General:

Fig. 7.15

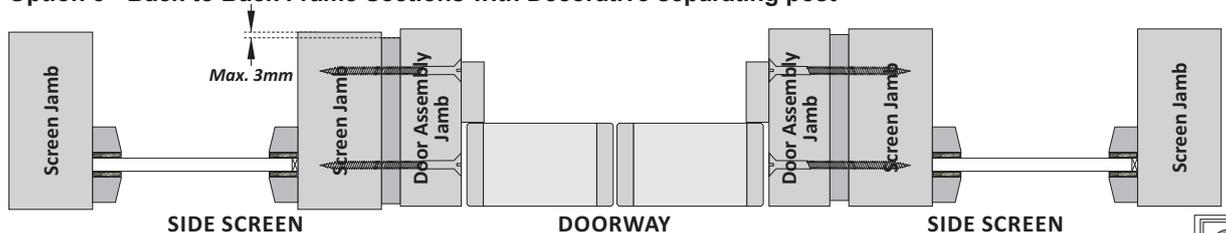
#### Option 1 - Common Mullion (Transom Rail)



#### Option 2 - Back to Back Frame Sections



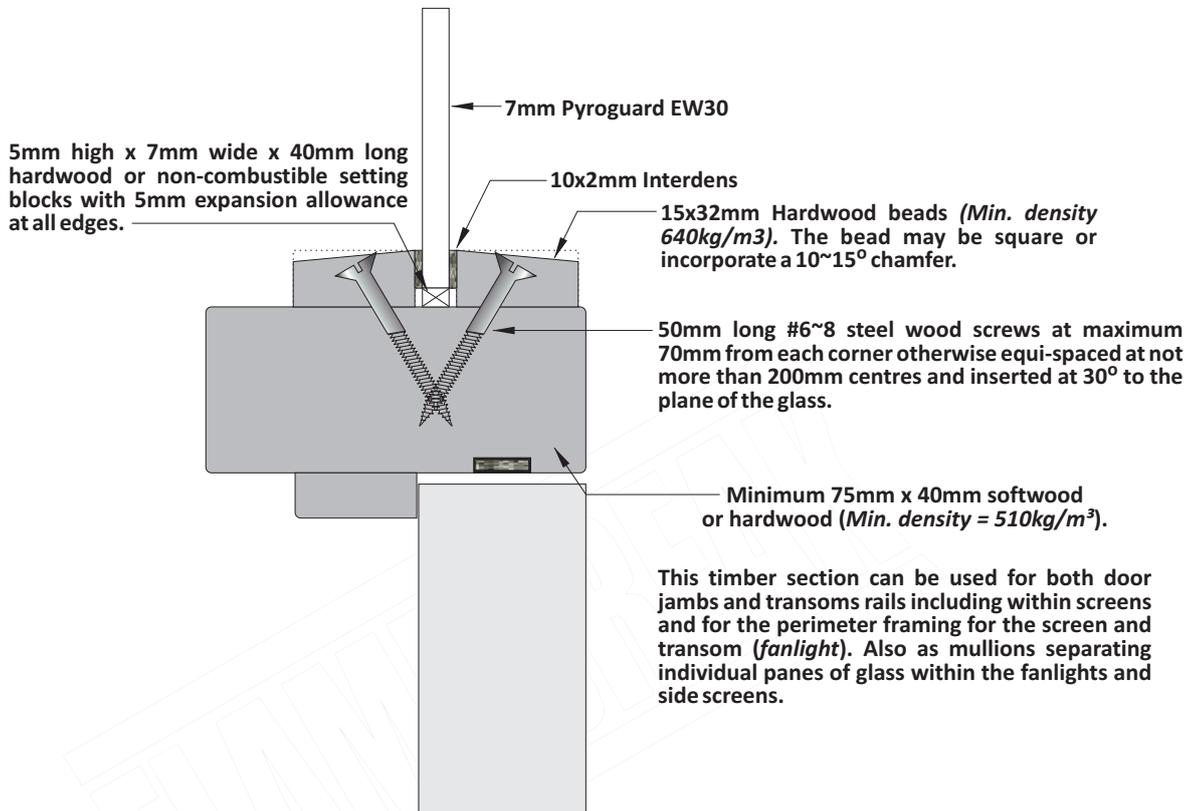
#### Option 3 - Back to Back Frame Sections with Decorative separating post



**Glazed Screens & Fanlights - FD30 - Pyroguard EW30 (7mm thick Glass)**  
 (Pyroguard UK Ltd.)

Q Glazed Screens & Fanlights - FD30 - Pyroguard EW30

Fig. 7.16



Element		Height (mm)	Width
Fanlight	From	1074	808
	To	808	2600
Side Screen		2500	1000

**Glazed Screens & Fanlights - FD30 - Pyroguard EW30**

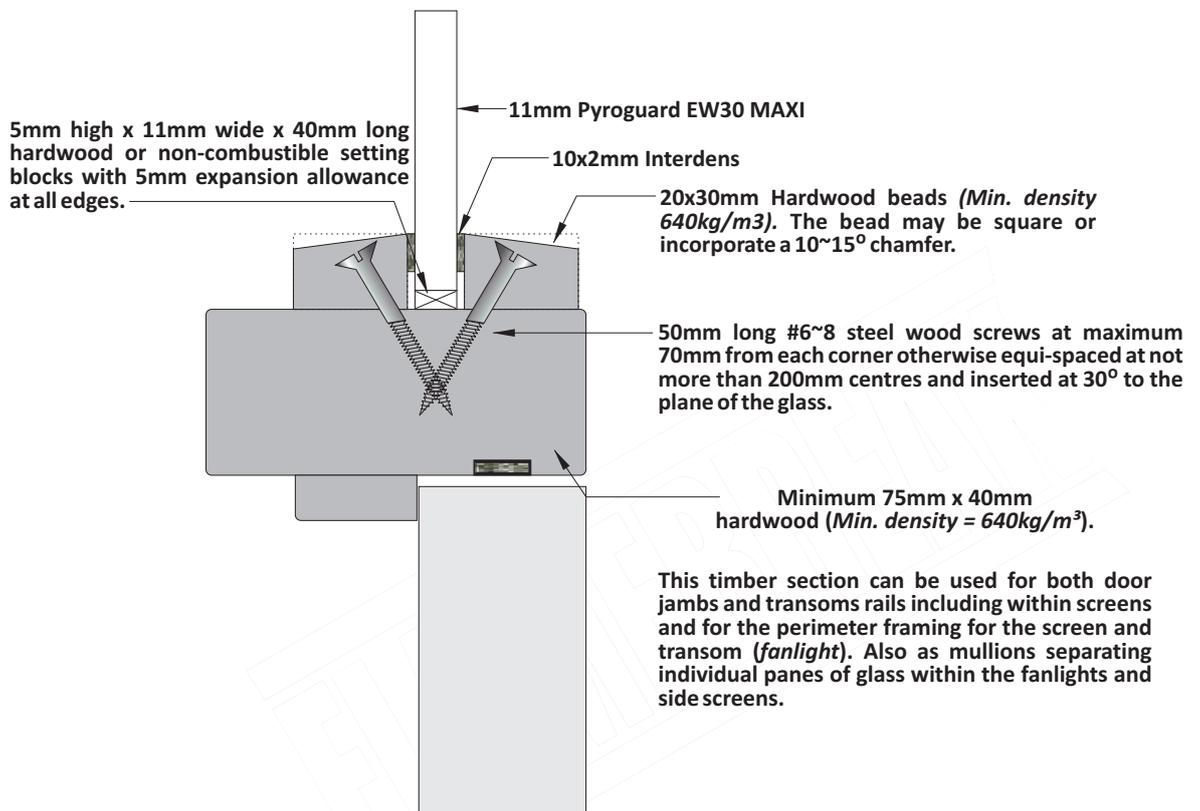
- The pane dimensions given above represent the maximum permitted width relative to maximum permitted height. Panes of smaller dimensions are acceptable.
- Transom rails supporting single panes in excess of 900mm wide must be equally separated by at least one vertical mullion.
- The fanlights and side screens may comprise multiple panes of glass providing the total dimensions for the door assembly and screen / fanlight does not exceed 2950mm high and that the transom rail / mullion specifications are complied with.
- The overall width of multiple screens is unlimited.
- The total screen assembly must not include more than 1No. single leaf or double leaf door assembly.



**Glazed Screens & Fanlights - FD30 -  
Pyroguard EW30 MAXI (11mm thick Glass)**  
*(Pyroguard UK Ltd.)*

Q Glazed Screens & Fanlights - FD30 - Pyroguard EW30 MAXI

Fig. 7.17



Element		Height (mm)	Width
Fanlight	From	967	2525
	To	808	3000
Side Screen		2700	1500

**Glazed Screens & Fanlights - FD30 - Pyroguard EW30 MAXI**

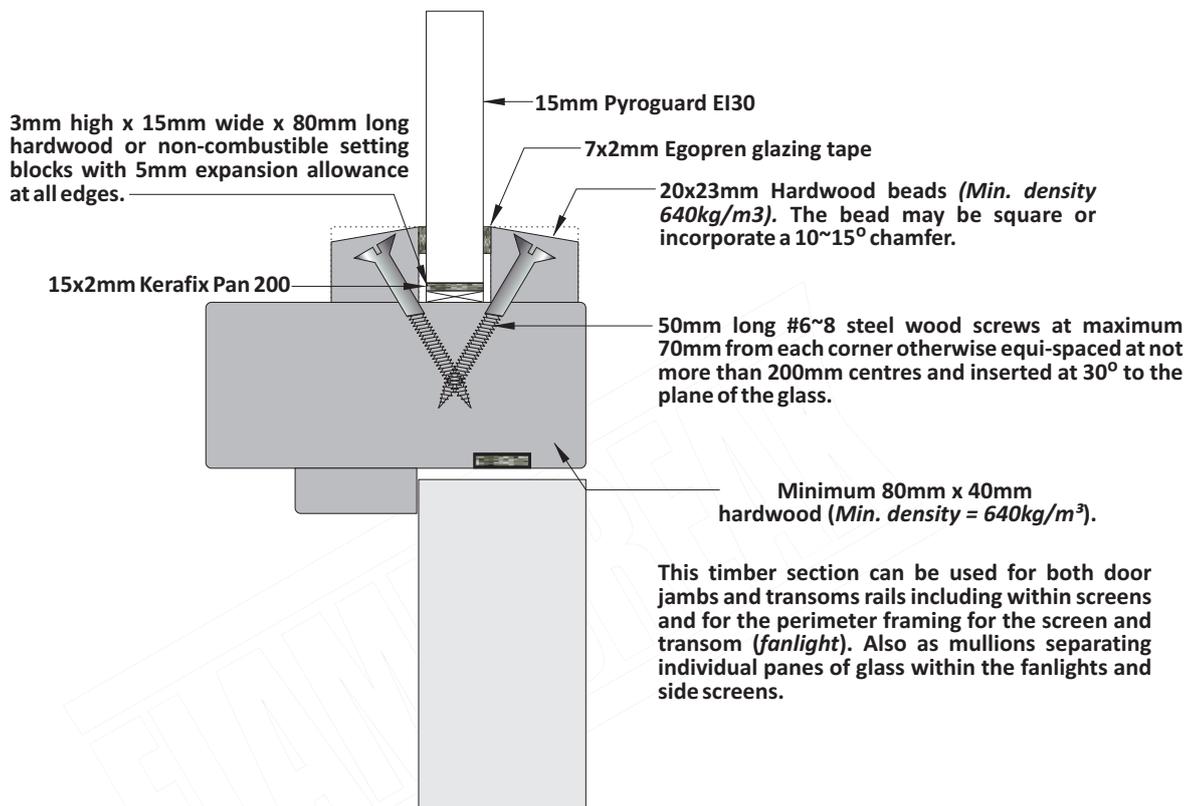
- The pane dimensions given above represent the maximum permitted width relative to maximum permitted height. Panes of smaller dimensions are acceptable.
- The fanlights and side screens may comprise multiple panes of glass providing the total dimensions for the door assembly and screen / fanlight does not exceed 2950mm high and that the transom rail / mullion specifications are complied with.
- The overall width of multiple screens is unlimited.
- The total screen assembly must not include more than 1No. single leaf or double leaf door assembly.



**Glazed Screens & Fanlights - FD30 -  
 Pyroguard EI30 (15mm thick Glass)**  
*(Pyroguard UK Ltd.)*

Q Glazed Screens & Fanlights - FD30 - Pyroguard EI30

Fig.7.18



Element		Height (mm)	Width
Fanlight		350	2890
Side Screen	From	2520	225
	To	1141	1100

**Glazed Screens & Fanlights - FD30 - Pyroguard EI30**

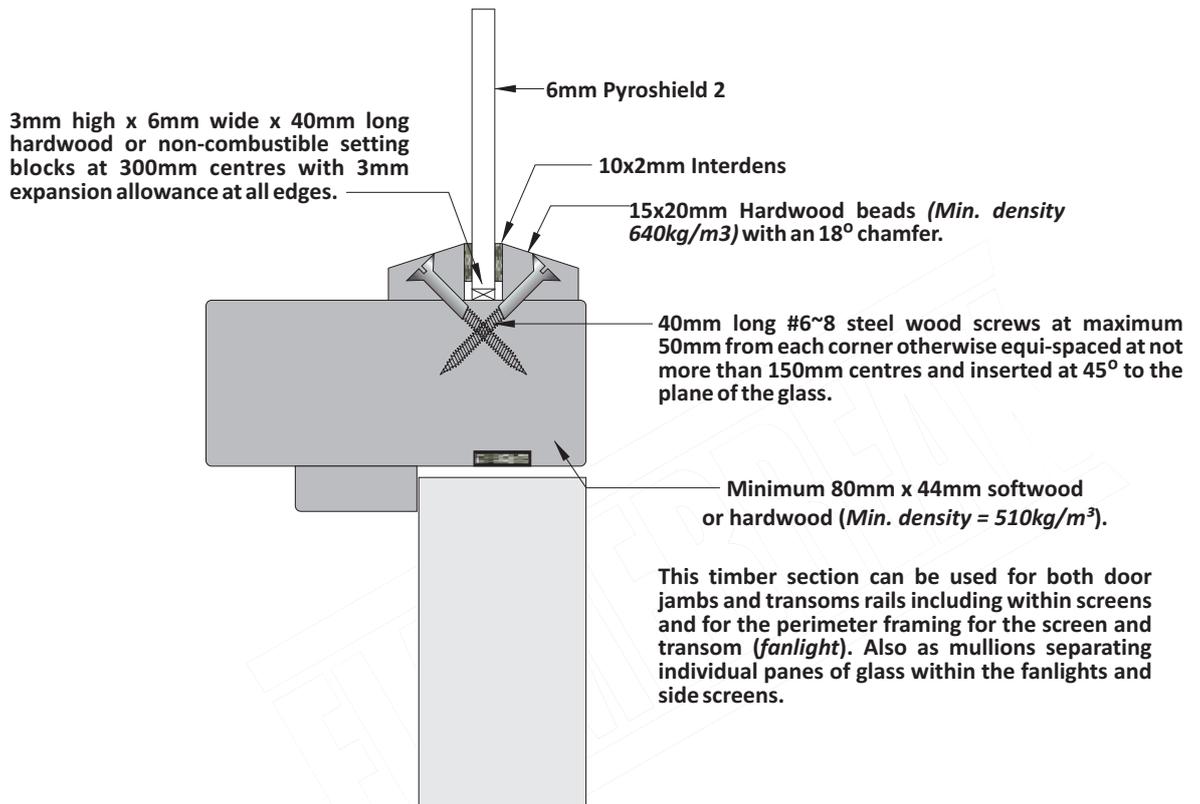
- The pane dimensions given above represent the maximum permitted width relative to maximum permitted height. Panes of smaller dimensions are acceptable.
- Transom rails supporting single panes in excess of 1100mm wide must be equally separated by at least one vertical mullion.
- The fanlights and side screens may comprise multiple panes of glass providing the total dimensions for the door assembly and screen / fanlight does not exceed 2950mm high and that the transom rail / mullion specifications are complied with.
- The overall width of multiple screens is unlimited.
- The total screen assembly must not include more than 1No. single leaf or double leaf door assembly.



**Glazed Screens & Fanlights - FD30 -  
Pyroshield 2 (6mm thick Glass)**  
*(Pilkington Group Ltd.)*

Q Glazed Screens & Fanlights - FD30 - Pyroshield 2

Fig. 7.19



Element	Height (mm)	Width
Fanlight	810	1830
Side Screen	2040	485

**Glazed Screens & Fanlights - FD30 - Pyroshield 2**

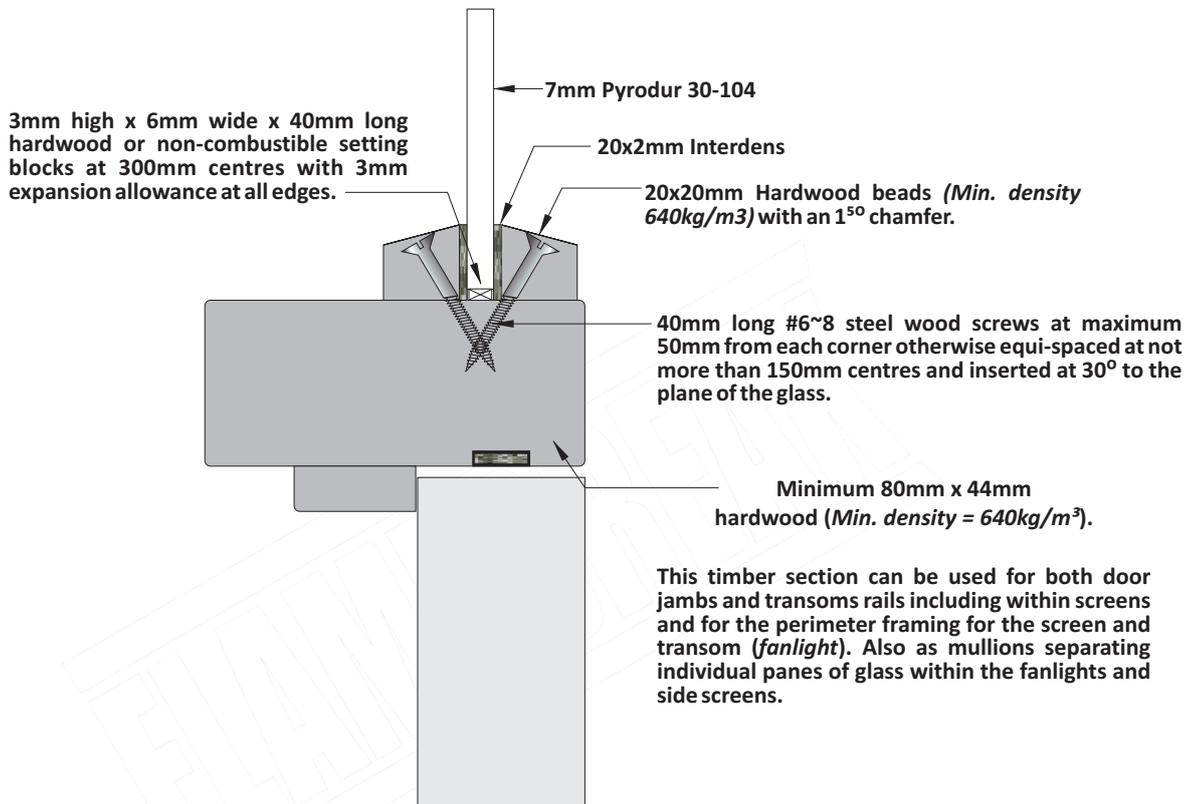
- The pane dimensions given above represent the maximum permitted width relative to maximum permitted height. Panes of smaller dimensions are acceptable.
- The fanlights and side screens may comprise multiple panes of glass providing the total dimensions for the door assembly and screen / fanlight does not exceed 2950mm high and that the transom rail / mullion specifications are complied with.
- The overall width of multiple screens is unlimited.
- The total screen assembly must not include more than 1No. single leaf or double leaf door assembly.



**Glazed Screens & Fanlights - FD30 -  
 Pyrodur 30-104 (7mm thick Glass)  
 (Pilkington Group Ltd.)**

Q Glazed Screens & Fanlights - FD30 - Pyrodur 30-104

Fig. 7.20



Element	Height (mm)	Width
Fanlight	810	1670
Side Screen	2057	956

**Glazed Screens & Fanlights - FD30 - Pyrodur 30-104**

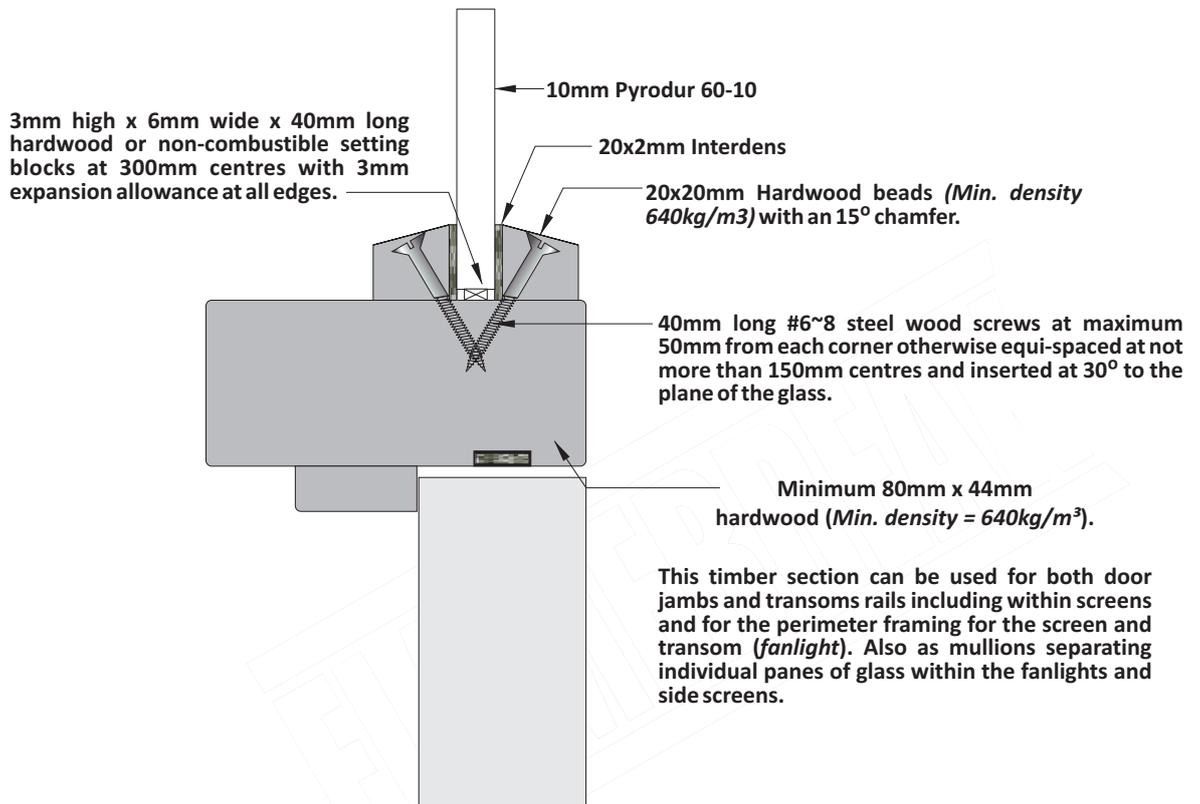
- The pane dimensions given above represent the maximum permitted width relative to maximum permitted height. Panes of smaller dimensions are acceptable.
- The fanlights and side screens may comprise multiple panes of glass providing the total dimensions for the door assembly and screen / fanlight does not exceed 2950mm high and that the transom rail / mullion specifications are complied with.
- The overall width of multiple screens is unlimited.
- The total screen assembly must not include more than 1No. single leaf or double leaf door assembly.



**Glazed Screens & Fanlights - FD30 -  
Pyrodur 60-10 (10mm thick Glass)**  
*(Pilkington Group Ltd.)*

Q Glazed Screens & Fanlights - FD30 - Pyrodur 60-10

Fig. 7.21



Element	Height (mm)	Width
Fanlight	810	1670
Side Screen	2057	956

**Glazed Screens & Fanlights - FD30 - Pyrodur 60-10**

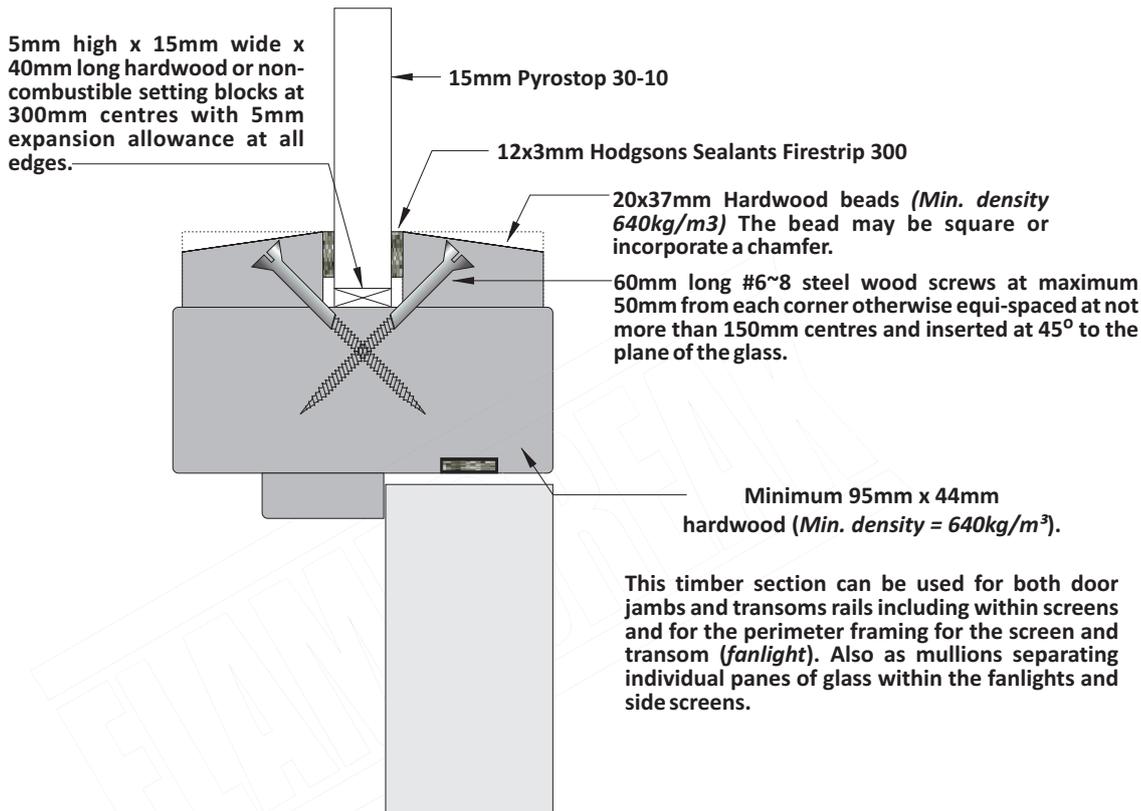
- The pane dimensions given above represent the maximum permitted width relative to maximum permitted height. Panes of smaller dimensions are acceptable.
- The fanlights and side screens may comprise multiple panes of glass providing the total dimensions for the door assembly and screen / fanlight does not exceed 2950mm high and that the transom rail / mullion specifications are complied with.
- The overall width of multiple screens is unlimited.
- The total screen assembly must not include more than 1No. single leaf or double leaf door assembly.



**Glazed Screens & Fanlights - FD30 -  
 Pyrostop 30-10 (15mm thick Glass)**  
*(Pilkington Group Ltd.)*

Q Glazed Screens & Fanlights - FD30 - Pyrostop 30-10

Fig. 7.22



Element	Height (mm)	Width
Fanlight	733	1001
Side Screen	2870	1366

**Glazed Screens & Fanlights - FD30 - Pyrostop 30-10**

- The pane dimensions given above represent the maximum permitted width relative to maximum permitted height. Panes of smaller dimensions are acceptable.
- The fanlights and side screens may comprise multiple panes of glass providing the total dimensions for the door assembly and screen / fanlight does not exceed 2950mm high and that the transom rail / mullion specifications are complied with.
- The overall width of multiple screens is unlimited.
- The total screen assembly must not include more than 1No. single leaf or double leaf door assembly.



## FD30 Glazed Fanlights - Norsound Vision 30 Glazing Systems

### Q FD30 Assemblies with Glazed Fanlights - Norsound Vision 30B & 30T Glazing Systems

Fig. 7.23

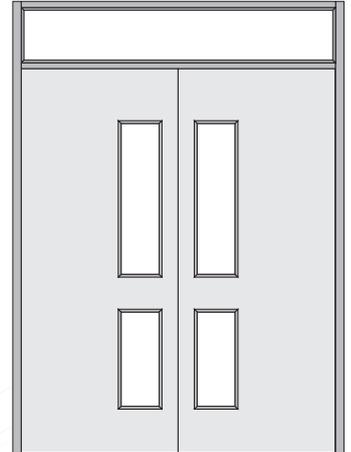
FLAMEBREAK™ doors in timber frames may include glazed fanlights using approved FD30 glass types 1~12 (See Section 6 page 5) provided that the glass has also demonstrated adequate performances when tested as a window or a screen in accordance with BS476 Pt.22 : 1987 or BS EN 1634-1 at the required pane dimensions.

Fanlights may comprise multiple panes of glass provided that the overall door assembly height including the fanlight does not exceed 2950mm.

All timber must be straight grained, joinery quality free from knots, splits & checks. Minimum 70mm x 32mm (*Min. density = 510kg/m<sup>3</sup>*). This timber section can be used for both door frame jambs and transom rails including within screens and for the perimeter framing for the screen and transom (*fanlight*).

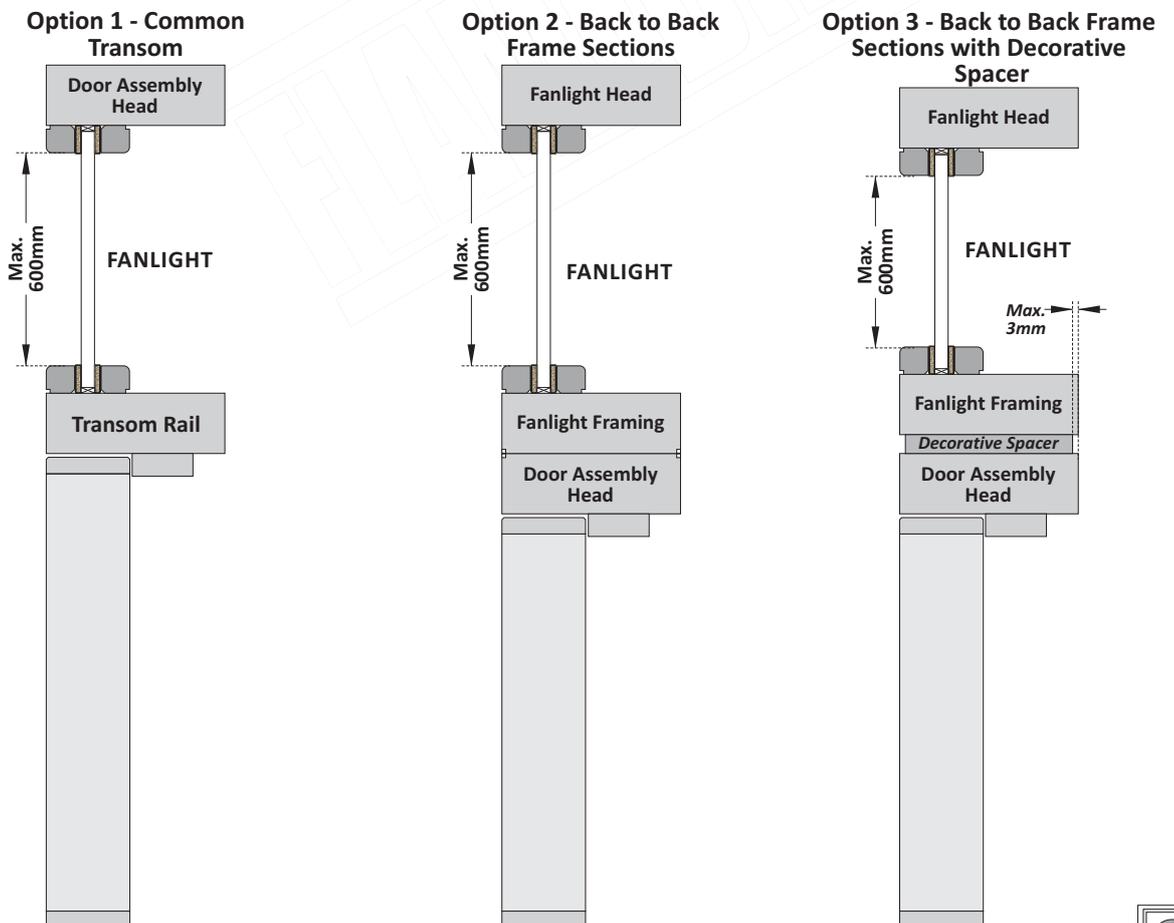
See page 7.19 for details of the Norsound Vision 30B & 30T glazing system.

See page 7.8 for further assembly requirements.



Assembly Element	Configuration	Max. Height (mm)	Max. Width (mm)
Fanlight	Single & Double leaf door assemblies	≤ 600	Overall door width

### Q FD30 Assemblies with Glazed Fanlights - Norsound Vision 30B & 30T Glazing Systems Fig. 7.24



# 7.18 Door Frames Transoms & Side Screens FD30



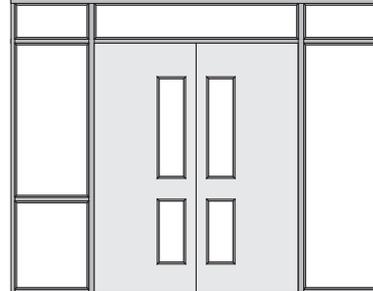
## FD30 Glazed Side Screens - Norsound Vision 30 Glazing Systems

### FD30 Assemblies with Glazed Side Screens - Norsound Vision 30B & 30T Glazing Systems

Fig.7.25

FLAMEBREAK™ door assembly designs in timber frames may include glazed fanlights and side screens using approved FD30 glass types 1~12 (See Section 6 page 5) provided that the glass has also demonstrated adequate performances when tested as a window or a screen in accordance with BS476 Pt.22 : 1987 or BS EN 1634-1 at the required pane dimensions.

Fanlights and side screens may comprise multiple panes of glass provided that the overall door assembly height including the fanlight does not exceed 2950mm. Side screens are limited to one screen to one or both sides of a door assembly with a clear glass width not exceeding 600mm.



All timber must be straight grained, joinery quality free from knots, splits & checks. Minimum 70mm x 32mm (Min. density = 510kg/m<sup>3</sup>). This timber section can be used for both door frame jambs and transoms rails including within screens and for the perimeter framing for the screen and transom (fanlight).

**NOTE :** The frame section is increased to min. 70x40mm to the full height of the door assembly where a common mullion is used to link the door assembly with the side screen(s).

See page 7.19 for details of the Norsound Vision 30B & 30T glazing system.

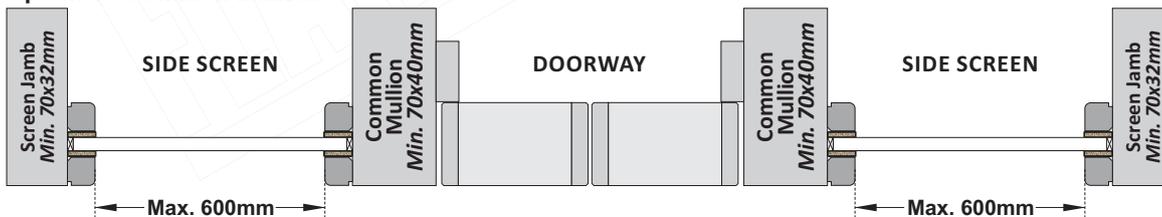
See page 7.8 for further assembly requirements.

Assembly Element	Configuration	Max. Height (mm)	Max. Width (mm)
Side Screens	Single & Double leaf door assemblies	Overall door assembly height	≤ 600

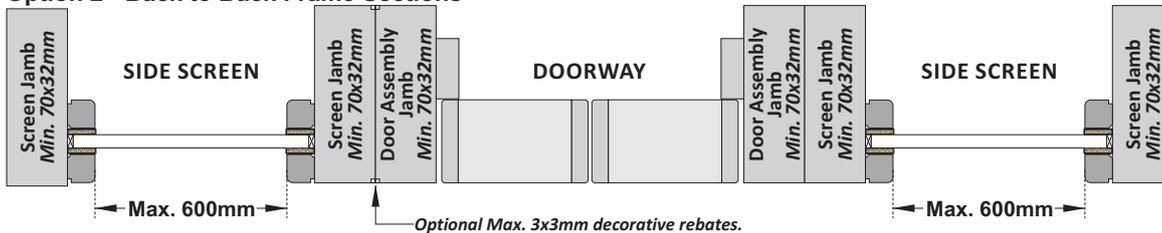
### FD30 Assemblies with Glazed Side Screens - Norsound Vision 30B & 30T Glazing Systems

Fig.7.26

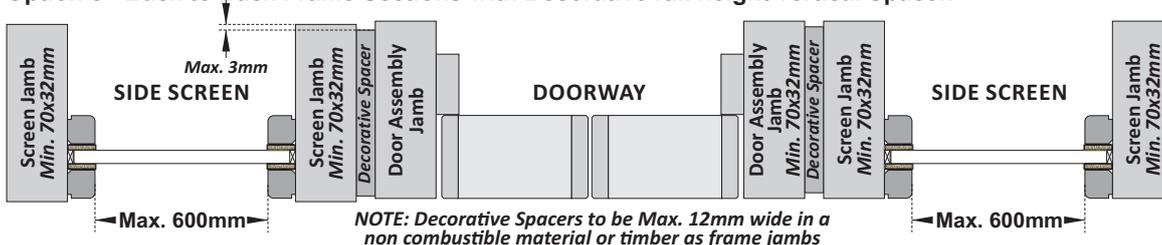
#### Option 1 - Common Mullion



#### Option 2 - Back to Back Frame Sections



#### Option 3 - Back to Back Frame Sections with Decorative full height vertical Spacer.



## FD30 Glazed Side Screens & Fanlights - Norsound Vision 30 Glazing Systems

### Q FD30 Assemblies with Glazed Transoms & Side Screens - Norsound Vision 30B & 30T Glazing Systems

The glazing system and beads must meet the specifications described for the Norsound Vision 30 glazing system illustrated below with the Norsound Vision 30B or 30T intumescent seals to project 0.5mm above the sight line of the glass.

**NOTE: The position of the groove in the rear of the bead is critical for the installation of the Vision 30T glazing system.**

Expansion gaps between the glass and the framing must be set in accordance with the glass manufacturers approved details including the use of non-combustible or hardwood setting blocks.

Glazing beads must be retained in position with minimum 40mm long x 1.5mm diameter steel pins *OR* minimum 40mm long #6~8 steel wood screws inserted at 35~40° to the vertical at not more than 40mm from each corner, with intermediate fixings located equi-spaced at not more than 150mm centres.

Pneumatically fired pins are acceptable providing the pins meet the specification given by reference to Section 6, page 3.

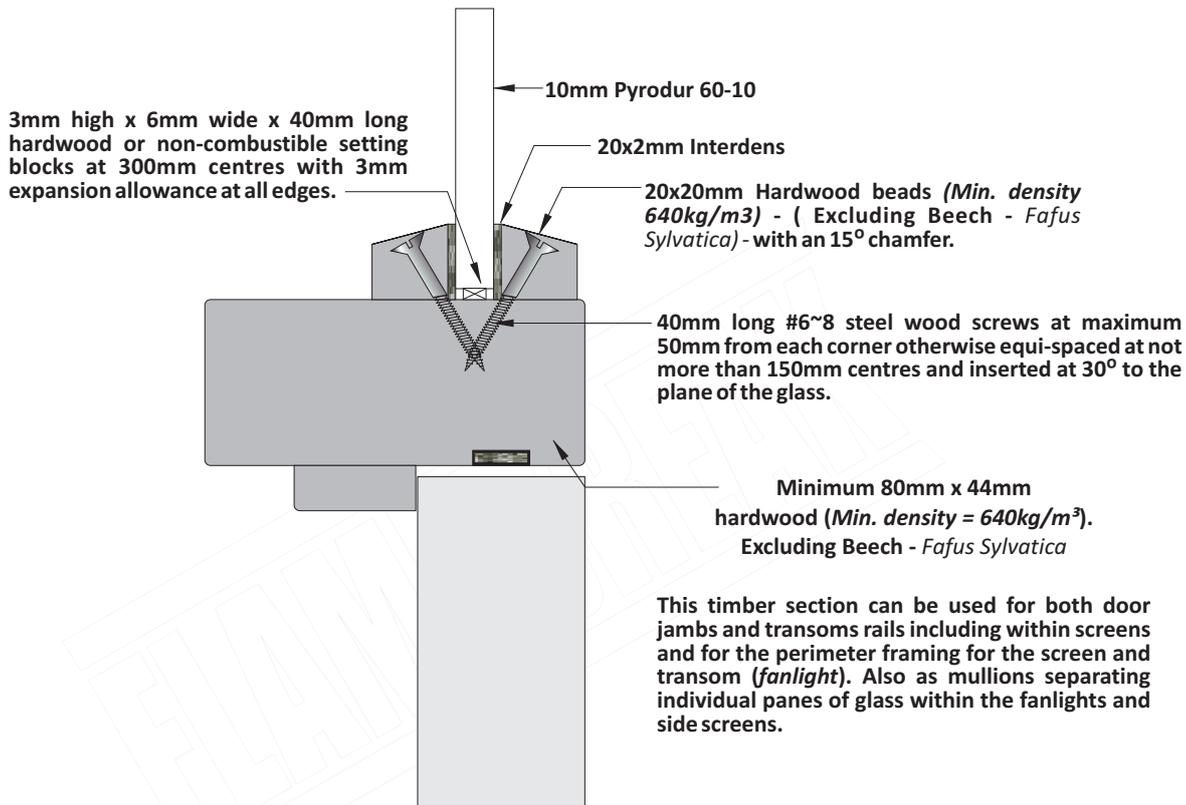
Screen Element	Configuration	Height (mm)	Width (mm)
Fanlight	Single & Double leaf door assemblies	≤ 600	Overall door width
Side Screen	Single & Double leaf door assemblies	Overall door assembly height	≤ 600

System Name		Norsound Vision 30B	Norsound Vision 30T
Typical Installation		<p><i>Fig. 7.27</i></p> <p>Glass &amp; Beading system to align with centre thickness of the door leaf</p>	<p><i>Fig. 7.29</i></p> <p>Glass &amp; Beading system to align with centre thickness of the door leaf</p>
Dimensions	Bead Height	Nominally 14.5mm	Nominally 14.5mm
	Intumescent Seal(s)	15mm high x 3mm thick	15mm high x 3mm thick + Plug dimension
Aperture Liner		Not Required	Not Required
Glazing Bead Profiles		<p><i>Fig. 7.28</i></p> <p>All timber for glazing beads must be straight grained, joinery quality free from knots, splits &amp; checks.</p> <p>Approved material: Min. 450kg/m<sup>3</sup> Softwood Min. 450kg/m<sup>3</sup> Hardwood Min. 700kg/m<sup>3</sup> MDF.</p> <p>See Section 6 Glass &amp; Glazing - page 6.20 for further Bead profile details.</p> <p>* = 2mm splay applicable to all bead profiles</p>	<p><i>Fig. 7.30</i></p> <p>* = 2mm splay applicable to all bead profiles</p>

**Glazed Screens & Fanlights - FD60 -  
Pyrodur 60-10 (10mm thick Glass)**  
*(Pilkington Group Ltd.)*

Q Glazed Screens & Fanlights - FD60 - Pyrodur 60-10

Fig. 7.31



Element	Height (mm)	Width
Fanlight	810	1670
Side Screen	2057	956

**Glazed Screens & Fanlights - FD60 - Pyrodur 60-10**

- The pane dimensions given above represent the maximum permitted width relative to maximum permitted height. Panes of smaller dimensions are acceptable.
- The fanlights and side screens may comprise multiple panes of glass providing the total dimensions for the door assembly and screen / fanlight does not exceed 2950mm high and that the transom rail / mullion specifications are complied with.
- The overall width of multiple screens is unlimited.
- The total screen assembly must not include more than 1No. single leaf or double leaf door assembly.



## FD60 Glazed Fanlights - Norsound Vision 60 Glazing Systems

### Q FD60 Assemblies with Glazed Fanlights - Norsound Vision 60B & 60T Glazing Systems

Fig. 7.32

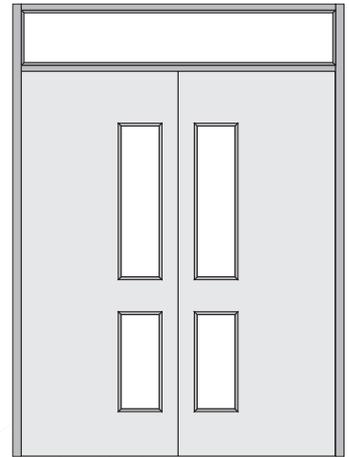
FLAMEBREAK™ doors in timber frames may include glazed fanlights using approved FD60 glass types 1~8 (See Section 6 page 5) provided that the glass has also demonstrated adequate performances when tested as a window or a screen in accordance with BS476 Pt.22 : 1987 or BS EN 1634-1 at the required pane dimensions.

Fanlights may comprise multiple panes of glass provided that the overall door assembly height including the fanlight does not exceed 2950mm.

All timber must be straight grained hardwood (Excluding Beech - *Fagus Sylvatica*), joinery quality free from knots, splits & checks. Minimum 70mm x 32mm (Min. density = 640kg/m<sup>3</sup>). This timber section can be used for both door frame jambs and transom rails including within screens and for the perimeter framing for the screen and transom (fanlight).

See page 7.23 for details of the Norsound Vision 60B & 60T glazing system.

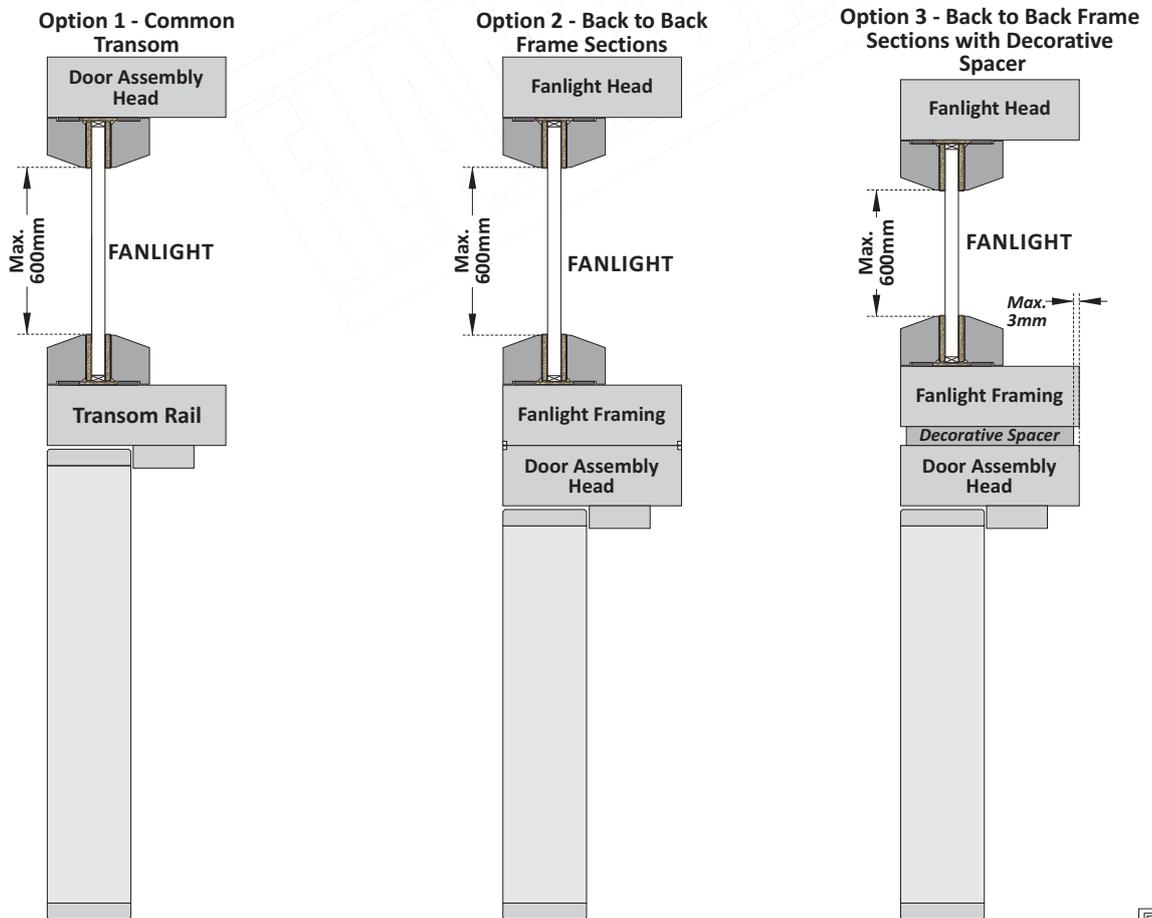
See page 7.8 for further assembly requirements.



Assembly Element	Configuration	Max. Height (mm)	Max. Width (mm)
Fanlight	Single & Double leaf door assemblies	≤ 600	Overall door width

### Q FD60 Assemblies with Glazed Fanlights - Norsound Vision 60B & 60T Glazing Systems

Fig. 7.33



# 7.22 Door Frames Transoms & Side Screens FD60



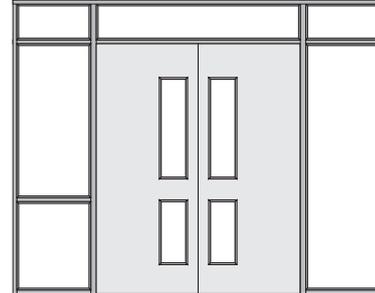
## FD60 Glazed Side Screens - Norsound Vision 60 Glazing Systems

### Q FD60 Assemblies with Glazed Side Screens - Norsound Vision 60B & 60T Glazing Systems

Fig. 7.34

FLAMEBREAK™ door assembly designs in timber frames may include glazed fanlights and side screens using approved FD60 glass types 1~8 (See Section 6 page 5) provided that the glass has also demonstrated adequate performances when tested as a window or a screen in accordance with BS476 Pt.22 : 1987 or BS EN 1634-1 at the required pane dimensions.

Fanlights and side screens may comprise multiple panes of glass provided that the overall door assembly height including the fanlight does not exceed 2950mm. Side screens are limited to one screen to one or both sides of a door assembly with a clear glass width not exceeding 600mm.



All timber must be straight grained hardwood (Excluding Beech - *Fagus Sylvatica*), joinery quality free from knots, splits & checks. Minimum 70mm x 32mm (Min. density = 640kg/m<sup>3</sup>). This timber section can be used for both door frame jambs and transoms rails including within screens and for the perimeter framing for the screen and transom (fanlight).

**NOTE : The frame section is increased to min. 70x40mm to the full height of the door assembly where a common mullion is used to link the door assembly with the side screen(s).**

See page 7.23 for details of the Norsound Vision 60B & 60T glazing system.

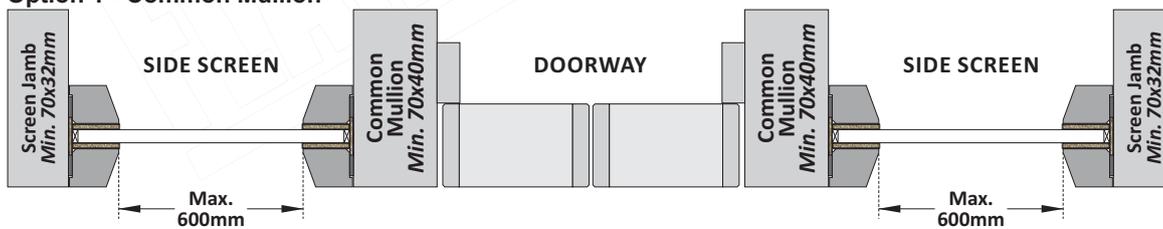
See page 7.8 for further assembly requirements.

Assembly Element	Configuration	Max. Height (mm)	Max. Width (mm)
Side Screens	Single & Double leaf door assemblies	Overall door assembly height	≤ 600

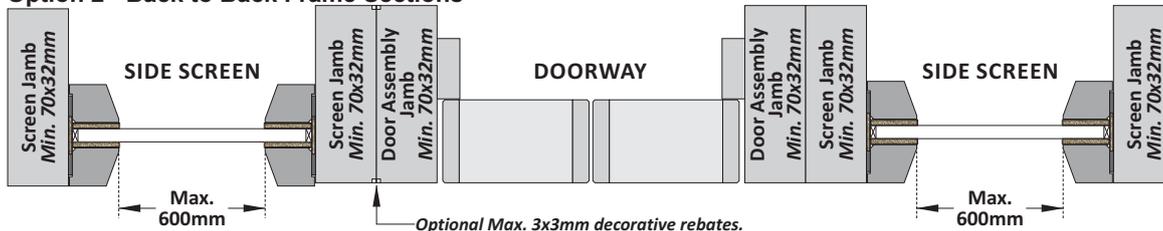
### Q FD60 Assemblies with Glazed Side Screens - Norsound Vision 60B & 60T Glazing Systems

Fig. 7.35

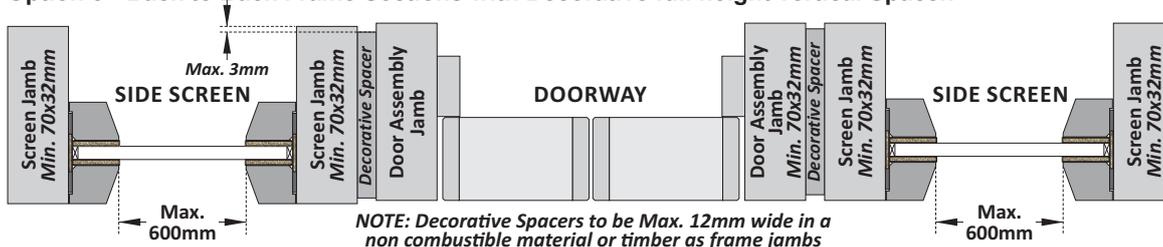
#### Option 1 - Common Mullion



#### Option 2 - Back to Back Frame Sections



#### Option 3 - Back to Back Frame Sections with Decorative full height vertical Spacer.



## FD60 Glazed Side Screens & Fanlights - Norsound Vision 60 Glazing Systems

### Q FD60 Assemblies with Glazed Transoms & Side Screens - Norsound Vision 60B & 60T Glazing Systems

The glazed aperture must be lined with the Norsound 5202LNR liner that is supplied at 52mm wide and may be reduced to a minimum of 42mm wide - liners must be fitted centrally in the glazed aperture.

The glazing system and beads must meet the specifications described for the Norsound Vision 60 glazing system illustrated below with the Norsound Vision 60B or 60T intumescent seals to project 0.5mm above the sight line of the glass.

**NOTE:** The position of the groove in the rear of the bead is critical for the installation of the Vision 60T glazing system.

Expansion gaps between the glass and the framing must be set in accordance with the glass manufacturers approved details including the use of non-combustible or hardwood setting blocks.

Glazing beads must be retained in position with minimum 50mm long x 2mm diameter steel pins *OR* minimum 50mm long #6~8 steel wood screws inserted at 35~40° to the vertical at not more than 50mm from each corner, with intermediate fixings located equi-spaced at not more than 150mm centres.

Pneumatically fired pins are acceptable providing the pins meet the specification given by reference to Section 6, page 3.

Screen Element	Configuration	Height (mm)	Width (mm)
Fanlight	Single & Double leaf door assemblies	≤ 600	Overall door width
Side Screen	Single & Double leaf door assemblies	Overall door assembly height	≤ 600

System Name		Norsound Vision 60B	Norsound Vision 60T
Typical Installation		<p><b>Fig. 7.36</b> Align face of glass with the glass used in the door leaf <i>OR</i> Centre thickness of door</p>	<p><b>Fig. 7.38</b> Align face of glass with the glass used in the door leaf <i>OR</i> Centre thickness of door</p>
Dimensions	Bead Height	Nominally 24.5mm	Nominally 24.5mm
	Intumescent Seal(s)	25mm high x 3mm thick	25mm high x 3mm thick + Plug dimension
Aperture Liner		NOR5202 reduced to Min. 42x2mm	NOR5202 reduced to Min. 42x2mm
Assessed Bead Profiles		<p><b>Fig. 7.37</b></p>	<p><b>Fig. 7.39</b></p>
<p>All timber for glazing beads must be straight grained, joinery quality free from knots, splits &amp; checks.</p> <p>Approved material: Min. 640kg/m<sup>3</sup> Hardwood. (Excluding Beech - <i>Fagus Sylvatica</i>).</p> <p>See Section 6 Glass &amp; Glazing - page 6.20 for further Bead profile details.</p>		<p>* = 2mm splay applicable to all bead profiles</p>	

## Frame Designs for Fire Door Applications:

The design of frames for door assemblies is beyond the scope of this manual. However, certain indicative parameters can be advised to illustrate frame designs that can be 'Q' marked as being suitable for fire door applications up to FD60 (BS476 Pt.22).

Materials approved for the manufacture of frames for fire door applications are given by reference to **Section 2** of this manual with further advice concerning the minimum approved sectional dimensions advised by reference to pages **7.2 & 7.3**.

Generally frames will fall into two basic categories:

**1/ 1st. Fix Frames:** Frames that are installed into (*and becoming part of*) the structure in advanced of the application of final finishes to walls or partitions.

**NOTE: 1st. Fix frame designs are generally installed while 'wet trades' are still active on site. This can influence the moisture content of timber and induce raised grain. Whereas this might be a suitable option for painted frames the use of 1st. Fix frame designs is not recommended where frame are in polished hardwoods.**

**2/ 2nd. Fix Frames:** Frames that are installed into pre formed (*prepared openings*) in the structure. A 'fitting in' installation gap is required between the frame and the surrounding structure. 2nd. Fix frames can be installed into walls or partitions that are completely finished including the application of decoration.

**NOTE: 2nd. Fix frame designs can generally be fitted into completely finished areas of the building allowing for joinery to be delivered at a late stage in the construction programme with a consequent reduction of the risk of damage due to construction activities. The use of 2nd. Fix frame designs is recommended where polished hardwood frames are used.**

Proposed frame designs for any particular project can be independently assessed by Exova Warringtonfire where required.

### Method of Jointing:

The following methods of jointing can be used for the construction of frames for fire door applications up to FD60:

Mortise & Tenon Joints.

Butt Joints.

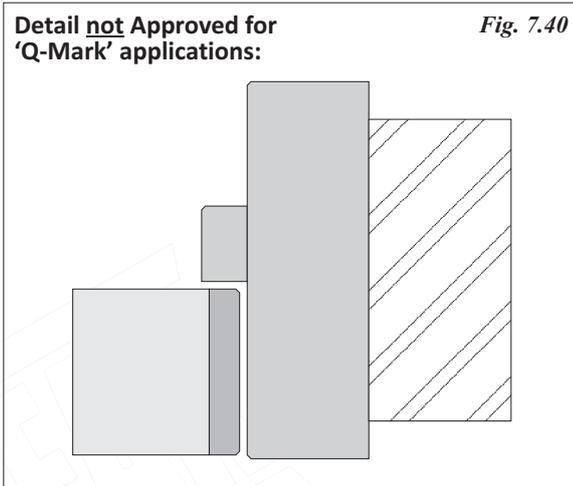
Half Lapped Joints.

Mitred joints.

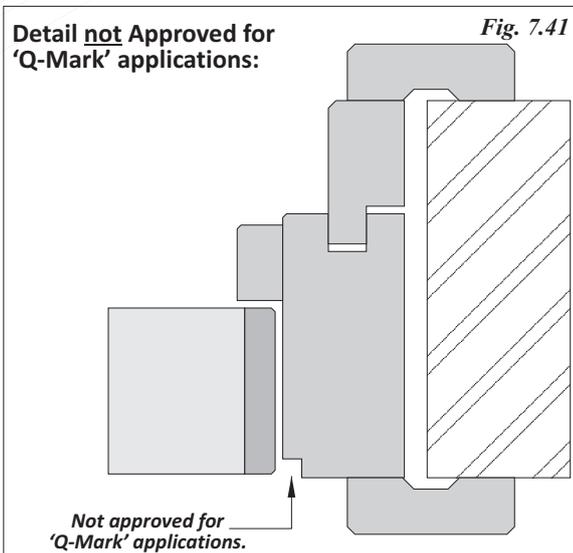
Frames may be assembled using dry joints with mechanical (*screw*) fixings or glued and screw fixed.

The following details are not approved for 'Q-Mark' applications:

Frames projecting beyond the face of the wall / partition:



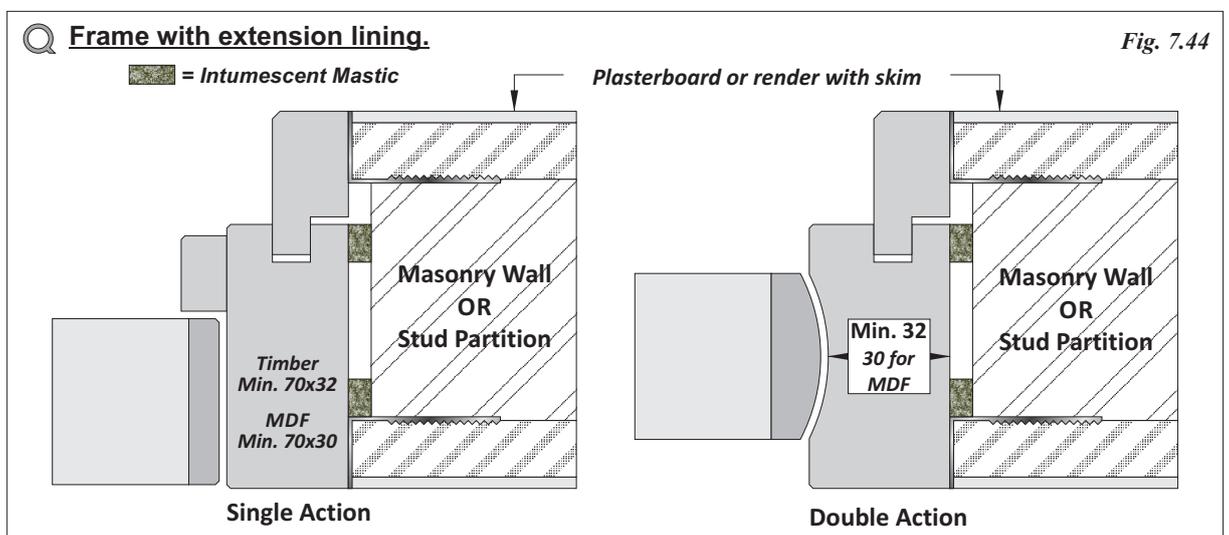
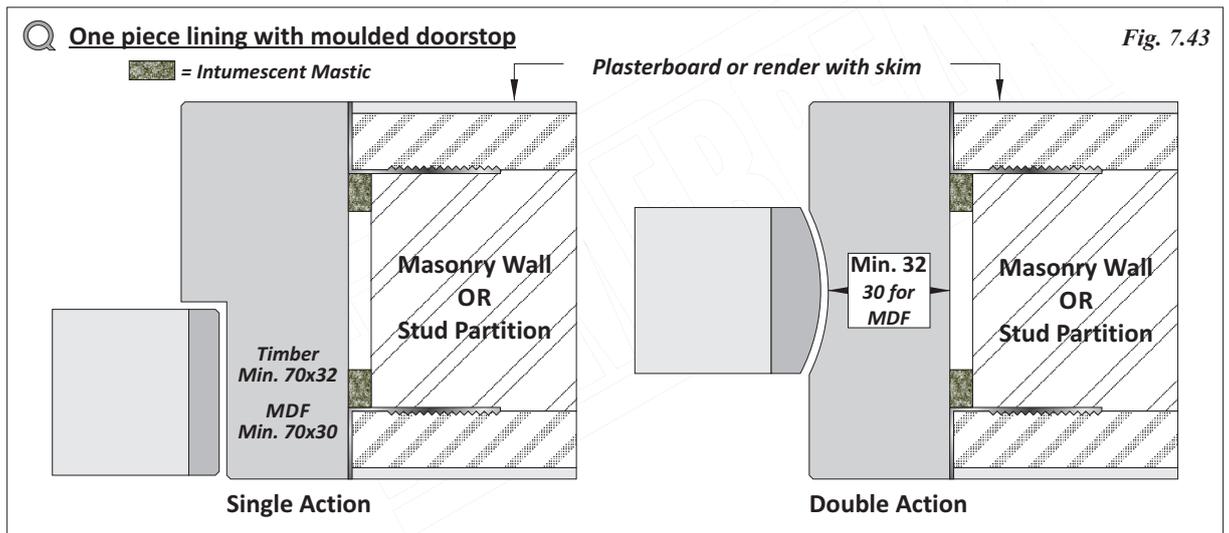
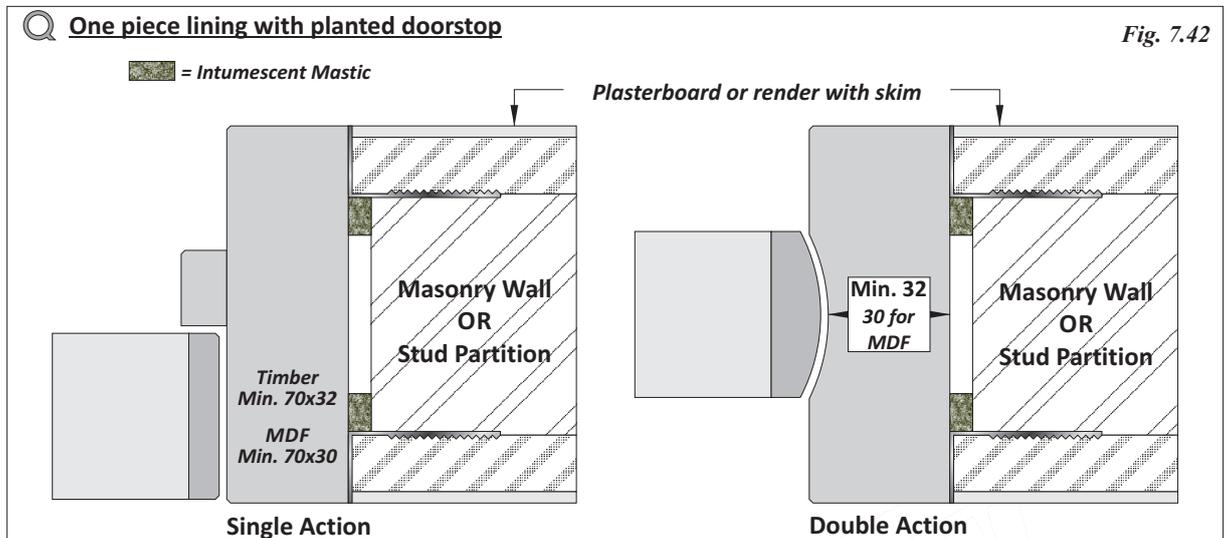
Frames with feature rebates to the door leaf or the frame at the operating gap positions between the door leaf and the frame:



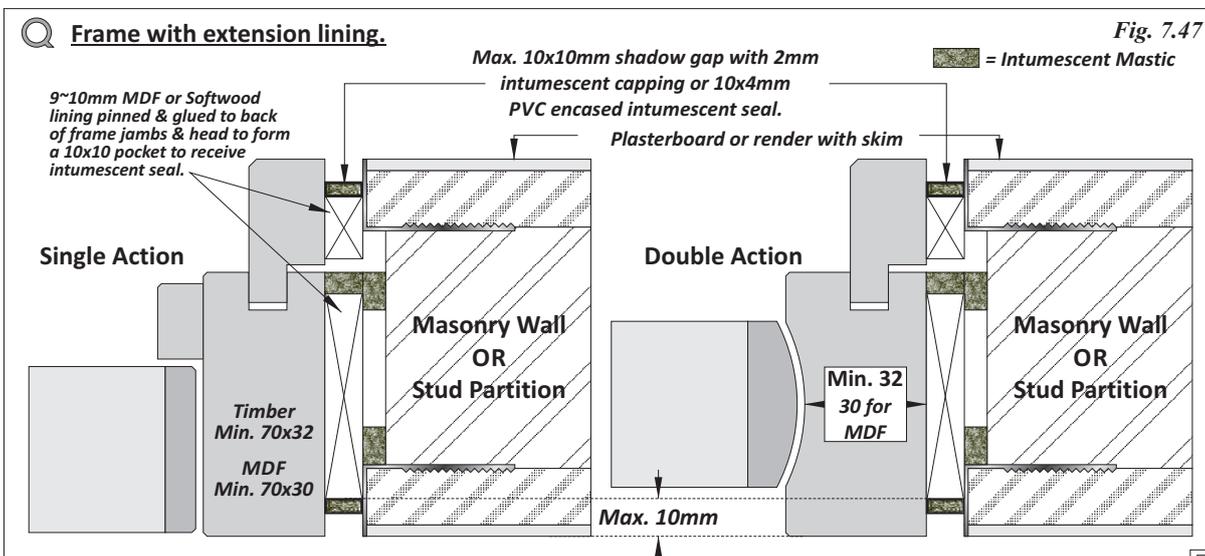
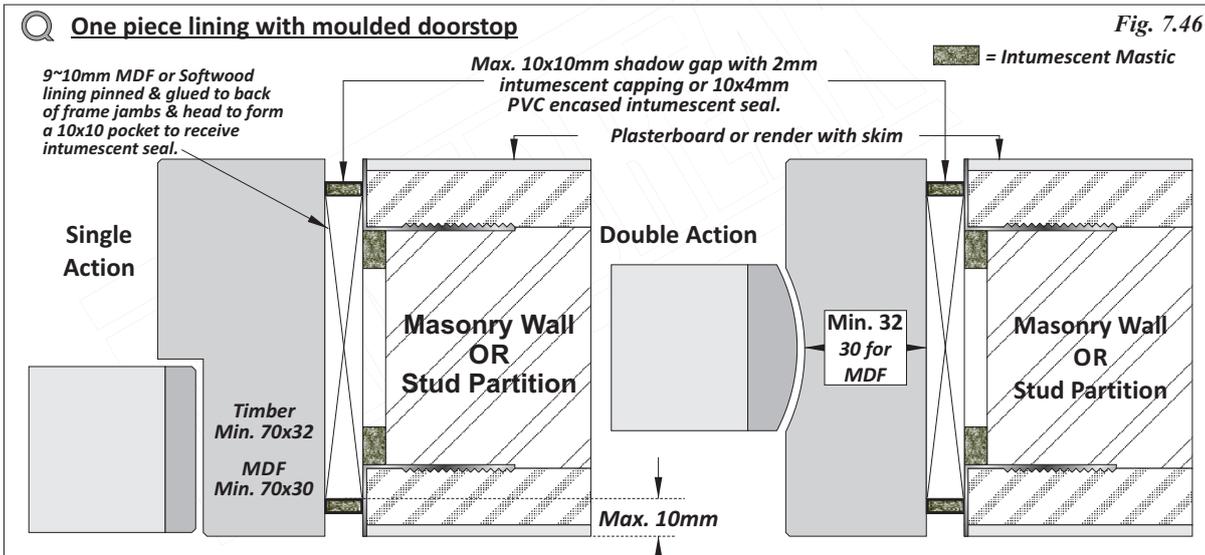
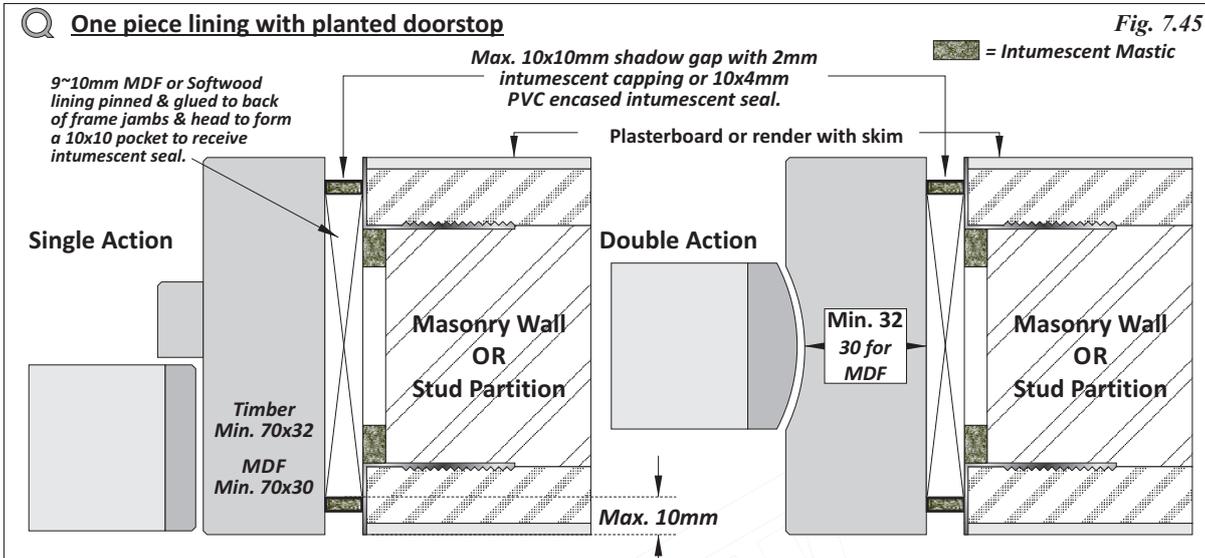
The following details illustrate guidance details for frame designs that have been 'Q-Mark' assessed as being suitable for fire door applications for performances up to FD60 (BS476 Pt.22) subject to the use of materials that are approved for the particular performance by reference to **Section 2 - Fire Door Applications** of this manual.



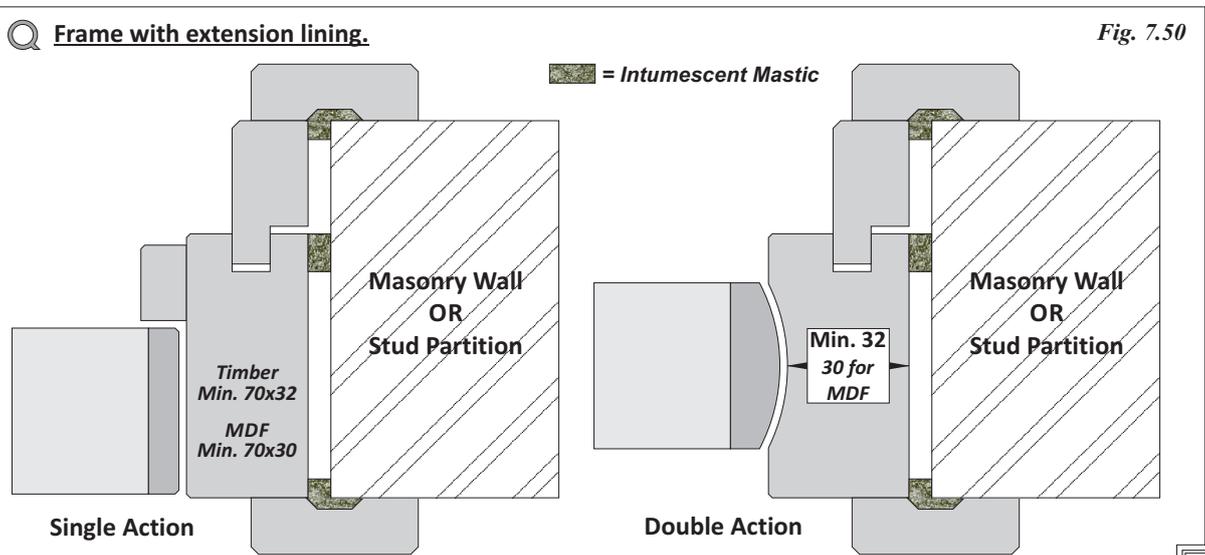
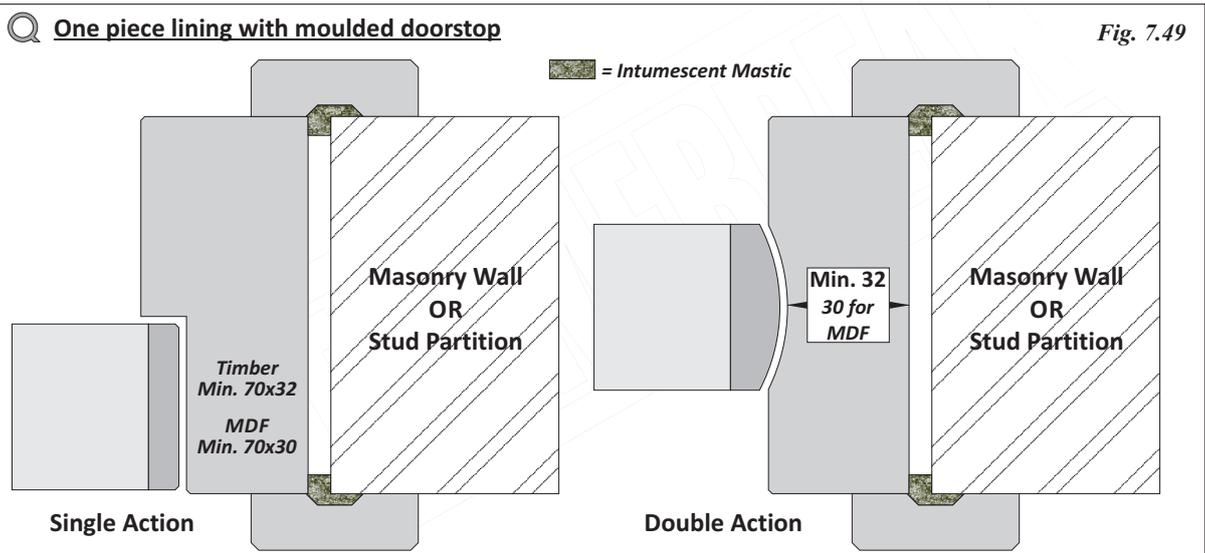
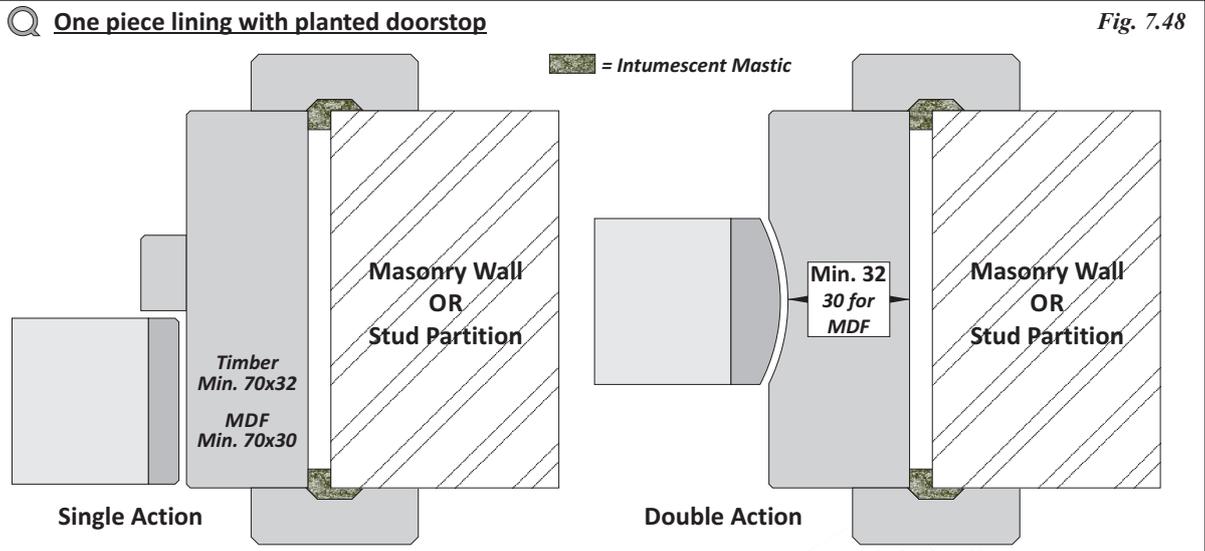
### Flush Frame - No Architrave - (1st. Fix).



## Shadow Gap Frame - (1st. Fix).



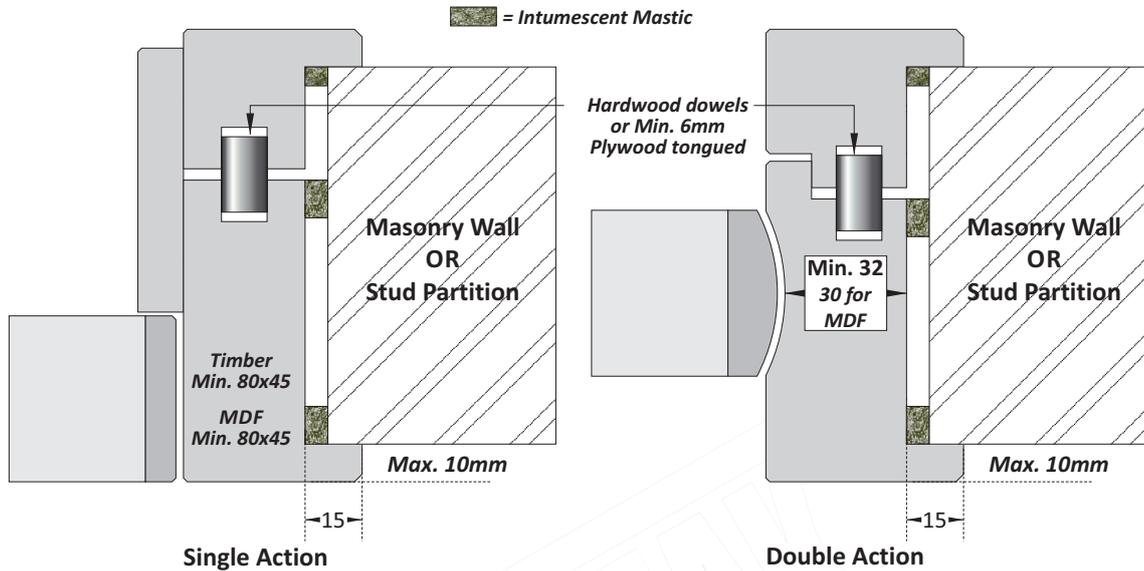
### Traditional Frame - With Architrave - (2nd. Fix)



## Split Frame - With Integral Architrave - (2nd. Fix).

Q Two piece frame with integral architrave.

Fig. 7.51



### Alternative Frame Intumescent Sealing:

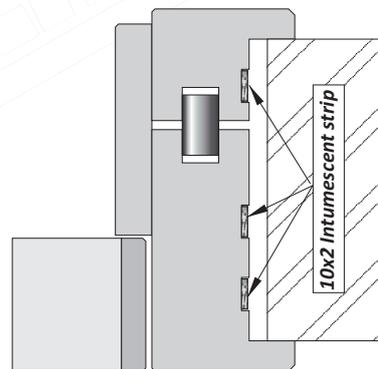
The back of frame components can be grooved to receive low pressure intumescent seals that can be fitted to the frames before installation to provide for an alternative to the use of intumescent mastics.

This option is a preferred method for use with 2nd. Fix frame designs, particularly where used in conjunction with high quality polished hardwoods.

An additional benefit resulting from this method of sealing is that the frame components are more resistant to distortion if subjected to environmental conditions that result in variations to moisture content.

Q

Fig. 7.53

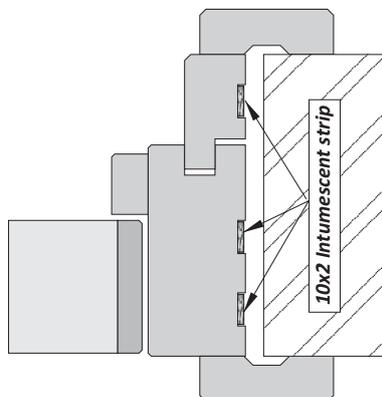


Approved Intumescent material suitable for this application:

- 2mm Interdens - Dufalite Developments Ltd.
- 2mm MAP paper - Lorient Polyproducts Ltd.
- 2mm Therm-A-Strip - Intumescent Seals Ltd.
- 2mm Pyrostrip 300 - Mann McGowan Fabrications Ltd.

Q

Fig. 7.52



*Figs. 7.42~7.53* illustrate the approved locations for the sealing between the door frame and the surrounding structure to suit various frame designs when using intumescent sealants. Further guidance relating to the installation of fire rated door assemblies with wood frames is given by reference to **Section 14 - Fire Door Installation** of this manual.

### Softwood and Hardwoods for use with frames for FLAMEBREAK™ based doors.

- 1/ The following lists of Softwoods & Hardwoods is culled from BS EN 942 : 2007.
- 2/ These lists show the nominal density for the species @ 15% moisture content.
- 3/ The lists identify suitability for fire door applications based upon BS8214 : 2016 recommendations and current fire test / assessment data.
- 4/ The lists are provided as a guide to users and may not describe all available softwoods or hardwoods.

#### Frame Materials - Softwoods

Item	Species	Latin Name	Characteristics	Avg. Density	Fire Door	
					FD30	FD60
1	Douglas Fir	<i>Pseudotsuga menziesii</i>	Pale reddish brown heartwood, paler sapwood. Growth rings clearly defined and inclined to show through paint. Discolours in contact with ferrous metal. Non-ferrous fittings and fastenings are recommended. Long clear lengths available.	530Kg/m3	OK	NR
2	Hemlock, western	<i>Tsuga heterophylla</i>	Pale brown in colour. Growth rings distinguishable. Straight grain, fine even texture. Shipments include amabilis fir (less dense, less strong). Good paint performance in service. Long clear lengths available.	470Kg/m3 to 500Kg/m3	OK	NR
3	Parana Pine	<i>Araucaria angustifolia</i>	Golden brown, sometimes with red streaks. Straight grain, fine uniform texture, generally available knot free. Liable to distort on machining. Good paint performance in service.	550Kg/m3	OK	NR
4	Pine, lodgpole	<i>Pinus contorta</i>	Heartwood yellow to pale brown tinged with red, paler sapwood. Where present, knots are small and tight. Resinous smell. Fine even texture, straight grained. Paints well.	470Kg/m3	NR	NR
5	Pine, ponderosa	<i>Pinus ponderosa</i>	Very wide pale yellow sapwood. Dark yellow to reddish brown heartwood, with fine prominent resin ducts. Paints well, but resin exudation can be troublesome.	480Kg/m3	OK	NR
6	Pine, southern	<i>Pinus echinata, Pinus taeda &amp; others</i>	Yellow / reddish brown resinous heartwood, paler sapwood. Growth rings distinct, coarse appearance. Paints fairly satisfactorily	590Kg/m3	OK	NR
7	Pine, sugar	<i>Pinus lambertiana</i>	Pale straw to reddish brown heartwood, white sapwood. Soft even texture. Paints well.	430Kg/m3	NR	NR
8	Redwood: Scots pine	<i>Pinus sylvestris</i>	Pale yellowish brown to red brown heartwood, paler sapwood. Medium texture. Growth rings clearly marked. Good paint performance in service.	510Kg/m3	OK	NR
9	Western Red Cedar	<i>Thuja plicata</i>	Variable reddish brown heartwood, distinct white sapwood. Straight grain, coarse texture. Discolours in contact with ferrous metal if damp. Non-ferrous fittings and fastenings are recommended. Good paint performance in service. Particularly suited for exterior use.	390Kg/m3	NR	NR
10	Whitewood	<i>Picea abies and Abies alba</i>	White to pale yellowish brown. Straight grain, rather fine texture. Good paint performance in service.	470Kg/m3	NR	NR

Avg. Density = Average density @ 15% moisture content.

#### NOTES:

- The densities for Softwoods and Hardwoods described in BS EN 942 are the average densities for the particular species at 15% moisture content.
- Some species listed as 'NR' may be used for FD30 and FD60 applications where there is test evidence to support the use of the particular species or the frame material is selected from available stocks to suit the fire performance density requirement. e.g. American Cherry selected to provide for a minimum density of 640kg/m<sup>3</sup> may be used for FD60 applications.
- Similarly, materials listed as 'OK' for fire door applications must provide for the minimum density requirement to suit the fire performance.



## 7.30 Timber Species

# FLAMEBREAK

### Frame Materials - Hardwoods

Item	Species	Latin Name	Characteristics	Avg. Density	Fire Door	
					FD30	FD60
1	Abura	<i>Hallan ciliata</i>	Pale brownish coloured heartwood and sapwood, plain appearance. Medium / fine texture. Tendency to split on nailing. Stains well.	580Kg/m <sup>3</sup>	OK	NR
2	Afromosia	<i>Pericopsis elata</i>	Deep brown heartwood, pale brown sapwood. plain appearance. Medium / fine texture. Discolours in contact with ferrous metal if damp. Pre-bore before nailing.	710Kg/m <sup>3</sup>	OK	OK
3	Afzelia	<i>Afzelia spp.</i>	Reddish brown timber, straw coloured sapwood. Grain often interlocked, texture course. Pre-bore before nailing. Can stain masonry and textiles if damp.	830Kg/m <sup>3</sup>	OK	OK
4	Agba	<i>Gossweilerodendron balsamiferum</i>	Pale pinkish brown heartwood of uniform appearance, sapwood slightly paler (border sometimes indistinct). Medium texture. Resin, resinous odour frequent.	510Kg/m <sup>3</sup>	OK	NR
5	Ash, American	<i>Fraxinus americana, F. nigra &amp; others.</i>	Coarse texture. Sapwood nearly white, White ash heartwood greyish brown, tough. Black ash darker, lower density, less tough.	660Kg/m <sup>3</sup>	OK	OK
6	Ash, European	<i>Fraxinus excelsior</i>	Generally white to pale brown. Medium / course texture. Very good bending timber, very tough.	710Kg/m <sup>3</sup>	OK	OK
7	Beech, European	<i>Fagus sylvatica</i>	Pale reddish brown; if steamed, pink. Fine even texture. Good bending. Stains, polishes well.	720Kg/m <sup>3</sup>	OK	NR
8	Birch, yellow	<i>Betula alleghaniensis</i>	Wide variation in colour from cream to reddish brown, can include sweet birch (denser, darker). Fine even texture. Stains and polishes well.	700Kg/m <sup>3</sup>	OK	OK
9	Cedar, Central & South American	<i>Cedrela odorata, C. fissilis</i>	Colour pale to dark reddish brown and properties highly variable. Very low density. Occasional interlocked grain, coarse texture. Fragrant odour. Resin exudation, resin pockets may occur.	480Kg/m <sup>3</sup>	OK	NR
10	Cherry, American	<i>Prunus serotina</i>	Colour varies from pale straw to reddish brown. Straight fine grain, fine texture. Pith flecks and small gum pockets are common. Stains, polishes well.	590Kg/m <sup>3</sup>	OK	NR
11	Chestnut, sweet	<i>Castanea sativa</i>	Yellowish brown heartwood, similar to oak. Sapwood distinct. Course texture, tendency to spiral grain. Discolours in contact with ferrous metal if damp. Non-ferrous fittings or fastenings are recommended.	560Kg/m <sup>3</sup>	OK	NR
12	Elm	<i>Ulmus spp.</i>	Pale greyish brown. Straight but sometimes interlocked grain, course texture. Good bending properties.	580Kg/m <sup>3</sup>	OK	NR
13	Guarea	a/ <i>Guarea cedrata</i> b/ <i>Guarea thompsonii</i>	Can be brought separately. Pinkish brown colour, sapwood pale. Fine texture, often interlocked grain. a/ occasionally exudes resin.	590Kg/m <sup>3</sup> 640Kg/m <sup>3</sup>	OK OK	NR OK
14	Idigbo	<i>Terminalia ivorensis</i>	Yellowish to pale yellowish brown colour heartwood, sapwood somewhat paler. Coarse texture. Discolours in contact with ferrous metal, can stain masonry if damp. Non-ferrous fittings or fastenings are recommended.	560Kg/m <sup>3</sup>	OK	NR
15	Iroko	<i>Milicia excelsa and m. regiam.</i>	Colour varies from yellowish brown to dark brown, with pale yellow sapwood. Interlocked grain, coarse texture. Very hard, strong.	660Kg/m <sup>3</sup>	OK	OK
16	Keruing	<i>Dipterocarpus spp.</i>	Numerous species of similar characteristics. Pinkish brown to dark brown heartwood, plain appearance. Sapwood grey. Straight grain, occasionally interlocked. Exudes resin, sometimes making finishing troublesome. Prone to severe distortion during drying.	740Kg/m <sup>3</sup>	OK	OK

Avg. Density = Average density @ 15% moisture content.



### Frame Materials - Hardwoods

Item	Species	Latin Name	Characteristics	Avg. Density	Fire Door	
					FD30	FD60
17	Lauan, Meranti, Seraya	<i>Shorea spp.</i> <i>Parashorea spp.</i>	Name depends on origin: Philippines, Malaysia/Indonesia Sabah respectively. Produced from numerous species, the timber is sold in a wide variety of colour (dark red, red, light red, yellow, white) with wildly varying characteristics. Those with higher density are generally stronger, stiffer and more durable than those with lower density. Interlocked grain, coarse texture.	Dark Red 710Kg/m3	OK	OK
				Light Red 550Kg/m3	OK	NR
18	Mahogany, African	<i>Khaya spp.</i>	Reddish brown heartwood, yellowish brown sapwood. Interlocked grain, moderately coarse texture.	530Kg/m3	OK	NR
19	Mahogany, American	<i>Swietenia spp.</i>	Pale to dark reddish brown. Some interlocked grain, texture slightly coarse: gives excellent finish.	560Kg/m3	OK	NR
20	Makore	<i>Teiaghemella heckelii</i>	Lustrous, pinkish brown to dark red heartwood, paler sapwood. Straight grain, fine texture. Discolours in contact with ferrous metal. Tends to split on nailing.	640Kg/m3	OK	OK
21	Maple, rock	<i>Acer saccharum</i>	Pale brown heartwood, white sapwood. Straight grain, fine texture. A strong, taut timber, bends well. Stains, polishes well.	740Kg/m3	OK	OK
22	Maple, soft	<i>Acer rubrum</i> , <i>A. saccharinum</i>	Creamy white heartwood, sapwood indistinct. Similar to rock maple but softer, less strong.	610Kg/m3	OK	NR
23	Niangon	<i>Heritiera utilis</i> , <i>H. densiflora</i>	Pale sapwood, pink to reddish-brown heartwood. Interlocked grain gives stripy appearance, affects machining.	640Kg/m3	OK	OK
24	Oak American, Red	<i>Quercus spp</i>	Colour varies, depending on species, from pale yellow brown to reddish mid brown. Sapwood distinct, paler. Straight grain, all species medium texture except European, which may be coarse. Discolours in contact with ferrous metals. Non-ferrous fittings and fastenings are required. Nailing difficult, pre-bore. Difficult to dry, tendency to check, split and honeycomb.	Am.Red 790Kg/m3	OK	OK
25	Oak American, White	<i>Quercus spp</i>		Am.White 770Kg/m3	OK	OK
26	Oak European	<i>Quercus spp</i>		European 720Kg/m3	OK	OK
27	Oak Japanese	<i>Quercus spp</i>		Japanese 670Kg/m3	OK	OK
28	Obeche	<i>Triplochiton scleroxylon</i>	Pale straw coloured. Interlocked grain, moderately coarse even texture. A stable, lightweight, easy to work timber. Stains well. Not suitable for stairs.	390Kg/m3	NR	NR
29	Poplar American - yellow	<i>Liriodendron tuplipifera</i>	Yellowish to olive brown heartwood with some dark streaks, whitish sapwood. Straight grain, fine even texture. Smooth finish, good nailing and staining.	510Kg/m3	OK	NR
30	Ramin	<i>Gonystylus spp.</i>	White to pale straw colour. Straight grain, fine texture. Splits on nailing. Stains well. Not suitable for stairs.	670Kg/m3	OK	OK
31	Sapele	<i>Entandrophragma cylindricum</i>	Medium to dark reddish brown heartwood with a pronounced stripe. Sapwood whitish. Interlocked grain, fine texture.	640Kg/m3	OK	OK
32	Sycamore	<i>Acer pseudoplatanus</i>	White to yellowish, lustrous. Generally straight grain, fine even texture.	630Kg/m3	OK	NR
33	Teak (Burma)	<i>Tectona grandis</i>	Golden brown heartwood sometimes with dark markings, pale yellowish brown sapwood. Straight or wavy grain, coarse texture. Very stable. Pre-boring recommended for nailing.	660Kg/m3	OK	OK
34	Utile	<i>Entandrophragma utile</i>	Reddish or purplish brown heartwood, pale sapwood. Interlocked grain, open texture.	660Kg/m3	OK	OK
35	Walnut (African)	<i>Lovoa trichilioides</i>	Bronze brown heartwood, with occasional black streaks, distinct buff coloured sapwood. Interlocked grain, fine texture.	560Kg/m3	OK	NR
36	Walnut (American)	<i>Juglans nigra</i>	Rich dark brown heartwood, pale sapwood. Grain varies from straight to curly, texture coarse.	660Kg/m3	OK	OK
37	Wenge	<i>Millettia laurentii</i>	Sapwood whitish, heartwood dark brown with fine blackish veining. Straight grained, coarse texture. Difficult to polish.	880Kg/m3	OK	OK

Avg. Density = Average density @ 15% moisture content.





FLAMEBREAK



### Hardware General:

FLAMEBREAK™ is a laminated wood core product providing for universal screw fixing without the necessity to provide for additional timber backing to receive hardware.

For use with fire rated door assemblies, the following recommendations apply:

**a/** Reference should be made to BS8214 : 2016. Code of Practice for Fire Door Assemblies.

**b/** Reference should be made to the 'Hardware for Timber Fire and Escape Doors' Code of Practice published jointly by the DHF (*Door & Hardware Federation*) and the GAI (*Guild of Architectural Ironmongery*).

**Fixings:** All hardware fitted to FLAMEBREAK™ based doors should be fixed with wood screws. Where fixings are likely to screw into end grain, the use of fully threaded 'Twinfast' or Chipboard screws is recommended. The screw size for load bearing items should suit the particular item of ironmongery, otherwise Min. 1 1/2in. No.8 fixing screws should be used, in all cases, the use of pilot holes to suit screw sizes is recommended.

### Fire Door Applications:

**NOTE:** For 'product assured' items, the fixing instructions provided by the hardware manufacturer should be strictly adhered to and these instructions take precedence over BS8214 and Code of Practice general recommendations in the event of any conflict.

FLAMEBREAK™ based doors, like other wood and wood based doors, rely on the core material to erode at a predictable rate for their fire performance. Intumescent seals fill gaps around the door(s) that may occur as a result of shrinkage or distortion under fire conditions. The removal of core and intumescent material to accommodate hardware creates weaknesses that can be exploited under attack by fire. Large areas of metal, when used with a wood door can induce excessive distortion and premature failure. It is recommended that hardware is selected with care in consideration of these risks.

It is not unusual for hardware to be specified prior to the specification of the doors and without knowledge, at the time of preparation of hardware schedules, of the fire performances that need to be satisfied. It is a Designer's responsibility to ensure that the door assembly designs meet the requirements of national and local regulations for the purpose of fire certification. (See: BS9999).

FLAMEBREAK™ like other wood based products provides for very good insulation performances with a potential to provide for an insulation performance equal to the integrity performance. (See BS476 Pt.22). Metal passing through the door from one face to another creates a path for thermal bridging, (i.e. The transfer of heat from one side of the door to the other), this will reduce the insulation properties of the door and in extreme cases may give rise to ignition on the non fire face of the door.

Under BS476 Pt.20 fire test conditions the pressure 'normal' in the furnace occurs at (approx.) 1000mm above floor level. Areas of door above the normal are subjected to increasing positive pressure from the furnace side while areas below the normal are subjected to negative pressure from the furnace side. This results in 'cold' air entering the furnace under the door with a cooling effect on this edge. Hardware items, particularly locks & latches, should be positioned below the 'normal' where possible.

**NOTE:** The pressure normal is lowered to 500mm above floor level for testing to BS EN 1634-1.

Where the door / frame seals are interrupted to receive hardware it may be necessary to provide for replacement sealing. The use of pressure intumescent seals (e.g. Palusol P100 or Graphite) may be unsuitable for this purpose due to a risk that pressure seals could compete with door / frame seals in an unpredictable manner. The replacement intumescent sealing should generally be of the low pressure type. (Usually Phosphate based). Low pressure intumescent is available in sheet form (often pre cut dedicated gaskets to suit particular items of hardware). (See page 8.2)



### Intumescent Gaskets for Hardware:

#### Intumescent Gaskets for Hardware:

All hardware fittings that require the removal of door core material when used with FLAMEBREAK™ door constructions for fire door applications must be used with intumescent gaskets unless otherwise stated for the particular hardware product.

**NOTE: Some hardware products are supplied complete with dedicated intumescent gaskets. Use of dedicated intumescent gaskets take precedence over the following listing and these must be used in accordance with the suppliers installation instructions.**

Approved intumescent materials for these applications are as follows:

Application	Location	Product / Manufacturer	FD30	FD60
Hinges	Under both hinge blades. <i>NOTE: May be omitted for FD30 applications only for door heights up to 2400mm</i>	1/ 1mm Interdens - Dufaylite Developments Ltd.	✓	✓
		2/ 1mm MAP paper - Lorient Polyproducts Ltd.	✓	✗
		3/ 1mm Pyrostrip 300 - Mann McGowan Ltd.	✓	✗
		4/ 1mm Therm-A-Strip - Intumescent Seals Ltd.	✓	✓
		5/ 1mm G30 - Sealmaster Ltd.	✓	✓
		6/ 1mm NOR910 - Norsound Ltd.	✓	✓
Locks / Latches	Under forend & keep for double leaf door assemblies OR if the forend or keep is greater than 150mm high up to the maximum assessed dimension.	1/ 1mm Interdens - Dufaylite Developments Ltd.	✓	✓
		2/ 1mm MAP paper - Lorient Polyproducts Ltd.	✓	✗
		3/ 1mm Pyrostrip 300 - Mann McGowan Ltd.	✓	✗
		4/ 1mm Therm-A-Strip - Intumescent Seals Ltd.	✓	✓
		5/ 1mm G30 - Sealmaster Ltd.	✓	✓
		6/ 1mm NOR910 - Norsound Ltd. <i>(NOTE 1)</i>	✓	✓
Top Pivot Fittings	Lining to all sides of the mortice.	1/ 2mm Interdens - Dufaylite Developments Ltd.	✓	✓
		2/ 2mm MAP paper - Lorient Polyproducts Ltd.	✓	✗
		3/ 2mm Therm-A-Flex - Intumescent Seals Ltd.	✓	✗
		4/ 2mm Therm-A-Strip - Intumescent Seals Ltd.	✓	✓
		5/ 2mm G30 - Sealmaster Ltd.	✓	✓
		6/ 2mm NOR920 - Norsound Ltd.	✓	✗
Flush Bolts	Lining to all sides of the mortice.	1/ 2mm Interdens - Dufaylite Developments Ltd.	✓	✓
		2/ 2mm MAP paper - Lorient Polyproducts Ltd.	✓	✗
		3/ 2mm Therm-A-Flex - Intumescent Seals Ltd.	✓	✗
		4/ 2mm Therm-A-Strip - Intumescent Seals Ltd.	✓	✓
		5/ 2mm G30 - Sealmaster Ltd.	✓	✓
		6/ 1mm NOR910 - Norsound Ltd.	✓	✓
Cableways	Lining to the base of the groove. <i>(See detail page ???)</i>	1/ 2mm Interdens - Dufaylite Developments Ltd.	✓	✓
		2/ 2mm MAP paper - Lorient Polyproducts Ltd.	✓	✗
		3/ 2mm Therm-A-Flex - Intumescent Seals Ltd.	✓	✗
		4/ 2mm Therm-A-Strip - Intumescent Seals Ltd.	✓	✓
		5/ 2mm G30 - Sealmaster Ltd.	✓	✓
		6/ 2mm NOR920 - Norsound Ltd.	✓	✓

**NOTE 1: The maximum latch forend size for FD60 application using 1mm NOR910 gaskets is 155mm high x 25mm wide.**



### Fire Door Applications - Hanging devices - Hinges:

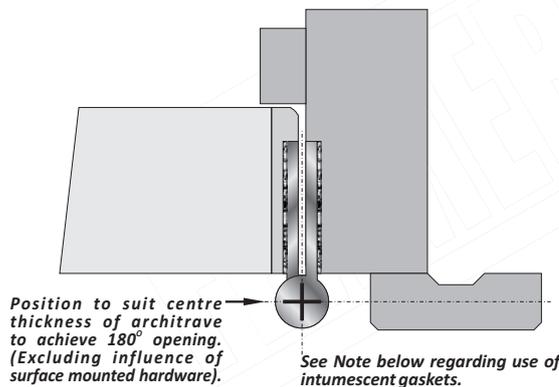
#### Hinges for use with FLAMEBREAK™ doors:

Hinges for use with FLAMEBREAK™ doors must provide for the appropriate BS EN 1935 : 2002 performance according to the door weight and anticipated usage and be suitable for use with timber fire doors to the required performance.

It is recommended that the hinge knuckle centre should be set as near to the opening face of the door as possible to minimise the 'door growth' during operation. (See 'Growth Formula' - **Section 9 - page 9.32 - Coordination**).

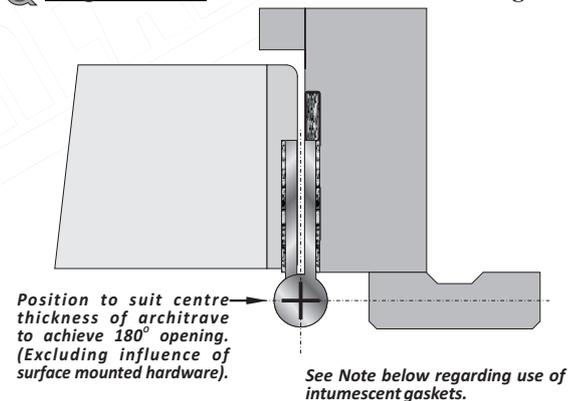
A hinge knuckle centered on the centre line of the architrave thickness will allow for 180° opening (excluding the influence of other surface mounted hardware).

**Q Hinges - FD30:** **Fig. 8.1**



Blade Height	90~120mm
Blade Width (excluding knuckle)	30~35mm
Blade Thickness	2.5 ~ 4mm
Fixings	Min. 4No. 30mm long #8 or #10 steel wood screws per hinge blade.
Materials	Steel or stainless steel OR brass (Min. 800°C melting point).
Intumescent Protection	See page 8.2 - FD30 Listing
Hinge Positions:	See page 8.3 Fig. 8.3

**Q Hinges - FD60:** **Fig. 8.2**



Blade Height	90~120mm
Blade Width (excluding knuckle)	30~35mm
Blade Thickness	2.5 ~ 4mm
Fixings	Min. 4No. 30mm long #8 or #10 steel wood screws per hinge blade.
Materials	Steel or stainless steel
Intumescent Protection	See page 8.2 - FD60 Listing
Hinge Positions:	See page 8.3 Fig. 8.3



## Fire Door Applications - Hanging devices - Hinges:

### Fire Door Applications - Hinge Locations:

Fig. 8.3



### Hinge Location - Fire rated Door Assemblies:

3No. hinges are required for use with door leaf heights 1500mm ~ 2400mm located as follows:

#### OPTION 1:

**Top Hinge = dim. a** = 200 ~ 220mm from top of door leaf.

**Centre Hinge** = located equispaced between top and bottom hinge

**Bottom Hinge = dim. b** = 220 ~ 300mm from bottom of door leaf.

#### OPTION 2:

**Top Hinge = dim. a** = 200 ~ 220mm from top of door leaf.

**Alternative = dim. c** = 200mm from centre line of top hinge.

**Bottom Hinge = dim. b** = 220 ~ 300mm from bottom of door leaf.

For door heights over 2400mm (or where otherwise specified in project details) additional hinges are used located as follows:

**Top Hinge = dim. a** = 200 ~ 220mm from top of door leaf.

**Additional Top Hinge = dim. c** = 200mm from centre line of top hinge.

**Centre Hinge(s)** = located equispaced between 2nd. top and bottom hinge with a further hinge for each additional 500mm in door height.

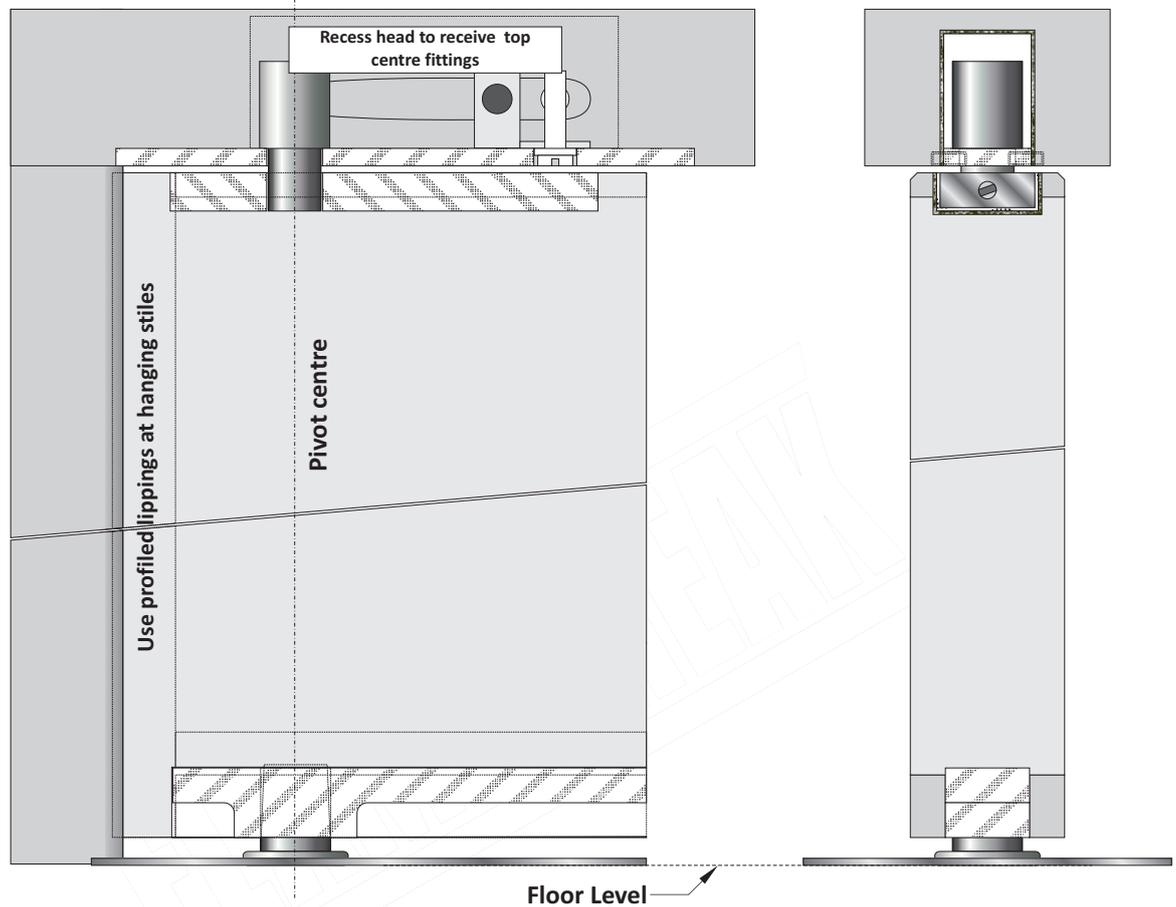
**Bottom Hinge = dim. b** = 220 ~ 300mm from bottom of door leaf.

**NOTE:** For door heights less than 1500mm doors may be hung on 2No. hinges located to suit dims. 'a' & 'b' in these details.

## Fire Door Applications - Hanging devices - Floor Mounted Closers - Double Action:

### Q Floor Mounted Closers - Double Action - FD30 & FD60:

Fig. 8.4



#### Double Action Pivots FD30 & FD60:

Automatic closing devices must be either as tested or components of equal specification have demonstrated contribution to the required performance of similar wood based types of door assembly design when tested to BS 476 Pt.22 : 1987 or BS EN 1634-1 with wood doors.

The top pivots to floor spring assemblies must be protected with intumescent gaskets as described by reference to **page 8.2** for the relevant fire performance. Alternatively a dedicated intumescent pack provided by the floor spring supplier may be used.

The above illustration indicates use of the DORMA BTS series floor mounted closer with double action fittings.

Hanging stile lippings must be profiled (*to suit the pivot centre*).

Pilot holes should be drilled to receive screw fixings. Min. 1 1/2in. No.8 wood screws should be used for fixing.

**NOTE 1:** Additional hardwood blocking may be used at the pivot location positions to provide for improved fixing of the load bearing elements.

**NOTE 2:** Bottom strap fittings can be over recessed to provide for required under door clearances.

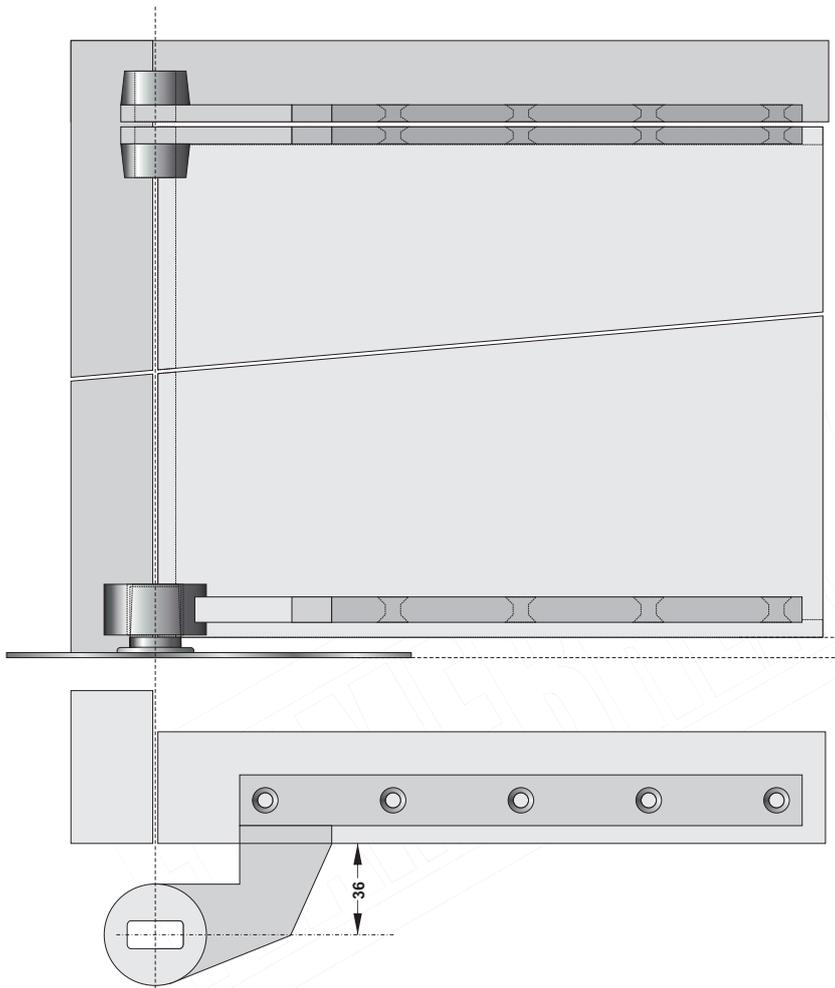
**NOTE 3:** Transom mounted double action closers are **not** approved for 'Q-Mark' applications but may be used in reliance upon test / assessment data provided 'by others'. (e.g. Dorma RTS 85).



### Fire Door Applications - Hanging devices - Floor Mounted Closers - Single Action:

#### Q Floor Mounted Closers - Single Action - FD30 & FD60:

Fig. 8.5



#### Double Action Pivots FD30 & FD60:

Automatic closing devices must be either as tested or components of equal specification have demonstrated contribution to the required performance of similar wood based types of door assembly design when tested to BS 476 Pt.22 : 1987 or BS EN 1634-1 with wood doors.

The top pivots to floor spring assemblies must be protected with intumescent gaskets as described by reference to **page 8.2** for the relevant fire performance. Alternatively a dedicated intumescent pack provided by the floor spring supplier may be used.

The above illustration indicates use of the DORMA BTS series floor mounted closer with single action fittings.

Pilot holes should be drilled to receive screw fixings. Min. 1 1/2 in. No.8 wood screws should be used for fixing.

**NOTE 1:** Additional hardwood blocking may be used at the pivot location positions to provide for improved fixing of the load bearing elements.

**NOTE 2:** Bottom strap fittings can be over recessed to provide for required under door clearances.

**NOTE 3:** Transom mounted double action closers are not approved for 'Q-Mark' applications but may be used in reliance upon test / assessment data provided 'by others'. (e.g. Dorma RTS 85).

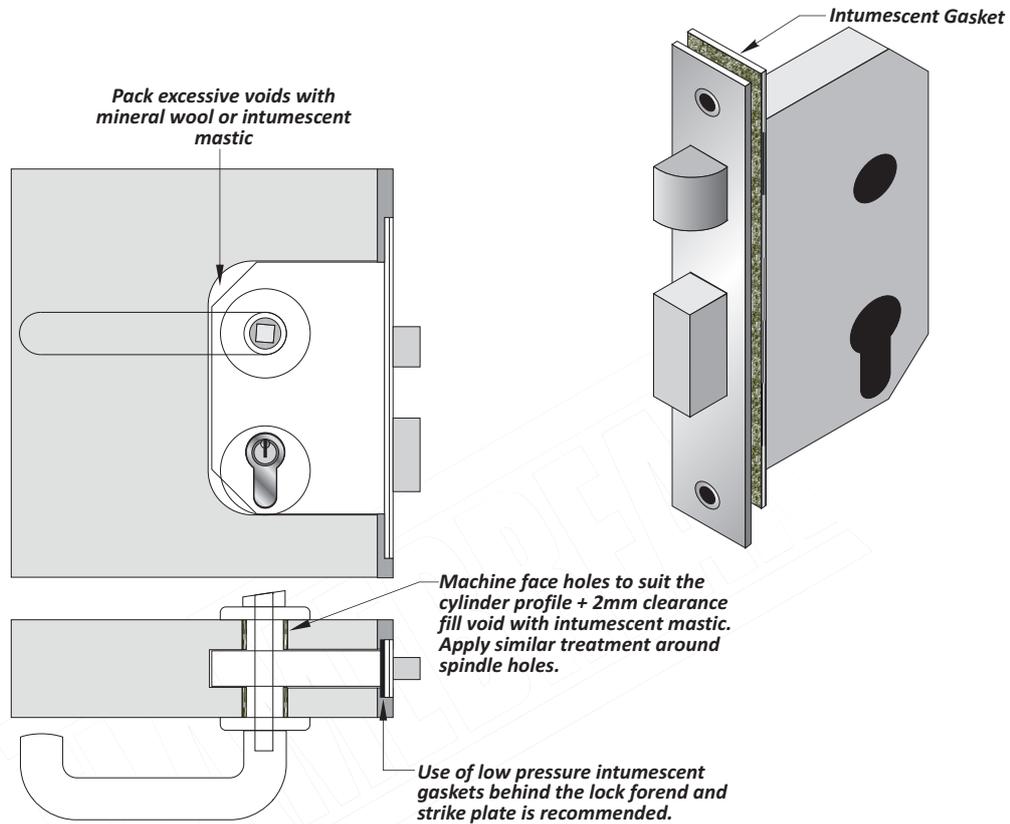
**WARNING:** The pivot centre for these fittings extends a considerable distance from the opening face of the door. This can give rise to operational problems when used with narrow or thick door. See 'Growth Formula' Section 9 - page 9.43 - Coordination



### Fire Door Applications - Securing devices - Locks & Latches:

#### Q Locks & Latches - FD30 & FD60:

Fig. 8.6



#### Q Locks & Latches - FD30 & FD60:

Latches and locks must be either 'as tested', alternatively components complying with the following specifications are acceptable:

#### Q Lock / Latch Specification FD30:

Maximum forend & strike plate dimension.	235mm high by 24mm wide by 4mm thick
Maximum body dimensions	18mm thick by 100mm wide by 165mm high
Intumescent Protection	See page 8.2 - FD30 Listing
Materials	All parts essential to the locking / latching action (including the latch bolt, forend and strike) to be steel or brass, <i>melting point</i> $\geq 800^{\circ}\text{C}$ .
Location	Between 850 ~ 1200mm above floor level

#### Q Lock / Latch Specification FD60:

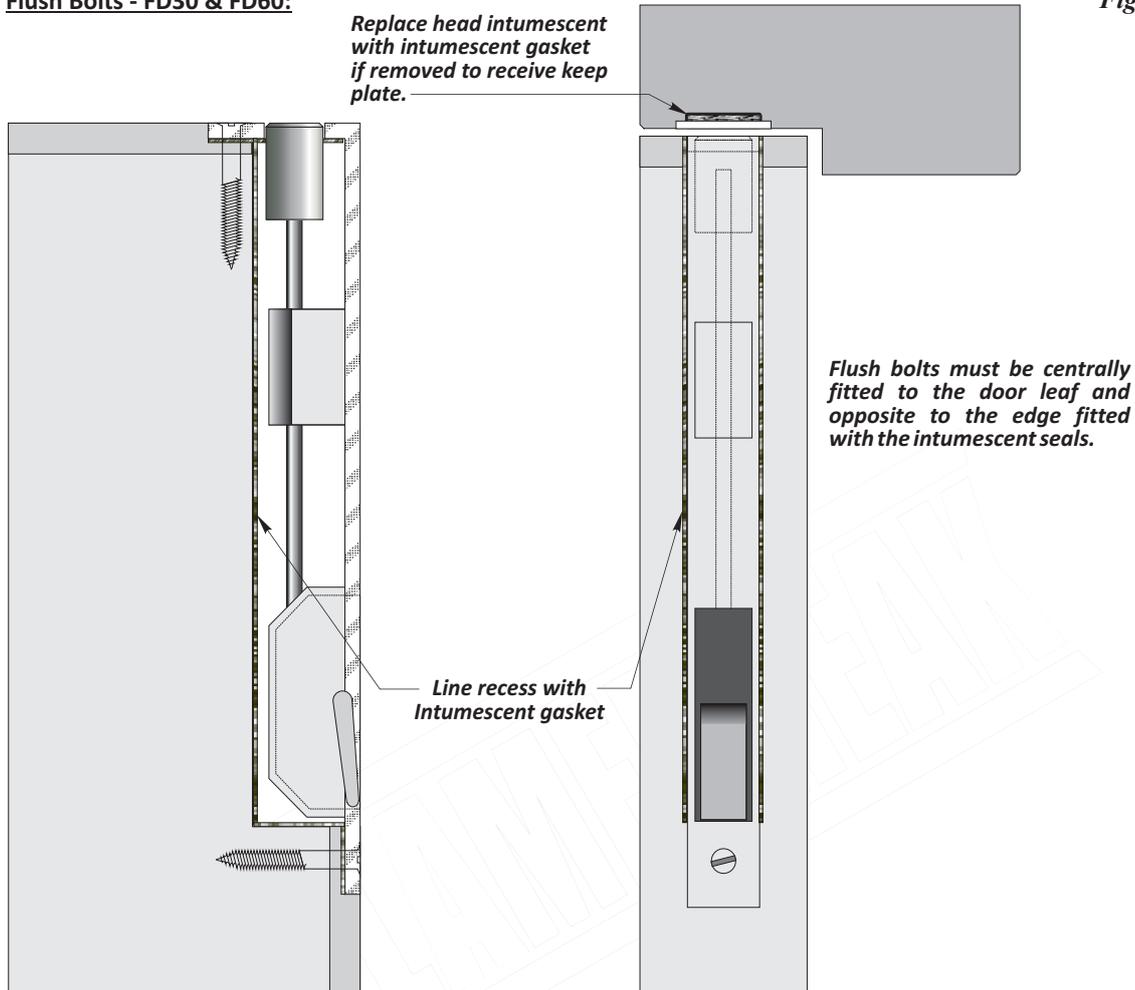
Maximum forend & strike plate dimension.	235mm high by 24mm wide by 4mm thick
Maximum body dimensions	18mm thick by 100mm wide by 165mm high
Intumescent Protection	See page 8.2 - FD60 Listing
Materials	All parts essential to the locking / latching action (including the latch bolt, forend and strike) to be steel or stainless steel.
Location	Between 1000 ~ 1200mm above floor level



## Fire Door Applications - Securing devices - Flush Bolts:

### Q Flush Bolts - FD30 & FD60:

Fig. 8.7



### Flush Bolts FD30 & FD60:

Bolts may be required to secure the secondary leaf of pairs. There are no restrictions on the use of surface mounted bolts (e.g. Barrel bolts) that do not interfere with the edge sealing of the doors.

Edge fixed flush bolts are approved for FD30 and FD60 fire door applications subject to the following:

#### Q Flush Bolt Specification FD30:

Flush bolts may be incorporated into the top and bottom of the meeting edge of the inactive (or secondary) leaf of a double leaf door assembly (pair), provided that the following maximum dimensions are not exceeded:

Length = 200mm.

Depth = 20mm.

Width = 20mm.

Flush bolts may be in steel or brass.

#### Q Flush Bolt Specification FD60:

Flush bolts may be incorporated into the top and bottom of the meeting edge of the inactive (or secondary) leaf of a double leaf door assembly (pair), provided that the following maximum dimensions are not exceeded:

Length = 200mm.

Depth = 20mm.

Width = 20mm.

Flush bolts must be in steel.

For both FD30 and FD60 applications the mortise to receive flush bolts should be as tight to the mechanism as is compatible with its operation and the mortise must be lined with an approved intumescent gasket. **See page 8.2 for FD30 and FD60 approved gasket listing.**

## Fire Door Applications - Operating Devices - Door Closers

### Operating Devices - Closers - FD30 & FD60:

Automatic closing devices e.g. Single Action Overhead Closers, must either be tested or components of equal specification that have demonstrated contribution to the required performance of these types of FD30 or FD60 door assembly designs when tested to BS476 Pt.22 : 1987 or, BS EN 1634-1.

The use of concealed closers with FLAMEBREAK™ door constructions is not 'Q-Mark' approved.

See Appendix - Page 16G.1 for details of Rutland Closers

### Concealed Closers

1/ Some concealed closer designs have been successfully tested for fire door applications in wood doors and may be used with FLAMEBREAK™ core doors in reliance upon test / assessment data provided 'by others'. However, these devices do require the removal of a large amount of core material to house the closer and its dedicated intumescent pack leaving minimal thickness door material either side of the mortise.

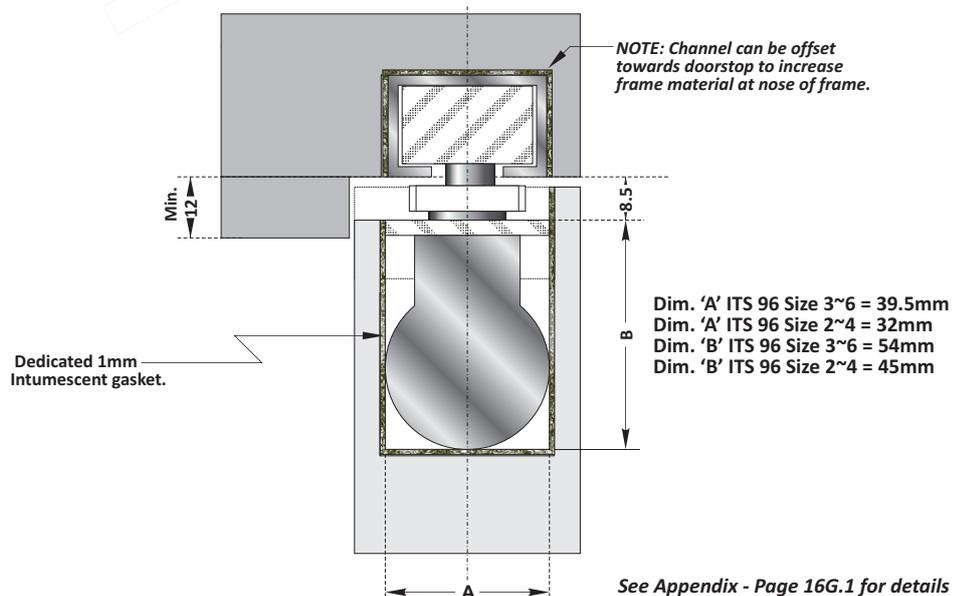
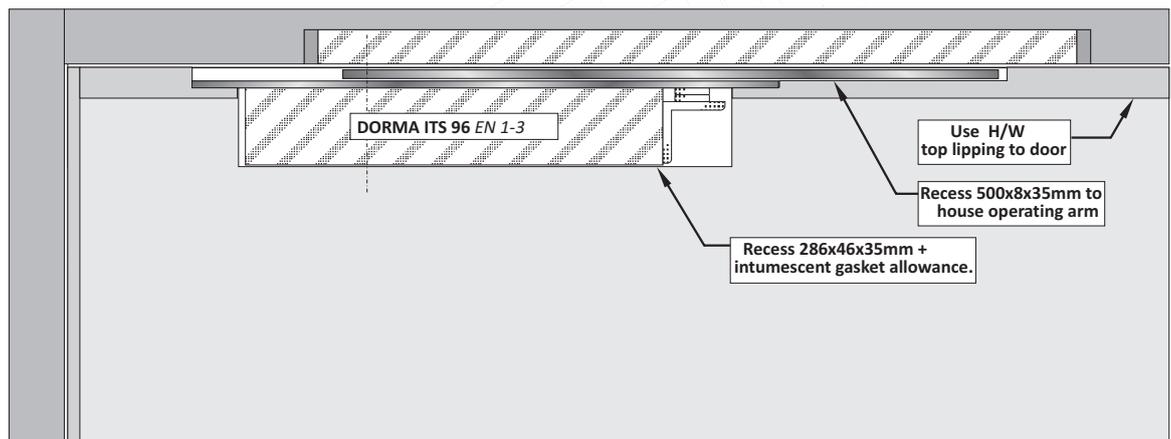
2/ It is recommended that these are only used with min. 50mm thickness doors to minimise the risk of 'telegraphing' of the mortise on the face of the door and a risk of mechanical failures at the mortise position.

3/ It is further recommended that doors are hardwood lipped on the top edge to provide for improved fixing.

### Concealed Closers: (Dorma ITS96 illustrated)

Fig. 8.8

**NOTE: This detail is not approved for 'Q-Mark' Fire Door applications.**



See Appendix - Page 16G.1 for details of Rutland Closers

## Fire Door Applications - Other Hardware:

### **Securing Devices - Barrel Bolts - FD30 & FD60:**

Barrel Bolts of a maximum length of 450mm can be surfaced fixed to the top closing corner of double leaf door assembly provided that the particular item does not require the removal of any material from the door leaf or the frame and does not interfere with perimeter intumescent sealing.

### **Operating Devices - Pull Handles - FD30 & FD60:**

Pull handles may be surface fixed to both FD30 & FD60 door provided that they are steel or brass and the length is limited to 1200mm between the fixing points.

Bolt through fixing pull handles up to the same length may also be used for fire door applications with no additional intumescent sealing required, provided that the hole through the door to receive the bolt provides for a tight fit.

### **Operating Devices - Push, Buffer and Kick Plates - FD30 & FD60:**

Face fixed only push, buffer and kick plates may be fitted to FLAMEBREAK™ doors for fire door applications provided that their fitting does not require the removal of any part of the door core.

These items of hardware are permitted up to a maximum of 20% of the door leaf area when screw fixed or 30% of the door leaf area when fixed with a contact or other thermally softening adhesive.

Plates must not return around the door edges.

### **Operating Devices - Door Selectors - FD30 & FD60:**

Door selectors may be freely applied for use with FLAMEBREAK™ doors for FD30 and FD60 fire door applications, provided that they are not invasive in the door leaf edges or the door frame. Those that are invasive will require fire resistance test / assessment evidence to support their use. Additional intumescent protection is not required unless fire test / assessment documentation relating to the particular device requires otherwise.

### **Operating Devices - Panic Hardware - FD30 & FD60:**

Panic hardware may be used with FLAMEBREAK™ doors for FD30 and FD60 fire door applications, provided that the installation does not require the removal of any core material from the door leaf or the removal of any timber from the door leaf, doorstop or frame reveal. Further, the panic hardware must not, in any way, interfere with the self-closing action of the fire doors.

### **Miscellaneous Devices - Door Security Viewers - FD30 & FD60:**

Door security viewers may be used with FLAMEBREAK™ core doors for FD30 and FD60 applications provided that the viewers are manufactured from brass or steel with viewer bodies of a diameter of 15mm (*or less*) and provided that the through-hole is bored tight to the case of the viewer with a maximum tolerance of +1mm. Lenses must be glass.

Viewers must be bedded in intumescent mastic unless otherwise approved for use without additional intumescent by reference to fire test / assessment data relating to the particular viewer design when tested in wood doors.

### **Miscellaneous Devices - Acoustic, Weather and Dust Perimeter Seals - FD30 & FD60:**

Acoustic, weather and dust seals with a proven flame retardant performance may be fitted to FLAMEBREAK™ based door assemblies for FD30 and FD60 applications providing that the fitting of the seals does not interfere with the activation of the door assembly intumescent seals or hinder the self closing function of the door leaves.

### **Miscellaneous Devices - Automatic Threshold Seals - FD30 & FD60:**

Fully mortised automatic threshold drop seals with a proven performance when tested with wood doors may be fitted to FLAMEBREAK™ based door constructions for FD30 and FD60 applications providing that the fitting of the seals does not interfere with the activation of the door assembly intumescent seals or hinder the self closing function of the door leaves.

The following Automatic Door Bottoms / Drop Seals are 'Q-Mark' approved for use with FLAMEBREAK™ doors:

Manufacturer	Product
Lorient Polyproducts Ltd.	LAS8001Si
Pemko	411-AR
Raven	RP8Si
Athmer	Schall-Ex Duo L-15
Norsound Ltd.	NOR810, NOR810S



### Fire Door Applications - Other Hardware:

#### **Miscellaneous Devices - Air Transfer Grilles - FD30 & FD60:**

Air transfer grilles not exceeding 0.2m<sup>2</sup> may be fitted to FLAMEBREAK™ based door assemblies for FD30 and FD60 applications provided that the particular grille design is supported by fire test evidence to BS476 Pt.22 : 1987 or BS EN 1634-1 that demonstrates an integrity performance that is at least equal to the desired fire performance of the door assembly when fitted into wood door leaves of a compatible thickness.

Margins for apertures to receive grilles are to be as described for glazing (See **Section 6**) with the grille located towards the bottom of the door (*i.e. in the low / negative pressure area of the door under test conditions*) unless the fire test / assessment data relating to the particular grille design provides for alternative locations in a wood based door.

Grilles must be fitted precisely in accordance with the grille manufacturers test / assessment data, including all hardwood lining, intumescent seals, fixings etc. as required for the relevant fire performance.

**NOTE: When used with glazed doors, the maximum permitted area for glazing approved for the particular fire performance should be reduced by an amount that is at least equal to the area of the door that is occupied by the grille.**

Pyroplex Air Transfer Grilles listed below are 'Q-Mark' approved for use with FLAMEBREAK™ door constructions for FD30 & FD60 fire door applications subject to the following:

#### **Pyroplex Ltd:**

Part No.	Dimensions mm.	Air Flow (sq. cm)	Compatible Face Plate
ATG 1500	150 x 150	153	FP1500
ATG 1503	150 x 300	307	FP1503
ATG 1300	300 x 300	614	FP1300
ATG 2251	112 x 225	161	FP2251
ATG 2250	225 x 225	323	FP2250

- Grilles must be located a minimum of 100mm from the edge of the door leaf and not less than 80mm apart if more than one grille is fitted.
- The area occupied by the air transfer grille(s) must be deducted from the area of glazing that is otherwise approved for the particular door construction.
- Grilles may be fitted up to a maximum height of 2200mm from the threshold.
- The grilles must be installed in accordance with the manufacturer's installation details which includes a 6mm thick hardwood aperture liner (excluding Beech - *Fagus Sylvatica* - for FD60 applications) and sealed using Pyroplex intumescent mastic around the perimeter of the grille.

#### **Miscellaneous Devices - Letter Plates / Boxes - FD30 & FD60:**

Letter plates (*boxes*) may be fitted to FLAMEBREAK™ based door assemblies for FD30 and FD60 applications provided that the particular letter plate (*box*) design is supported by fire test evidence to BS476 Pt.22 : 1987 or BS EN 1634-1 that demonstrates an integrity performance that is at least equal to the desired fire performance of the door assembly when installed in a wood door of a compatible thickness.

Margins to the leaf edges must not be less than the margins approved for glazing (See **Section 6 - Glazing**).

**NOTE: Beech - *Fagus Sylvatica* - must not be used as an aperture lining material for FD60 applications.**

Letter plates (*boxes*) should generally be located towards the bottom of the door (*i.e. not more than 1000mm above the threshold level*) unless the fire test / assessment data relating to the particular letter plate (*box*) provides for alternative locations in a wood based door.

#### **Miscellaneous Devices - Cable Ways for electric locks / strike plates - FD30 & FD60:**

Concealed cable ways to provide for a route for the connection of electric locks / strikes with command units are permitted for use with FLAMEBREAK™ core doors with cable ways concealed in the following way:

- A hole of Max. 10mm diameter drilled centre thickness through the door leaf.
- The cable for the electronic closing / latching mechanisms must be no more than 2mm smaller in diameter than the hole through the door leaf.
- The cable for the electronic closing / latching mechanism must be PVC encased.
- Cable ways are only approved for use with latched, single leaf, single acting door assemblies with maximum door leaf dimensions of 2100mm high x 900mm wide.
- The conduit hole must be located below 1500mm from the threshold and must be spaced to provide for a minimum margin of 90mm from any apertures within the door. e.g. glazing, air transfer grilles, letter plates etc.
- The particular hardware for this application must be supported by appropriate fire test evidence to the required performance in wood doors and must be fitted with intumescent gaskets for the lockset, closing mechanism, receiver plate, cable loops etc. to replicate 'as tested' installations.

**WARNING: The use of hardware items with a proven fire performance when used with metal doors should not be used with wood based fire doors (and vice versa) without the benefit of further testing.**

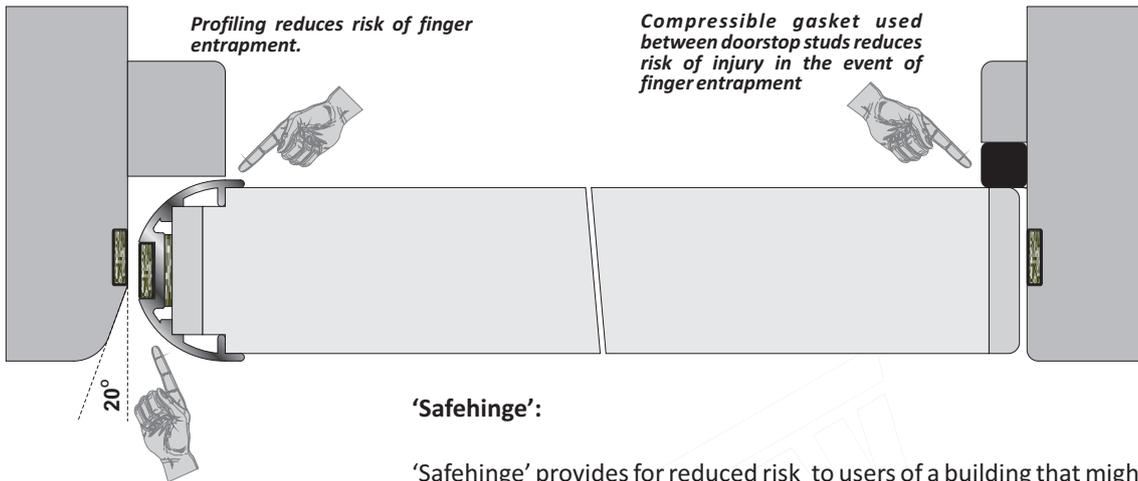


## Fire Door Applications - Other Hardware:

### 'Safehinge'

Fig. 8.9

**NOTE:** This detail is not approved for 'Q-Mark' Fire Door applications.



Profiling reduces risk of finger entrapment when used with backcheck closer, limiting stay or stop to limit opening angle.

### 'Safehinge':

'Safehinge' provides for reduced risk to users of a building that might otherwise result from finger entrapment at the hanging stiles of doors.

The Norsound 'Fingersafe' compressible seal can be surface applied to the face of the doorstop to reduce the risk of injury at the closing stile.

See: [www.norsound.co.uk](http://www.norsound.co.uk) for further information.

### 'Safehinge'

'Safehinge' provides for a door hanging pivot system with design features that minimises the risk of injury due to finger entrapment at the hanging stiles.

At the closing stile, the face of the doorstop can be fitted with the Norsound 'Fingersafe' compressible gasket that provides for a similar injury reduction function.

Being a pivot system, the 'Safehinge' can be used with both single action and double action doors, but with opening limited to slightly more than 90°.

**NOTE 1:** 'Safehinge' is not a 'Q-Mark' approved product but may be used with fire rated door sets in reliance upon test / assessment data provided 'by others'.

**NOTE 2:** The 'Safehinge ALU30 has been approved for use with 44mm FLAMEBREAK™ doors for FD30 (BS476 Pt.22) applications by reference to IFC (International Fire Consultants Ltd) Field of Application Report IFCA/08160 - Rev. B - April 2010 in the following dimensions. Reference should be made to the full assessment before using this product with fire rated doorsets:

IFCA/08160 - Rev. B	Standard Intumescent Seal Specification		Enhanced Intumescent Seal Specification	
	Configuration (Door Type)	Maximum leaf height (x associated width)	Maximum leaf width (x associated height)	Maximum leaf height (x associated width)
LSASD	2301 x 727	966 x 1845	2606 x 786	1045 x 2090
ULSASD & DASD	2256 x 713	947 x 1809	2555 x 771	1024 x 2049
LSADD	N/A	N/A	2350 x 836	2350 x 836
ULSADD & DADD	N/A	N/A	2327 x 827	2350 x 836

LSASD = Latched single action single door. ULSASD = Unlatched single action single door. DASD = Double action single door. LSADD = Latched single action double door. ULSADD = Unlatched single action double door. DADD = Double action double door.

FLAMEBREAK



### **Introduction:**

This document provides for general guidance with regard to the coordination of bespoke door assemblies. The document includes recommendations with regard to the reference points generally used within the industry for the purpose of communicating dimensional information and for a common language for use by all parties concerned with the design, manufacture and installation of bespoke door assemblies.

Experience suggests that the coordination of door assemblies with floor levels can be particularly difficult when considering regulations relating to threshold gaps and the possibility that the actual thickness of floor finishes may not be known at the time of manufacture of the assemblies. One method (*General Method*) suggests the accommodation of variations in floor levels by way of limited site adjustments. Where the precise alignment of door assembly components between adjacent locations in a building is a factor for consideration, this document also suggests a method (*Precision Method*) that can provide for this.

**NOTE:** For the purpose of this document, the term 'Sub Floor Finish' is used to describe the floor level before the application of floor finishes. The sub floor levels may include screed, chipboard or floor boards etc.

For some performance applications e.g. fire performance, there are limits to the maximum approved door assembly size and to the minimum size of frame section that can be used, otherwise Architects and Designers are generally provided with generous scope for the use of door assemblies to meet their design requirements.

'Standard doors and frames' are manufactured to designs determined by the manufacturer and produced without knowledge or consideration of the particular location in which they might be used. These are typically supplied through builders merchants with the majority of doors in this sector being used in the domestic housing market.

'Bespoke door assemblies' are purpose made to suit a particular location in a particular building and are generally manufactured and supplied in accordance with the terms of a particular contract. Sizes and aesthetic appearances are generally determined by an Architect (or Designer) who will also specify performance requirements to the satisfaction of the Regulations applicable to the building.

Standard door assemblies should comply with the dimensional requirements of BS4787 Part 1. Whereas BS4787 Part 1 might be a useful standard for the manufacture of standard doors, it has its limitations for bespoke applications. In particular:

- Architrave is not described in BS4787 Part 1 and there are no considerations with regard to the installation of the door assembly into the building.
- Door assembly designs with flush over panels are not considered.
- Double action door assembly designs are not considered.

The purpose and intended use of the building will have an influence on design requirements and the manufacturers of bespoke door assemblies are accustomed to working closely with designers and contractors to provide for coordinated products to meet the requirements of a particular project.

Generally the important requirements are:

- The door assembly design should reasonably satisfy the aesthetic requirements of the Designer.
- The door assembly should provide for the performance requirements for each location to the satisfaction of the Regulations and specifications applicable to the particular building.
- The door assembly should fit the particular opening in the particular building into which they are to be installed.

To satisfy these requirements there needs to be a high level of coordination between the door assembly manufacturer and other parties involved with the installation.

- Openings in walls and partitions need to be properly prepared to suit the required door assembly design and dimensions.
- Floor finishes and floor levels need to be determined to ensure that the doors clear the floor during the swing of the door and that the under door clearances satisfy the standards and regulations applicable to any related performance.
- The installation of the door assemblies needs to be carried out by competent installers, particularly where 'performance' door assemblies are required. (See Section 14).

**NOTE 1:** The primary performance requirement for any door assembly is to provide for a means for 'traffic' to pass from one side of a wall to the other. The term 'performance door assembly' in this document relates to secondary performances that may be attributed to the same location e.g. fire, smoke, sound attenuation, security etc.

**NOTE 2:** If an installed door assembly does not work satisfactorily in its primary role then it is unlikely that any secondary performance requirement will be achieved.

## 9.2 Door Assembly Coordination

# FLAMEBREAK

### **Introduction contd:**

For bespoke projects, the door assembly designs and the coordination of the door assemblies will be determined by the Designer with due regard to the performance requirements for particular locations in a building with reference to relevant standards and regulations. Considerations should include for the following:

- The nature of the structure into which the door assembly is to be fitted including provisions for installation fixings.
- The dimensions of the opening in the wall or partition to receive the door assembly.
- The required dimensions for the door leaves.

*(NOTE: May be subject to performance limitations).*

- The extent to which there is a requirement to align door assembly elements between adjacent locations in the same building.

*(NOTE: Door assembly elements can include door leaf height levels, glazing aperture levels, hardware positions etc.)*

- The work to be carried out by the builder in preparation to receive the door assemblies.
- Floor finishes and levels.

The following advice provides for guidance for Designers and describes recommended coordinates for the purpose of communicating dimensional information and conventions to be applied in the absence of specific design instructions to address the particular issues discussed in this document.

The conventions are based upon guidance to be found by reference to BS4787-1 : 1980 Incorporating Amendment Nos. 1, 2 & 3 'Internal and External wood doorsets, door leaves and frames - Part 1: Specification for dimensional requirements' and BS6750 'Modular coordination in building'. However, the conventions are applied in a manner that provides for bespoke door assemblies of any size (*subject to performance limitations*) that may be required by the Designer based upon the customs and practices of the bespoke door industry.

Use of door assembly designs that use separate architrave provide for greater flexibility and are less demanding in respect of pre manufacture planning. Frame designs using integral architrave or 'nibs' or which use 'shadow gaps' around the installed frame require more careful planning in advance of manufacture.

BS4787 Pt. 1 : 1980 and BS EN 12519 : 2004 refer to the use of a coordinating dimensions. The relevant standards will show that the coordinating dimensions relate to positions in space between the door assembly

and the surrounding structure. The method described in this document refers to the 'Prepared Opening'.

This is the opening size in the wall or structure to be prepared by the builder to receive door assemblies of the desired dimensions and provides for a clear separation between the builders work and the work to be done by the door assembly installation contractor.

Frame sectional dimensions suggested in this document are based upon the economic use of raw material sizes for timber. Frame jambs and heads using planted doorstops can be moulded using ex. 1 $\frac{1}{2}$ in. material while frames with moulded doorstops can be manufactured using ex 2in. raw material. This results in maximum finished frame sections of 32mm and 44mm respectively after allowing for trimming and finishing of the timber. Frames of different finished sectional dimensions may be used (*subject to performance limitations*). A minimum 32mm finished frame section may be an essential requirement for some performance door assembly designs. For any given structural opening size, where the frame section dimension is greater than 32mm the door leaf sizes may be reduced to provide for coordination with the building. Where the frame section dimension is less than 32mm it is recommended that the door leaf sizes remain the same but with increased packing between the frame and the surrounding structure.

When installed, it is recommended that the door assembly designs should provide for a minimum of 5mm cover of the surrounding structure by the architrave.

*NOTE 1: Increased architrave cover may be required for some performance applications. e.g. Fire Performance.*

*NOTE 2: The term 'Architrave' in this sense can apply to a separate architrave section or an integral architrave (nib).*

The determination of precise finished floor levels in advance of manufacture of the door assemblies creates a major difficulty in determining component height requirements. The general method suggested in this section provides for a site adjustment allowance providing for minimum clearance of 20mm from the bottom of the door to the bottom of the frame jamb (*when used without sills*). This allows for the frame jambs to rest upon the sub floor (*floor level before the application of floor finishes*) permitting the use of floor finishes up to 17mm thickness to leave the 3mm under door operating tolerance required (*where threshold seals are not used*) by reference to BS4787 Pt.1 and BS9999 (*for smoke containment without threshold seals*).

*NOTE: Unless a four sided frame (with sill) is used, the door assembly manufacturer cannot control the threshold gap for an installed door assembly. However, most manufacturers will provide for a standard trimming allowance by controlling the dimension from the bottom of the door leaf to the bottom of the frame jambs. Each manufacturer may offer their 'standard' provisions in this regard. It is important that Specifiers / Buyers should ensure that these provisions suit the requirements for the particular project and agree variants, if necessary in advance of manufacture.*

### Introduction contd:

Based upon a trimming dimensions dimension of 20mm from the bottom from the bottom of the door to the bottom of the frame jamb:

Where the applied floor finishes are less than 17mm, the frame jambs can be reduced on site to provide for a minimum 3mm clearance over the actual floor finish within the installation tolerances provided for by use of a 44mm section architrave.

**NOTE:** A 44mm section architrave provides for the economic use of timber allowing for the use of ex. 2in (50mm) raw material with minimal wastage. Increased architrave dimensions provide for increased installation tolerances.

Where soft floor finishes (e.g. carpet) are greater than 17mm it is necessary to either specify an undercut requirement or to trim the bottom edge of the door leaves on site to provide for the under door operating clearance.

**NOTE:** Where soft floor finishes are used, it is recommended that jambs extend down to the sub floor level. Where hard floor finishes (e.g. ceramic tiles) are used, the frame jambs can be reduced with the door assembly fitted after laying the tiles.

The general method described above has the advantage of permitting the manufacture of door assemblies in advance of any final decisions with regard to applied floor finish dimensions. Whereas this method is satisfactory for use with door assembly designs using separate architrave of suitable dimensions for the purpose of accommodating tolerances, there can be some misalignment of door assembly components between adjacent locations following on site adjustments to suit actual floor finish thicknesses.

Designers may prefer to use door frame systems with integral architrave. Alternatively, door assembly designs using 'shadow gap' features (*without architrave*) may be desired. A requirement to provide for the precise alignment of door assembly elements between adjacent locations may also be an important design consideration. Where these considerations apply a more precise method for coordination is recommended.

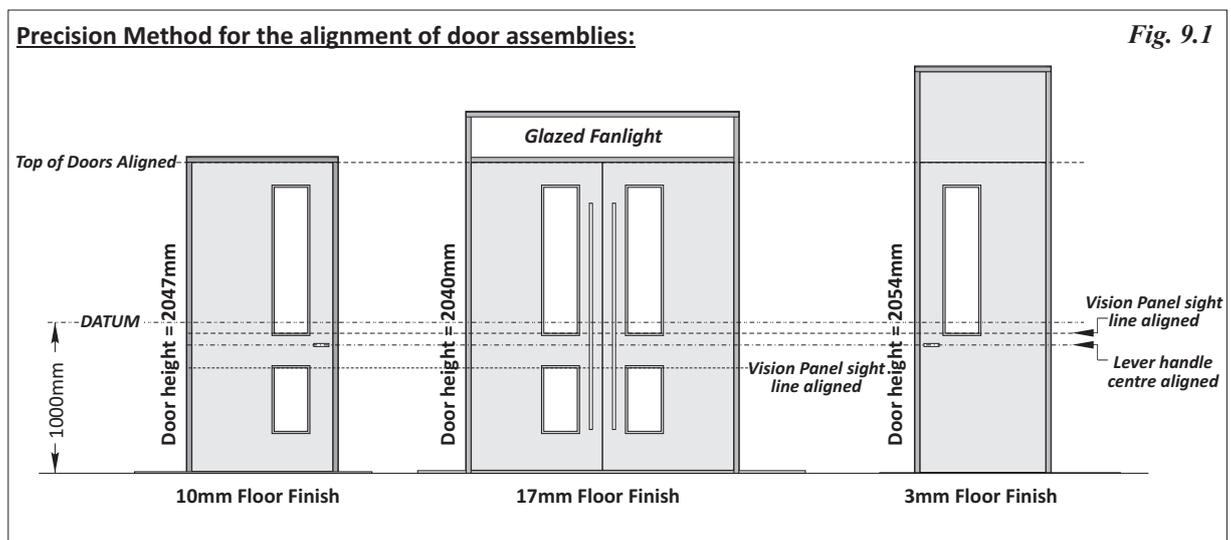
The suggested 'Precision Method' is based upon the use of a building DATUM which is used as a reference by all affected trades.

The DATUM can be shown in project drawings and physically marked in the building for use as a reference by all affected trades including:

- Builder: Construction of Prepared Openings to receive door assemblies.
- Door Assembly manufacturer.
- Door Assembly Installation Contractor.
- Flooring Contractor.
- Electrical Fittings Contractor. (*for the alignment of wall mounted switches etc.*)
- Other trades required to fit visible products in a coordinated manner.

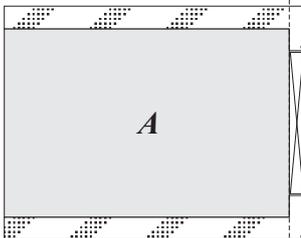
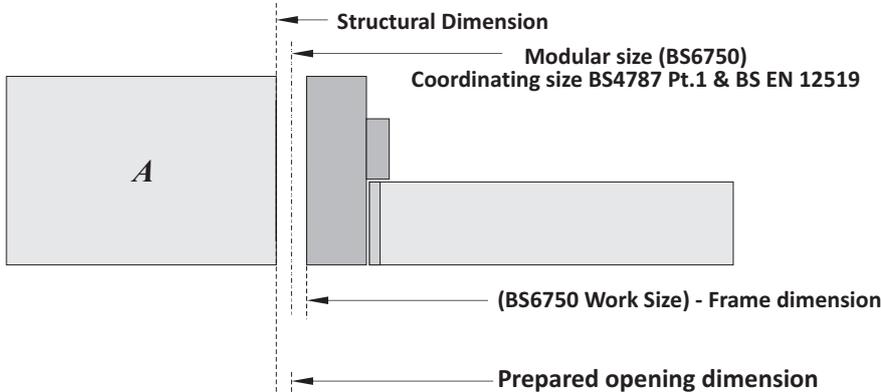
The DATUM can be set at any height determined by the Designer but for convenience a height of 1000mm above a nominal (*hard floor*) floor level is recommended. All affected trades can then work independently to a common DATUM reference.

**NOTE:** To satisfy the requirements of Building Regulations - (England & Wales) - Approved Document 'M' and BS8300, glazed aperture location dimensions should relate to the sight line of the glass i.e. the clear glass area after beading. (See page 9.29)



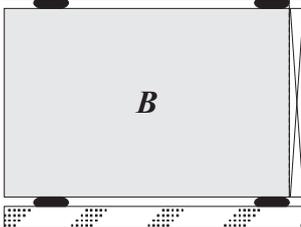
Door Assembly Coordination - Prepared Openings

Fig. 9.2



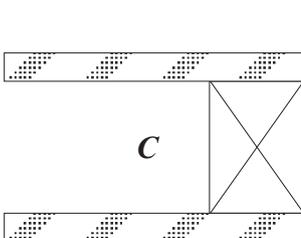
This detail illustrates the relationship between: Structural opening, Modular or Coordinating size, Prepared opening and Work size / Frame dimensions.

The size of the permissible installation gap (*i.e. the gap between the door frame and the surrounding structure*) will vary according to the extent of the architrave cover provided by the particular door frame design. As an absolute minimum, it is recommended that the installation gap should not be less than 3mm at each jamb and 6mm at the frame head. This absolute minimum installation gap is only possible where the opening in the structure is carefully prepared to receive the door assembly and is absolutely plumb and square.



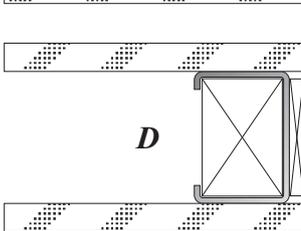
*A/* For rendered or plastered block work the render or plaster should be returned around the edges to a ground or sub frame that is less than the finished thickness of the base wall.

**NOTE:** Plaster or render should not be applied to timber grounds or sub frames. The timber ground will absorb moisture from the render / plaster and will swell as a result. Subsequently it is likely that the ground will lose moisture and shrink causing plaster to crack.



*B/* Where masonry walls are faced with plasterboard secured by plasterboard adhesive dabs, the ground or sub frame can be to the full thickness of the base wall.

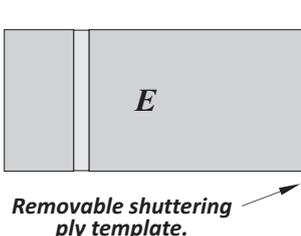
*C/* Timber stud partition walls can generally be constructed to suit the prepared opening requirements.



*D/* Metal stud partitions can generally be constructed to provide for required Prepared Opening dimensions. However, these can be adjusted by the use of additional sub frames or grounds.

**NOTE 1:** It is recommended that the metal stud is back filled with a timber ground to receive installation fixings. Further, the timber ground will provide for improved stability under fire conditions when used with timber door sets.

**NOTE 2:** Some metal stud partitions have been successfully fire tested with timber door assemblies without the need for additional timber filling of the metal stud. In this case, the door assembly should be installed in reliance upon the partition manufacturers test data using installation fixings for the door assemblies that comply with the partition suppliers recommendations.

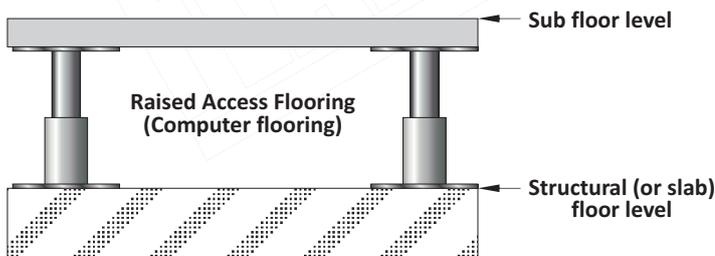
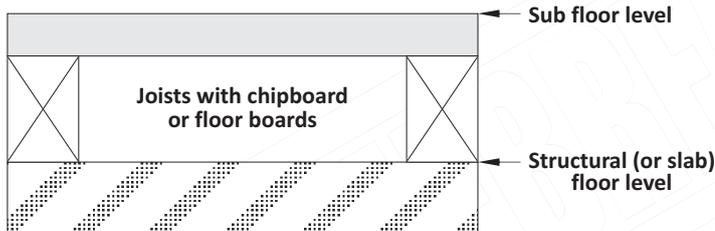
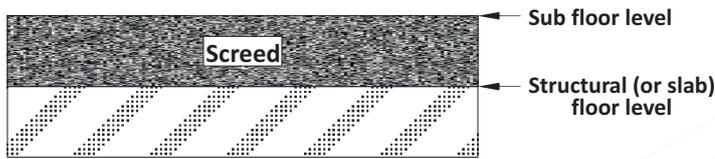
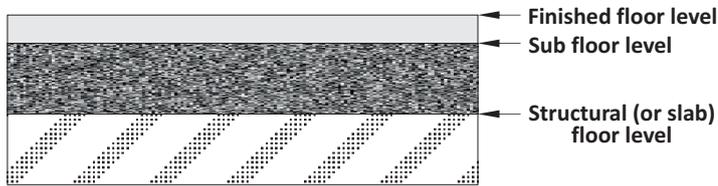


*E/* For fair faced brick or block walls and for other masonry walls one method is to provide for a prepared opening dimension by building the wall to a template that can be removed after construction of the wall.

Removable shuttering ply template.

### Door Assembly Coordination - Floor Levels

Fig. 9.3



### Floor Levels

There can be 3 floor levels to consider when coordinating door assemblies:

- Structural (or slab) level.
- Sub floor level.
- Finished floor level.

Generally for 2nd. fix door assemblies the frame jambs rest on top the sub floor level but, the door leaf has to clear the finished floor for the whole swing of the door.

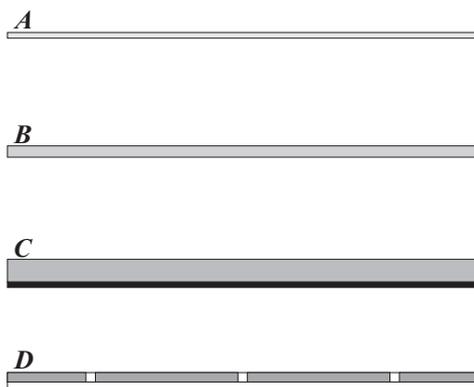
*NOTE: Where ceramic tile floor finishes are used it is generally recommended that the door assemblies are installed after tiling.*

For some applications e.g. car parks and some plant rooms a sub floor is not used and the frame jambs rest on top of the Structural (slab) floor level.

It is often the case that the actual thickness of a floor finish is unknown at the time when door assemblies are required to be manufactured. Even where the nominal thickness of the floor finish is known, there is often a significant difference between the nominal and actual floor finish.

The coordination of door assemblies with floor finishes has proven to be a difficult requirement demanding additional care, particularly where small threshold gaps are required for installed door sets. e.g. for unsealed threshold gaps for smoke sealed door assemblies.

The door assembly manufacturer can control the dimension from the bottom of the door leaf to the bottom of the frame jamb but other considerations that are outside of the control of the manufacturer apply with regard to the under door clearance for an installed door set.



### Floor Finishes:

Various materials of different thicknesses are used as floor finishes. These include :

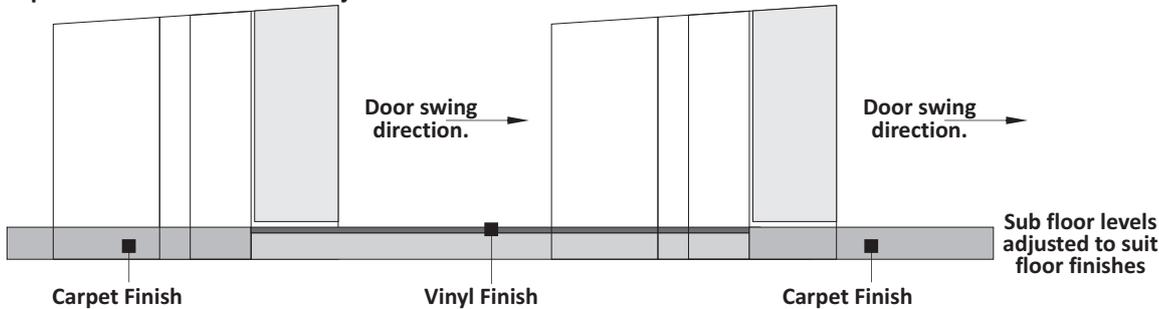
- A/ Lino, Vinyl & Vinyl tiles.
- B/ Carpet tiles.
- C/ Carpet (with or without underlay).
- D/ Ceramic tiles.

*NOTE: Whereas it is possible to fix door assemblies into locations where floor finishes have previously been laid, it is general practice (except where ceramic tiles are used) to install door assemblies relative to sub floor levels i.e. before floor finishes are applied.*

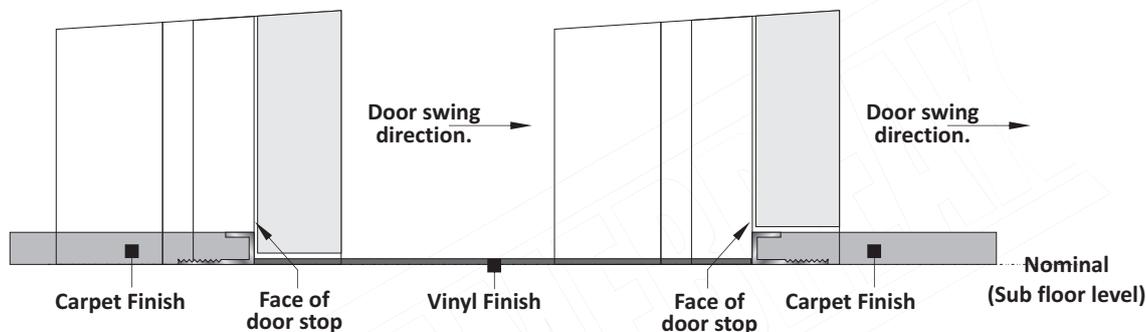
## Change of Finished Floor levels:

Fig. 9.4

### Option 1 - Sub Floor Levels adjusted to suit floor finishes:



### Option 2 - Variable height floor levels to suit floor finishes:



## Change of Floor Finish:

In many cases the levels for the sub floor will be varied such that the finished floor levels when the flooring is laid will be a constant throughout the building. (**Option 1**).

In other cases the finished floor levels will vary with the possibility that there will be a change of floor finish at the door positions. (**Option 2**).

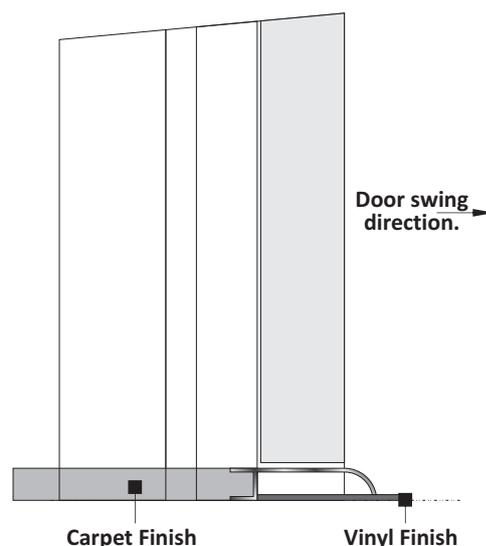
For single action doors it is recommended that the change of floor levels should be planned to align with the face of the doorstop. Alternatively threshold strips may be used. (**Option 2a**). In both cases the floor level should be a constant within the thickness of the door leaf.

Using the General Method suggested in this document, the frame jambs will be adjusted on site to provide for a finished floor level up to 17mm above the sub floor level (using a 44mm architrave).

For double action doors it is recommended that the change of floor level should be planned such that the higher floor level extends through the whole thickness of the door. This will ensure that the doors will clear the floor during the whole of the swing.

## Change of Finished Floor levels: Option 2a

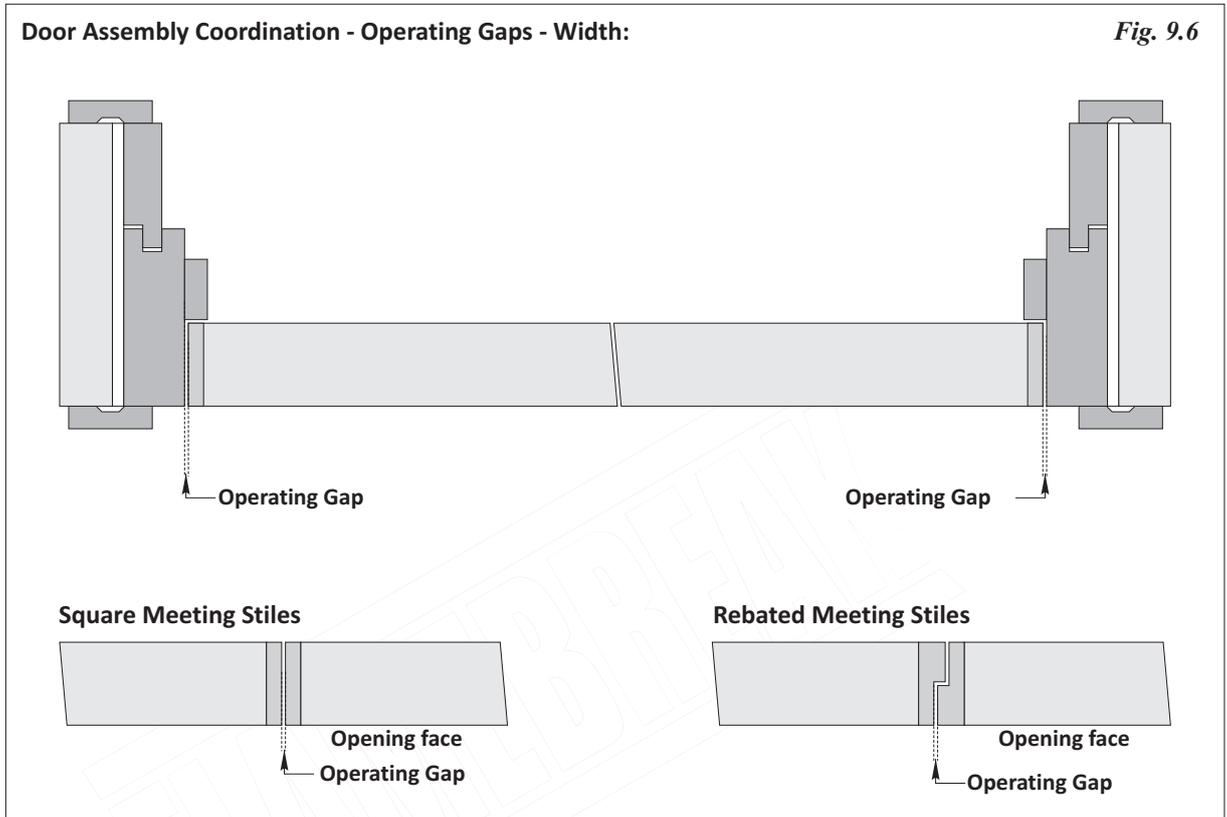
Fig. 9.5



An alternative method is to use a threshold strip that provides for a level floor to the full thickness of the door leaf.

Door Assembly Coordination - Operating Gaps - Width:

Fig. 9.6



### Operating Gaps - Width.

BS 4787 Pt.1: 1980 Incorporating Amendment Nos. 1, 2 & 3 requires that operating gaps in width should comply with the following:

Door / Frame at Jambs	= Nom. 2mm +1 / - 0.5mm
Meeting Stiles	= Nom. 2mm +1 - 0.5mm

**NOTE:** BS4787 Pt.1 permits variations to operating gaps to accommodate sealing systems e.g. smoke seals.

Operating gaps should be measured from the opening face of the door (*narrowest point*) for single action doors. (See page 9.32 - Adjusting for 'Door Growth').

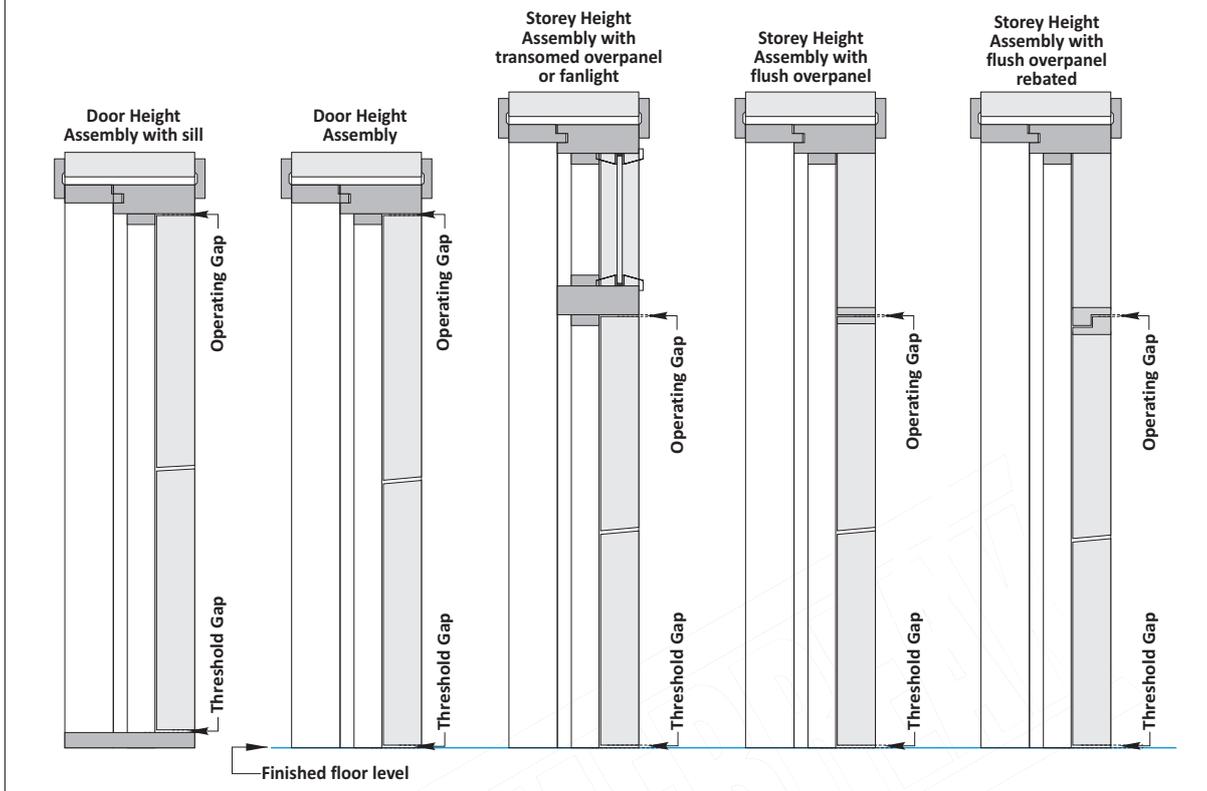
**NOTE 1:** Operating gaps are determined at the time of factory completion of the door assembly. Subsequent changes in environmental conditions that influence the moisture content of timber may become apparent by way of variations to operating gaps.

**NOTE 2:** The maximum / minimum operating gaps approved for installed fire rated door assemblies may be defined by reference to 3rd. Party Certification Global Fire Door Assessments related to the particular door leaf construction design.

Unless otherwise specified, manufacturers complying with BS4787 Pt.1 will calculate door / frame dimensions based upon a Nom. 2mm operating gap at hanging, closing and meeting stiles.

Door Assembly Coordination - Operating Gaps - Height:

Fig. 9.7



### Operating Gaps - Height.

BS 4787 Pt.1: 1980 Incorporating Amendment Nos. 1, 2 & 3 requires that operating gaps in height should comply with the following:

Door / Frame at Head / Transom	= Nom. 2mm +1 / -0.5mm
Threshold - with sill	= Nom. 3mm +1 -0.5mm

**NOTE:** BS4787 Pt.1 permits variations to operating gaps to accommodate sealing systems e.g. smoke seals.

**NOTE:** Unless otherwise specified manufacturers complying with BS4787 Pt.1 will calculate door assembly dimensions based upon a provision for Door / Frame Head / Transom operating gaps of 2mm at the junction between the door leaf and flush overpanels. (Not defined by reference to BS4787 Pt.1)

Operating gaps at the head of the door should be measured from the opening face (*narrowest point*) of the door for a single action door assembly. The operating gap at the threshold is the minimum gap at any point within the thickness of the door leaf.

**NOTE 1:** Operating gaps are measured at the time of factory completion of manufacture. Subsequent changes in environmental conditions that influence the moisture content of timber may become apparent by way of variations to operating gaps.

**NOTE 2:** The maximum / minimum operating gaps approved for installed fire rated door sets may be defined by reference to 3rd. Party Certification Global Fire Door Assessments related to the particular door leaf construction.

**NOTE 3:** For smoke sealed doors, the threshold gap for an installed door set should be sealed. Where it is impractical to use seals, the maximum gap (above finished floor level - with the door in the closed position) should not exceed 3mm. (BS9999 : 2008).

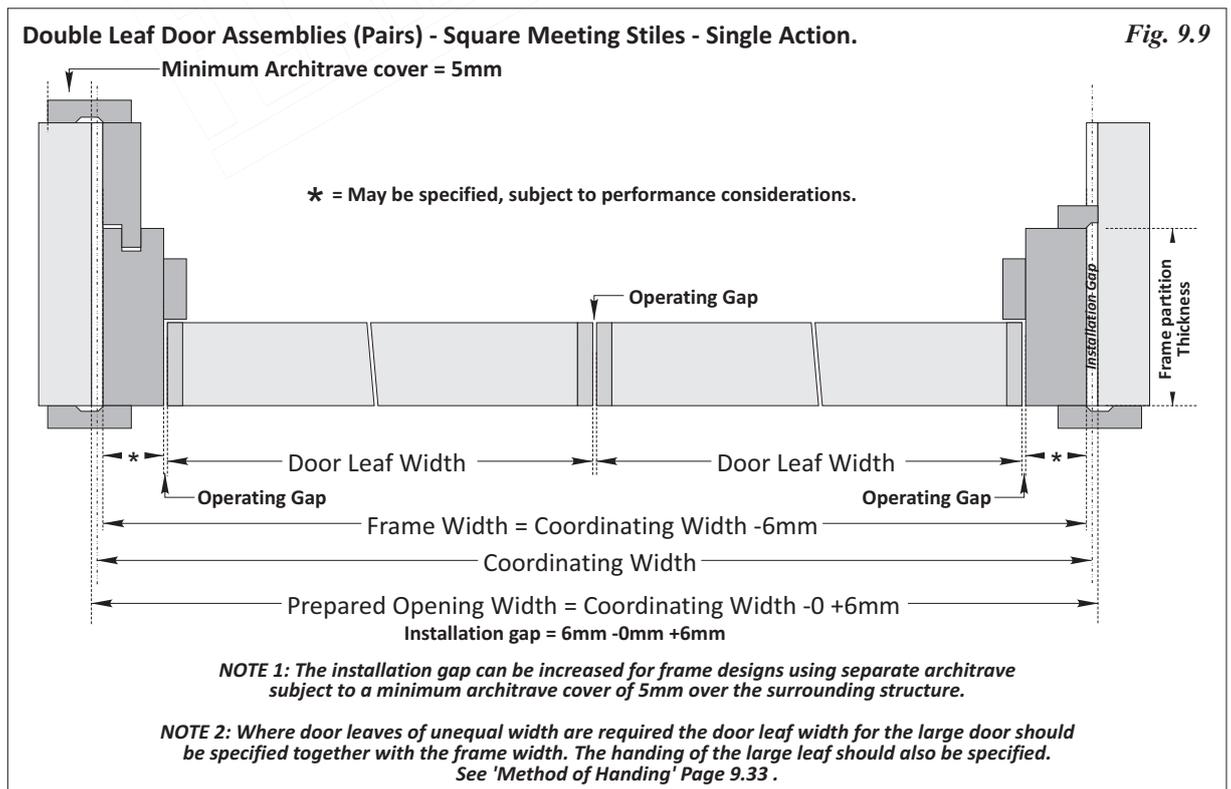
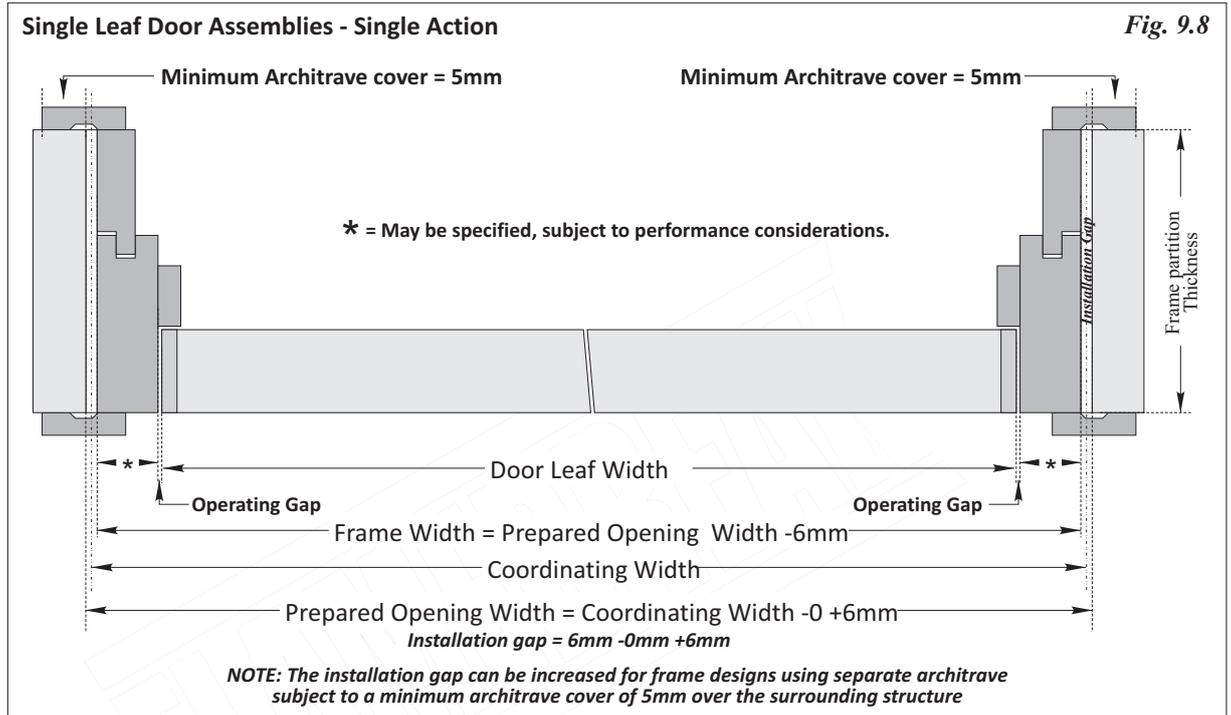
Unless otherwise specified, manufacturers complying with BS4787 Pt.1 will calculate door assembly dimensions based upon a Nom. 2mm operating gap at the head of the door.

Most manufacturers will provide for overpanels with a tight fit (*i.e. zero tolerance*) to frame jambs / heads and transoms unless otherwise agreed at the time of order, on a project basis.

Unless otherwise agreed at the time of order, manufacturers supply door assemblies (without sills) with a 'manufacturers standard' dimension from the bottom of the door to the bottom of the frame jambs with the intentions that jambs will be reduced on site by the installation contractor to suit individual location requirements.

### General Method - Door Assembly Coordination Door Assembly Widths - Single Action Doorsets:

- Generally the cover provided by the architrave allows for generous installation tolerances.
- The architrave, when fitted should provide for a minimum 5mm cover over the surrounding structure.
- The prepared opening width in the structure (*or the frame width*) should be calculated to provide for a minimum 6mm installation gap in width (min. 3mm at each jamb).
- Prepared openings must be carefully formed and must be plumb and square to receive door assemblies.

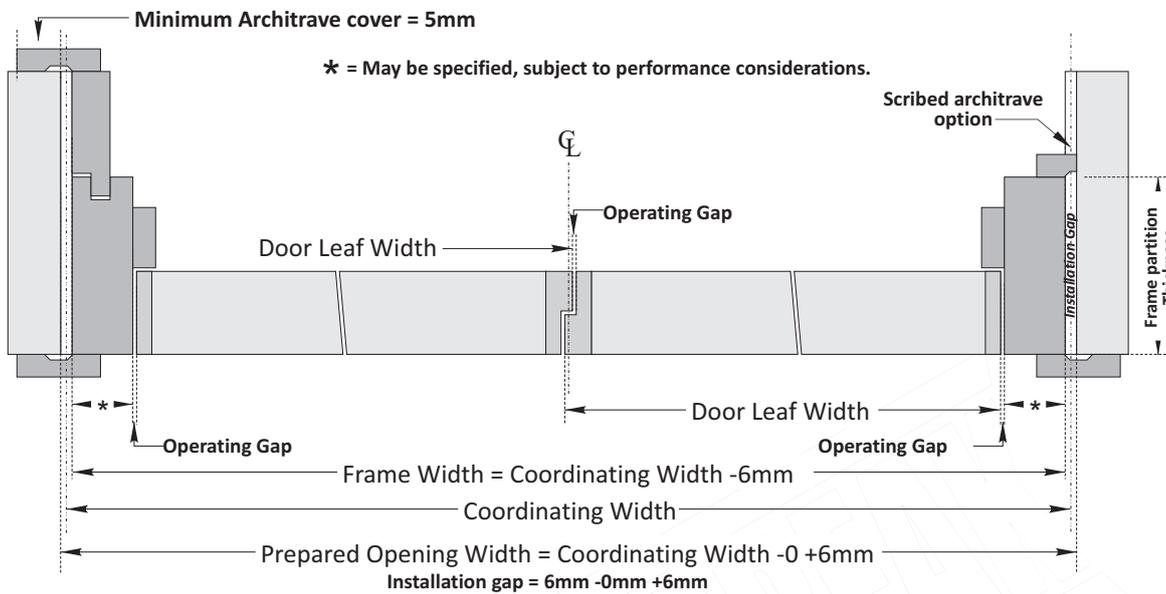


## 9.10 Door Assembly Coordination

# FLAMEBREAK

Double Leaf Door Assemblies (Pairs) - Rebated Meeting Stiles - Single Action.

Fig. 9.10



**NOTE 1:** The installation gap can be increased for frame designs using separate architrave subject to a minimum architrave cover of 5mm over the surrounding structure.

**NOTE 2:** Unless otherwise specified requirements for rebated meeting stiles will be satisfied by providing for 12mm rebated meeting stiles achieved by increasing each door leaf width by 6mm. This will essentially mean that the meeting stile gap will be off centre width of the pair on both faces of the doors.

**NOTE 3:** Where required the operating gap can be positioned to show centre width of the pair of doors to one of the door faces. In this event the Designer should specify the door leaf widths necessary to provide for the desired aesthetic effect. In any event the handing for the first opening (primary) door leaf should be specified. See 'Method of Handing' Page 9.33.

### General Method - Door Assembly Coordination Heights - Door Height Door Assemblies - Single Action:

Coordinating door assemblies in height is more difficult due to the number of trades involved. The general method described in this detail is suitable for use with frame designs using separate architrave to cover the junction between the frame and the surrounding structure.

This method provides for the site adjustment of frames to suit actual floor finishes for each site location. The frame jambs are sized to provide for the site reduction of frames by up to 17mm while providing for a Nom. 3mm clearance between the bottom of the door and the top of the floor finish to the satisfaction of BS4787 Pt.1 or BS9999 (*without additional threshold sealing*) for smoke sealed locations.

For some performances e.g., smoke sealing, fire performance and sound attenuating performances, the installation contractor should provide for packing between the frame and the surrounding structure. This might require the addition of softwood grounds to be applied to the top of the frame head or the underside of the structure. (See Page 9.22).

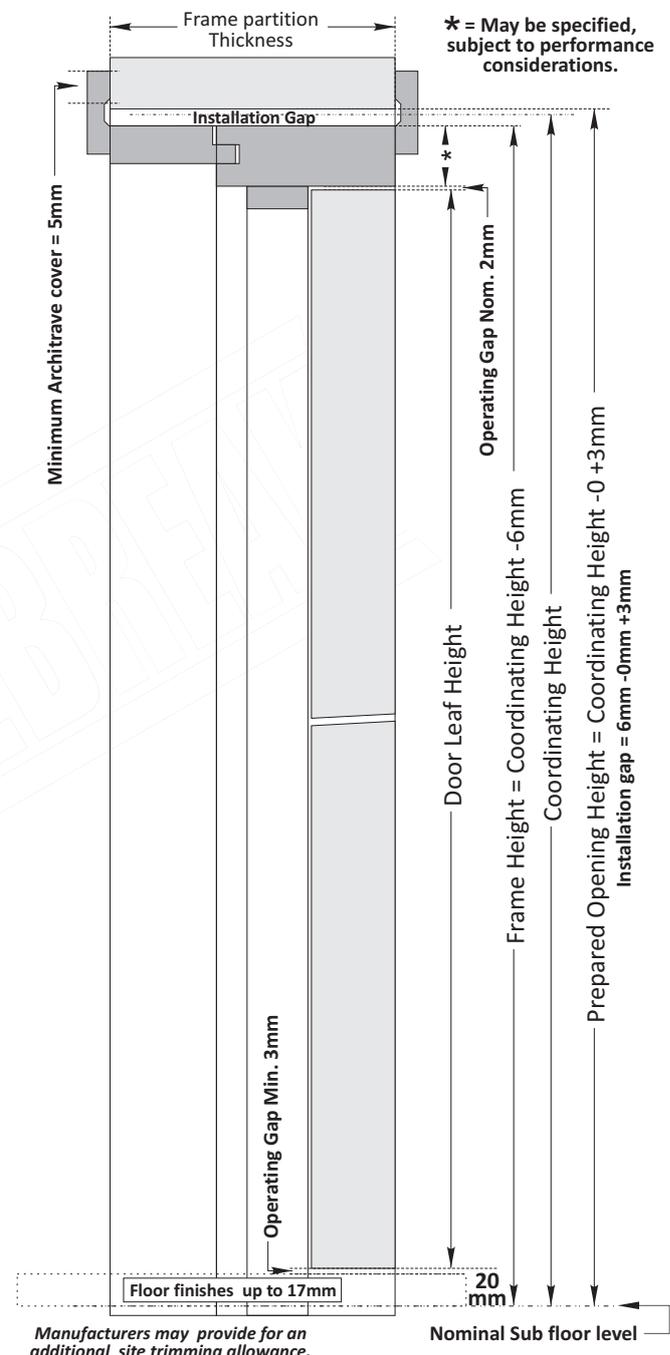
**NOTE:** See Section 14 and BS8214 for Fire Rated door assemblies.

The method of adjustment and dimensional advice described in this document will provide for the minimum 5mm cover over the surrounding structure when used with a nom. 44mm architrave. Designers may vary these details but with a possible requirement for increased size architrave.

As frames may be reduced on site (*by up to 17mm + any additional trimming allowance provided for by the door assembly manufacturer*) to suit actual location requirements, particularly floor finishes, this method does not provide for the alignment of door assembly or door assembly elements (*e.g. glazed apertures, hardware*) between adjacent locations where different floor finishes are used.

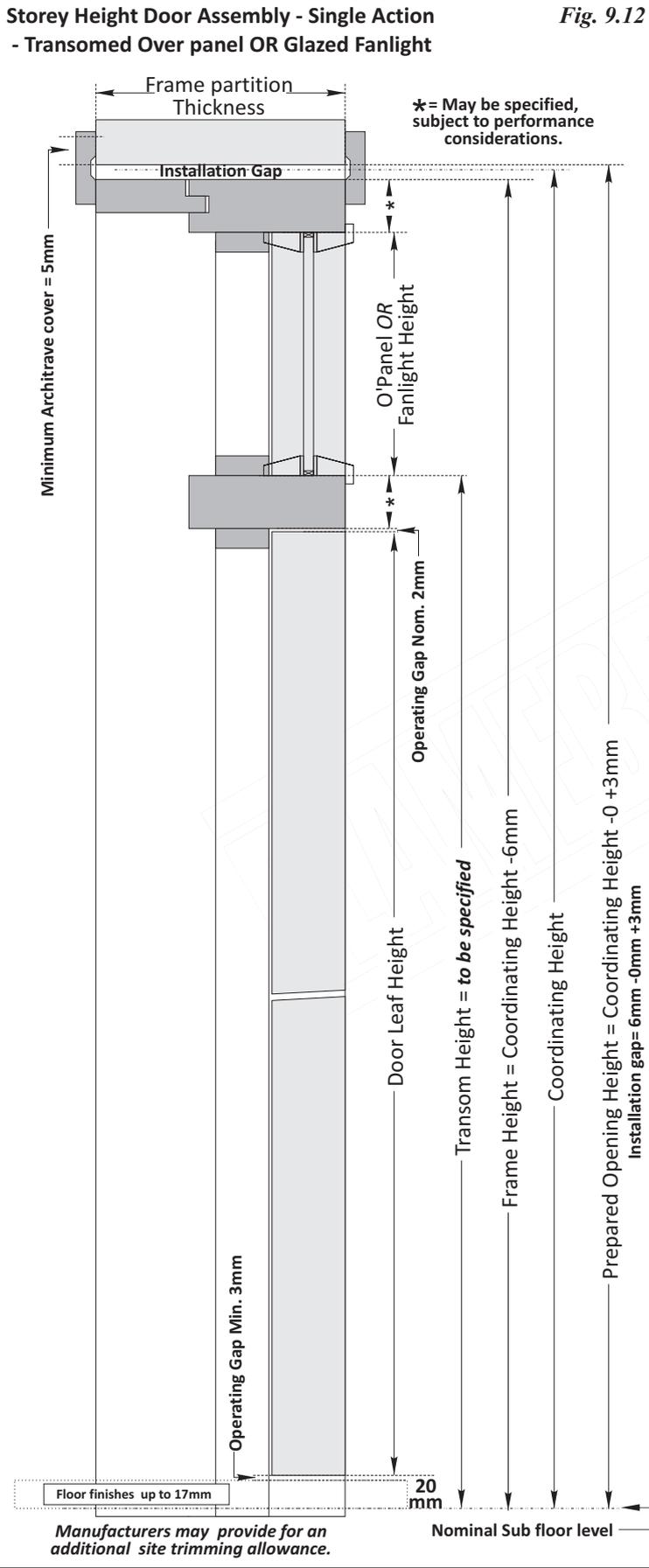
Door Height Doorset - Single Action

Fig. 9.11



**NOTE:** The installation tolerance can be increased for frame designs using separate architrave subject to a minimum architrave cover of 5mm over the surrounding structure

# 9.12 Door Assembly Coordination



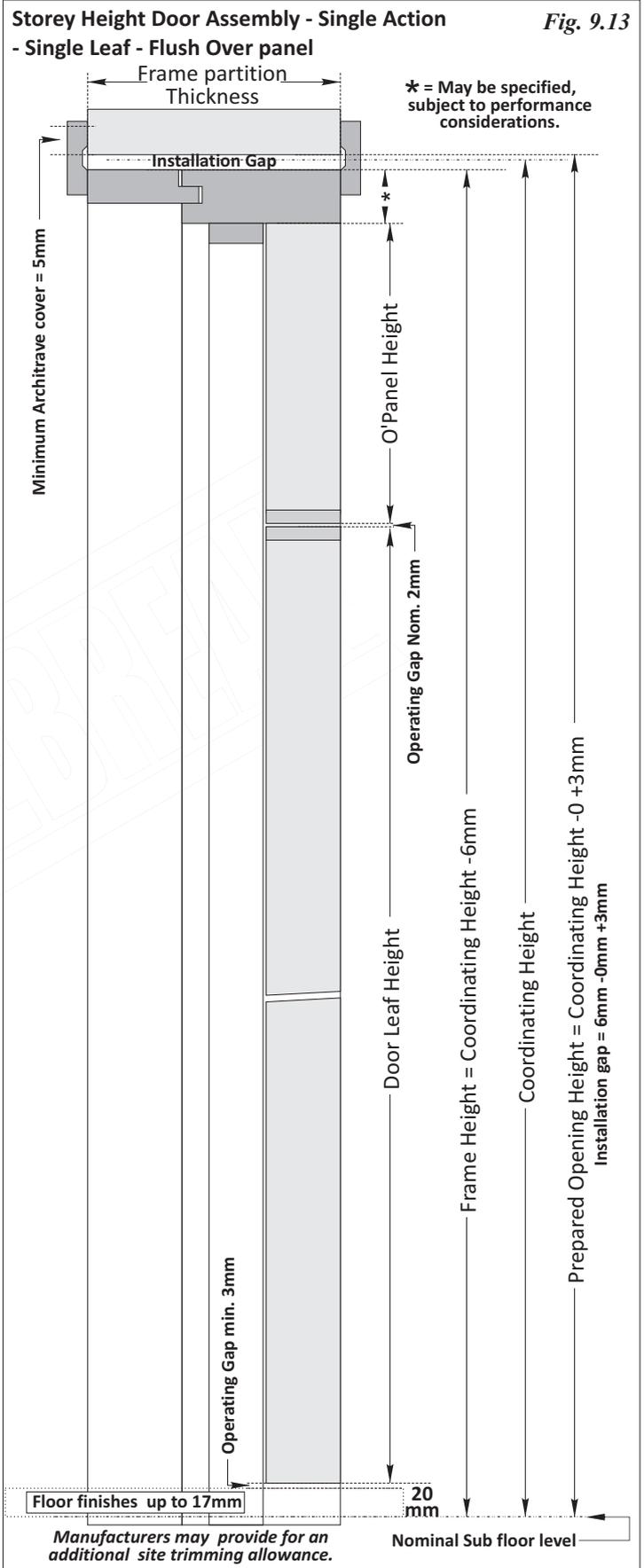
## Storey Height Door Assemblies - Single Action - with Transomed Over panel OR Fanlight

For storey height door assemblies with transom rails the frame height is calculated in the same manner as for door height door assemblies.

Additional instructions are required for the purpose of locating the transom rail height.

Where transomed storey height door assemblies are used with door height door assemblies on the same project, the transom rail height will generally be set to align with the frame head position for door height assembly in the absence of any other instructions.

**NOTE:** The Fanlight beading profile shown in this detail is indicative only to illustrate location.



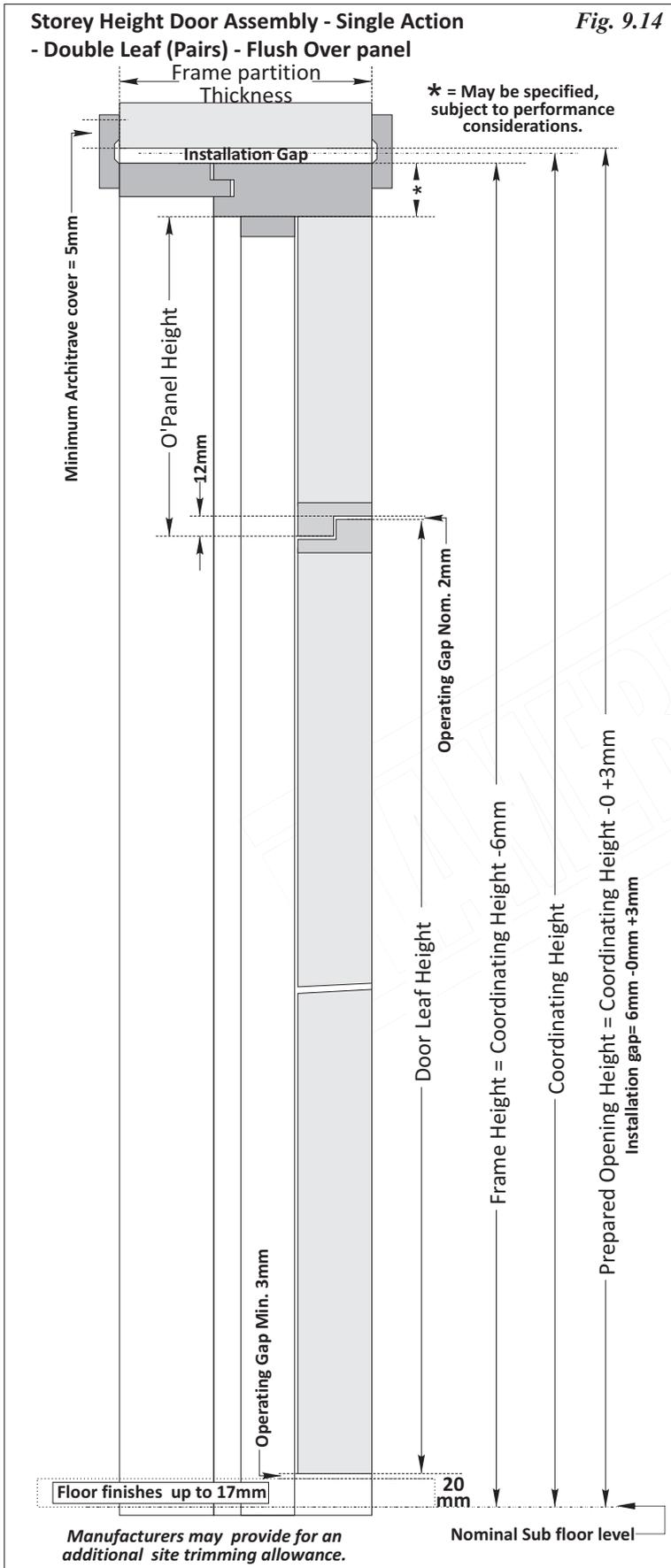
### Storey Height Door Assemblies - Single Action - with Flush Over panel - Single leaf assemblies.

For storey height door assemblies with flush over panels the door leaf height will be sized to suit door height assemblies that are specified for the same project.

Alternatively, the door leaf height should be specified by the Designer on a project basis.

*NOTE: Unless otherwise specified (and detailed) the overpanel widths will be to the full clear opening width of the frame i.e. door leaf width plus operating gap dimensions. Similarly, the overpanel will fit tight against the frame head unless otherwise specified (and detailed).*

# 9.14 Door Assembly Coordination



## Storey Height Door Assemblies - Single Action - with Flush Over panels - Double Door assemblies (Pairs).

For pairs of doors, a doorstop is required at the head of the door to prevent the doors from swinging through. Unless otherwise specified, this is generally achieved by rebating the door leaves to the over panel using a 12mm rebate.

Unless otherwise specified, the door leaf is sized such that the overall height of the door (*including the rebate*) is as specified or otherwise, the same as the door height for single leaf assembly for the same project. The overpanel is sized to suit the remaining space between the top of the door and the underside of the frame head plus the 12mm rebate depth. i.e. both the door leaf and the over panel are dimensioned to show overall heights.

**NOTE 1:** To provide for some performance requirements and / or to suit some hardware fittings, the rebates at the top of the door and bottom of the overpanel may be off set in the thickness of the door.

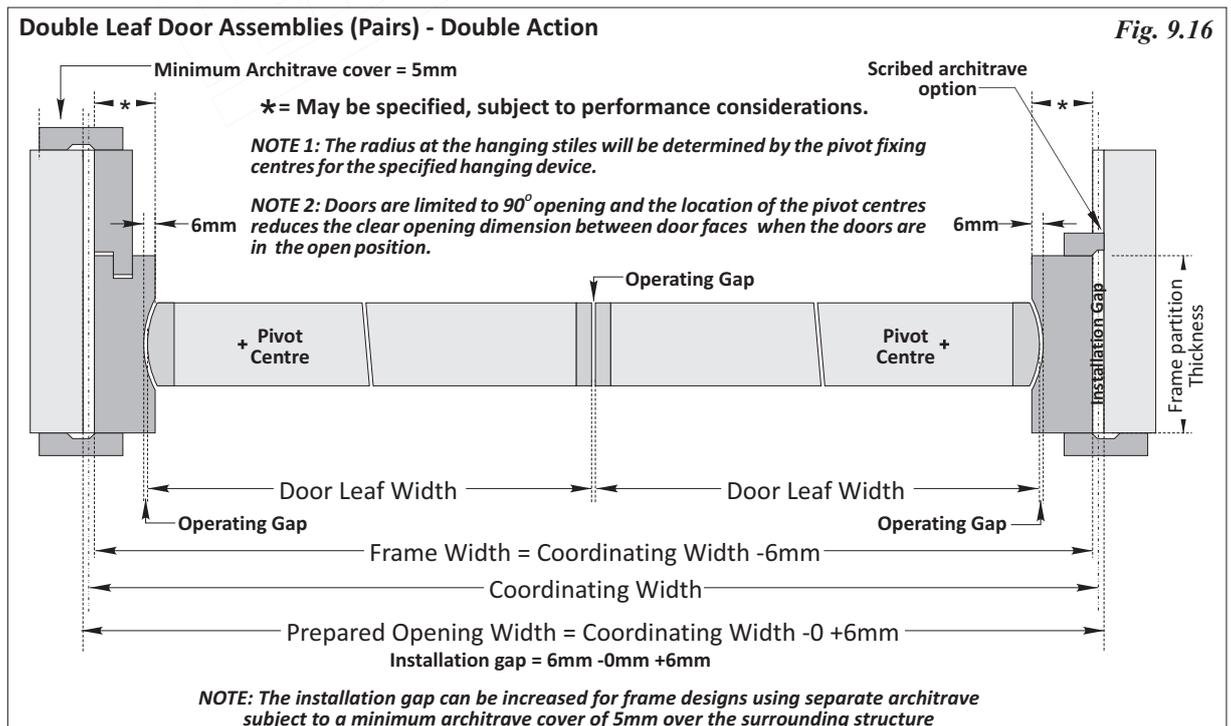
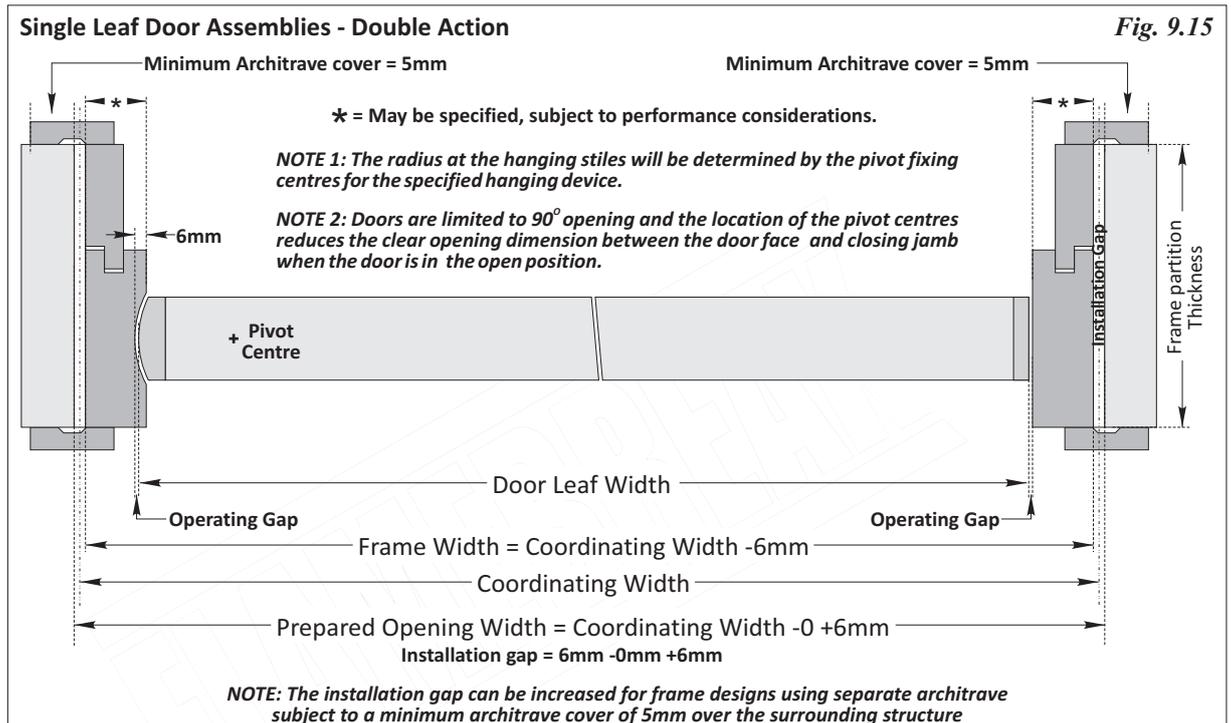
**NOTE 2:** Unless otherwise specified (and detailed) the overpanel widths will be to the full clear opening width of the frame i.e. door leaf width plus operating gap dimensions. Similarly, the overpanel will fit tight against the frame head unless otherwise specified (and detailed).

### General Method - Door Assembly Coordination Widths - Double Action Assemblies:

- Generally the cover provided by the architrave allows for generous installation tolerances.
- The architrave, when fitted should provide for a minimum 5mm cover over the surrounding structure.
- The prepared opening width in the structure (or the frame width) should be calculated to provide for a minimum 6mm installation gap in width (min. 3mm at each jamb).
- Prepared openings must carefully formed and must be plumb and square to receive door assemblies.

*NOTE: Larger frame lining sections are required for some fire door applications .*

*NOTE: Some manufacturers may offer double action frame designs without a scallop or with a scallop depth that is at variance with this detail.*



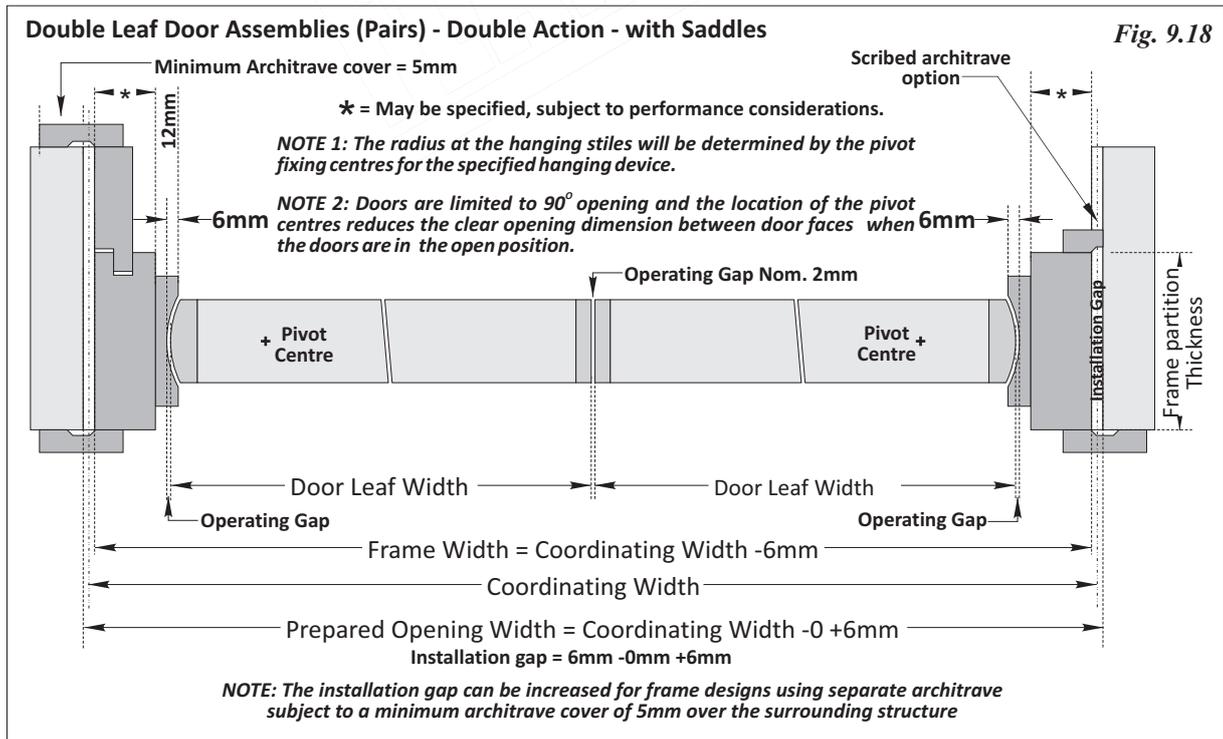
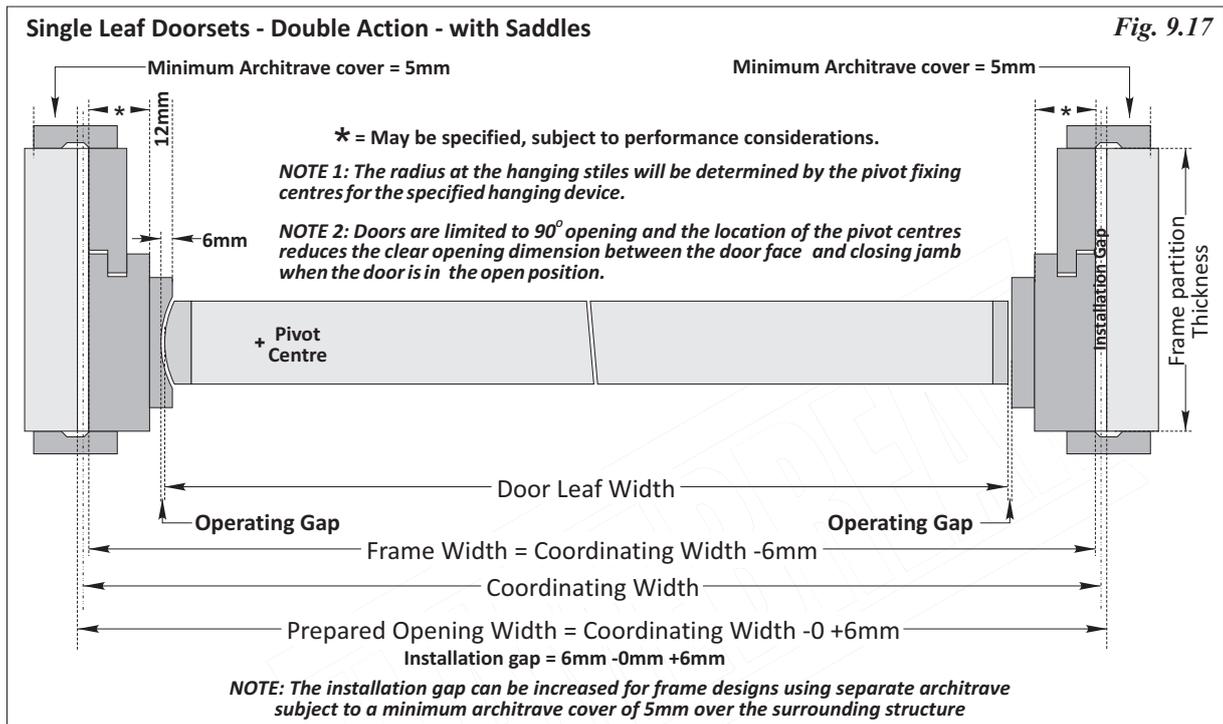
# 9.16 Door Assembly Coordination



## General Method - Door Assembly Coordination Widths - Double Action Assemblies: - Option 2:

For some frame designs, or where required by the Designer, saddles are used to cover the joint between split frame components or to provide for a 'suited' appearance with single action door assemblies. This will result in reduced door leaf widths for any given frame or coordinating width dimension.

*NOTE: Some manufacturers may offer double action frame designs without a scallop or with a scallop depth that is at variance with this detail.*



### General Method - Door Assembly Coordination Heights - Door Height Door Assemblies - Double Action:

This detail shows a typical arrangement for double action doors hung on floor mounted closers. Reference should be made to the particular closer details and fittings with the closer details to take precedence in the event of any conflict with the following advice.

To provide for the housing of the top pivot fixings it is recommended that the frame nose dimension at the frame head is increased relative to head sections for single action door assemblies with a corresponding reduction in the door leaf height.

**NOTE: It is possible to use a smaller head section. However, in this event the top pivot fixing may extend into the prepared opening space at the head of the frame. This is not recommended for door assemblies in locations required to provide for fire rated or sound insulation performances.**

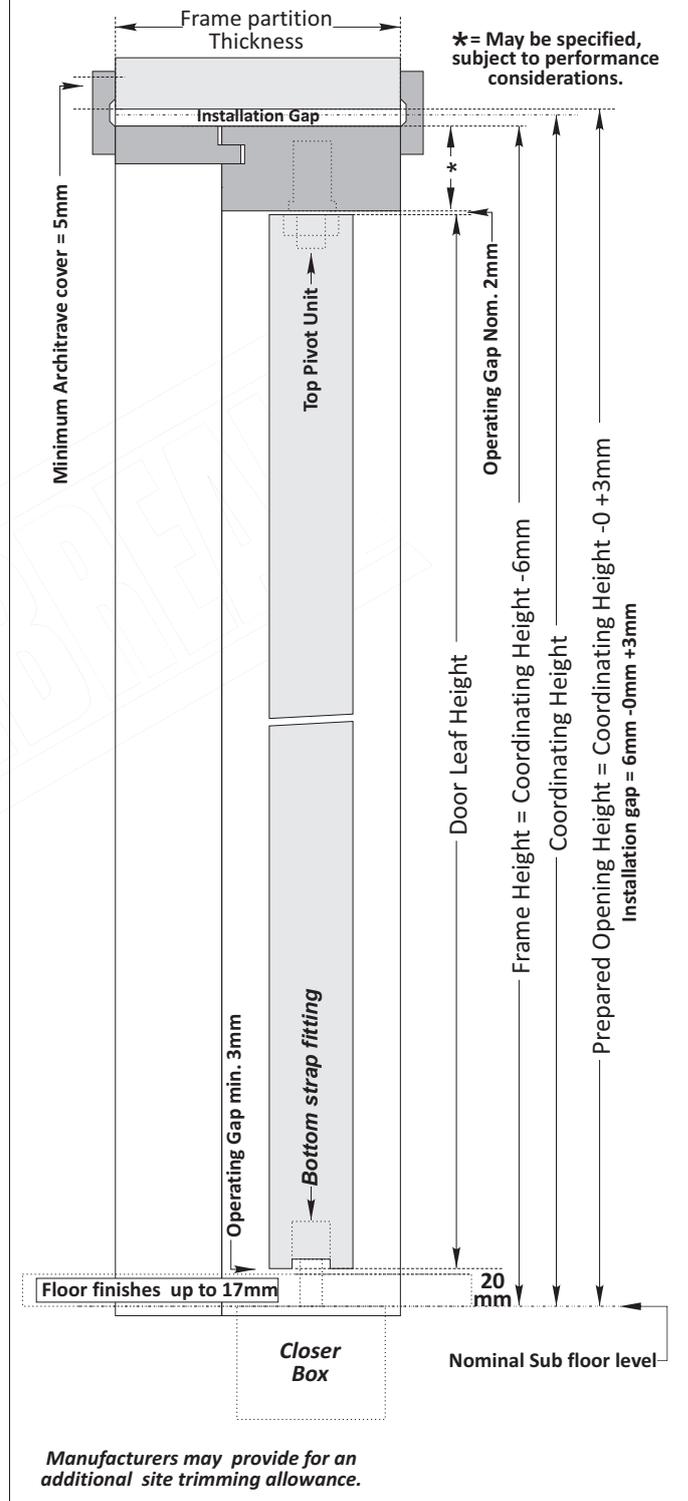
The particular closer details will give recommendations with regard to the clearance to be allowed from the top of the floor finish and the bottom of the double action strap fitting. With some closer designs the strap fittings can be recessed into the bottom edge of the door to provide for an under door gap between the bottom of the door and the top of the floor finish of not exceeding 3mm to the satisfaction of BS4787 Pt.1 and BS9999 (for smoke sealed door assemblies without additional threshold sealing). In this case the dimension from the top of the floor finish to the underside of the strap fitting is generally in the region of 8mm and it may be necessary to notch the heel of the door to aid installation.

The floor mounted closer manufacturer will usually offer a range of spindle lengths to suit variations in floor finishes such that the floor mounted closer box can be installed relative to the 'sub floor' level (before the application of floor finishes).

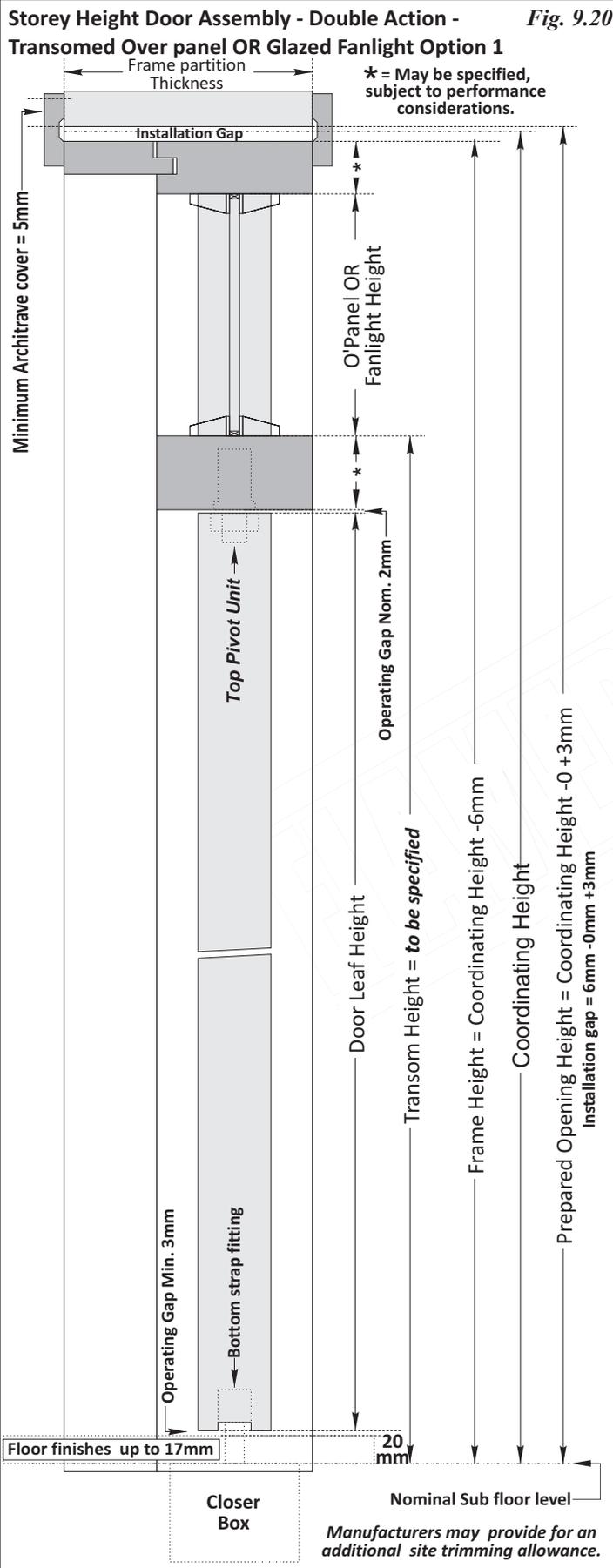
As with single action door assemblies, frame jambs can be reduced by up to 17mm (plus any manufacturers additional trimming allowance) on site to suit actual floor finishes.

**IMPORTANT: For both single action and double action door assemblies where doors are hung using floor mounted closers in conjunction with raised floor designs, floor structure planning should provide for the secure installation of the floor mounted closer boxes.**

Door Height Door Assembly - Double Action Fig. 9.19



# 9.18 Door Assembly Coordination



## Storey Height Door Assembly - Double Action - with Transomed Over panel OR Fanlight Option 1

For double action storey height door assemblies with transom rails the frame height is calculated in the same manner as for door height door assembly.

Additional instructions are required for the purpose of locating the transom rail height.

It is recommended that the transom rail dimension is increased with a corresponding reduction in the door leaf height to provide for the housing of the top pivot fixings

**NOTE 1:** Unless otherwise specified (and detailed) the over panel widths will be to the full clear opening width of the frame i.e. door leaf width plus operating gap dimensions. Similarly, the over panel will fit tight against the frame head and transom unless otherwise specified (and detailed). The scallop in the frame will be stopped at the top of the door leaf to the underside of the transom. Where saddles are used the saddle will stop at the underside of the transom rail.

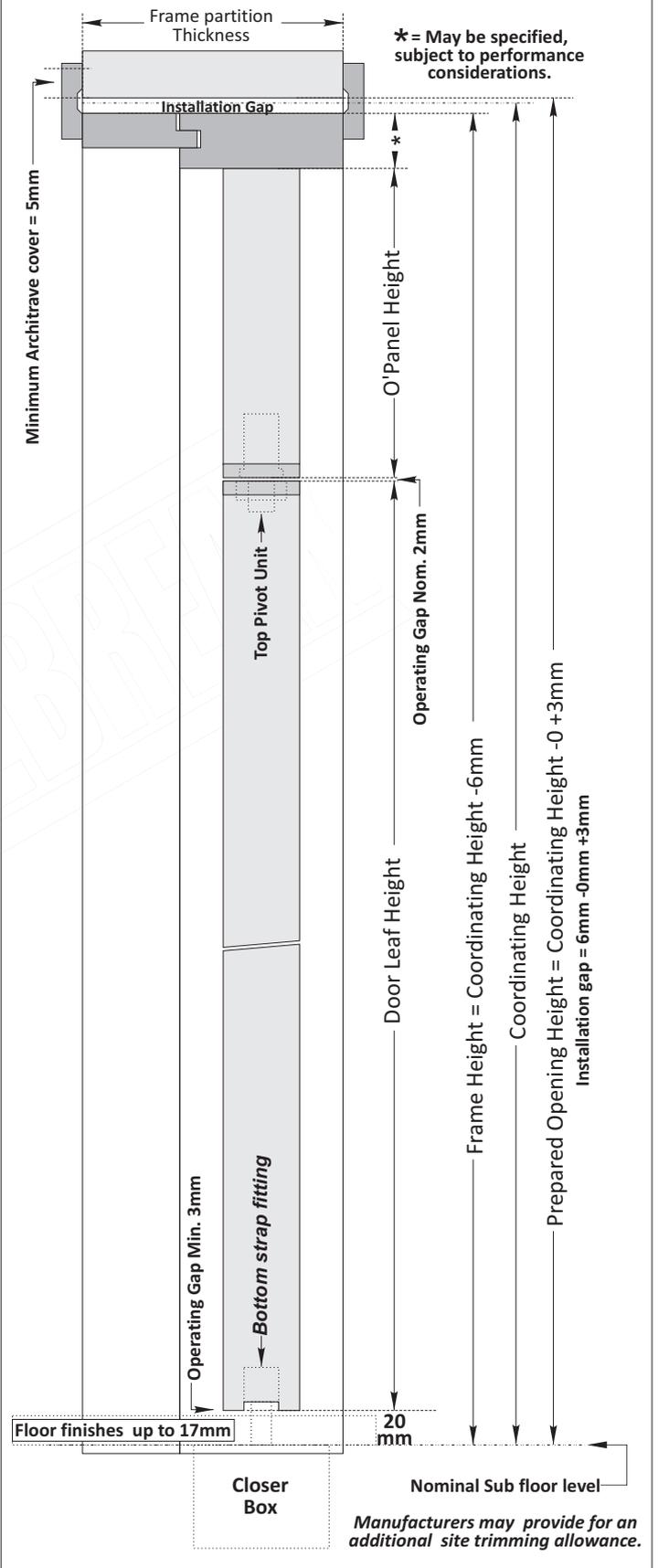
**NOTE 2:** Unless otherwise specified, the transom rail will be located at a position to align with the head of other door height double action door assembly for the same project.

**NOTE 3:** The Fanlight beading profile shown in this detail is indicative only to illustrate location.

**IMPORTANT:** For both single action and double action door assemblies where doors are hung using floor mounted closers in conjunction with raised floor designs, floor structure planning should provide for the secure installation of the floor mounted closer boxes.

Storey Height Door Assembly - Double Action  
- Flush Over panel

Fig. 9.21



### Storey Height Door Assemblies - Double Action - with Flush Over panel - Single leaf door assembly.

For storey height door assemblies with flush over panels the door leaf height will be sized to suit door height assemblies that are specified for the same project.

Alternatively, the door leaf height should be specified by the Designer on a project basis.

*NOTE: Unless otherwise specified (and detailed) the over panel widths will be to the full clear opening width of the frame i.e. door leaf width plus operating tolerance dimensions. Similarly, the over panel will fit tight against the frame head unless otherwise specified (and detailed). The scallop in the frame will be stopped at the door leaf height to the underside of the over panel. This detail is not recommended for use with frame designs using saddles.*

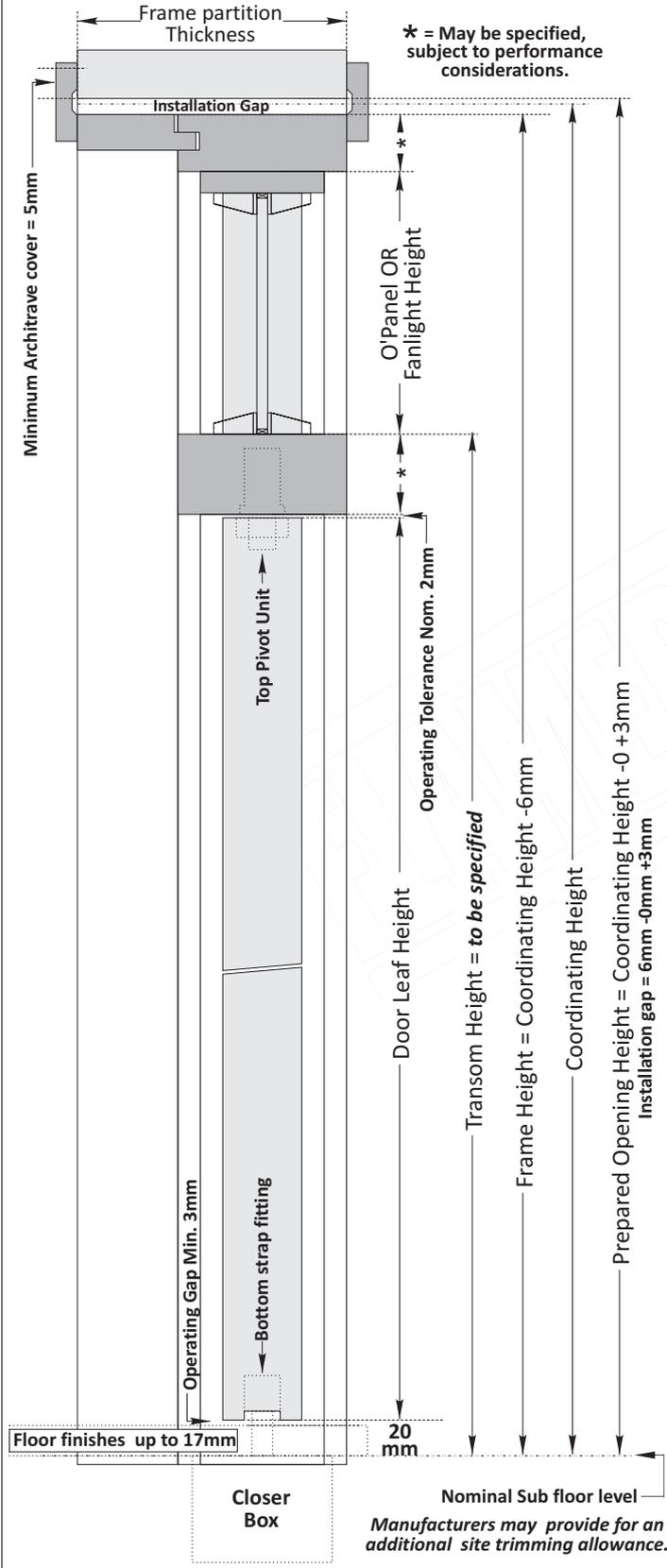
**IMPORTANT:** For both single action and double action assemblies where doors are hung using floor mounted closers in conjunction with raised floor designs, floor structure planning should provide for the secure installation of the floor mounted closer boxes.

# 9.20 Door Assembly Coordination



Storey Height Door Assembly - Double Action  
- Transomed Over panel OR Glazed Fanlight  
Option 2

Fig. 9.22



## Storey Height Door Assemblies - Double Action - with Transomed Over panel OR Fanlight. Option 2

For frame designs using saddles, the saddles are applied to the jambs and head with saddles to butt to both sides of the transom rail. Square faced (*not scalloped*) saddles will be used at the over panel / glazed fanlight position.

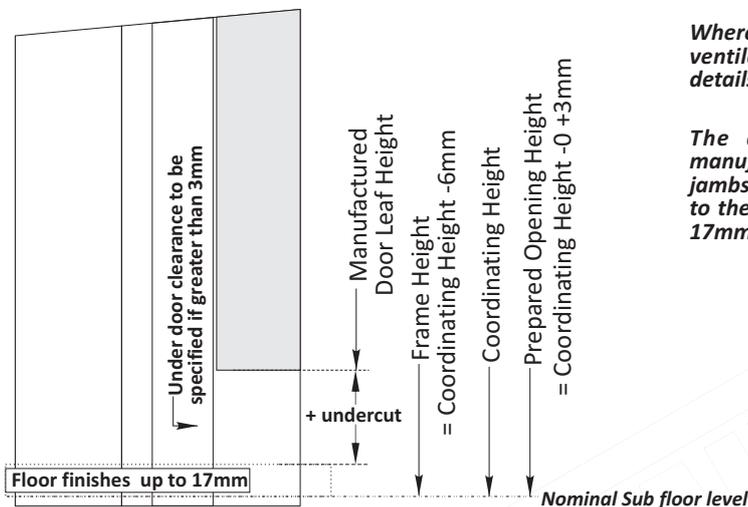
**NOTE 1:** Unless otherwise specified, the transom rail will be located at a position to align with the head of other door height double action door assemblies for the same project.

**NOTE 2:** The Fanlight beading profile shown in this detail is indicative only to illustrate location.

**IMPORTANT:** For both single action and double action door assemblies where doors are hung using floor mounted closers in conjunction with raised floor designs, floor structure planning should provide for the secure installation of the floor mounted closer boxes.

### Increased Under Door Clearances:

Fig. 9.23



Where a large undercut is required e.g. for ventilation, the specifications / project details should identify this requirement.

The door manufacturer should then manufacture the doors such that the frame jambs extend below the bottom of the door to the size of the specified undercut + Min. 17mm when used with a 44mm architrave.

Manufacturers may provide for an additional site trimming allowance.

### Increased Door Undercut:

The general coordination method provides for frames to be manufactured such that the bottom of the frame jamb extends 20mm (plus any additional trimming allowance made by the manufacturer) below the bottom of the door leaf. This allows for site trimming to suit floor finishes up to 17mm thickness while still providing for a 3mm under door gap (above finished floor level) required to satisfy BS9999 for smoke sealed doors without additional threshold seals.

The 'Sub Floor' level described in these details is the floor level before the application of floor finishes. Floor finishing materials can be many and varied including carpet with or without underlay, ceramic tiles, vinyl tiles etc. Where the floor finishing materials are less than 17mm this method provides for frame jambs to be reduced on site to suit.

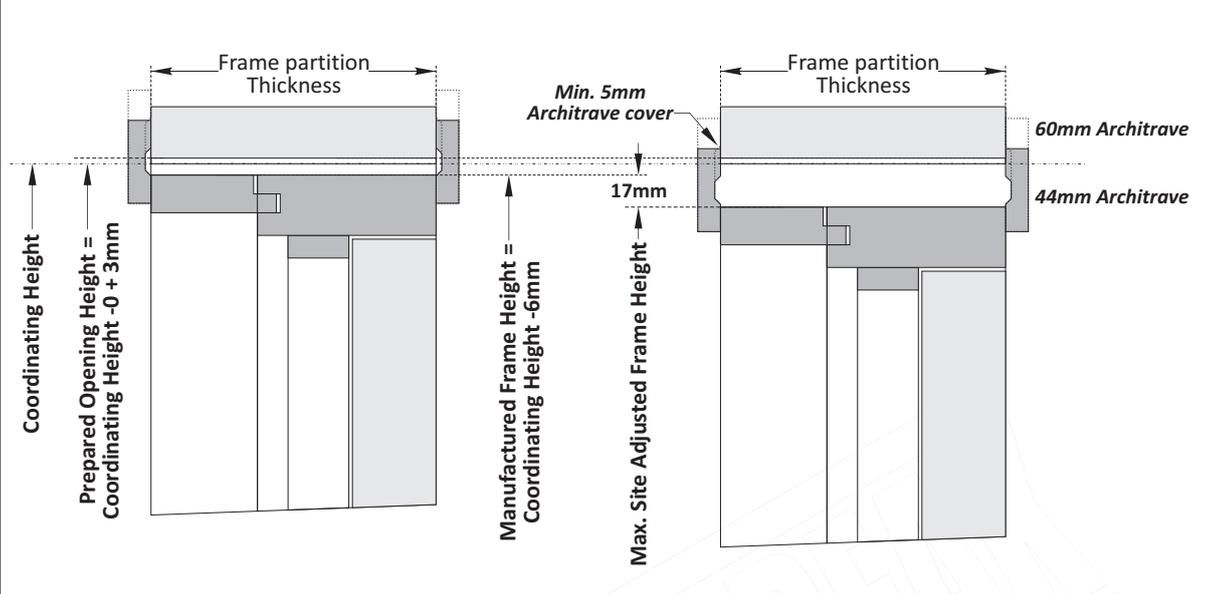
For ceramic tiled areas the tiles can be laid before the door assembly is installed. In other cases e.g. for carpeted areas the frames are generally fitted to suit the sub floor level before the flooring is laid.

Where the 17mm floor finish allowance provided for by these details is insufficient OR, where an increased under door clearance over the finished floor level is required (e.g. for ventilation), door leaves can be manufactured to a reduced height to suit the under door clearance requirements specified in project documents with a corresponding increase in the 20mm (plus the additional site trimming allowance) dimension from the bottom of the door to the bottom of the frame jambs allowed for the purpose of manufacture. Alternatively, door leaves may be reduced in height on site where minor adjustments are required.

Where these considerations apply, it is recommended that the Designer should ensure that the project details identify the requirement. The manufacturer will then add the door undercut dimension to the 'standard' dimension allowed from the bottom of the door to the bottom of the frame jamb.

**Example:** If a 50mm undercut is required to provide for (say) ventilation. This is 47mm greater than the minimum 3mm allowance normally provided for. The door leaf height would be reduced by 47mm and the dimension from the bottom of the door to the bottom of the frame jambs would be increased from 20mm to 67mm plus any additional trimming allowance determined by the manufacturer to provide for the same degree of site adjustment. To define this example requirement project details should advise: Door undercut = 50mm.

**General Method - Frame Height Adjustment to suit Finished Floor levels - (44mm Architrave):** Fig. 9.24



**General Method - Frame Height Adjustment:**

The general method suggested in this section provides for the frame jambs to extend 20mm below the bottom of the door leaf (plus the any additional trimming allowance provided by the manufacturer).

This provision will allow for the use of floor finishes up to 17mm thickness when used with a 44mm architrave.

**NOTE:** Increased scope for site adjustment and accommodation of increased installation gap tolerances can be provided where an architrave section greater than 44mm is used See Fig. 9.24.

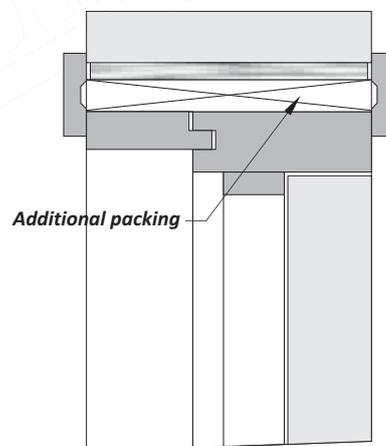
When used with a 44mm architrave: If a floor finish is not used, or where the floor finish is less than 17mm, the frame jambs can be reduced on site to provide for the desired under door clearance over the actual floor finish where the maximum reduction to the frame jambs does not exceed 17mm (plus any additional trimming allowance provided by the manufacturer).

When used with a 44mm architrave: Where the maximum site reduction is carried out, this will provide for a Nom. 3mm under door clearance above the sub floor level but with an increase of up to 17mm in the space between the head of the frame and the opening prepared by the builder.

Where 'performance' door assemblies (e.g. fire rated and sound attenuating assemblies) are adjusted in this manner, additional packing is required at the head of the door assembly. (See Section 14 - Fire Door Installation).

**NOTE:** The structural floor level may be treated as the sub floor level where a sub floor is not used. e.g. possibly for car parks and some plant rooms.

**Reduced Height - Performance Doorsets** Fig. 9.25



*For some performance door assemblies e.g. for fire rated and sound insulating locations, additional packing is required at the head of the assembly where the door assembly height is reduced to suit floor conditions.*

*Reference should be made to BS8214 : 2008 and to test / assessment data relating to the particular performance to determine requirements of this nature.*

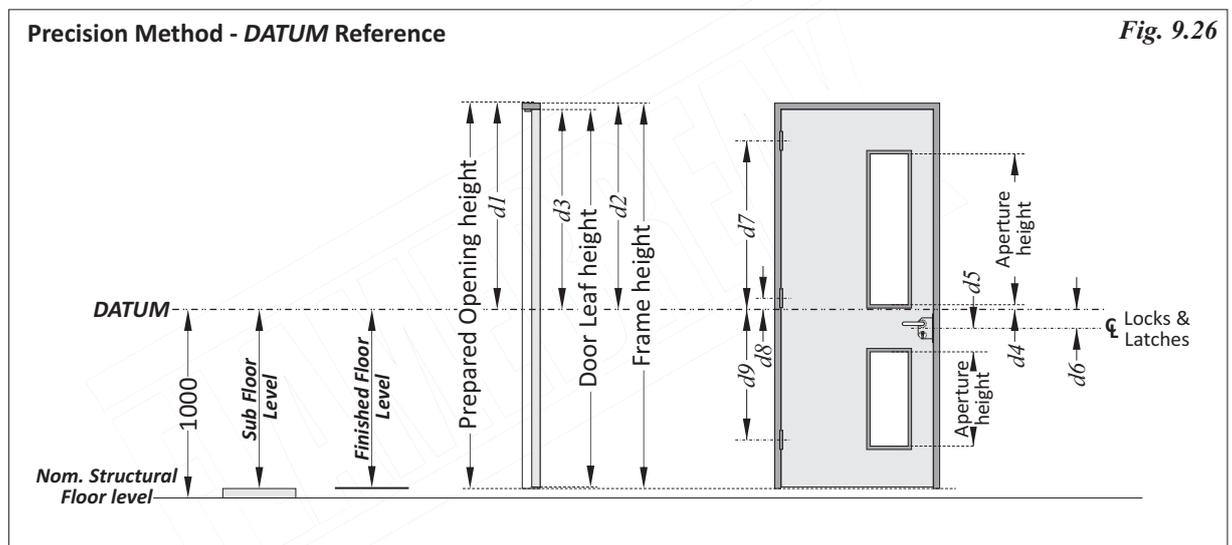
### **Precision Method - Door Assembly Coordination:**

For the 'Precision Method' all trades concerned with the alignment in height of building products can work to a common DATUM. Trades that may be affected include:

- The Builder.
- Sub Floor Contractor.
- Floor finishing contractor.
- Electricians (*fitting switches etc.*)
- Door Assembly manufacturer.
- Installation Contractor.

For the purpose of manufacturing the door assemblies it is necessary to provide for more precise planning in advance of manufacture. Door assembly considerations include:

- Door leaf height and width.
- Frame height, width and frame partition thickness.
- Required under door clearance above nominal finished floor level.
- Location dimensions and size of apertures.
- Location dimensions for hardware.



**Fig. 9.26**

Using the Precision Method all work can be related to a common Project **DATUM**. For this example a **DATUM** height of 1000mm is indicated

- The top of the sub floor level is located relative to the **DATUM**.
- The top of the finished floor level is located relative to the **DATUM**.
- Dimension **d1** - The opening is prepared by the Builder to receive the door assembly. Tolerance = -0 +3mm.
- Dimension **d2** - Determine the Frame Height by use of dimension **d2**.
- Dimension **d3** - Determine position at the top of the door leaf by use of dimension **d3**. Calculate door leaf height by deducting frame nose dimension, operating tolerances (**including required under door clearance**) and finished floor thickness from the frame dimension.
- Dimension **d4** & **d5** - Locate apertures relative to the **DATUM** then define clear glass opening height.

**NOTE:** Glazed apertures are positioned relative to the clear glass opening to ensure compliance with BS8300 - Building Regulations - (England & Wales) - Approved Document 'M'.

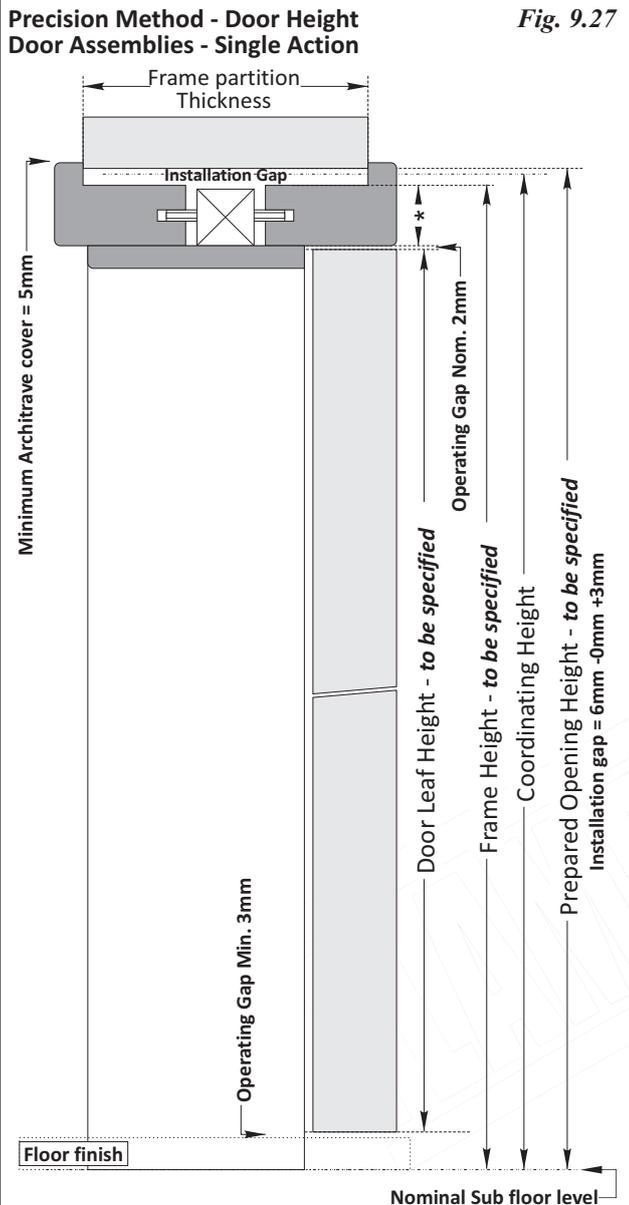
- Dimension **d6** - Locate locks / latches relative to the **DATUM**.

**NOTE:** This detail shows the dimension from the **DATUM** to the centre of the lock case. Alternatively separate references may be used to align (say) lever sets and cylinders

- Dimensions **d7, d8** & **d9** - align hinges relative to the **DATUM**.

Use of this method will ensure that door assembly elements for adjacent locations will align correctly in height irrespective of the door assembly height and floor conditions.

# 9.24 Door Assembly Coordination



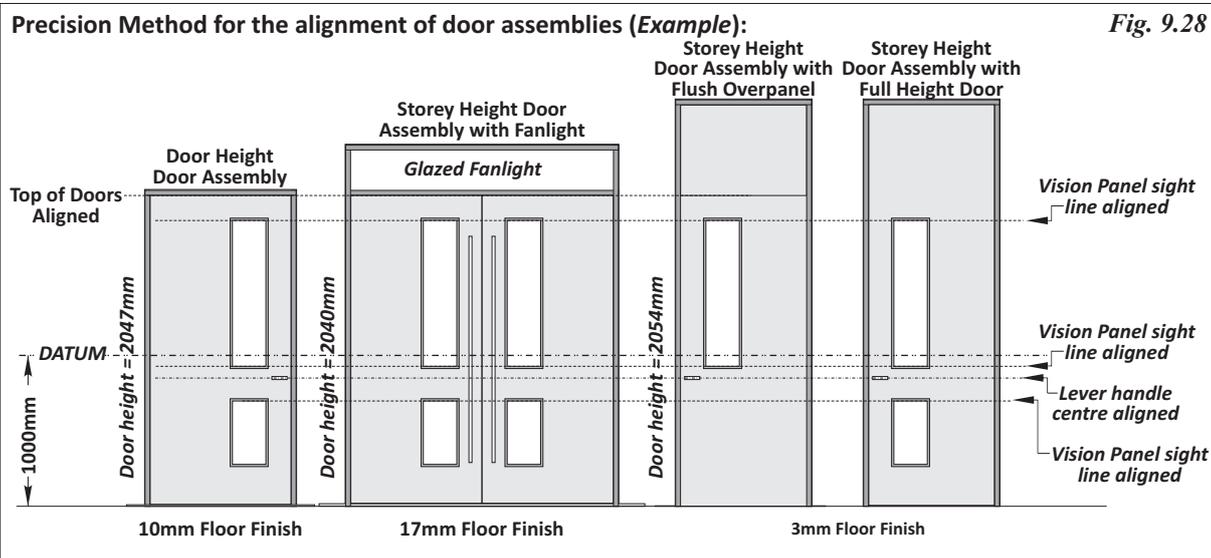
## Precision Method - Door Assembly Coordination - Door Height Assemblies - Single Action:

Coordinating door assemblies in height is more difficult due to the number of trades involved. The Precision Method described in this detail is recommended for use with door assembly designs that provide for limited architrave cover or where the frame design otherwise restricts installation tolerances.

The Precision Method is also suitable where there is a requirement to provide for the precise alignment of door assembly elements between adjacent locations.

This method provides for the supply of assemblies with door assembly elements cut to size and prepared to suit dimensions determined by the Architect / Designer.

Door assembly components (*i.e. door leaves and frames*) are manufactured to the dimensions determined by the Architect / Designer with no provision for on site adjustment unless this has been provided for by the Designer.



### Door Frames:

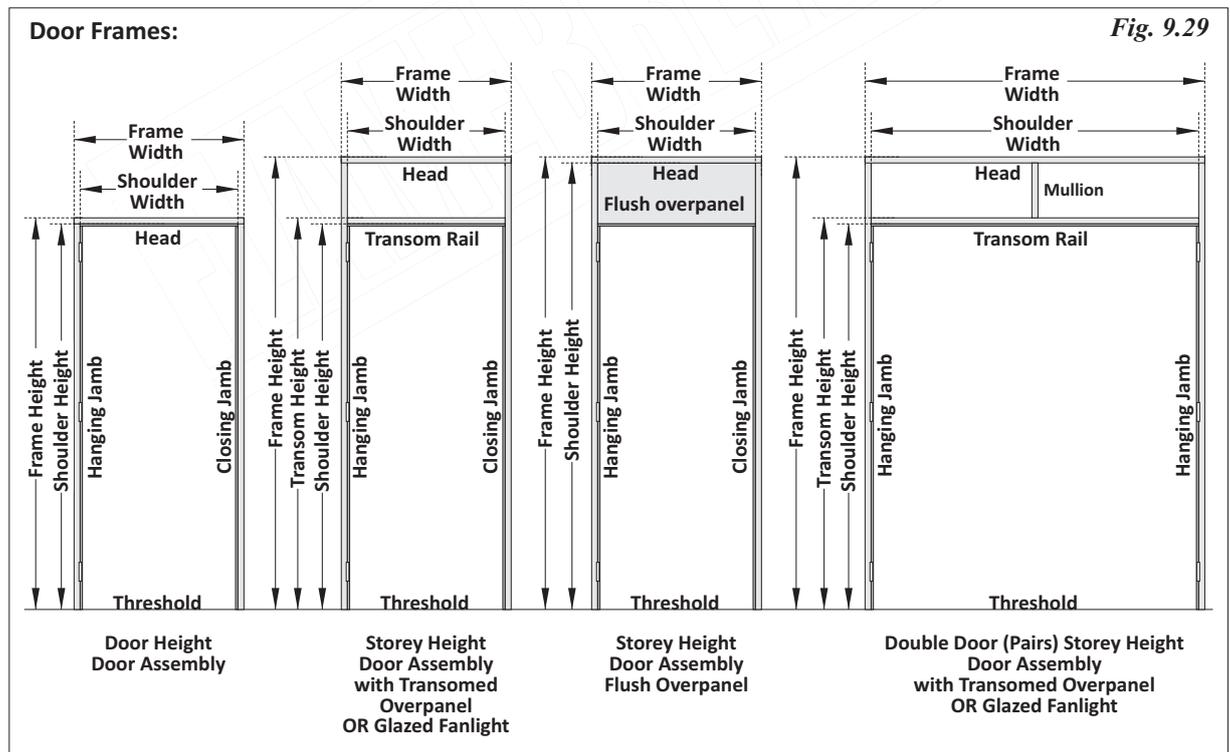
Whereas it is possible to fit a door into an opening without the use of a frame, generally frames are used as a door assembly component that links the door leaf with the surrounding structure.

Frames can be manufactured using a wide range of materials including:

- Hardwoods.
- Softwoods.
- MDF (*Medium Density Fibreboard*).
- Chipboard.
- Metal or metal clad.

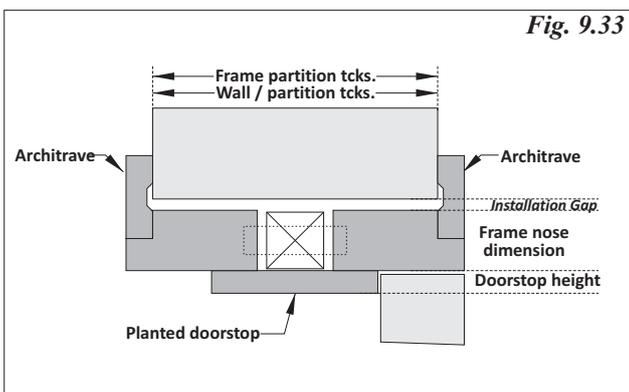
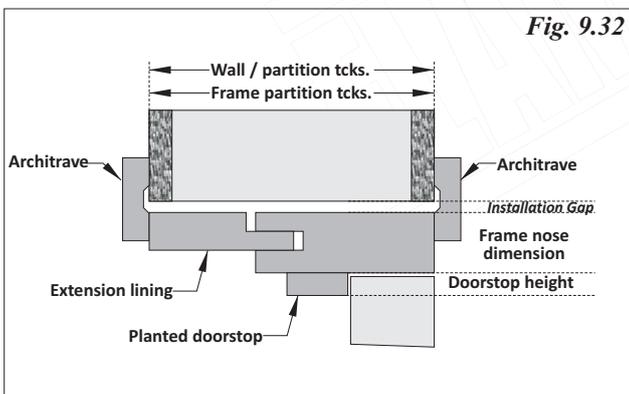
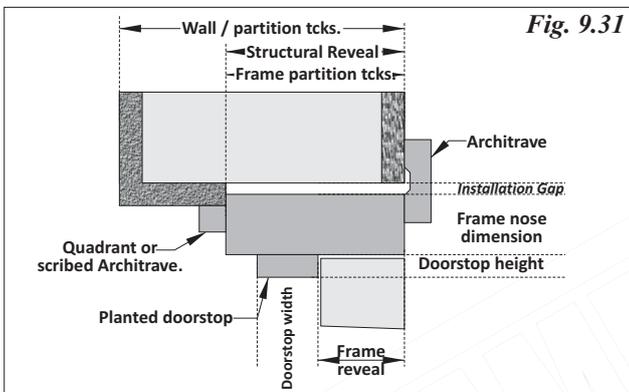
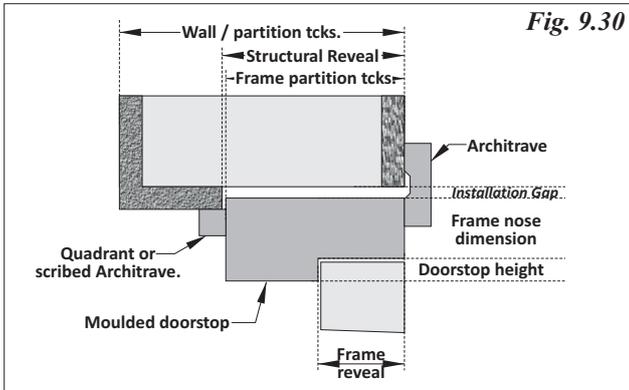
Frames (*usually MDF or Chipboard*) can be manufactured with veneered facings and are also available with post formed laminate, high impact plastic or metal facings.

This *Fig. 9.29* illustrates height and width coordinating reference points for frames that may be used for the purpose of communicating dimensional requirements and subsequently for determining door leaf dimensions.



## 9.26 Door Assembly Coordination

### Frame Designs suitable for the General Method of Coordination:



#### Frame Designs:

Subject to performance limitations, frame designs may be determined by the Specifier. However, many bespoke door assembly manufacturers have their own preferred frame systems that are designed (*and proven*) to provide for flexibility in use and for the economic use of timber.

**Moulded Stop designs:** The frame partition thickness can suit a structural reveal (*as illustrated*) or may extend to the full finished thickness of the partition. The doorstop is moulded from a solid section of timber to form a frame reveal. Where different facing materials are used on the door face it will be necessary either to calibrate the door core or to vary the frame reveal dimension to suit.

**Planted doorstop designs:** The doorstop is manufactured as a separate frame component allowing for variations in the doorstop height which may be necessary for some performance door assembly applications and for the adjustment of the position of the doorstop to suit the particular door leaf thickness. The frame partition thickness can suit a structural reveal (*as illustrated*) or may extend to the full finished thickness of the partition.

**Frames with extension linings:** Extension linings of a thinner section than the primary frame section may be used to provide for cover of the structural reveal to the full wall / partition thickness. Designs of this type will generally provide for a means of adjustment (*around +/- 5mm*) to accommodate wall / partition thickness tolerances. The primary frame section may be of a moulded or planted stop design.

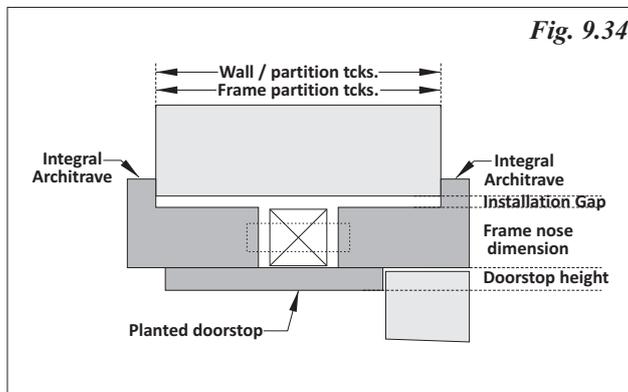
**NOTE:** Double action doors may be located to suit the primary (door related) frame section with doors offset within the partition thickness to provide for adequate fixings for double action fittings. Alternatively, the primary frame section can be located to suit the centre partition thickness with extension linings used to both sides of the primary frame section.

#### Split Frame Designs with separate architrave:

Frame designs of this type use two frame sections with equal frame nose dimensions with the void between the frame sections covered by a variable door stop. The two frame sections may be jointed using dowels or plywood tongues. Make up pieces using low cost timber may also be used with frames of this design to suit large partition thicknesses.

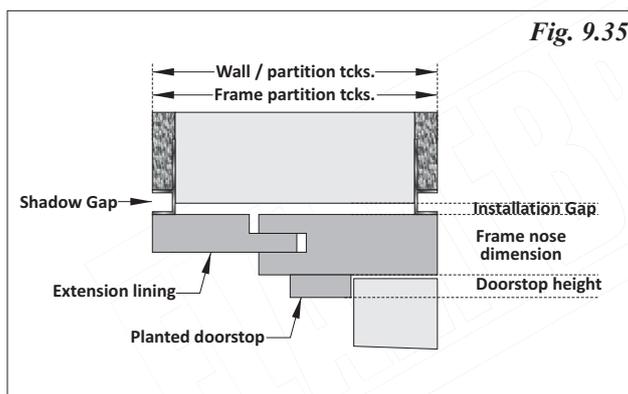
**NOTE:** Double action doors may be located to suit the primary frame section with doors offset within the partition thickness to provide for adequate fixings for double action fittings.

### Frame Designs where use of the Precision Method of Coordination is recommended:



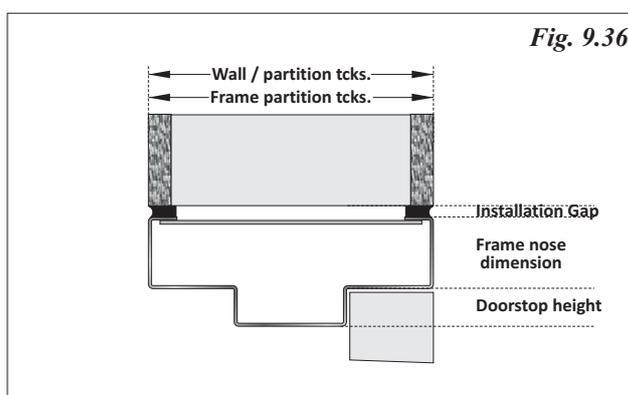
#### Split Frame Designs with integral Architrave:

Projects requiring the use of frame designs that provide for limited or no architrave cover over the surrounding structure require demanding levels of care and skill in the planning, preparation and installation of the work to provide for satisfactory results. Use of the 'Precision Method' suggested in this document provides for one method for achieving expectations in this regard.



**Frame Designs without Architrave:** For frame designs using a 'shadow gap' the door assembly should be installed before the application of the final wall / partitioning finishing with a dry lining option being recommended to minimise the risk of moisture or plaster contamination of the door frame.

**NOTE:** Use of frame designs with shadow gaps may not be suitable for some performance applications, (particularly fire performance). Reference should be made to the manufacturers test / assessment data to determine any limiting factors in this regard.



**Metal Frames:** Most metal frame, particularly steel frame designs do not include architrave. Considerations related to frame with 'shadow gaps' will generally apply.

Some metal frames need to be installed as 1st. fixed items and effectively become part of the structure. Other designs provide for 2nd. fix installation into prepared openings with shims used at the fixing positions. The gap between the frame and the surrounding structure being filled with a mastic. As with frames using a 'shadow gap' detail, high levels of skill, planning and installation are required to ensure even installation gaps around the door assembly.

**NOTE 1:** It is difficult to adjust metal frames on site and site adjustment provisions are rarely allowed with door assemblies of this design.

**NOTE 2:** Whereas there is successful test evidence supporting the use of wood doors with metal frames for fire door applications this is generally associated with reduced dimensional limitations. Reference should be made to the manufacturers fire test / assessment data to determine limiting factors relating to the use of metal frames, including a possible requirement to back fill frames.

## 9.28 Door Assembly Coordination

### Variations to Frame Section Dimensions:

Where frame section dimensions are varied either to satisfy aesthetic requirements or for performance reasons, the project Coordinating sizes and Prepared Opening dimensions can be maintained with the adjustments applied as follows:

Increased frame nose dimension: Reduce door leaf dimensions to suit.

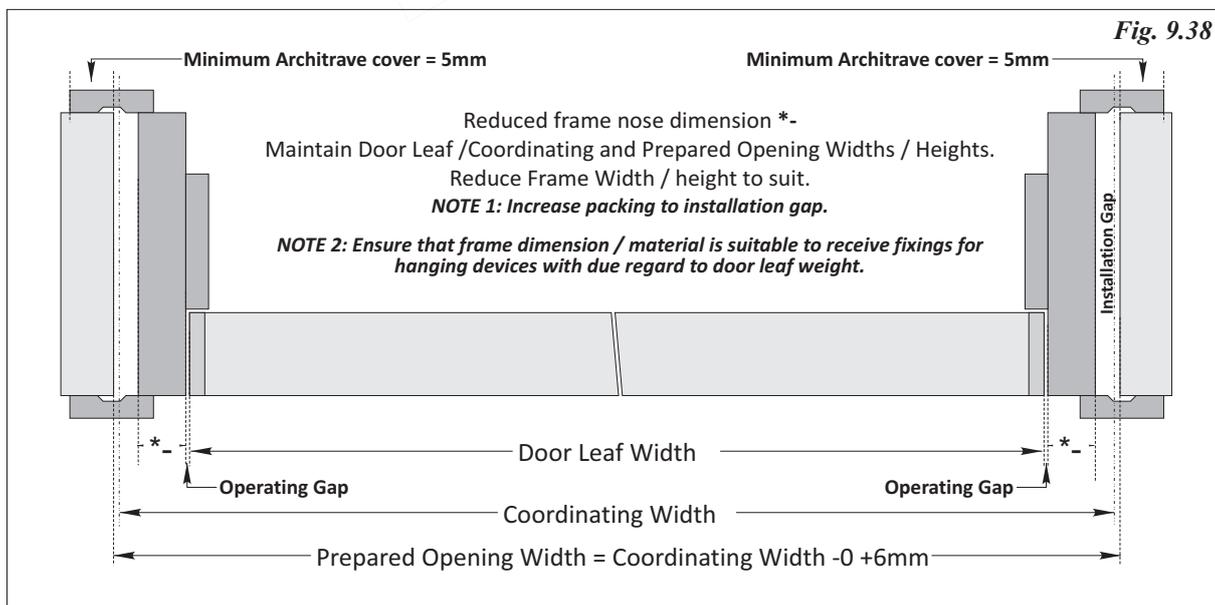
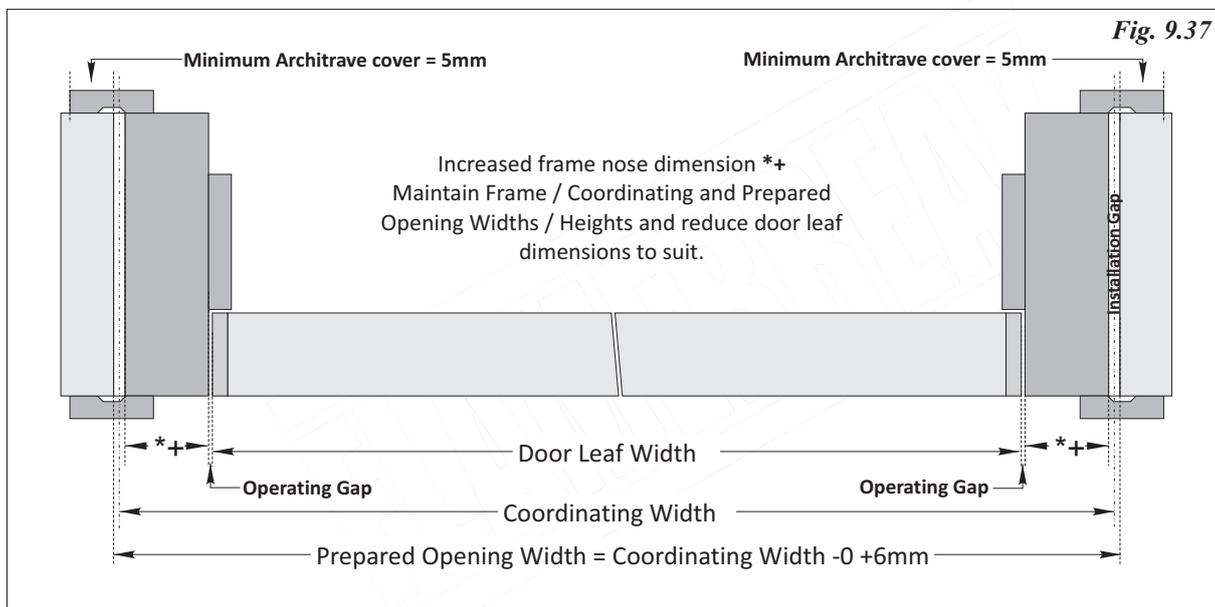
Reduced frame nose dimension: Increase the installation gaps and provide for additional packing as required.  
(Alternatively, Frame width and height dimensions may be varied to suit with a corresponding adjustment to door leaf dimensions).

**NOTE 1:** These options are only available for use with frame designs using separate architrave that are suitable for the 'General Method' of door assembly coordination.

**NOTE 2:** Reference should be made to BS8300 (Provisions for the disabled) and regulations concerning clear opening widths for escape purposes when reducing door leaf widths.

**NOTE 3:** When considering the use of thinner section frames, consideration should also be given to the screw holding capabilities (particularly with regard to the fixing of hanging devices) of the resultant frame section with due regard to the door leaf weight.

**NOTE 4:** Additional size architrave may be desirable for use with thinner section frames.



### Locating Apertures:

Whereas variations in door undercut might be relatively common, it is unusual to require an air space between the top of the door and the head of the frame. Where this is a requirement, precise details should be provided by the Designer.

As variations in undercut usually apply to the bottom edge of the door, most manufacturers will locate apertures in height relative to the top edge of the door leaf.

Information required by the manufacturer to locate apertures is shown in these details.

For the 'General Method' described in this document measurements are taken relative to the top edge of the door in height and the closing stile in width with two essential dimensions in each plane required:

- 1/ A reference dimension =  $R1$  &  $R2$  in this detail.
- 2/ An aperture dimension =  $d1$  &  $d2$  in this detail.

**NOTE:** For the 'Precision Method' apertures are location by reference to the project DATUM.

Primarily as a consequence of the influence of Building Regulation - (**England & Wales**) - Approved Document 'M' and the related BS8300, the dimensions related to glazed apertures will be assumed to refer to the clear glass dimensions (**the vision area after beading**), unless otherwise specified. Manufacturers will then cut the aperture in the door leaf to suit the beading dimension that may vary according to performance.

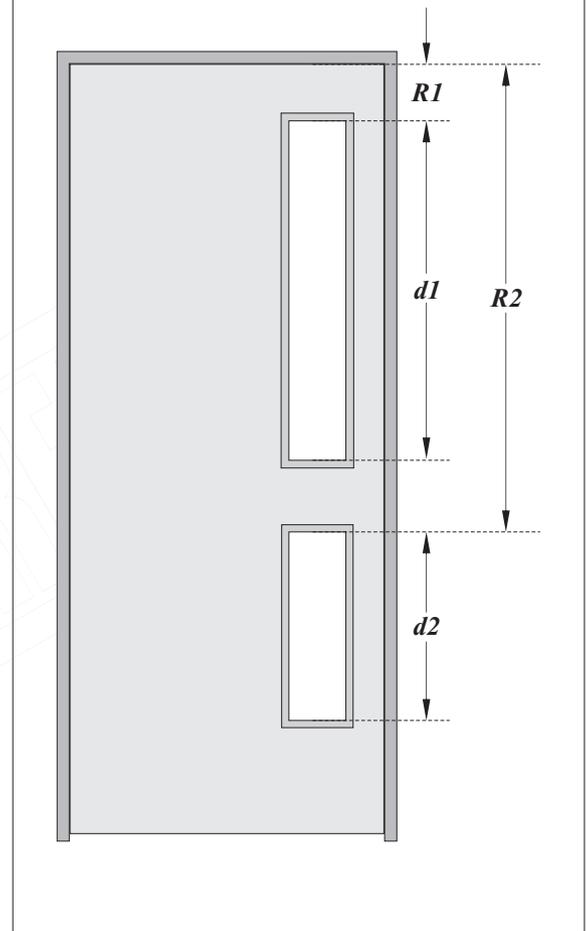
For apertures other than glazed apertures (**e.g. to receive grilles**), the apertures will be cut to suit specified dimensions.

**NOTE 1:** For rebated pairs of doors, the reference dimension to locate the aperture will generally be taken from the widest edge of the door unless otherwise specified in project details.

**NOTE 2:** Reference should be made to test / assessment data relating to the particular performance when considering glass type, beading system and the location of apertures in fire rated door assemblies.

### General Method - Locating Apertures:

Fig. 9.39

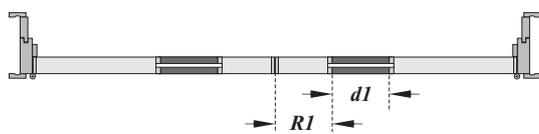


### Locating Apertures in Width:

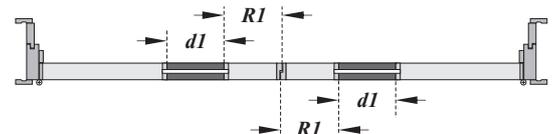
Fig. 9.40

Determine the reference dimensions  $R1$  relative to the closing stile of the door leaf.

#### Square edged doors:

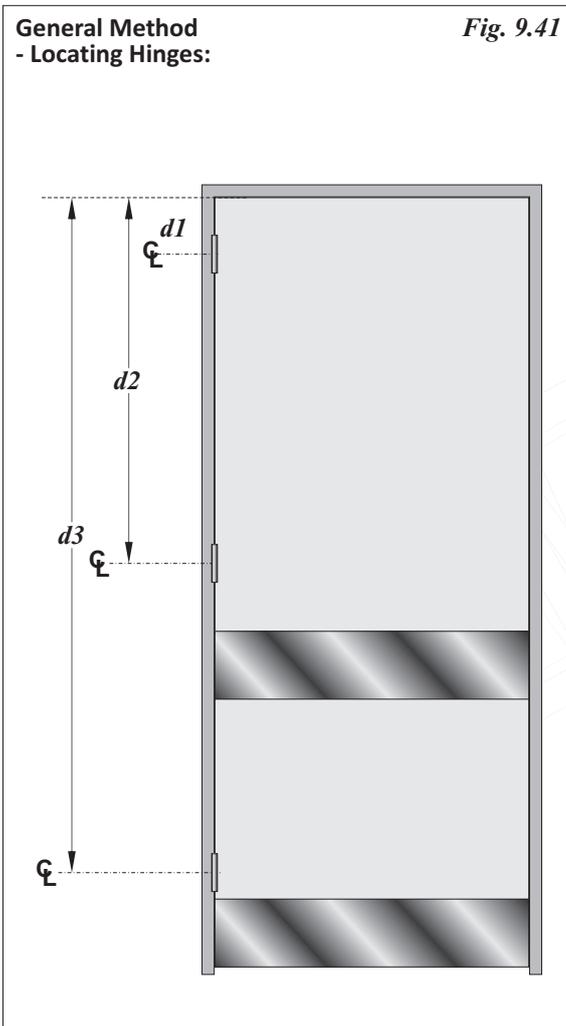


#### Doors with rebated meeting stiles:



General Method  
- Locating Hinges:

Fig. 9.41



Locating Hardware:

1/ Hinges:

Whereas variations in door undercut might be quite common, it is unusual to require an air space between the top of the door and the head of the frame. Where this is a requirement, precise details should be provided by the Designer.

As variations in undercut usually apply to the bottom edge of the door, manufacturers will locate hardware relative to the top edge of the door leaf.

For the 'General Method' described in this document measurements are taken relative to the top edge of the door.

**NOTE:** For the 'Precision Method' hardware location is determined by reference to the project DATUM.

Requirements and restrictions relating to the location of hinges (*i.e. dimensions  $d1$ ,  $d2$  &  $d3$  in these details*) may be found by reference to the hinge manufacturers technical data. Otherwise hinges may be located to suit Designers instructions.

For fire rated doors reference should be made to the fire test / assessment data relating to the particular performance which may place restrictions with regard to the hinge type and location and the need (*or otherwise*) for the use of intumescent gaskets under hinge blades. (**See BS 8214**).

Consideration should be given to the location of other hardware when locating hinges, in particular conflict with metal protection plates (*kick & buffer plates*) should be avoided.

**Locating Hardware:**

**2/ Locks & Latches (Securing devices):**

There are numerous designs of latches and locks, some of these use the same size case for different functions, for other designs the cases may vary according to function.

For most bespoke projects, Architects and Designers may be concerned with the visible elements i.e. lever handles and cylinders / escutcheons. Requirements (*with dimensions*) in this regard should be identified in project details.

For the 'General Method' described in this document it is recommended that securing hardware is located relative to the top edge of the door for the same reasons as stated for apertures and hinges.

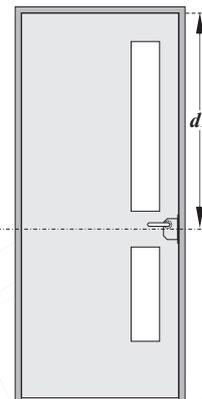
Depending upon the design of the securing hardware, the locks / latches can be located in a manner that relates to the visual elements, (*e.g. lever handles*) alternatively, and particularly where common case dimensions for each function are used, securing hardware of this type can be located to the centre mortise position. (*As illustrated in Fig. 9.42*).

**NOTE 1:** Care should be taken to avoid conflicts between the location of securing hardware and glazed apertures.

**NOTE 2:** For some fire door applications it is necessary to use intumescent gaskets, generally under the lock / latch forend and under strike plates. It is the responsibility of the person fitting hardware to ensure that intumescent gaskets complying with test / assessment data relating to the door leaf construction and / or the particular hardware product, are fitted in accordance with the fire test / assessment data. (See BS 8214).

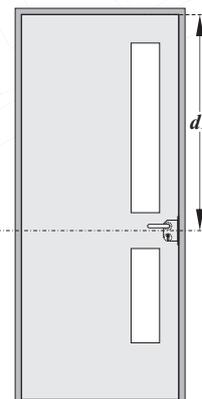
**General Method  
Locating Locks / Latches:**

*Fig. 9.42*



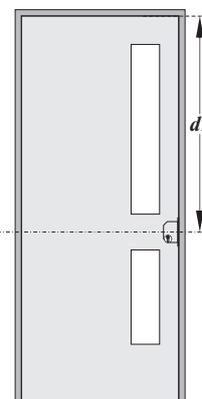
**LATCH**

*d1* = Dim. from the top of the door to the centre line of the latch mortise.



**SASHLOCK**

*d1* = Dim. from the top of the door to the centre line of the latch mortise.



**DEADLOCK/  
NIGHTLATCH**

*d1* = Dim. from the top of the door to the centre line of the latch mortise.

## Door Assembly Coordination - Operational Considerations - Door Growth Formula:

Fig. 9.43

When a door operates it will swing around the axis of the hanging device. The actual operating gap required for the door leaf to clear the frame (or adjacent door if a pair) will vary according to the following formula:

$$= \left[ 2\sqrt{(a + b)^2 + (c + d)^2} \right] - a + b$$

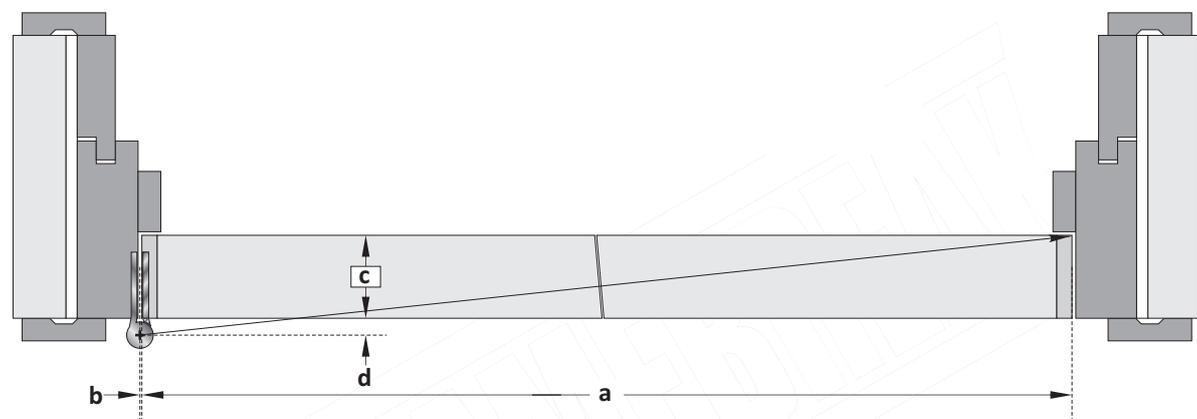
**a** = Door leaf width.

**b** = Dimension from the hanging stile to the pivot centre of the hanging device.

**c** = Door leaf thickness.

**d** = Dimension from the opening face of the door to the pivot centre of the hanging device.

*NOTE: Dimensions b & d can be a negative figure for double action door assemblies.*



### Adjusting for Door Growth:

'Door Growth' relates to the throw of the door during its initial movement (until the door leaf clears the frame or the adjacent leaf) from the closed position.

For wide and thin doors it is likely that 'door growth' will not generally give rise to problems as the growth takes place within the operating gaps (with tolerances) provided for by reference to BS4787 Pt.1.

Door Growth can become a problem where thick / narrow doors are used. e.g. a 600mm wide x 54mm thick door hung on single action pivots with a 32mm projection to the pivot centre will require an operating gap of 6 ~ 7mm between the door edge and the closing jamb for the door to clear the frame with a square edged door leaf.

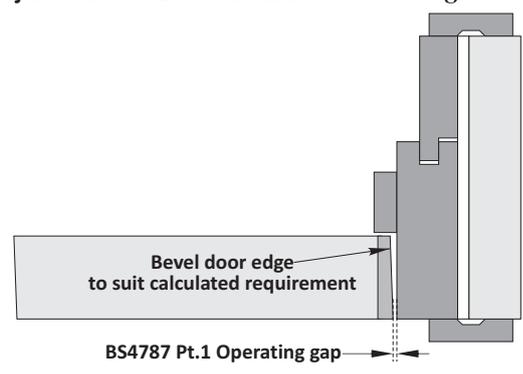
For single action doors the operating gaps described by reference to BS4787 Pt.1 should always be measured from the opening face of the door excepting at the threshold where the measurement applies at any point within the thickness of the door.

For double action doors the measurement applies to the narrowest point within the thickness of the door.

Adjustments to accommodate 'door growth' should be made to suit the particular location and by bevelling the closing stile of the door. This may be referred to as a 'leading edge'.

Some manufacturers offer a 'factory bevel' (leading edge) service as an optional extra. This service usually provides for a fixed 2 ~ 3° bevel that will suit most applications.

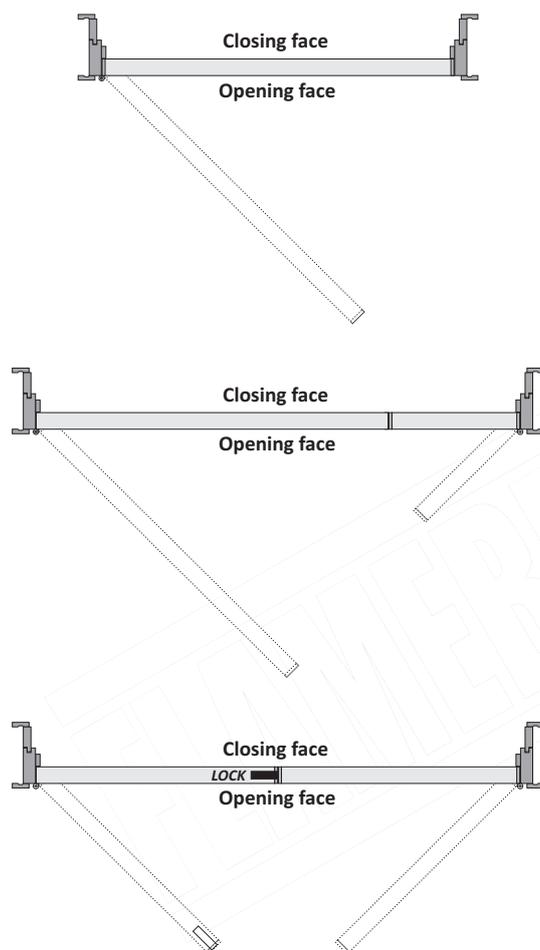
### Adjustment for Door Growth: Fig. 9.44



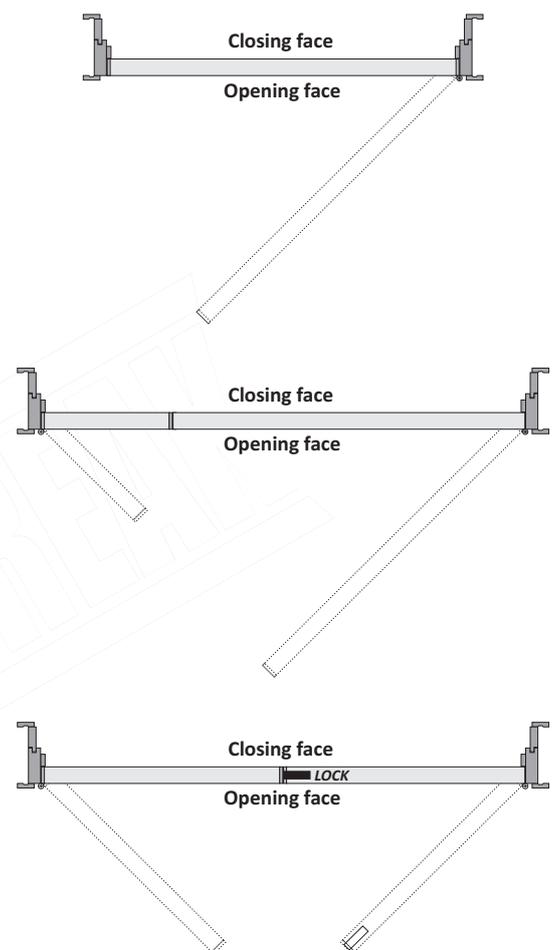
**Method of Handing:**

*Fig. 9.45*

**LH (Left Hand) Door Assemblies.**



**RH (Right Hand) Door Assemblies.**



**Method of Handing:**

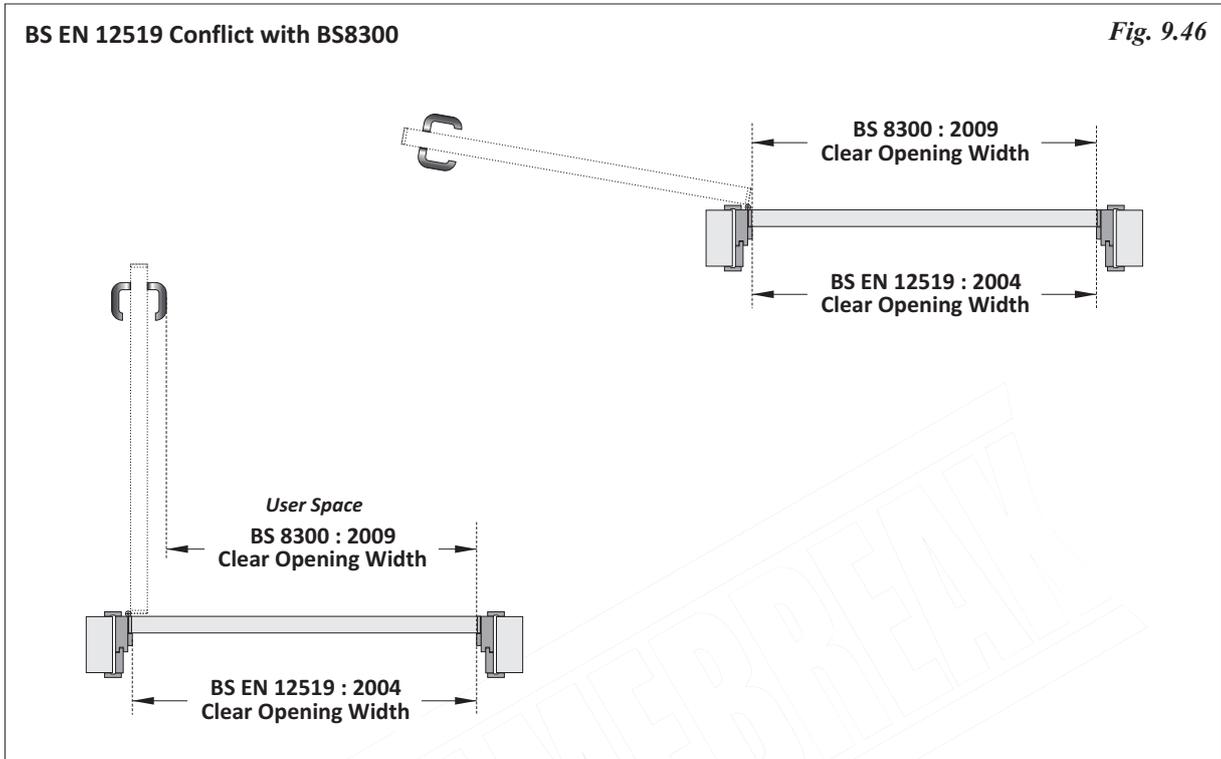
The recommended Method of Handing is culled from BS EN 12519 which is extended to include unequal pairs.

When facing the opening face of the door, if the knuckle of the hanging device is to the left then this is a LH (*Left hand*) door. If the knuckle is on the right then this is a RH (*Right hand*) door.

For unequal pairs the doors are handed in the same manner, relative to the wider door leaf.

For equal pairs, the doors are handed in the same manner but related to the 'active' leaf, i.e. first operating leaf. This will generally only apply to rebated pairs but may also apply to doors fitted with a latch or lock with the handing defined to describe which leaf is to be fitted with this hardware.

The 'Opening' and 'Closing' face of a door leaf is defined by reference to BS EN 12519 and may provide for a useful reference for doors faced with different materials on each face or for the location of hardware elements e.g. signage.



### BS EN 12519 Conflict with BS8300 & Building Regulations - (England & Wales) - Approved Document 'M'.

BS EN 12519 : 2004 defines the clear opening width as a fixed dimension between the faces of the frame door stop.

BS 8300:2009+A1:2010 defines the clear opening width as a variable being the effective opening after the deduction of projections into the BS EN 12519 clear opening space. To assist identification, of the requirements, (*pending amendment of these standards*) this document refers to the BS8300 clear opening width as the 'User Space'.

The 'User Space' is a variable that is influenced by the following:

- The position of the door leaf when in the open position.

**NOTE:** *If the door is opened to the point where the heel of the door aligns with the face of the hanging jamb doorstop the 'User Space' is equal to the clear opening.*

- Door thickness.
- Doorstop dimensions.
- Location of the pivot centre of the hanging device.
- Projection of hardware (*e.g. lever handles*) into the clear opening space.

**NOTE:** *Generally this consideration does not apply to single action overhead closers or other devices that would not normally encroach into the 'User Space'.*

### Definitions:

For the purpose of this document the following definitions apply:

*NOTE: Definitions are culled from BS EN 12519 : 2004 or by reference to BS6100 documents where possible.*

#### active leaf

leaf of a multi-leafed door set or door assembly intended to move first to provide opening. Otherwise referred to as the primary leaf. *See: BS EN 12519 : 2004*

#### architrave

trim item used to cover installation gaps between the frame and the surrounding structure. *See: BS EN 12519 : 2004*

#### clear opening dimension

the clear opening width is the dimension from the face of the doorstop on one jamb to the corresponding position at the opposite jamb. The clear opening height is the dimension from the bottom of the head door stop to the top of the finished floor level. *See: BS EN 12519 : 2004*

*\* NOTE: For BS8300 - Provision for the Disabled - The clear opening width is defined as above for doors that open more than 90°. For doors that are restricted to open to 90° the clear opening width is further defined as above less half the thickness of the door leaf, less the dimension of the projection of any ironmongery into the 'traffic' space.*

#### clear glass opening (cgo)

the area of a glazed aperture after glazing bead has been fitted. *(Not defined)*

#### closing face

the face of a single action door that contacts the door stop when the door is closed. *See: BS EN 12519 : 2004*

#### coordinating dimensions

theoretical design dimensions used for the coordination of building elements including nominal opening height and width dimensions of openings to receive door sets or assemblies. *See: BS EN 12519 : 2004*

#### coordinating height (transoms & over panels):

the dimension from the bottom of the frame jamb to the top of a transom rail, measured at the door leaf position OR the dimension from the bottom of the frame jamb to the under side of an over panel measured relative to the opening face of the door leaf, at the time of manufacture. *Not Defined*

*NOTE: Relevant to storey height assemblies only.*

#### cover fillet

fillet to cover a joint in joinery or between joinery and the adjoining work. *See quadrant BS6100-4.4*

#### DATUM

fixed position in height above the nominal floor level used as a reference by a door assembly manufacturer (and other trades) for the determination of door assembly dimensions and door set component location dimensions to ensure alignment of components with adjacent locations. *See Precision Projects Pages 8.23 & 8.24 - Not defined*

#### door assembly

complete assembly as installed, including door frame and one or more leaves, together with its essential hardware supplied from separate sources. *See: BS EN 12519 : 2004*

#### door assembly - 'knock down'

frames are supplied separately with frame jambs / heads & transom rails cut to size and factory jointed for site assembly. Frames are not prepared to receive hardware. Loose doorstop and architrave supplied over length to be cut to size and jointed on site. Door leaves are supplied separately and may be edge machined only (where specified) for non projecting hardware.

#### door assembly - 'door assembly kit'

doors and frames supplied as describe for door set 'knock down' but delivered at the same time and packed into location kits that may include specified items of hardware.

#### door bottom rail

the bottom edge of a door leaf *See: BS EN 12519 : 2004*

#### door frame

part of the door assembly from which the doors hang. *See: BS EN 12519 : 2004 & BS6100-1.3.5*

#### door growth

the extent of the movement in the horizontal plane that a door requires to clear a frame jamb (or adjacent leaf if a double leaf door assembly) during operation. This is a variable related to the door leaf width, door leaf thickness and the location of the pivot centre around which the door swings. Related to Operating gaps. *Not defined - See leading edge.*

#### door head

the top edge of a door leaf *See: BS EN 12519 : 2004*

#### door height door set / assembly

a door set or door assembly without an over panel or fanlight. *Not defined*

### Definitions contd:

#### door leaf

hinged, pivoted or sliding part of a door assembly or door set. *See: BS EN 12519 : 2004 & BS6100-1.3.5*

#### door leaf height

the overall height of a door leaf at the time of manufacture. *See: BS EN 12519 : 2004*

#### door leaf width

the overall width of a door leaf at the time of manufacture. *See: BS EN 12519 : 2004*

#### door leaf thickness

the thickness of a door leaf, at the frame rebate position, excluding any beading or planted decoration at the time of manufacture. *Not defined*

#### door set / doorset

complete unit consisting of a door frame and a leaf or leaves, supplied with all essential parts from a single source. *See: BS EN 12519 : 2004 & BS6100-1.3.5*

#### door stile

the vertical edges of a door leaf. *See: BS EN 12519 : 2004 & BS6100-4.4*

#### door stop

an element of a door frame that limits the swing of a single action door leaf. *See: BS EN 12519 : 2004 BS6100-1.3.5 & 4.4*

#### double action door

hinged or pivoted door that can be opened in either direction *See: BS EN 12519 : 2004*

#### double leaf door set / doorset

otherwise referred to as a pair of doors where two door leaves are used in a single plane with each leaf attached to a different jamb. *See: BS EN 12519 : 2004 & BS6100-1.3.5 (Conflicting definitions)*

#### double door door set / doorset

otherwise referred to a 'back to back' door sets where two doors are hung from a single frame with coordinating width dimensions suitable for a single leaf door set. *See: BS EN 12519 : 2004*

#### equal pair

a double leaf door assembly where each leaf is of equal width. *Not defined*

#### extension lining

a frame component added to the frame lining to extend the dimensions of the frame to suit a specified frame partition thickness. *Not defined*

#### external door

a door leaf that is directly exposed to external environmental conditions on one or both sides of the door leaf. *See: BS EN 12519 : 2004 & BS6100-1.3.5*

#### fanlight

the space between a frame transom rail and the frame head that is generally glazed. *See: BS EN 12519 : 2004 & BS6100-1.3.5 & BS6100-1.3.5*

#### finished floor level

the level above or below the nominal floor level resulting from the application of finishes and / or other building design considerations related to finished floor levels. Floor finishes may include carpet, vinyl or ceramic tiles, wood or laminate flooring etc. *Not defined*

#### flush door (leaf)

a fabricated door leaf that is flush on both faces of the door leaf. *See: BS EN 12519 : 2004 & BS 6100-1.3.5*

#### flush over panel

a panel located between a door leaf and a frame head to provide for storey height door sets when used without a transom rail. *Not defined*

#### frame jamb

the vertical outer components of a door frame. *See: BS EN 12519 : 2004 & BS6100-1.3.5*

#### frame lining

the primary frame jamb and head components of a door frame that form the outer perimeter of a door set or door assembly before the addition of architrave extension linings etc. *BS6100-1.3.5*

#### frame mullion

a vertical section of a door frame that is located between the frame jambs. *See: BS EN 12519 : 2004 & BS6100-1.3.5*

#### frame nominal opening width / height

the dimensions between the faces of a frame at the frame reveal (*at the door leaf position*) in width and from the bottom of the frame jambs or top of a sill to the frame reveal (*at the door leaf position*) at the frame head or transom rail. *See shoulder dimensions. See: BS EN 12519 : 2004*

#### frame nose dimension

the visible part of a frame in elevation when viewed from the opening face of a door set or door assembly when the door is in the closed position before the addition of architrave. *Not defined*

### Definitions contd:

#### frame partition thickness

the overall dimension of the frame, including extension linings but excluding architrave. May be different to the wall partition thickness. *Not defined*

#### frame rebate

the section formed in a frame to create a housing to receive a single action door leaf. *BS6100-4.4*

#### frame reveal

the dimension from the nose of the frame to the face of the doorstep. This is related to the door leaf thickness and may vary for any given door thickness to accommodate sealing systems or the extent to which the door leaf is to be set back from the face of the frame. The internal side surfaces of a door frame at the door leaf position. *BS6100-1.3.5*

#### frame sill

a frame component that is jointed to the frame jambs at the bottom of a door set or door assembly. *See: BS EN 12519 : 2004 & BS6100-1.3.5*

#### frame transom

a horizontal frame section that is jointed to the frame jambs at a position between the door leaf and the frame head to provide for extended height door sets / door assemblies. *See: BS EN 12519 : 2004 & BS6100-1.3.5 & 4.4*

#### frame width / height

the overall width of a frame excluding architrave in width. the overall dimension from the bottom of the frame jambs and / or bottom of a sill if used to the top of the frame head excluding architrave. *See: BS EN 12519 : 2004*

#### glazing bead

door components used to secure glass in a door leaf or frame. *See: BS EN 12519 : 2004*

#### glazing system

complete system including linings, gaskets, seals and beading required to secure glass in a door leaf or door frame. *Not defined*

#### hardware

door set / door assembly components usually in metal that are fitted to a door or frame to provide for the operation and securing of a door leaf. *Not defined*

#### inactive leaf

leaf of a multi-leafed door set or door assembly, intended to be moved after the active leaf. Otherwise referred to as the secondary leaf. *See: BS EN 12519 : 2004*

#### installation gaps

the spaces required between a door frame and a surrounding structure to provide for the installation of 2nd. fix door sets. *Not defined*

#### internal door

a door leaf located between two internal spaces. *See: BS EN 12519 : 2004 & BS6100-1.3.5*

#### ironmongery

See hardware. *Not defined*

#### left hand door

door which opens with a rotating movement with the hinge position on the left hand side when viewed from the opening face. When viewed on plan the door will move in a clockwise direction. *See: BS EN 12519 : 2004*

#### joinery door

a door leaf constructed of solid timber components that are jointed together. *BS6100-4.4*

#### leading edge

the bevelling of the closing stile of the door leaf to accommodate 'door growth' in operation. *See door growth.*

*NOTE: The leading edge is generally applied by the installation contractor to suit the requirements for each location. However, some manufacturers offer a factory applied 'leading edge' facility as an optional extra.*

#### moulded door stop

a door stop that is machined from a single piece of timber and which is an integral part of that frame jamb, head or transom. *(Suitable for use with door leaves of a known or fixed thickness). See door stop. BS6100-4.4*

#### nominal floor level

a coordinating level used for determining a prepared opening height and the level for applied floor finishes. *See: BS EN 12519 : 2004*

#### non projecting hardware

items of hardware that can be fitted within the thickness of the door leaf without projecting beyond the face of the door. *Not defined*

*NOTE: Butt hinges are generally considered as being non projecting items of hardware.*

#### operating gaps

the gap dimensions between a door leaf and a frame or an adjacent door that are necessary to ensure that the door leaves do not contact with the frame or adjacent door during the operation of the door leaves. *Not defined*

## Definitions contd:

### over panel

a panel, usually constructed to the same details as a door leaf to fill a space above a door leaf when used with storey height door sets or door assemblies. **Not defined**

### panelled door / glazed door leaf

a flush door that is cut to form glazing apertures or to receive panels *OR* a joinery door fabricated to form glazing apertures or a space to receive panels. **See: BS EN 12519: 2004 & BS6100-1.3.5**

### performance door sets / assemblies

the basic function of a door is to provide a facility for 'traffic' to pass from one side of a wall to another. The term 'Performance door set / assembly' is used where a secondary performance is required. Secondary performances may include: fire, smoke sealing, sound attenuation, air permeability, weather sealing, etc. **Not defined**

### planted door stop

a door stop that is added as a separate component to the frame jamb, head and / or transom (*suitable for use with door leaves of an unknown or variable thickness*). **BS6100-4.4**

### precision projects

projects where structural and design considerations require a high level of accuracy and precise dimensions for the purpose of manufacturing door assembly components. All details necessary to determine precise dimensions must be known to the door set / assembly manufacturer in advance of the commencement of manufacture. **Not defined**

### prepared opening

the opening (*height, width and thickness*) in a building that is prepared by the builder to receive door sets / door assemblies of the designed details and dimensions. The prepared opening dimensions may be the same as the structural opening dimensions or related to the coordinating dimensions by reference to BS EN 12519 according to the nature of the design of the structure. **Not defined**

### primary leaf

**See active leaf**

### quadrant

a trim item usually used in conjunction with architraves to cover installation tolerances at a junction between components. **See cover fillet**

### rebate depth (frame)

**See frame reveal.**

### right hand door

door which opens with a rotating movement with the hinge position on the right hand side when viewed from the opening face. When viewed on plan the door will move in an anti-clockwise direction. **See: BS EN 12519: 2004**

### secondary leaf

**See inactive leaf. Not defined**

### sequential opening

a term used in connection with double leaf door sets to identify a requirement that door leaves should be operated in sequence. **See active leaf. Not defined**

### 'shooting'

a trade term to describe the adjustment of door leaves by planing or otherwise easing to ensure the correct operation of a door leaf **Not defined**

### shoulder dimensions

a trade term to describe the internal dimensions of a door frame at the door leaf and or panel positions at the time of manufacture.

**NOTE: This is the same as the Frame Nominal opening for width. For height; the shoulder height is the dimension from the bottom of the jambs (or top of the sill) to the under side of the frame head at the door position for door height assemblies. A second shoulder height is defined for storey height assemblies from the bottom of the jambs (or top of a sill) to the under side of a transom at the door leaf position.**

### simultaneous opening

a term used in connection with double leaf door sets to describe a requirement where the door leaves may be operated in any sequence or at the same time. **Not defined**

### single action door

hinged or pivoted door that can be opened in one direction only **See: BS EN 12519: 2004**

### sill

**See frame sill**

### solid door stop

a door stop that is machined from a single piece of timber and which is an integral part of that frame jamb, head or transom. (*Suitable for use with door leaves of a known or fixed thickness*). **See door stop. BS6100-4.4 - See moulded doorstop.**

**Definitions contd:**

**storey height door set / assembly**

a door set or door assembly that is of extended height generally to fill a full floor to ceiling space and that may be constructed using flush or transomed over panels or fanlights. *Not defined*

**structural reveal**

side surfaces of an opening in a wall. *See: BS EN 12519: 2004*

**threshold**

the space at the bottom of a door set or door assembly under the door leaf when the door is in the closed position. *See: BS EN 12519: 2004 & BS6100-1.3.5*

**threshold strip**

a component that is not part of a frame that is located under the door when the door is in the closed position. A threshold strip may be in any material and may be profiled and / or rebated. *See BS6100-1.3.5 alternative to threshold*

**'traffic'**

the users of a doorway including persons and equipment. *Not defined*

**transomed over panel**

a panel used above a door leaf in a space created between a transom rail and a frame head in a storey height door set / assembly. *Not defined*

**unequal pair**

a double leaf door set / assembly where one of the leaves (*usually the active leaf*) is wider than the other leaf. *Not defined*

**NOTE:** *BS6100-1 has been withdrawn since the original publication of this document but references are retained to indicate the source of the definition.*

This Section is an advisory document only included to assist users of FLAMEBREAK™.

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FLAMEBREAK



### Acoustics Explained:

This introduction attempts to simplify what is an extremely complex subject. Where acoustic considerations are critical, reference should be made to qualified Acoustic Engineers.

'Acoustic' is a term that is used loosely in connection with door assemblies. When considering the 'acoustics' of a room or space, acoustics relates to a number of considerations.

When sound is generated, the amplitude (*loudness*) refers to sound pressure which is expressed in decibels 'dB'. When striking a surface, some sound will be reflected, some will be absorbed (*converted to heat*) and some will pass through the structure. Sound will lose energy (*amplitude*) with distance in accordance with the inversed square law.

The time taken for the sound pressure to drop by 60dB is measured. This loss of sound pressure related to time is measured as a 'reverberation time'. If the time it takes for the sound pressure to reduced by 60dB is less than 0.3 seconds the room will sound 'dead' with hearing made difficult due to an apparent loss of bass. If the reverberation time is in excess of 5 seconds the reverberation (*or echos*) can give rise to confusion which again makes hearing difficult. The optimum reverberation times may vary according to the intended use of the space. A reverberation time of 1 second might be ideal for a lecture hall providing for clear speech but this might not be a preferred performance for a concert hall where a reverberation time of up to 3.5 seconds would provide for fuller and richer musical sound. For 'general purpose' use Acoustic Engineers will generally try to 'tune' the space to provide for reverberation times between 1.5 ~ 2.5 seconds.

The reverberation times can be adjusted by the use of sound absorbers. i.e. by the use of materials that are less likely to reflect sound. Soft furnishings, carpet and curtains will provide for some sound absorbing properties. Mineral wool provides for a good example of a material that will readily convert sound energy into heat energy thus absorbing sound and consequently reducing the reflected sound. The performance of a sound absorber is measured by a 'coefficient of adsorption'.

The other issue of concern to Acoustic Engineers is the influence of sound created outside of the measured space and the ability of a structure to minimise the influence of an acoustic space by preventing or reducing the transfer of external sound through a structure. This is referred to as 'sound

insulation' and it is the measure that generally applies to structures between spaces. e.g. walls, windows and door assemblies. Thus, when referring to 'acoustic' doors we generally mean 'sound attenuating or insulating' door assemblies.

Sound is generated at different frequencies. The 'frequency' is the number of sound waves that pass through a given point in a second and described in 'Hertz' (Hz.) where 1 hertz = one wave per second. Differences in frequency can be identified by a change of pitch. An example of a high frequency sound might be a computer bleep (*approx. 2,500Hz.*) while a low frequency sound might be the hum of an electrical generator (*approx. 100Hz.*). Few sounds are made up of a pure single frequency. Sound is generally produced simultaneously over a range of frequencies. We might refer to the random structure of sound over a range of frequencies as noise, while sound produced over a range of frequencies in a structured manner might be referred to as speech or music. (*See Fig. 10.1 & 10.2.*)

The average human ear is not a perfect sound receiver. We cannot hear some very low frequency sounds e.g. at frequencies below (*about*) 20Hz. referred to as 'sub sonic'. However, we might feel low frequency sound as vibration. At the other end of the spectrum human hearing may not notice sound at frequencies in excess of (*about*) 20,000Hz. (*20kHz.*). This is referred to as the 'ultra sound region'. Bats navigate using sound in the ultra sound range and ultra sound can be used for medical purposes to create images. (*See Fig. 10.2.*)

Even within the audible range (*approx. 20Hz. ~ 20kHz.*) the human ear is less than perfect, being more sensitive to sound produced at frequencies of about 3,000 ~ 4,000Hz. (*3 ~ 4kHz.*) than sound produced at other frequencies. Thus, if sound is produced at the same amplitude (*or loudness*) at all frequencies, sound in the 3~4kHz. range will be perceived to be predominant. (*See Fig. 10.3.*)

ISO 140 sets out the range of frequencies used for the purpose of testing for acoustic performances. The test procedure for the measurement of sound attenuation is described by reference to BS EN ISO 10140-2 : 2010+A2:2014. This measures performances over a frequency range of 100Hz. (*Hertz*) to 3,150Hz.

*NOTE: A frequency range of 125Hz. ~ 4000Hz. is used for testing in the United States and Australia.*

### Acoustics Explained contd.:

The basic principles associated with testing for sound insulation performances are quite simple. The 'specimen' is located between a transmitting room and a receiving room. Sound is generated across the full frequency range determined by reference to the test standard in the transmitting room. The sound pressure levels on the receiving room side of the specimen are then measured. The sound pressure levels recorded in the receiving room can then be deducted from the sound pressure levels in the transmitting room with the resultant loss in sound pressure levels measured in decibels recorded at each of the measured frequencies.

For some purposes it is necessary to know the performances at particular frequencies but for most applications an average performance over the measured range is required. To determine this, the decibel reduction over the measured range could simply be averaged out. However, this would be misleading as this would not reflect human perception resulting from the imperfections of human hearing.

To relate to human perception, the average sound reduction is amended to provide for a 'weighted index' identified by the use of the prefix 'Rw'. The weighted index is calculated by reference to BS EN ISO 717-1:2013.

In the absence of a vacuum, most spaces will be subject to a background noise.

### Typical Background Noise Levels:

	dBA
Library or Museum	40
Private Office	45
Quiet Restaurant	50
General Office	55
General Store	60
Average Restaurant	65
Mechanised Office	70
Noisy Canteen	75
Factory Machine Shop	80
Main Street (at kerbside)	85
Plant Room	90

The sound insulating performances determined by testing can be applied by deducting the measured performance weighted index (*Rw*) from the source sound. Thus, a sound insulation barrier providing for a performance of (*say*) *Rw*.30dB will reduce the sound pressure level generated in (*say*) a Plant Room from 90dBA to 60dBA. Conversely, to reduce the sound level in a Plant Room to the background sound level in (*say*) a Private Office, the sound insulation barrier needs to provide for a performance of 90dBA - 45dBA = *Rw*.45dB.

**NOTE:** The 'A' suffix indicates a 'weighted' measurement.

On site, sound attenuating measurements relate to the complete barrier between the sound source and the receiving area and will measure the overall performance of the wall, door assembly, window etc. that makes up the barrier. (See page 10.4).

### Other Acoustic Terms:

**Octave:** An octave is a doubling or halving of a frequency. Doubling would involve going up to the next higher octave while halving involves coming down an octave.

Expressed simply, one octave is a difference resulting from the doubling or halving of frequency (*or pitch*).

**STC:** By reference to European tests, the weighted index is expressed by the use of the prefix 'Rw'. For tests carried out in the United States over a slightly different frequency range (125Hz. ~ 4,000Hz. as opposed to the European 100Hz. ~ 3,150Hz.) the prefix 'STC' might be used. STC = Sound Transmission Class.

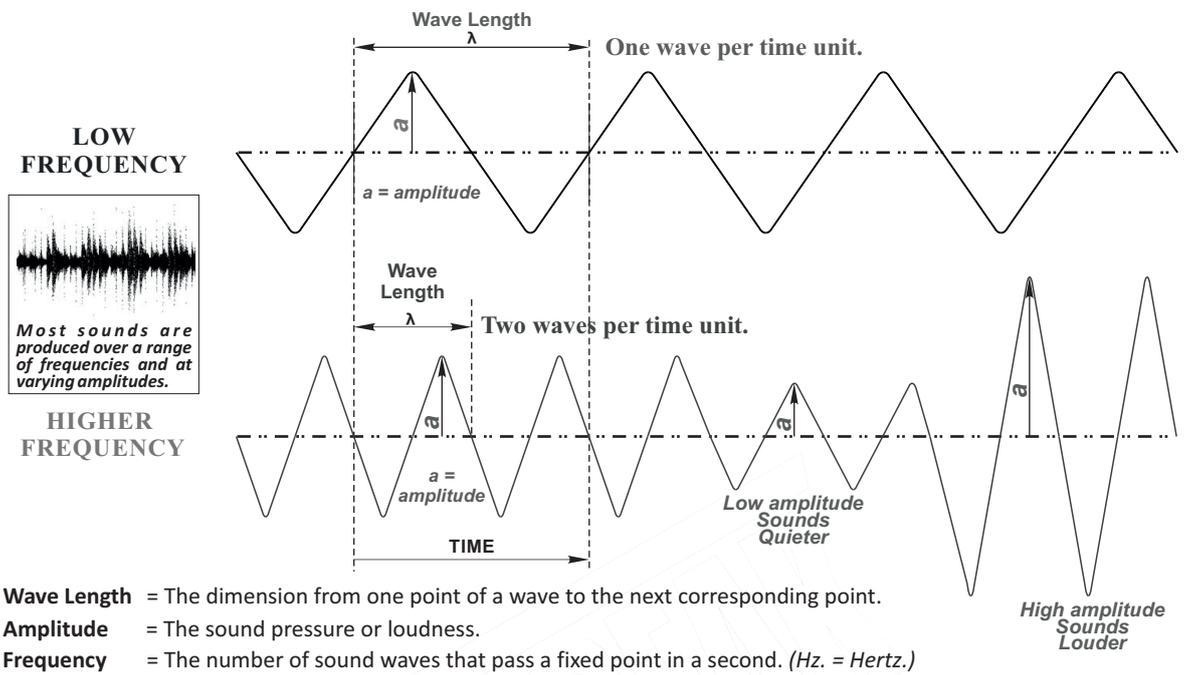
For all practical purposes *Rw*. & STC may be taken to be equal performances +/- 1dB.

### Rule of Thumb:

Sound attenuation is measured using a logarithmic scale. Within the range applicable to most door assemblies, an *Rw*.3dB variation in performance may be taken to be a doubling or halving of performance. e.g. an *Rw*.36dB door assembly provides for (*approx.*) double the performance of an *Rw*.33dB door assembly.

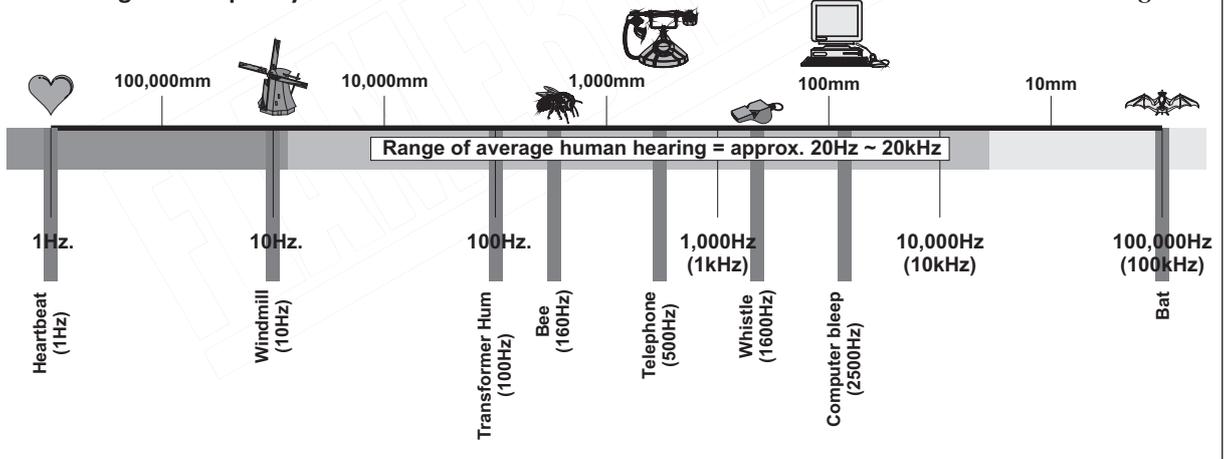
Wavelength Amplitude & Frequency

Fig. 10.1



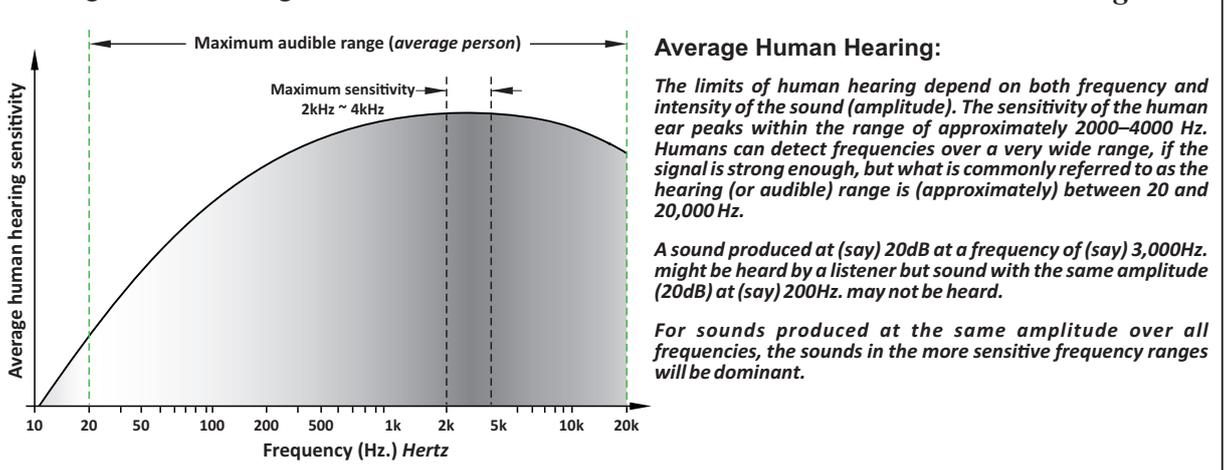
Wavelength & Frequency

Fig. 10.2



Average Human Hearing

Fig. 10.3

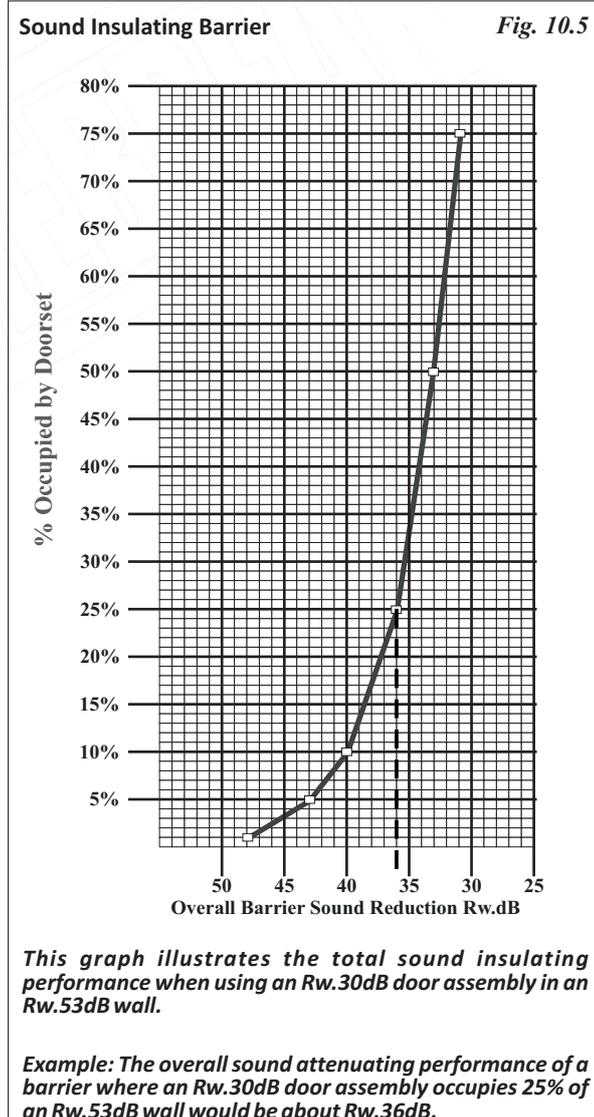
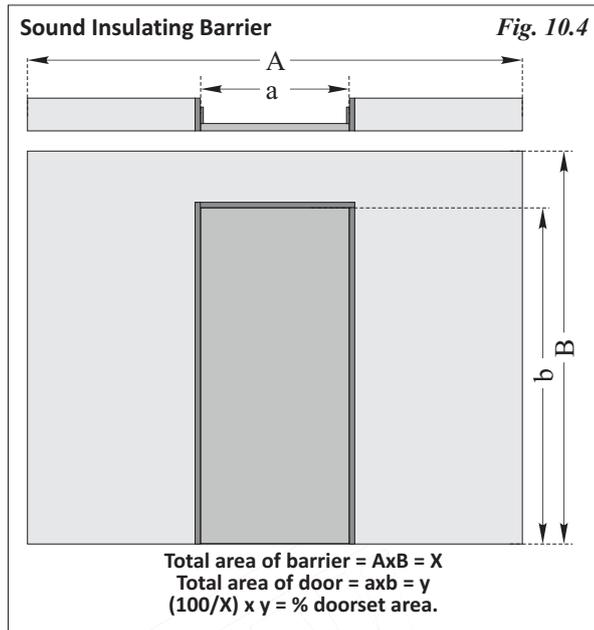


### Sound Insulating Barrier:

The objective when considering sound insulation is to reduce the external sound levels to the background levels in the protected area. Thus, if (say) a Private Office is located next to (say) a Factory Machine shop then, by reference to these typical background noise levels, the barrier between the Machine Shop (generating 80dBA) is required to reduce the sound pressure levels by 35dBA to match the background noise levels in the Office (45dBA). i.e. the total barrier between the Machine Shop and the Office is required to reduce the noise levels by  $80 - 45\text{dBA} = 35\text{dBA}$ .

It should be appreciated that the average performance of the complete sound attenuating barrier is the important thing. A door assembly, as an operable product, is likely to be a weak point in a sound insulating barrier. However, for the example given above, it may not be necessary to use an  $R_w.35\text{dB}$  rated door assembly design.

The required performance of the door assembly may vary according to the performance of the surrounding structure and the percentage area of the sound attenuating barrier that is occupied by the door assembly.



### Sound Insulating Door Assemblies:

Generally any material will provide for a sound insulating performance if used as a barrier between a sound source and a 'protected' area. Some materials provide for better performances than others.

Door assemblies are essentially functional products with a primary purpose to provide for a means for 'traffic' to pass from one side of a wall to the other. For this purpose the door must be open. As the thing that we are trying to stop is the transfer of airborne sound then an open door will not provide for any performance. When the door is closed, the sound insulating performance will be influenced by the residual airflow across (*or around*) the door assembly. To minimise the airflow it is necessary to use sealing systems.

Some door constructions have been specifically developed to provide for excellent sound insulating performances when used with suitable sealing systems. Some of these 'specialist' constructions rely on the mass law technology. i.e. generally increased mass provides for improved sound insulating performances. However, there is not a direct relationship between mass and the sound insulating performance. Adding a dense material such as lead will generally improve performances but this will also change the characteristics of the door assembly resulting in significant improvements at some frequencies but with little or no improvement (*or even a loss of performance*) at other frequencies. Other 'specialist' door constructions rely on air gap technology in a similar manner to that used for glazed units. Essentially the air trapped in a gap will convert sound energy into heat energy with an improvement in sound insulating performances. Use of facing materials that change the stiffness of the door, the use of hardware fittings or glazing that bridge the door thickness can have an adverse influence on doors of this design.

To determine the precise performance of a sound insulating door assembly design it is necessary to carry out testing of a specimen that is identical in all respects to the design that is intended for use. The following factors can influence sound insulating performances:

- Door size.
- Door assembly configuration.
- Facing materials.
- Glazing.
- Choice of hardware.
- Frame section dimensions.
- Sealing systems.
- Nature of the surround structure.
- Method and quality of installation.

The only certain method for determining the precise performance to be expected of a particular design is to test a product that is identical in all respects to the product that is intended for use in the building with the specimen installed into a structure in a manner that replicates precisely the methods intended for use.

FLAMEBREAK™ is essentially a general purpose door core material and has not been designed as a 'dedicated' sound insulating product. However, Pacific Rim Wood Ltd. have carried out an extensive range of tests to determine potential sound attenuating performances and to develop the product to suit the demands of published regulations, specifically:

*Building Regulations - (England & Wales) - Approved Document 'E'.*

*Building Bulletin 93 - Educational Establishments.*

To determine potential performances, tests were carried out on behalf of Pacific Rim Wood (UK) Ltd. using a 2040x926mm door leaf size, being the largest size single leaf dimension anticipated by reference to BS4787 Pt.1. The influence of meeting stiles was determined by use of smaller sized doors to create an unequal pair that would fit in the 'standard' frame used for the single leaf door tests.

When tested with glazing, the glass aperture dimensions were carefully calculated to provide for a clear glass area equal to 25% of the single leaf door area.

*NOTE: It is important to carefully seal around the glass using suitable mastic to minimise the risk of sound leakage through the beading system.*

The use of sealing systems is an essential requirement to provide for sound attenuating performances and these were carefully selected to provide for the following considerations:

**1/ The sealing systems should have minimal influence on the operation of the door, with due regard to BS8300 and Building Regulations - (England & Wales) - Approved Document 'M'.**

**2/ It should not be necessary to interrupt sound insulating sealing systems to accommodate items of hardware. (i.e. provide for a minimal risk of conflict between seals and ironmongery).**

**3/ Sealing systems used for sound insulation purposes should also be able to provide for smoke sealing performances (BS476 : Section 31.1).**

**4/ Sound insulating sealing systems should not conflict with intumescent sealing systems.**

### FLAMEBREAK™ and Sound Insulation:

To achieve desired performances for operational products such as a door it is necessary to use sealing systems to prevent the movement of air, (and consequently airborne sound) through and around the door assembly, when the door is in the closed position.

For lower performances, typically up to Rw.30dB, simple sealing systems can generally be used. For higher performances of (say) Rw.35dB + additional sealing may be necessary.

Perhaps the easiest way to appreciate this is to consider a bath full of water into which a bowl with a small hole in the bottom is floated. Where a low pressure is applied to the bowl the water will flow through the hole as a gentle trickle. When greater pressure is applied the water will eventually spout up rather like a fountain. To reduce the flow through the hole at the higher pressure a smaller hole (i.e. additional sealing) is required.

An extensive sound insulation test programme was carried out on behalf of Pacific Rim Wood (UK) Ltd. in 2008.

Since that time a number of door seal manufacturers / suppliers have carried out independent testing providing FLAMEBREAK™ users with a range of options.

Fully caulked test data for FLAMEBREAK™ door constructions is advised as follows:

FLAMEBREAK™ Type	Fully Caulked Performance Rw.
430	Rw.30dB
FF630	Rw.30dB
660	Rw.35dB

**NOTES:**

- 'Fully Caulked' = the door leaves were sealed on all edges in an inoperative condition using heavy duty sealants. This indicates the maximum potential performance for the base flush door construction.
- The fully caulked performances indicated in this section relates to a door leaf dimension of 2040x926mm. i.e. the largest internal single leaf size anticipated by reference to BS4787 Pt.1.
- Operational performance guidance is given by reference to Section 16 - Appendix by reference to test data provided by seal manufacturers / suppliers.
- It has been established by testing that the sound insulating performance of FLAMEBREAK™ doors can be improved by the use of glazing.

### Acoustic Seals:

There are a wide range of sealing systems available that are suitable for use as 'acoustic seals'.

Most seal manufacturers / suppliers will be able to provide base test data with recommendations to suit particular performance requirements. There are however some general issues to be considered as follows:

- **Conflicts with Hardware:** To minimise the risk of air (and therefore airborne sound) leakage, care must be taken to avoid the interruption of sealing systems to accommodate hardware, (OR, to provide for the making good of seal interruption).

- **Conflicts with other sealing: e.g. fire / smoke seals.**  
NOTE: Generally proven acoustic seals will also meet specification requirements for smoke sealing performances. i.e. seals that are effective at preventing the flow of airborne sound are also likely to be effective in the prevention of the flow of airborne particles.

- **Operating forces:** Efficient seals providing for excellent acoustic performance can often give rise to a 'bath plug' effect. i.e. additional force may be required during the initial opening of the door.

NOTE: This effect may be more apparent for higher performance acoustic door assemblies using multi bank sealing systems. Automatic opening / closing devices may be required for locations where Building Regulations - Approved Document 'M' - (BS 8300) considerations apply.

- **Minimal Interference:** It is generally recommended that fixed seals are located to ensure that they are in contact with the adjacent door or frame for the minimal amount of the swing of the door. Generally this will result in frame fixed seals being located towards the doorstop face (lining / frame rebate) with door leaf fitted seals located towards the opening face of the door.

NOTE: This will generally result in reduce influence on opening forces and will extend the working life of sealing systems.

- **Over Compression:** Care must be taken to avoid over compression of seals. This can lead to seal distortion, undermining of the sealing function, a need for increased operating forces and increased seal wear. Seal manufacturers / suppliers can generally provide for guidance relative to the particular seal type. In the absence of any other guidance, 50% compression of a sealing gasket may be taken as a guide for achieving optimum performance.

### Planning Sealing Systems:

Manufacturers / Suppliers of sound insulating seals will generally provide for guidance with regard to the preferred location of their seals.

A good guide for determining the suitability of a sealing system is to identify the sealing efficiency relative to a fully caulked performance for doors that are otherwise of the same construction.

**NOTE:** Whereas the seal efficiency system is suitable for applications where the particular requirement is less than the maximum seal tested performance it should not be used where higher than tested performances applications apply.

**Example:** Where an operational door assembly has been tested to provide for a performance of (say)  $Rw.35dB$  and the fully caulked performance of the same door assembly design is (say)  $Rw.37dB$  then the sealing system provides for 95% efficiency.

If the same sealing system is used with a door construction providing for a fully caulked performance in excess of  $Rw.37dB$  then the sealing efficiency may be less than 95%.

The efficiency of the sealing system is likely to be matched or even bettered if the same sealing system is used with a lower performing fully caulked construction. e.g.

Fully caulked = (say)  $Rw.40dB$  / Sealing efficiency = <95%  
i.e. operation performance likely to be less than  $Rw.38dB$ .

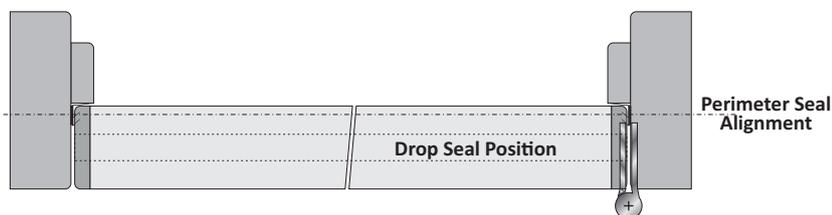
Fully caulked = (say)  $Rw.35dB$  / Sealing efficiency = or > 95%  
i.e. operation performance likely to be better than  $Rw.33dB$ .

The following details illustrate typical location details for sound insulating sealing systems with guidance with regard to considerations that should be taken into account to achieve optimum performances including:

**See Section 16 - Appendix for some Sound Insulating Seal Manufacturers / Suppliers data.**

### Typical Acoustic Sealing - Basic Sound Insulating Sealing

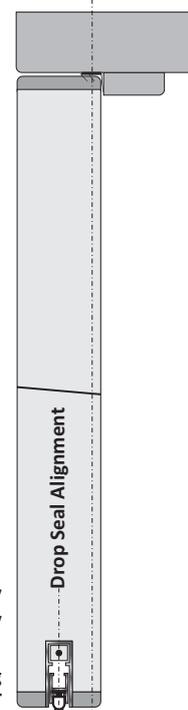
- Operating forces minimised as door is only in contact with perimeter seals for final degree of closing.
- Perimeter seals are aligned in a single plane at the head and jambs reducing the risk of flanking.
- Minimal risk of conflict with intumescent seals or hardware.



- Automatic door bottoms can generally be used direct onto smooth / level floor finishes (e.g. vinyl). In all other cases it is strongly recommended that threshold strips are to provide for:
- Threshold strips provide for good seating for the threshold sealing gaskets and provide for improved durability for Automatic Door Bottom - (Drop Seal) gaskets.

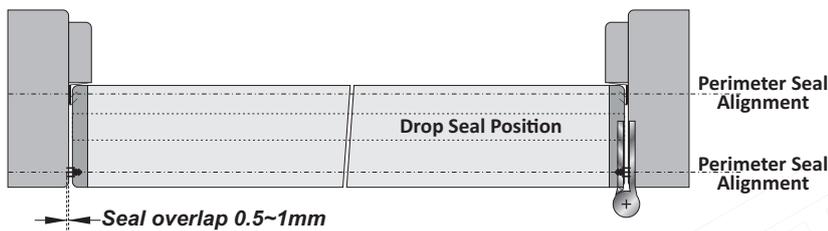
Perimeter Seal Alignment

Fig. 10.6



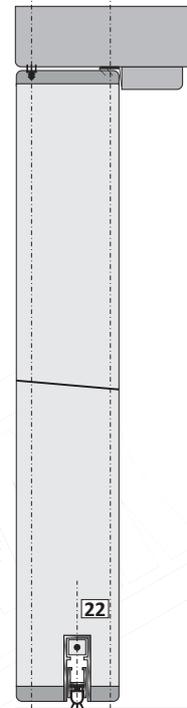
## Basic with Supplementary Sound Insulating Sealing

- Operating forces minimises as door is only in contact with perimeter seals for final degree of closing.
- Perimeter seals are aligned in a single plane at the head and jambs reducing the risk of flanking.
- Minimal risk of conflict with intumescent seals or hardware.
- Door leaf fitted supplementary seal is interrupted by hinges. This can be addressed by use of self adhesive 'tear drop' type seals fitted to either the door leaf or frame hinge blade to align with the supplementary seal.



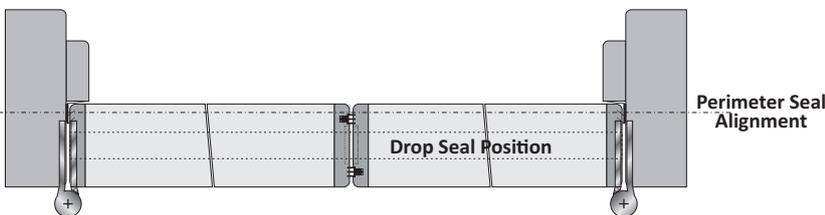
- Automatic door bottoms can generally be used direct onto smooth / level floor finishes (e.g. vinyl). In all other cases it is strongly recommended that threshold strips are to provide for:
- Threshold strips provide for good seating for the threshold sealing gaskets and provide for improved durability for Automatic Door Bottom - (Drop Seal) gaskets.
- Automatic door bottoms can be located off centre thickness to align as near as possible with perimeter seals.

Perimeter Seal Alignment **Fig. 10.7**



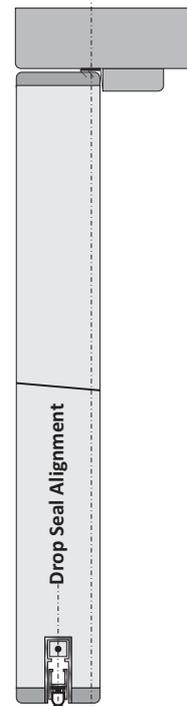
## Typical Acoustic Sealing - Basic Sound Insulating Sealing - Pairs

- Operating forces minimises as door is only in contact with perimeter seals for final degree of closing.
- Perimeter seals are aligned in a single plane at the head and jambs reducing the risk of flanking.
- Minimal risk of conflict with intumescent seals or hardware.
- Locate meeting stile seals as near as possible to align with perimeter seals and to avoid conflicts with other seals and hardware.



- Automatic door bottoms can generally be used direct onto smooth / level floor finishes (e.g. vinyl). In all other cases it is strongly recommended that threshold strips are to provide for:
- Threshold strips provide for good seating for the threshold sealing gaskets and provide for improved durability for Automatic Door Bottom - (Drop Seal) gaskets.

Perimeter Seal Alignment **Fig. 10.8**



### Seal Types:

Generally Acoustic Seals will fall into two categories:

**Perimeter Seals:** Seals designed to seal at the perimeter of the door leaf generally at the head and jambs (*unless a 4 sided frame is used*) and meeting stiles for pairs.

There are numerous designs for perimeter seals, some with simple self adhesive fixing others with aluminium or plastic carriers. Reference should be made to the seal manufacturers / suppliers literature to determine the most appropriate seal for the particular application.

**NOTE:** *When locating perimeter seals consideration must also be given to the operation of the door and in particular the 'door growth' during operation that may require the use of a 'leading edge'. See the ASDMA publication 'Guidance and Recommendations for the Coordination of Bespoke Doors Assemblies' for further information on this subject.*

The use of pencil rounds or small splays to the edges of door leaves that contact the seals is recommended to provide for a 'lead' for the activation of the seals and for improved seal life.

**Threshold Seals:** Seals designed to seal the gap between the bottom edge of the door and the floor.

There are two fundamental types of threshold seal. The most common is perhaps the 'Automatic Door Bottom' (*or 'drop seal'*). These are mechanical devices where a gasket is extended from the bottom of the door by the action of a plunger that contacts the frame jambs during the final stages of closing.

The other type is the fixed bottom edge seal.

Fixed bottom edge seals should normally be used with a threshold strip to ensure that the door leaf fitted seals clear the floor for the whole of the swing of the door.

Whereas automatic door bottoms can seal directly onto the floor it is recommended that these are used with threshold strips (*particularly where floors are carpeted*) unless the floor is smooth and level.

Stepped thresholds incorporating seals will generally provide for optimum threshold sealing with these being recommended for use in locations where 'trip hazard' considerations may not apply. e.g. Plant Rooms.

**Optimum Performance:** Optimum sealing performance is likely to be achieved where the perimeter and threshold sealing gaskets are in a single plane within the thickness of the door.

### The influence of Hardware:

Provided that care is taken to select and position hardware to avoid the need to interrupt sealing systems, the choice of hardware will generally have little effect on sound attenuating performances.

Hardware items that require the removal of any of the door core should be kept as small as possible, with gaps around the hardware kept to a minimum.

The main risk to the performance of a sound attenuating door assembly results from the creation of flanking routes through the door that may be created by when using hardware items that pass through the thickness of the door. e.g. lever handles, cylinders / keyholes. The use of lever sets with back plates will generally allow for the use of mastic (*or other sealants*) to restrict the passage of airborne sound. Similar action can be taken with cylinders. For key ways, the use of escutcheons with escutcheon plates will generally provide for a sufficient barrier.

**NOTE:** *Letter plates passing through the door have been successfully tested for performances up to Rw.40dB.*

### Flanking:

'Flanking' is the term given to the leakage of airborne sound through or around the door leaf and / or the door assembly.

The main causes of flanking are:

- *Insufficient care and adjustment when fitting seals.*
- *Worn seals.*
- *Interruption of seals to receive hardware.*
- *Inadequate sealing around hardware items that pass through the door.*
- *Inadequate sealing around glazed apertures.*
- *Inadequate sealing between the frame and the surrounding structure.*

When fitting seals, the main areas of weakness are at the junctions between horizontal and vertical seals i.e. at the four corners of a single leaf door assembly. Seals should extend to the full shoulder height and width of the frame with the head seal carefully jointed to the jambs seals.

The operating gap at the seal position should suit the dimensions of the seal. Generally, for seals that act on the edges of the door leaf, the seal should overlap the door (*or frame*) by 0.5 ~ 1mm to provide for optimum acoustic sealing with minimal effect on operating forces.

**NOTE:** *This recommendation may vary according to the particular seal type. The particular seal manufacturer / supplier installation recommendations take precedence in the event of any conflict with this advice.*

### Perimeter Seals:

For perimeter seals acting on the face of a door leaf it is recommended these 'compression' seal gaskets are set to compress not more than 50% unless the seal manufacturers / suppliers fixing instructions advise otherwise.

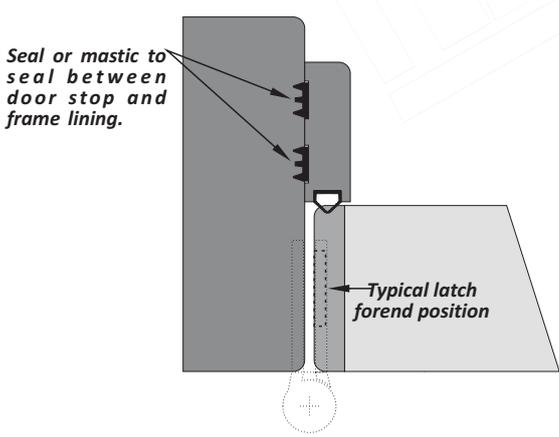
Carefully locating seals, particularly perimeter seals to suit the action of the door can ensure that the seals are in contact with the door / frame for the minimum amount of the swing of the door thus reducing the influence on operating forces and reducing wear resulting from friction.

The use of door leaf and frame designs that provide for a pencil round at junctions where the seals meet the door leaf or the frame are recommended. These will act as a lead to the compression of the seal providing for optimum performance and improve seal durability.

### Typical Perimeter seals may include:

- Door stop mounted 'O' seals.
- Combined Intumesce / Blade seals.
- Frame reveal seals and door edge seals located to provide for minimal interference with the operation of the door and to accommodate most hardware installations.

**Door stop mounted 'O' seal** *Fig. 10.9*

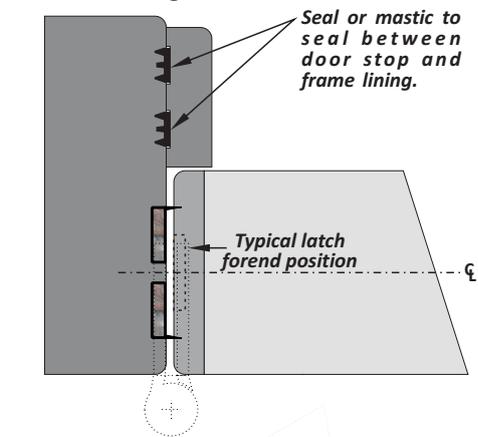


*Seal or mastic to seal between door stop and frame lining.*

*Typical latch forend position*

*Door stop mounted 'O' seals provide for a minimal risk of conflicts with hardware and have minimal effect on opening forces. However, increased force may be required to close and latch a door and seals acting on the face of the door only have a poor ability to accommodate any distortions.*

**Combined Intumescent / sound insulating seal** *Fig. 10.10*



*Seal or mastic to seal between door stop and frame lining.*

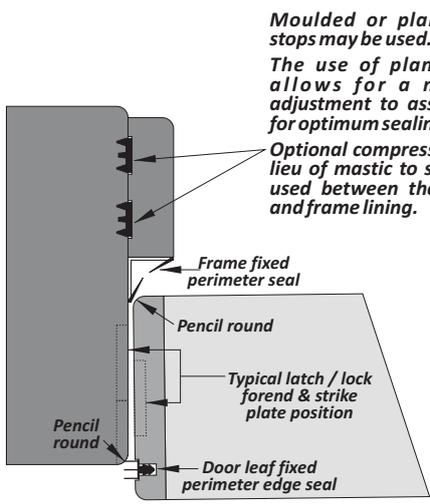
*Typical latch forend position*

*Combined intumescent / blade seals generally must be located to suit fire test / assessment requirements. These locations can give rise to conflicts with hardware.*

*When used with narrow and / or thick doors the blade seal location can have an adverse influence on operating forces and may undermine the acoustic sealing properties.*

The use of separate 'dedicated' acoustic perimeter seals, located by illustrated by reference to *Fig.10.11* is recommended for use with FLAMEBREAK™ based door assemblies. These can be used with separate intumescent seals for use with fire doors and will accommodate most hardware fittings with minimal influence on door operating forces.

**Typical Frame Design & Positioning of Perimeter seals** *Fig. 10.11*



*Moulded or planted door stops may be used. The use of planted stops allows for a means of adjustment to assist setting for optimum sealing.*

*Optional compression seal in lieu of mastic to seal can be used between the doorstop and frame lining.*

*Frame fixed perimeter seal*

*Pencil round*

*Typical latch / lock forend & strike plate position*

*Door leaf fixed perimeter edge seal*

*Frame designs that include a pencil round at junctions where seals meet the frame or the door leaf will provide for a lead for the compression of the seal blades in a manner that will generally optimise performance and improve seal durability.*

*Seal positions should be carefully considered to ensure that the seals are in contact for the minimum amount of the travel of the door as it swings. This will minimise the influence on operating forces and reduce seal wear resulting from friction.*

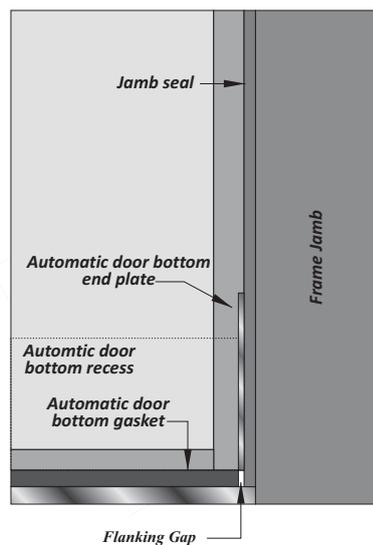
### Threshold Seals:

#### a/ Automatic Door Bottoms - Drop Seals:

The gaskets for automatic door bottoms should be cut to suit the full width of the door to provide for a close fit with the end plates. The automatic door bottoms should be carefully adjusted to ensure that they seal across the full width of the door onto a smooth level floor or onto a threshold strip.

Threshold strips or stepped thresholds with seals should be carefully scribed to the frame with mastic (or other suitable sealant) used to fill any gaps that might provide a route for flanking.

**Flanking Gaps - Single leaf doorsets.** Fig. 10.12



For single leaf door assemblies there will generally be a flanking route at the threshold position caused by the essential need to provide for operating gaps.

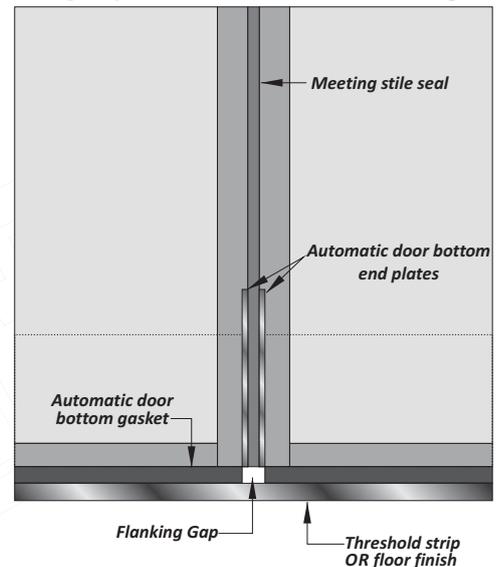
Flanking can be minimised by ensuring that operating gaps, particularly at the threshold are kept as small as possible (recommended  $4 \pm 1\text{mm}$ ) and that threshold sealing gaskets extend as far as possible to the full width of the door. This is usually limited by the automatic door bottom end plates.

For single leaf door assemblies these flanking routes fall outside of the normal pedestrian used space. It is therefore sometimes possible to add small additional sealing devices to address this problem.

#### Automatic Door Bottoms - Drop Seals contd.:

For pairs of doors a flanking gap also occurs at the bottom of the meeting stiles. A stepped threshold with seal (currently) provides for the only effective way for sealing this gap.

**Flanking Gaps - Pairs.** Fig. 10.13

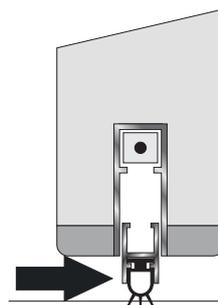


When using automatic door bottoms or fixed bottom edge seals at the threshold there will be a gap at the bottom of the meeting stiles which will be exploited by airborne sound.

This leakage is unavoidable for an operational door but can be minimised by ensuring that under door gaps are kept as small as possible (recommended  $4 \pm 1\text{mm}$ ) and that threshold sealing gaskets extend as far as possible to the full width of the door. This is usually up to the automatic door bottom end plates.

**NOTE:** Acoustic seals are used to seal the operating gaps around the door. Some of these, particularly automatic door bottoms, can fill some quite large gaps. However, for acoustic applications operating gaps should be kept as small as possible (unless supported by test data) and should generally comply with BS4787 Pt.1. with a recommended  $4\text{mm} \pm 1\text{mm}$  under door gap from the bottom of the door to the top of the floor or threshold strip.

**Increased under door gap** Fig. 10.14



The recommended under door gap from the bottom edge of the leaf to the top of the floor (or threshold strip if used) is  $4\text{mm} \pm 1\text{mm}$ .

If under door gaps are too large, the barrier to the sound attenuating performances may be reduced as the barrier provided at this point is limited by the thickness of the automatic door bottom carrier and gasket.

### Fixed Bottom Edge (Threshold) Seals:

Threshold sealing can also be effectively achieved without the use of automatic door bottoms.

Various designs for fixed bottom edge (*threshold*) seals are available:

Multi bladed 'Door Shoes' seal provides for excellent sound attenuating performances.

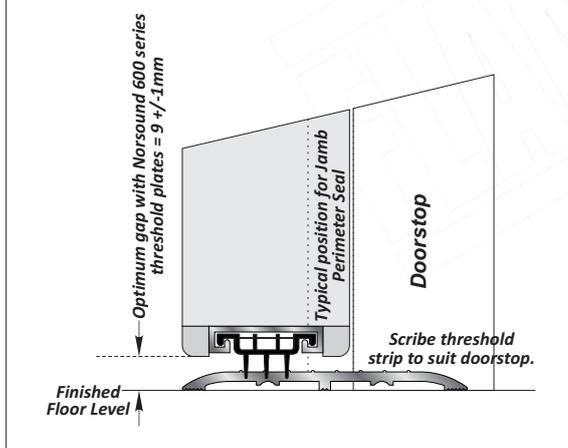
### Threshold Sealing - Door Shoe . Fig. 10.15

*Door shoes provides for a simple yet effective method for threshold sealing without the use of mechanically operated devices.*

*Fixed bottom of door seals must essentially be used with a threshold strip to ensure that the seal gasket clears the floor during the swing of the door.*

*It is recommended that the Door Shoe carrier is recessed into the bottom edge of to a depth that is necessary to provide for the gasket blades to overlap the threshold strip by Nom.2 +/- 0.5mm.*

*Comparative base test data demonstrates that Door Shoes can be used as a direct substitute threshold sealing options using Automatic Door Bottoms (Drop Seals) without detriment to performances.*



A simpler low cost alternative can be achieved by using 2No. simple blade seals at the threshold.

A threshold strip must be used with any fixed seals that are fitted to the bottom edge of the door to ensure that the seal blades will clear the floor during the swing of the door.

### Twin Blade Seals.

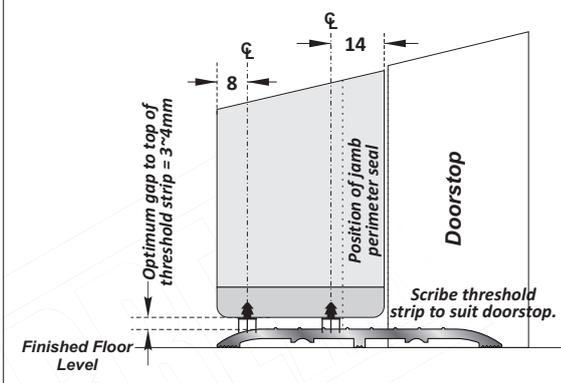
*Fig. 10.16*

*Simple bladed seal provides for a low cost yet effective threshold sealing system.*

*Fixed bottom of door seals must essentially be used with a threshold strip to ensure that the seals clear the floor during the swing of the door.*

*More demanding tolerances apply when using small bladed threshold sealing system.*

*Comparative base test data demonstrates that small bladed seals can be used as a direct substitute threshold sealing options using Automatic Door Bottoms (Drop Seals) without detriment to performances.*



For optimum sound insulating performances consideration can be given to the use of stepped thresholds with seals providing for the following features:

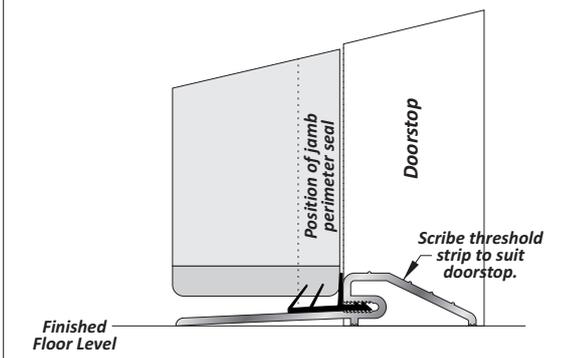
### Stepped Threshold with Seal.

*Fig. 10.17*

*Stepped thresholds with seals can provide for optimum sound insulation performances particularly where the threshold sealing gasket aligns with the perimeter seals to the head and the jambs thus considerably reducing flanking risks.*

*Where required, these thresholds can be used with additional sealing including Automatic Door Bottoms (Drop Seals) or fixed bottom edge seals fitted to the door leaf.*

*While providing for optimum sound insulating performances their use must be considered by reference to Building Regulations (England & Wales) - Approved Document 'M' and BS8300 as these can be considered as being a trip hazard for some locations.*



### Meeting stile sealing:

There are a number of meeting stile options most of which require that the doors are sequentially opened (and closed) to provide for optimum sound insulating performances.

**NOTE:** The twin bladed option can provide for simultaneous opening and closing when used with wide doors of limited thickness but this capability should be checked first by application of the 'Door Growth' formula given by reference to Section 9 - Door Assembly Coordination.

The choice and use of meeting stile seals must be carefully considered with due consideration to the following:

- Coordination with perimeter seals.
- Coordination with hardware.
- Coordination with threshold seals.
- Coordination with intumescent seals (if used).

Any interruption of the sound insulating sealing system will give rise to increased flanking risks with a consequential loss of performance.

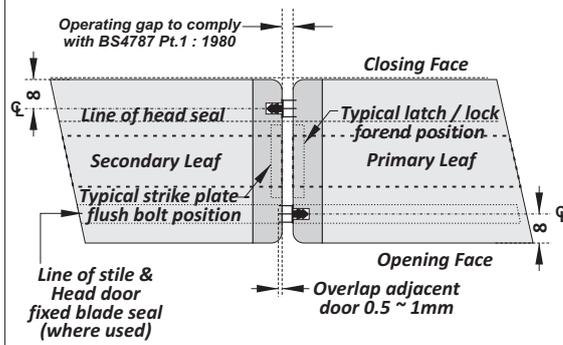
**NOTE:** Details illustrated are for guidance only, refer to seal manufacturer / supplier data for further guidance with regard to particular seal designs.

### Meeting stiles - Twin Blade Seals. Fig. 10.18

The use of twin blade seals located as illustrated provides for an economic solution for sealing at the meeting stiles of pairs of doors.

One seal is located towards the opening face is generally sufficient for performances up to Rw.30dB. For performance in excess of Rw.30dB it is recommended that a second seal is located towards the closing face of the secondary leaf.

**NOTE:** Locating the seals as illustrated ensures that the seals provide for minimal resistance to the operation of the doors (door are in contact with the seals for approx. 9mm in the door thickness during swing). These positions also provide room for the fitting of hardware with the need to interrupt the sealing.



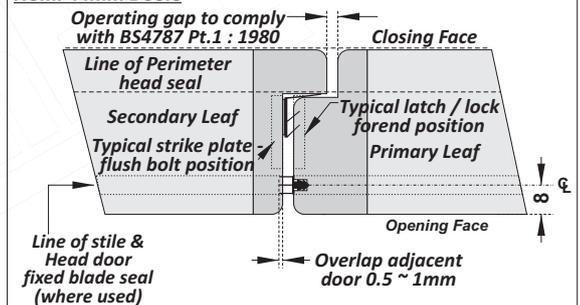
### Meeting stiles. Sealing with off-set rebates. Fig. 10.19

A number of perimeter seal designs can be used with a 12mm off-set rebate to provide for effective meeting stile sealing for use with both Nom. 44mm and 54mm based door assemblies. However, with Nom. 44mm thickness doors there is an increased risk of conflict with hardware items.

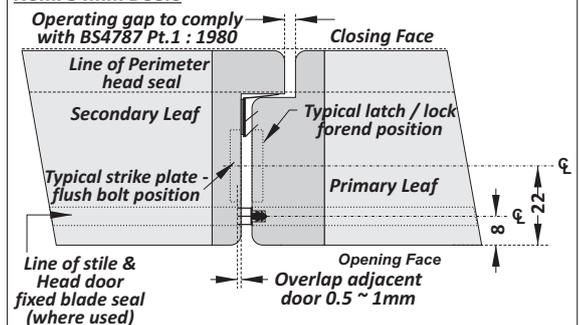
Whereas these meeting stile solutions are better suited for use with Nom. 54mm doors, consideration must still be given to the location of securing hardware (locks / latches & flush bolts). Conflicts of this nature can generally be avoided where the securing hardware is centred Nom. 22mm from the opening face of the doors.

The off-set rebate option using perimeter seals of the type illustrated is particularly useful where it is necessary to apply a leading edge to the primary leaf for operational reasons, the position of the seal can be adjusted to suit the gap at the seal position by the use packing behind the seal.

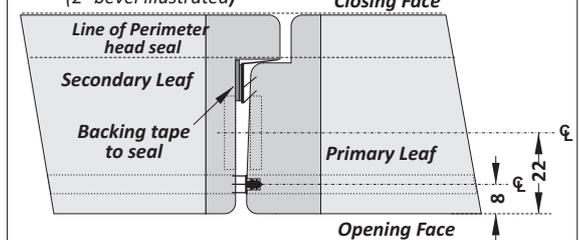
#### Nom. 44mm Doors



#### Nom. 54mm Doors



#### Meeting stiles with leading edge (2° bevel illustrated)



## Meeting Stiles - Astragals:

The use of astragals provides for a method for mounting sound insulating seals to align as near as possible to other perimeter seals that are located near to the closing face of the doors.

There are a number of branded designs for this application usually using aluminium carriers with housing to receive sound insulating gaskets.

An alternative is to use timber astragals used frame fitted with perimeter seals.

The use of astragals provides for a minimal risk of conflicts with hardware and intumescent seals or with door mounted Automatic Door Bottoms (*Drop Seals*) and is the recommended option for use with fire rated door assemblies.

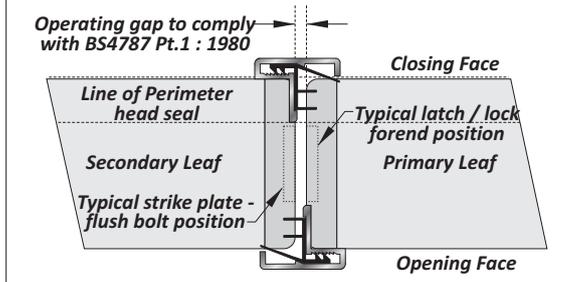
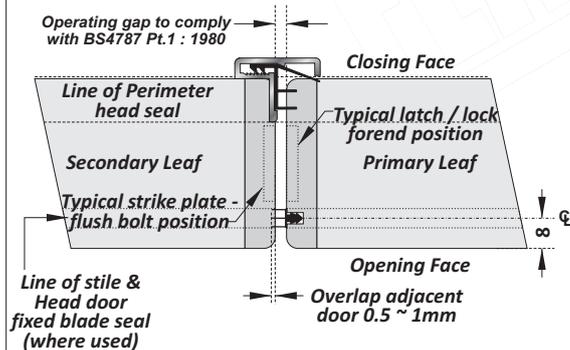
### Astragal with seal Meeting stiles.

Fig. 10.20

Use of an astragal with seal provides for an alternative to the off-set rebate design.

This option can be a useful solution where it is necessary to apply a leading edge to a Nom. 44mm thickness door as the position of the seal can be adjusted (by packing behind the carrier) to suit.

When fitted to the closing face of the secondary leaf the seal carrier projects beyond the face of the door; the carrier and seal will therefore need to be scribed to suit the frame head doorstep.



### Astragal with seal Meeting stiles.

Fig. 10.21

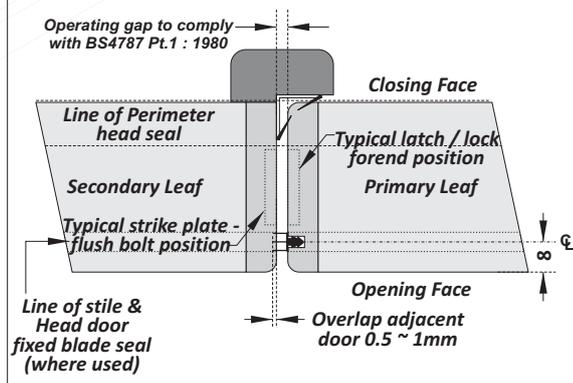
A timber astragal may be used with frame reveal fitted sound insulating seals.

The perimeter sealing are then continuous at the head, jambs and meeting stiles providing for optimum sound insulating sealing.

As with the astragal with aluminium carrier option, when fitted to the losing face of the secondary leaf the astragal must be scribed to the head door stop.

Timber astragals with seal can also be fitted to the opening face of the primary leaf or to both leaves but fitting to the opening face of the primary leaf only will result in a misalignment of perimeter seals.

Use of astragals provides for a minimal risk of conflicts with items of hardware or intumescent sealing and are generally approved for use with fire rated door assemblies.



FLAMEBREAK



**Mechanical Performances - General:**

When considering door assemblies for public buildings or dwellings there is a tendency to concentrate on a particular secondary performance e.g. fire performance, acoustic properties etc. This can lead to an oversight of the basic function of a door which is to provide a means for 'traffic' to pass from one side of a wall to the other.

To perform satisfactorily and to provide for other performances, the door must work reliably over a long period of time and often under conditions where the doors are subjected to abuse. If the door does not operate properly then all of the other performances that might otherwise be attributed to the particular location are likely to be undermined.

The term 'Mechanical Performance' is used in this section to identify a wide range of door assembly loading and durability testing that may be specified in general or specific terms to suit the requirements of a particular project including requirements for security doors.

It is important to appreciate that tests of this nature apply to the door assembly as a whole and in some cases the testing is specific to a particular design including all related hardware and glazing.

Pacific Rim Wood UK Ltd. have carried out numerous tests with various partners where the FLAMEBREAK™ door core was used as the basic door leaf construction. This evidence provides confidence with regard to the potential performance of the FLAMEBREAK™ core.

**DD171:**

Strength and durability testing for door assemblies is defined by reference to DD171 - 'Guide to specifying performance requirements for hinged or pivoted doors (including test methods)'.

More recently, European standards have been introduced to replace some of the tests described in DD171. (See page 11.2).

The testing of door assemblies using FLAMEBREAK™ door cores has been carried out by Chiltern Dynamics using all of the DD171 tests but substituting the particular DD171 tests with the alternative EN tests where applicable. For the European tests, BS EN 947 ~ 950 describe the test methods with classifications defined by reference to BS EN 1192.

**NOTE:** Door assemblies using FLAMEBREAK™ based doors have been tested to performances that exceed the DD171/BS EN 1192 minimum requirements for 'Severe Duty' applications. (See page 2):

**Test Report Ref: Chilt/P10056/02 June 2010:**

**Test BS EN 947 - Severe Duty requirement = 1000N - tested to 1250N.**

**Test BS EN 948 - Severe Duty requirement = 350N - tested to 438N.**

**Test DD717 Test Ref: 4.3 - Severe Duty requirement = 150 Impacts - tested to 200 Impacts.**

**Test DD717 Test Ref: 4.9 - Severe Duty requirement = 200N. - tested to 300N.**

**Test DD717 Test Ref: 4.10 - Severe Duty requirement = 200 Impacts - tested to 300 Impacts.**

**PAS23:**

For dwellings, specifications may call for PAS 23 related test data. PAS23 'General performance requirements for door assemblies - Part 1: Single leaf, external door assemblies to dwellings' requires mechanical testing similar to the DD171 tests but is extended to include Cyclic, Air Permeability, Watertightness and Wind Resistance testing.

**NOTE:** Cyclic testing may be specified separately by reference to BS EN 1191 with classifications defined by reference to BS EN 12400.

**PAS24:**

PAS24 'Enhanced security performance requirements for door assemblies - Part 1: Single and double leaf, hinged external door assemblies to dwellings. This is a security door standard that is supported by ACPO (Association of Chief Police Officers) under the 'Secure by Design' initiative.

**LPS (Loss Prevention Standard):**

Specifications may require door assembly designs to satisfy LPS ratings with the tested door assemblies approved by the Loss Prevention Certification Board. (See page 11.5).

**BS EN 1627 ~ 1630:**

European test and classification standards similar to LPS requirements.

**NOTE:** Test standards for security door assemblies e.g. PAS24, LPS 1175 & EN 1627 ~ 1630 tests are essentially reactive standards. i.e. The test methods include manual attack elements that are constantly being amended as villains discover new and more sophisticated ways to overcome security design elements. Specifications for door assemblies of this type should include required test standard revision references.

## 11.2 Mechanical Performances

# FLAMEBREAK

### DD171 & BS EN 1192 Mechanical Testing:

Strength and durability testing for door assemblies is defined by reference to DD171 - 'Guide to specifying performance requirements for hinged or pivoted doors (including test methods)'.

British Standard Draft for Development DD171 : 1987 provides a means for the testing of complete door assemblies that are subjected to various levels of abuse to allow for the evaluation of mechanical performances.

More recently, European tests have been adopted that replace some of the mechanical tests described by reference to DD171. Where this has occurred, the EN tests are used but the DD171 tests have been retained in the United Kingdom where these have not been substituted by the European standards.

The following guidance is given to explain the grading system used by reference to DD171 for determining mechanical performance properties:

**LD = Light Duty** : Low frequency use by those with a high incentive to exercise care. e.g. by private house owners - small risk of accident occurring or abusive use.

**MD = Medium Duty** : medium frequency use primarily by those with some incentive to exercise care - some chance of accident occurring or mild abuse.

**HD = Heavy Duty** : High frequency use by public and others with little incentive to exercise care. Risk of accident with probability of some abuse. e.g. offices, particularly offices open to the public.

**SD = Severe Duty** : High frequency use with risk of accidental damage and possibility of violent abusive usage. e.g. Hospitals, Educational Establishments.



### Results of Test: Chilt/P10056/02

#### Pacific Rim Wood Limited

Unit 3, Kingdom Fields,  
Bratton Fleming,  
Barnstaple,  
North Devon  
EX31 4EN

This document confirms that performance testing was conducted from 26 April 2010 to 27 April 2010. Testing was conducted to the following standards:-

- DD171: 1987, Draft for development Guide to specifying performance requirements for hinged or pivoted doors,
- BS EN 1192: 2000 Doors – Classification of strength requirements

Product tested	Flamebreak doorset
Summary of testing procedure	
DD171 Clauses 4.3, 4.4, 4.9, 4.10 and 4.11	Severe duty
EN947, EN948, EN949 and EN950 (Classified to BS EN 1192)	Severe duty

The results relate only to the specimen tested, as detailed in the test report Chilt/P10056/02

  
 Paul Andrews –  
Head of Section Mechanical Testing  
Date: 27 April 2011

  
 Vincent Keenan -  
Technical Manager  
Date: 27-04-2011

Chiltern Dynamics  
Chiltern House, Stocking Lane, Hughenden Valley, High Wycombe, HP14 4ND, United Kingdom  
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Email: cif@chilternfire.co.uk



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1762  
Page 1 of 1

Door assemblies based upon the use of FLAMEBREAK™ door cores have been successfully tested with testing extended to exceed the minimum requirements of D171 and BS EN 1192 for 'Severe Duty' performances.

### Comparisons of DD171 & BS EN 1192 Mechanical Tests.

DD171						European Standards					
TEST	Test Ref.	Classification				TEST					Classification Document
		LD	MD	HD	SD		n/a	n/a	n/a	n/a	
<i>Slam shut test</i>	4.3	10 times	20 times	100 times	200 times	No test	n/a	n/a	n/a	n/a	n/a
<i>Slam open test</i>	4.4	5J	25J	50J	50J	No test	n/a	n/a	n/a	n/a	n/a
<i>Heavy body impact</i>	4.5	20J	40J	100J	150J	EN949	30J	60J	120J	180J	EN 1192
<i>Hard body impact</i>	4.6	2J	3J	5J	8J	EN950	1.5J	3J	5J	8J	EN 1192
<i>Torsion</i>	4.7	400N	400N	400N	400N	EN948	200N	250N	300N	350N	EN 1192
<i>Downward Deflection</i>	4.8	500N	500N	500N	500N	EN947	400N	600N	800N	1000N	EN 1192
<i>Closure against obstruction</i>	4.9	200N	200N	200N	200N	No test	n/a	n/a	n/a	n/a	n/a
<i>Resistance to jarring</i>	4.10	50 Impacts	100 Impacts	150 Impacts	200 Impacts	No test	n/a	n/a	n/a	n/a	n/a
<i>Abusive force to handle</i>	4.11	750N	750N	750N	750N	No test	n/a	n/a	n/a	n/a	n/a

### PAS23 & PAS24:

Door assemblies manufactured using FLAMEBREAK™ cores have been successfully tested to meet PAS 23 and PAS 24 performances requirements, thus demonstrating the potential of FLAMEBREAK™ door cores to provide for the general performance requirements and enhanced security performances for external door assemblies to dwellings.

PAS 23 (*Product Assessment Specification - General Performance Requirements*) provides for a number of durability and mechanical tests, similar in many respects to DD171 including tests for:

- Resistance to static torsion.
- Operating forces.
- Resistance to vertical loads.
- Slamming resistance.
- Closure against obstructions.
- Abusive forces on handles.
- Resistance to soft & heavy body impact.
- Resistance to hard body impact.
- Resistance to thermal variation.
- Resistance to humidity.

In addition to the above, PAS 23 requires testing for weather tightness and a cycling test (50,000 cycles) that must be achieved without detriment to the operation of the door assembly.

PAS 24 (*Product Assessment Specification - Enhanced Security Performance*) provides for testing of door assemblies in respect of resistance to opportunists attacks. This standard is supported by the Association of Chief Police Officers and forms a core element of the 'Secure by Design' initiative that is promoted by many Local Authorities.

It is important to recognise that PAS 23 and PAS 24 testing is related to a prescribed door assembly complete with all glazing, seals and hardware. Any variation to size, detail or fittings will generally require re-testing. However, the specimens that achieved satisfactory PAS 23, PAS 24 performances were based upon the use of the FLAMEBREAK™ 430 core, it has therefore been possible to assess other FLAMEBREAK™ door core types as providing for suitable alternative core constructions, without adversely affecting the performance of a door that otherwise conforms with the tested details. See *Chiltern Dynamics Assessment Ref: Chilt/P06015 February 2006*

**NOTE: PAS23 Clause 6.2 Weathertightness test data applies to plywood faced FLAMEBREAK™ products only. i.e. Types 430, 630 & 660. MDF versions FLAMEBREAK™ FF630 & FF660 should not be used in external locations.**



## Test Certificate: Chilt/P05019/rev2

This certificate is awarded to:

**Pacific Rim Wood Limited**  
Unit 3, Kingdom Fields  
Bratton Fleming  
Barnstaple  
North Devon  
EX31 4EN

This document confirms that performance testing to PAS 23-1: 1999, Amendments 1 and 2 and Corrigendum 1 General performance requirements for door assemblies, and PAS 24-1: Amendments 1 and 2 1999, Enhanced security performance requirements for door assemblies, was conducted on your specimens from 20 September to 23 September 2005 and the following results were achieved.

Summary of testing procedure	Result
PAS 23-1: 1999 – Clause 6.10	Pass
PAS 24-1: 1999 - Clause A.6, A.7, A.10	Pass

Revision 2 change of Client address  
The results relate only to the specimens tested, as detailed in technical specification document number Chilt/P05019/tec1/rev2

*[Signature]*  
Paul Andrews -  
Head of Section Mechanical Testing  
Date: 3 March 2011

*[Signature]*  
Vincent Kerrigan  
Technical Manager  
Date: 03-03-2011

Chiltern Dynamics  
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High Wycombe, HP14 4ND, United Kingdom  
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Page 1 of 1



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## Results of Test: Chilt/P11128

**Pacific Rim Wood Limited**  
Unit 3, Kingdom Fields  
Bratton Fleming  
Barnstaple  
North Devon  
EX31 4EN

This document confirms that performance testing was conducted on 15 November 2011. Testing was conducted to the principles of the following standard:-

- PAS 24-1: 2007 + A1: 2009 Enhanced security performance requirements for door assemblies - Part 1: Single and double leaf, hinged external door assemblies to dwellings. The following results were achieved

Product tested	Flamebreak 430 Glazed Door Leaf
Summary of testing procedure	Result
PAS 24-1: 2007 + A1: 2009 - Clauses A.5.2, A.5.3 and A.9	Pass

Glazing system has passed for the requirements of both key removable and thumbturn locks  
The results relate only to the specimen tested, as detailed in the technical specification Chilt/P11128/tec1

*[Signature]*  
Steve Smith – Deputy Section Head  
Date: 03/01/12

*[Signature]*  
Vincent Kerrigan - Technical Manager  
Date: 05-01-2012

Chiltern Dynamics  
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Page 1 of 3



**1762**

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# 11.4 Mechanical Performances



### LPS Security ratings:

Some specifications may call for security door performances to meet LPS rating requirements.

Otherwise, private specifications may use the LPCB approved methods as a basis for determining test methods with modifications to meet specific risks identified by the Client and related to particular project considerations.

### Guide to Security Standards for Doors & Windows

This leaflet is an aid to help you determine whether a product has the appropriate level of security for its application and risk factor. It is a clear comparison between established security standards appropriate for the protection of windows and doors against burglary. For more details please refer to the actual standards or see the websites listed below.

To ensure that a product conforms to these standards, it is important that products be certified by a UKAS accredited certification body rather than be type tested. Certification ensures that the manufacturer continues to produce products to this high standard, particularly relevant for higher risk situations.

**To verify certification, ask to see a valid certificate or check with the relevant certification body.**

	<b>Application</b>	<b>Minimum Performance Required</b>	<b>Notes</b>
<p>The selection of the appropriate physical protection for windows and doors will depend on a number of issues including the following:</p> <ul style="list-style-type: none"> <li>• The location of the door/window.</li> <li>• The location of the property.</li> <li>• The value of the property.</li> <li>• The value or desirability of the goods or information within the premises.</li> <li>• The risks relating to the loss of, or interruption to business.</li> <li>• The use of additional security products and technology, including CCTV, intruder detection equipment and asset market systems.</li> </ul> <p>The standards of product performance specified in this chart should therefore be</p>	<p><b>HIGH RISK</b>  <b>Very high security Doorsets.</b>                      LPS1175 SR 5 certification is a minimum standard for high risk situations.</p>	<p><b>LPS1175 Security Rating (SR) 6</b></p> <hr/> <p><b>LPS1175 SR 5</b></p>	<p>Products certified to these security standards have resisted a series of professional attack tests each lasting up to 30 minutes using a wide variety of powerful mains operated tools.</p>
	<p><b>MEDIUM RISK</b>  <b>Doorsets or Rolling Shutters for door and window openings.</b>                      LPS1175 SR 3 certification is a minimum standard for medium risk situations.</p>	<p><b>LPS1175 SR 4</b></p> <hr/> <p><b>LPS1175 SR 3</b></p>	<p>Products certified to these security standards have resisted a series of professional attacks, each lasting up to 30 minutes (SR 4) or 20 minutes (SR 3), using a wide variety of battery operated power tools.</p>
	<p><b>LOW RISK</b>  <b>Doorsets, Rolling Shutters, Security Grilles or Windows for door and window openings.</b>                      BS.PAS 24 or LPS1175 SR 1 certification is a minimum standard for low risk situations.</p>	<p><b>LPS1175 SR 2</b></p> <hr/> <p><b>BS.PAS24<sup>1</sup></b></p> <hr/> <p><b>LPS1175 SR 1 and BS7950<sup>2</sup></b></p>	<p>Products certified to these security standards have resisted a series of professional attacks, each lasting up to 15 minutes (SR 2 &amp; PAS 24) or 10 minutes (SR 1) using a variety of hand tools such as hammers, crowbars, chisels and hacksaws.</p>
	<p><b>MINIMUM</b>  <b>Locking devices for doors &amp; windows.</b>                      Locks should be independently certified to BS3621 or incorporate cylinders that have been independently certified to EN1303, as a minimum protection.</p>	<p><b>BS3621 and EN1303 Grades 4-6</b></p>	<p>These standards cover the mechanical performance of the lock-set or cylinder for doors. They do not guarantee the resistance of the door to which they are fitted, although they can enhance the resistance to certain forms of attack.</p>



[www.brecertification.co.uk](http://www.brecertification.co.uk)

[www.securedbydesign.com](http://www.securedbydesign.com)

[www.bsia.co.uk](http://www.bsia.co.uk)

This leaflet has been prepared with the support of the above organisations. It should not be inferred that these organisations endorse specific products that meet these security standards, as each organisation has criteria for accrediting a particular company or product. No commercial reference to these organisations or their logos may be made without written agreement of the organisations concerned.

Each manufacturer will have their own preferences with regard to the construction of door assemblies intended for DD171 'severe duty' or security door applications.

Notwithstanding the performance achieved by testing, the following is provided by way of guidance for consideration where additional reinforcement might be required to suit door assemblies for use in locations that might be vulnerable to heavy impact attack.

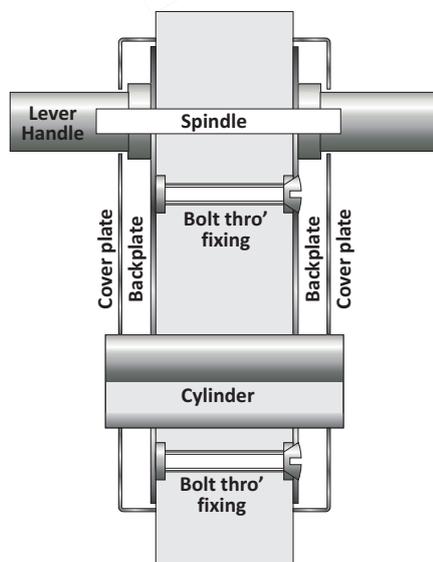
### Hardware Enhanced fixing:

**Hinges & Hanging Devices:** Whereas successful testing has been carried out using wood screws, the use of minimum 1 1/2 in. No. 10 fully threaded 'twinfast' or chipboard screws is recommended for the fixing of load bearing items of hardware to FLAMEBREAK™ door constructions. In any event, pilot holes should be drilled to receive screw fixings in both the door leaf and the frame.

**Locks / Latches:** Under heavy and abusive impact all wood door constructions may split at the lock / latch positions. The use of backplates with bolt through fixings is recommended to strengthen doors at these positions.

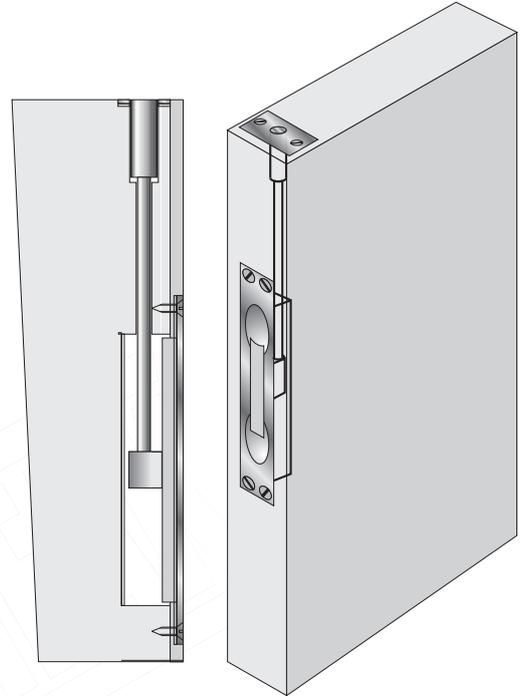
### Recommended Lock / Latch fitting. *Fig. 11.1*

*The use of backplates with bolt through fixings provide a means for clamping the door at lock / latch positions to improve resistance to splitting.*



### Concealed rod type Flush bolt. *Fig. 11.2*

*The use of concealed rod type flush bolts provides for improved resistance to splitting when doors are subjected to impact forces.*



### Other Hardware:

- Surface mounted hardware such as kick & buffer plates can generally be used without detriment to mechanical performance.

*NOTE: The use of PVC protection plates is recommended in preference to metal plates. Sharp edges can be created when using metal plates, (particularly aluminium) resulting from impact damage with a consequent risk to users of a building.*

- It is recommended that pull handles should be of the 'bolt-through' type used in conjunction with load spreading washers on the bolted face with pull handle fixings covered by a finger plate.

- Surface mounted Emergency Exit & Panic devices and surface mounted barrel bolts can generally be used without weakening the door construction.

- Edge fixed flush bolts can weaken the door construction in a similar manner to locks and latches. Use of 'concealed rod' type edge fixed flush bolts is recommended as a preferred alternative to edge fixed flush bolts for mechanical strength purposes.



FLAMEBREAK



## General:

Global warming and energy conservation have been linked by many experts in this field and the Government of the United Kingdom have committed themselves to reducing carbon emissions. This commitment is evident by reference to Building Regulations - Approved Document 'L' that is published in separate sections as follows:

- Approved Document L1A - Conservation of Fuel & Power - New Dwellings.
- Approved Document L1B - Conservation of Fuel & Power - Existing Dwellings.
- Approved Document L2A - Conservation of Fuel & Power - New Buildings other than Dwellings.
- Approved Document L2B - Conservation of Fuel & Power - Existing Buildings other than Dwellings.

The performance of building products may be expressed in terms of 'Thermal Conductivity' (*lambda-value*) OR, 'Thermal Transmittance' (*U value*):

### Thermal Conductivity:

*The rate at which a material will pass heat. Expressed in units of Watts per metre per degree of temperature difference (W/mK).*

### Thermal Transmittance:

*The measure of how much heat will pass through one square metre of a structure when the air temperatures on either side differ by one degree. U-values are expressed in units of Watts per square metre per degree of temperature difference (W/m<sup>2</sup>K).*

The Thermal Transmittance or U-value performance is generally applied to door assemblies.

Thermal Transmittance can be measured by use of three methods:

BS EN 12567-1:2010 - 'Hot Box' method. This provides for the physical measurement of specimens.

BS EN ISO 10077-1:2006 - Calculation of thermal transmittance - Simplified Method.

*NOTE: This method is used by reference to Tables in Building Regulations - Approved Document L1A - Table 2 and Approved Document L2A - Table 4.*

BS EN ISO 10077-2:2012 - Calculation of thermal transmittance - Numerical method for frames.

*NOTE: This method provides for calculations related to the characteristics of particular products.*

In practice, energy conservation relates to a building as a whole but with this performance being determined by considering the combined influence of each component. The savings resulting from the careful selection of one element can be offset against the performance of other elements to meet the performance requirements for a building as a whole.

For Dwellings, the Government's preferred method for determining an energy rating is by use of the 'Standard Assessment Procedure' (*SAP*). This provides for a method for calculating a 'Carbon Index' that can be used to demonstrate that dwellings comply with Approved Document 'L'.

The U-value performances for FLAMEBREAK™ door cores have been calculated by Chiltern Dynamics using the method defined by reference to BS EN ISO 10077-2.

Tables published by reference to Approved Documents L1A - Table 2 and L2A - Table 3 provide for numerical values to be applied to door assemblies (*among other things*) in the absence of calculated or tested data. The BS EN ISO 10077-2 calculated U value performances published in this section for FLAMEBREAK™ door cores provides Designers and Technicians with a stable door construction product that is suitable for the design of door assemblies that provide for significant thermal insulating property improvements when compared with the Approved Document published values. Further, being of a solid core construction, FLAMEBREAK™ door cores provide for an excellent base product for enhancing thermal insulation performances by the addition of appropriate facing materials.

**For further advice concerning the thermal transmittance performance of FLAMEBREAK™ door cores please contact our Technical Support Department:**

**Pacific Rim Wood Ltd.,**  
Ground Floor Suite, Block B,  
The Old Kelways  
Somerton Road  
Langport,  
Somerset TA10 9SJ  
  
Tel: +44 (0) 1458 252 305  
E-mail: enquiries@prwuk.com

## 12.2 Thermal Insulation

# FLAMEBREAK

### FLAMEBREAK® Thermal Transmittance:

This Section provides for guidance U - value data that has been calculated using the BS EN ISO 10077-2 calculation method.

#### FLAMEBREAK™ 430

**Top & Bottom Rails:** Nom. 26x36.4mm mixed hardwood.

**Stiles:** Nom. 33x36.4mm mixed hardwood.

**Core Construction:** Three layer laminated Falcatta.

**Facings:** 2x3.6mm Plywood.

**Calculated U-value = 1.0W/m<sup>2</sup>K**

#### FLAMEBREAK™ 430



#### FLAMEBREAK™ FF630

**Top & Bottom Rails:** Nom. 26x31.8mm mixed hardwood.

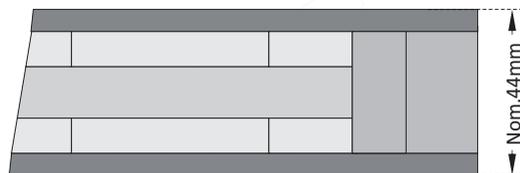
**Stiles:** Nom. 33x31.8mm mixed hardwood.

**Core Construction:** Three layer laminated Falcatta.

**Facings:** 2x6mm MDF.

**Calculated U-value = 1.1W/m<sup>2</sup>K**

#### FLAMEBREAK™ FF630



#### FLAMEBREAK™ 660

**Top & Bottom Rails:** Nom. 75~100x42mm mixed hardwood.

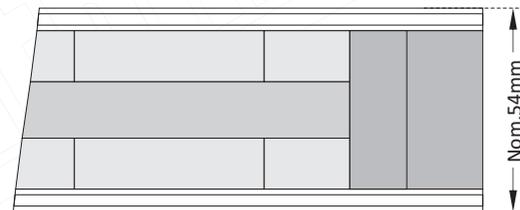
**Stiles:** Nom. 35x42mm mixed hardwood.

**Core Construction:** Three layer laminated Falcatta.

**Facings:** 2x5.2mm Plywood.

**Calculated U-value = 0.9W/m<sup>2</sup>K**

#### FLAMEBREAK™ 660



#### FLAMEBREAK™ FF660

**Top & Bottom Rails:** Nom. 75~100x42mm mixed hardwood.

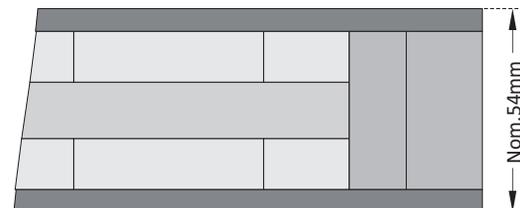
**Stiles:** Nom. 35x42mm mixed hardwood.

**Core Construction:** Three layer laminated Falcatta.

**Facings:** 2x6mm MDF.

**Calculated U-value = 0.9W/m<sup>2</sup>K**

#### FLAMEBREAK™ FF660



### Glazing:

Calculations in this section do not include for glazing. The performance of glazed doors will vary according to glass type and glazed area. For guidance (centre pane) performances for glazed elements are indicated as follows:

- Single pane clear glass - 'U' value = approx. 5.4W/m<sup>2</sup>K
- Double glazed unit using non specialist glass types - 'U' value = approx. 2.6W/m<sup>2</sup>K
- Sealed glazed units using specialist glass types e.g. Pilkington 'E' glass with air = approx. 1.8W/m<sup>2</sup>K.
- Sealed glazed units using specialist glass types e.g. Pilkington 'E' glass with argon gas = approx. 1.6W/m<sup>2</sup>K.



## Results of Calculation: Chilt/T11003-06

### Pacific Rim Wood Limited

Unit 3, Kingdom Fields  
Bratton Fleming  
Barnstaple  
North Devon  
EX31 4EN

This document confirms that simulation and calculations were conducted on 25 May 2011

Results were obtained using the following method:-

- Whole leaf U-Value simulation to the principles of EN ISO 10077-2:2003
- Whole leaf U-Value calculation to the principles of EN ISO 10077-1:2000

Product calculated	Flamebreak FD30 44mm (Door leaf)*	
	Calculation Method	Result
Whole leaf U-Value calculation	To the principles of EN ISO 10077-1 & EN ISO 10077-2	1.1 W/m <sup>2</sup> K

\*Covers Plywood or MDF Faced blanks

*The above result is the maximum door leaf only U-Value. Calculation methods, additional performance values, material specifications and sample dimensions are contained within report number Chilt/T11003-6*  
**These results can be validated when read in conjunction with the full calculation report.**

Mike Chorlton – BFRIC Certified Simulator  
Date: 04 July 2011

Terry Johnson – BFRIC Certified Simulator  
Date: 04 July 2011



## Results of Calculation: Chilt/T11003-07

### Pacific Rim Wood Limited

Unit 3, Kingdom Fields  
Bratton Fleming  
Barnstaple  
North Devon  
EX31 4EN

This document confirms that simulation and calculations were conducted on 25 May 2011

Results were obtained using the following method:-

- Whole leaf U-Value simulation to the principles of EN ISO 10077-2:2003
- Whole leaf U-Value calculation to the principles of EN ISO 10077-1:2000

Product calculated	Flamebreak FD60 54mm (Door leaf)*	
	Calculation Method	Result
Whole leaf U-Value calculation	To the principles of EN ISO 10077-1 & EN ISO 10077-2	0.9 W/m <sup>2</sup> K

\*Covers Plywood or MDF Faced blanks

*The above result is the maximum door leaf only U-Value. Calculation methods, additional performance values, material specifications and sample dimensions are contained within report number Chilt/T11003-7*  
**These results can be validated when read in conjunction with the full calculation report.**

Mike Chorlton – BFRIC Certified Simulator  
Date: 04 July 2011

Terry Johnson – BFRIC Certified Simulator  
Date: 04 July 2011

#### Chiltern Dynamics

Chiltern House, Stocking Lane, Hughenden Valley, High Wycombe, HP14 4ND, United Kingdom  
Tel: 01494 569600 Fax: 01494 564695

Web: [www.chilternfire.co.uk](http://www.chilternfire.co.uk)  
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FLAMEBREAK



## General:

FLAMEBREAK™ Types 430, 630, 660 cores are faced with external quality plywood and may be used as a core construction for doors that are intended for external use.

Whereas the bonding is suitable for external use, it is important to appreciate that exposed timber will absorb moisture, particularly as a consequence of capillary action through end grain. Wood will expand (or shrink) on average by 1% across the grain for every 4% variation in moisture content.

## Recommendations:

### Door Leaves:

1/ Door cores intended for external use should be pre conditioned to provide for the moisture contents recommended by reference to BS EN 942.

2/ Door leaves should be hardwood lipped on all edges using a hardwood selected by reference to BS EN 942 as 'suitable for external use without preservative treatment'. Lippings should be bonded to the door edges using a WBP grade adhesive.

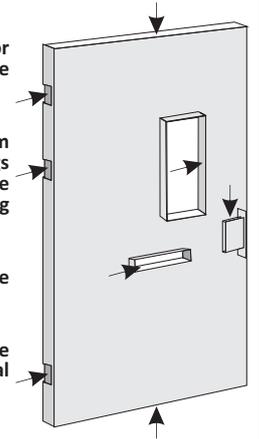
3/ All apertures cut into the door blank for vision panels, louvres, letter plates etc. should be lined with minimum 6mm thickness hardwood with specifications as described for lippings. The linings may be bonded into position using WBP grade adhesives or, a non setting mastic seal can be applied to the aperture before fitting the linings with zinc coated pins or screws.

4/ All recesses for hardware should be sealed using the finishing treatment determined for the door leaf, before fitting the hardware. Alternatively, hardware recesses can be protected by use of non setting mastics.

### Seal cores to reduce risk of moisture absorption

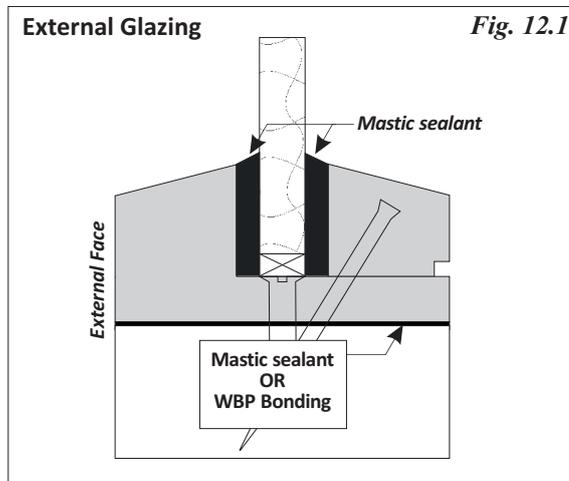
Fig. 12.2

- Prime or seal all parts of the door that will become inaccessible after installation.
- Line all apertures with min. 6mm thickness hardwood with linings bonded with WBP grade adhesive or seal by use of non setting mastics.
- Seal all hardware recesses before fitting hardware.
- Apply sealer / primer coat to the door before exposing to external conditions.



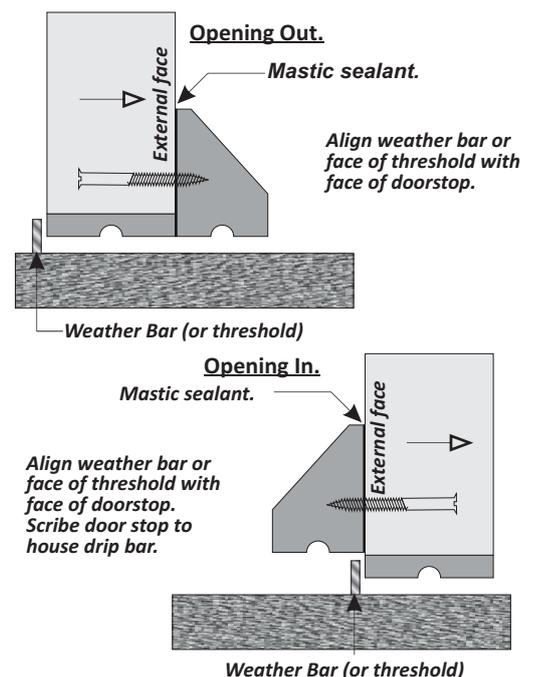
5/ All parts of the door leaf that will become inaccessible after installation should have the full finishing treatment applied before installing the door leaf in an external environment.

6/ The use of timber or aluminium drip bars is recommended to reduce the risk of entrapment of moisture in operating gaps.



### Use of Drip Bars

Fig. 12.3



## Recommendations contd.:

### Frames:

1/ Wood intended for external use should be pre conditioned to provide for the moisture contents recommended by reference to BS EN 942.

2/ Select a suitable species for external use by reference to BS EN 942 as 'suitable for external use without preservative treatment'.

3/ A doorstop moulded from the solid is generally recommended for external use. However, a planted doorstop may be used with mastic sealant between the doorstop and the frame lining.

4/ All recesses for hardware should be sealed using the finishing treatment determined for the frame, before fitting the hardware. Alternatively, hardware can be protected by use of non setting mastics.

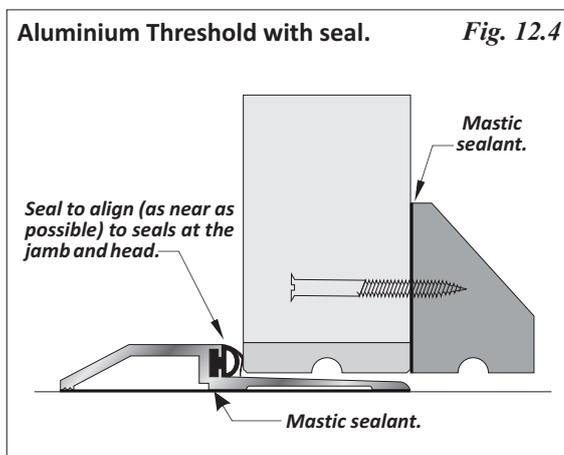
5/ All parts of the frame that will become inaccessible after installation should have the full finishing treatment applied before installing the frame in an external environment.

**NOTE:** Particular attention should be applied to end grain.

6/ It is recommended that the frame is set on mastic pads.

7/ Use of timber or aluminium thresholds is recommended. Otherwise weather bars, set to align with the face of the doorstop should be used.

**NOTE:** Where applicable, reference should be made to Document 'M' of the Building Regulations - Provisions for Disabled persons. i.e. Use of low level thresholds or weather bars not exceeding 12mm above floor level should be used.



### Finishes:

**NOTE:** The most important consideration for the extended life of external joinery (including door assemblies) is to select a good quality external finishing system that should be applied strictly in accordance with the finishing material manufacturer's recommendations.

1/ **External Opaque:** Recommended finish Dulux Weathershield Exterior Woodstain (or similar).

This is a solvent based finish incorporating ICI 'NAD' technology that improves flexibility and resistance to cracking, flaking & peeling.

Before installing the door assembly, apply Exterior Preservative base coat (coverage about 25m<sup>2</sup> per litre) plus one coat Weathershield Exterior Woodstain. (min. coverage 20m<sup>2</sup> per litre).

After installation apply two further coats Exterior Woodstain (coverage 20~25m<sup>2</sup> per litre).

**NOTE 1:** For optimum quality and for use in exposed coastal areas a further two coats of Exterior Woodstain should be applied with coverage of approx. 20m<sup>2</sup>/litre.

2/ **Semi Transparent:** The Exterior Woodstain finishes describe above are also available to provide for semi transparent finishes.

**NOTE:** Where the use of a solvent based finishing system is not acceptable, the alternative Dulux 'Aquatech' (or similar) water based system may be used.

3/ **Clear Finish:** Apply Dulux Weathershield Exterior Preservative Base coat (as described above).

Apply one coat Weathershield Exterior Varnish before installation of the doorset. (coverage approx. 20m<sup>2</sup>/litre).

Apply two coats Exterior varnish after installation of the door assembly. (coverage 12~16m<sup>2</sup>/litre per coat).

**NOTE:** The Weathershield clear varnish finish is similar to yacht varnish but with improved flexibility. Gloss levels for clear varnish finishes are typically 80~90%.

### Other Finishes:

1/ **Oil Finishes:** e.g. Pure Tong Oil. (not to be confused with finishing systems 'containing Tong Oil').

Apply min. 3 coats before installation of the door assembly with further 3 coats applied after installation. (coverage 10~12m<sup>2</sup>/litre). Typical gloss level with 6 coats = 75~80%.

2/ **Matt Painted Finishes:** Use of a micro porous painting systems such as the Farrow & Ball 'Archive' range is recommended. Gloss levels less than 35% available

## Finishes contd.:

The brand names referred to by reference to the previous page are indicative of types and processes.

Excellent external finishing systems are available from other sources e.g. Cuprinol, Sikken's etc.

The important recommendation is that external joinery should be finished by use of a high quality finishing system selected from a single source to ensure that all components of the system are compatible. Further, that partial finishing should be applied to the door assembly before installation into the external location. This provides for the opportunity to apply protective finishes to parts of the assembly that will become inaccessible after installation.

The drying times required for most external finishes generally renders these unsuitable for application under factory conditions. The normal practice is therefore to supply external door assemblies 'in the white' for finishing on site.

## Maintenance:

**1/** The frequency for maintenance may vary according to a number of factors:

**a/** The use of dark colours is likely to reduce the intervals between refurbishment.

**b/** Generally doors facing North and West in the United Kingdom will require a higher level of maintenance.

**c/** Door located externally in coastal areas are likely to require a higher level of maintenance attention.

**d/** The nature of the species used for frames, lippings, beading etc. may influence maintenance requirements. e.g. Some Hardwoods (e.g. *Agba*) and some softwoods are likely to contain knots with resin pockets. Resins can leak and may cause problems with the finishing system. This risk can be reduced by properly treating knots with a Shellac Knotting before applying finishing treatments.

**e/** Differences in environmental conditions acting on each face of the door assembly can give rise to movements that may be beyond the flexibility of the finishing system. This is generally apparent by recognition of significant differences in the operation of the door on a seasonal basis. This risk can be diminished by the construction of a lobby resulting in a more gradual change in environmental conditions acting on the internal and external faces of the door assembly.

**f/** A door assembly provided with some protection by the building of a porch is likely to degrade at a slower rate than a fully exposed door.

**2/** A properly finished exposed external door (i.e. a door assembly finished correctly in accordance with the finishing system manufacturer's recommendations), should not require refurbishment maintenance at less than 3 yearly intervals.

Maintenance provisions should provide for cleaning at regular intervals (*determined by visual assessment*).

Clean all accessible parts of the door assembly using a mild solution of warm water containing external fungicide. Apply with a chamois leather and wipe clean with an adsorbent knap free cloth.

Refurbishment procedures should provide for:

**a/** Remove any loose / cracked finishes.

**b/** Fill any open joints with a good quality external grade wood filler (e.g. *Cuprinol High Performance Wood Filler - or similar*).

**c/** Sand all exposed parts of the door assembly.

**d/** Clean with a mild solution of warm water containing external fungicide.

**e/** Recoat the doorset using the original external finishing system (*or a compatible finishing system*).

**NOTE:** It is strongly recommended that all finishing treatments for external joinery are applied by qualified tradesmen.







### Fire Door Installation:

Door assemblies are complex structures made up of a number of components that must be carefully assembled to meet performance requirements. Door assemblies are not free standing products and they will not provide for any design performance until they have been competently installed into a suitable structure.

The primary purpose of any door assembly is to provide a means for 'traffic' to pass from one side of a wall to the other. To achieve this objective the doors should be easy to use. If the installed door assembly is difficult to operate the users of the building may disable elements of the assembly on the basis of user convenience with consequential safety risks. e.g. by wedging fire doors in an open position.

It is vital that performance door sets are assembled and installed by competent tradesmen and it is strongly recommended that the installer is a member of a recognised quality assurance scheme, such as the 'Q-Mark' Fire Door Installers scheme to ensure that best practice is used.

Installers should be familiar with the content of BS8214 : 2016 - *Timber-based fire door assemblies – Code of practice*. Further guidance can be found by reference to the Architectural and Specialist Door Manufacturers (ASDMA) published Installation Guide that is reproduced by reference to *Section 16 - Appendix 1 & 2 of this manual*.

This section provides for further guidance but does not include for details with regard to any particular brand or type of fixing or for any particular method of packing door assemblies at fixing positions. Most installers have their preferred methods but these should generally comply with the following advice.

FLAMEBREAK™ based door assemblies are 'Q-Mark' approved for installation into most structures including:

- Cast dense concrete
- Dense concrete blocks or brickwork.
- Lightweight concrete
- Lightweight aerated concrete.
- Timber stud partition.
- Steel stud partition.

**NOTE 1:** All structures should provide for secure fixings and in the case of Steel stud partitions, the jamb fixing studs should be generally be back filled with softwood to receive fixings.

**NOTE 2:** Door assemblies may be fixed to some propriety steel stud partitions where the particular partition system has been successfully tested to the required performance with timber door assemblies. In this event fixings must comply with the partition suppliers (manufacturers) specifications.

### Installation Fixings:

Fasteners used for the installation of door assemblies must be of a size and type suitable for securing into the medium into which the door assembly is to be installed.

Fixings must penetrate the structure to a minimum depth of 40mm.

**NOTE:** Where grounds are used, the grounds must be secured with fixings to a minimum depth of 40mm into the surrounding structure.

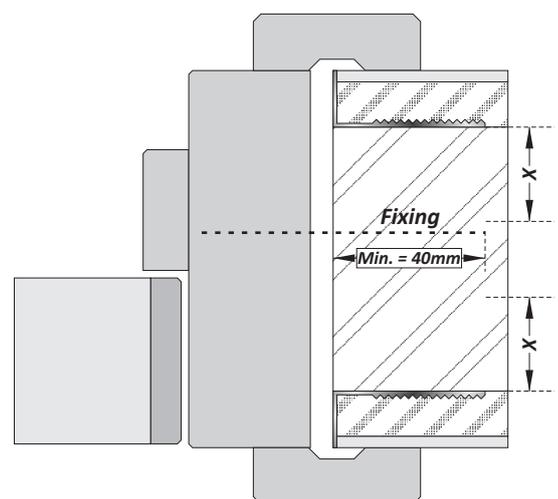
When installing door assemblies into masonry walls it is recommended that fixings should be located at least 25mm from the face of the base block work or brick work wall.

Steel wood screws are approved for use with timber stud partitions and for use with steel stud partitions that incorporate a timber infill.

When fixing to propriety metal stud partitions without timber infill the fixings must be of the size and type approved by reference to the partition manufacturers fire test / assessment data.

### Installation Fixings

Fig. 14.1



a/ Steel fixings to penetrate structure to a minimum depth of 40mm.

b/ For masonry walls it is recommended that fixings are located a minimum of 25mm (dim. x) from the face of the base block / brick structure.

c/ Fixings may be covered by use of the door stop, pellets or by the intumescent seals.

## 14.2 Fire Door Installation

# FLAMEBREAK

### Fire Door Installation:

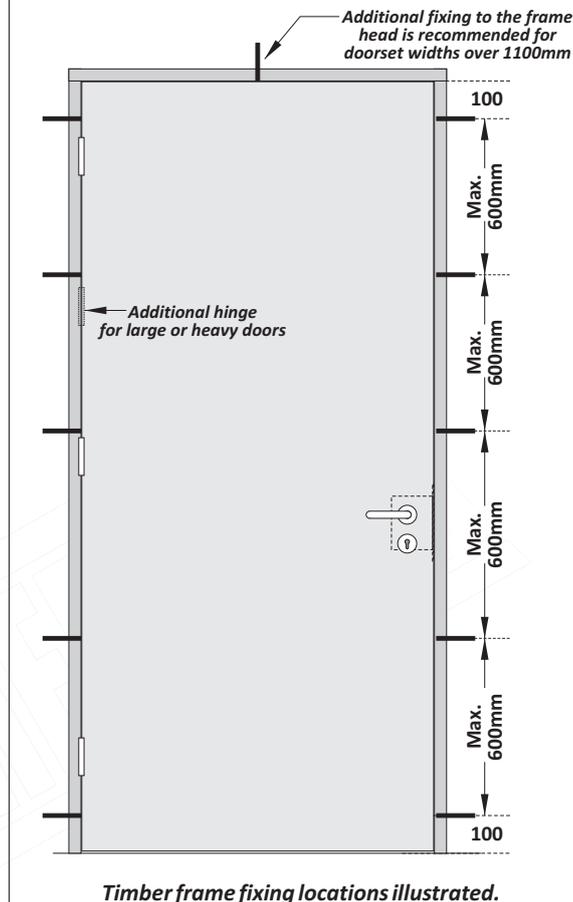
#### Q Installation Fixings *contd.*:

The positioning of installation fixings in height should be planned to avoid conflicts with hardware, sealing systems and other building elements.

- A top fixing must be located within 100mm from the underside of the frame head.
- A bottom fixing must be located 100mm from the bottom of the jamb.
- Intermediate fixings must be located at centres of not more than 600mm.
- The minimum number of fixings in height must be:
  - a/ Door assembly heights up to 2000mm = 4No.
  - b/ Door assembly heights 2000 ~ 2500mm = 5No.
  - c/ Add 1No. fixing for each further 500mm increase in the door assembly height.
- For storey height door assemblies a top fixing must be provided within 100mm from the underside of the frame head with a further top fixing positioned 100mm from the under side of the transom rail (or bottom edge of the over panel if a flush overpanel design is used).
- For door assembly widths in excess of 1100mm the use of an additional fixing centre width of the door assembly at the head position is recommended.
- MDF frames are more flexible than timber frames. To reduce the risk of frame distortion during fixing it is strongly recommended that the dimension for fixing centres between intermediate fixings is reduced from 600mm to a maximum of 500mm.

#### Q Installation Fixings *contd.*:

Fig. 14.2



#### Fire Performance Walls and Partitions:

The wall and partition constructions shown in this section are for illustration purposes only.

There are numerous wall and partition constructions and Designers must ensure that the designs used for any particular project are suitable to receive fire doors to the required performance.

The wall / partition designs must also provide for the secure fixing of door assemblies.

#### Locating Door Assemblies:

For 2nd. fix Fire Door installation, door assemblies must be positioned centrally in the opening width with equal packing to both sides.

For single action doors it is recommended that door assemblies are aligned with the wall / partition faces towards the opening face of the door. For double action door assemblies the assembly should be aligned relative to a single selected face.

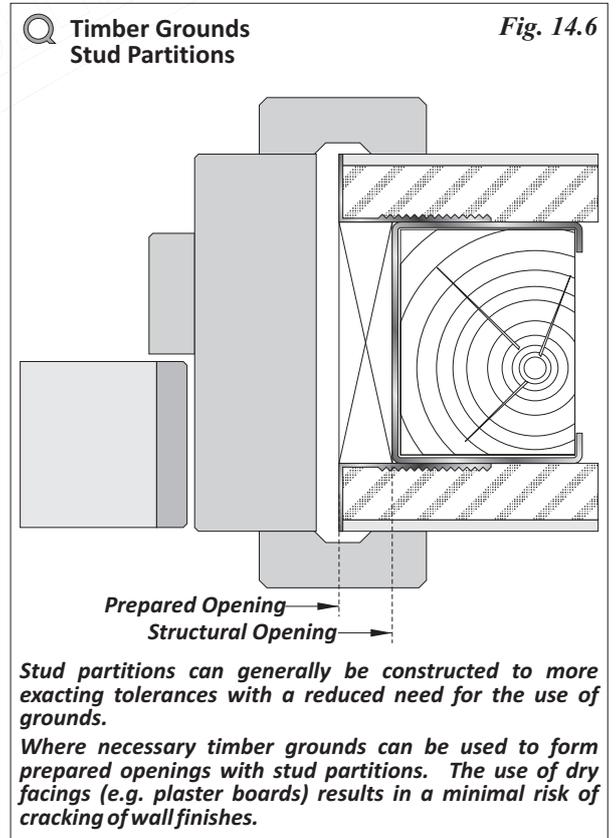
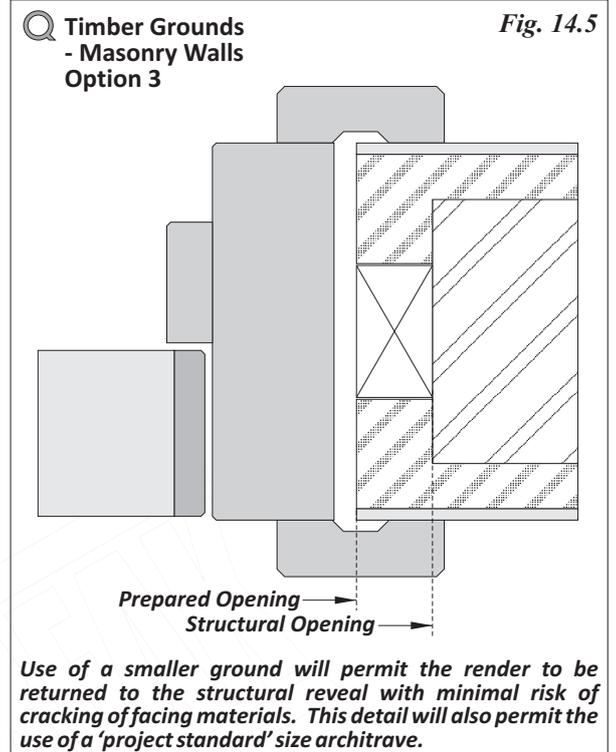
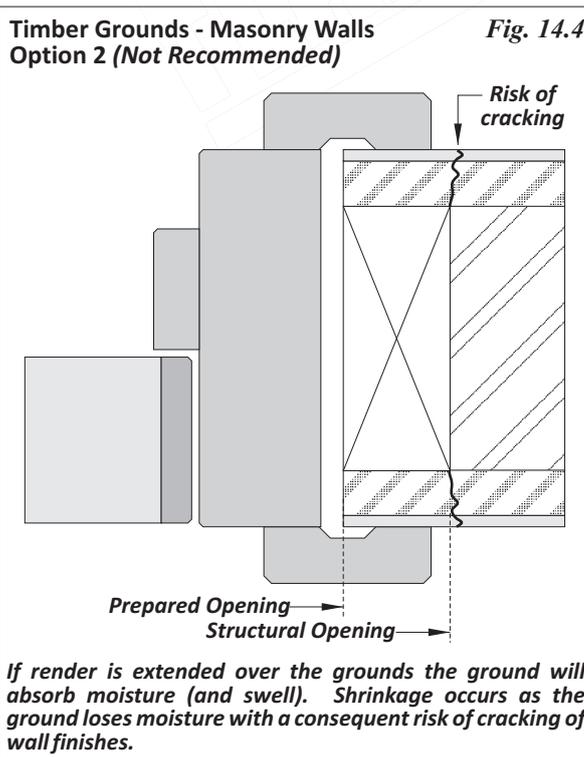
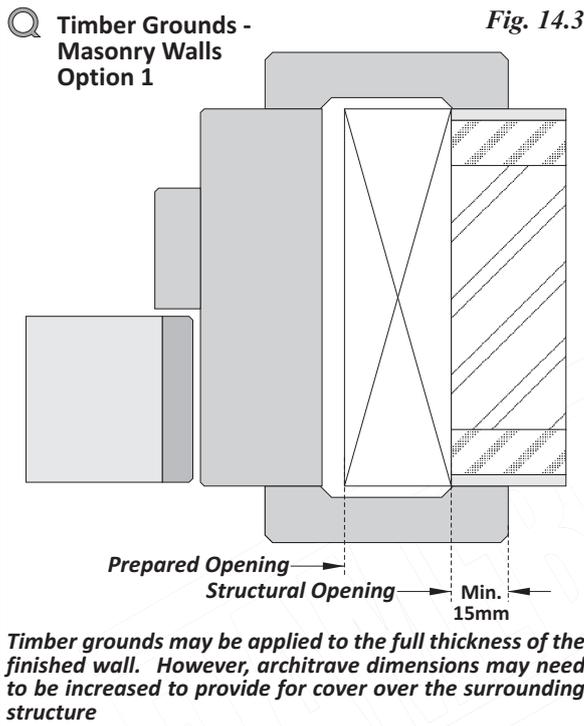
Door assemblies must be installed plumb and square and the use of the door leaf as an installation template is recommended to reduce the need for subsequent adjustments.



### Timber Grounds:

Timber grounds may be used to adjust opening dimensions to receive fire rated door assemblies up to FD60 (BS476 Pt.22).

The use of timber grounds is recommended to provide for 'prepared openings' to receive door assemblies See *Section 9 - Door Assembly Coordination*.



## Installation Gaps:

### Installation Gaps:

For 2nd. fixing of door assemblies into prepared openings it is essential that there is an installation gap between the frame and the surrounding structure.

The recommended minimum gap is 3mm at each jamb at 6mm at the head but, this is only possible where the openings are plumb and square and prepared to exacting tolerances.

The following details illustrate 'Q-Mark' approved methods for the treatment of installation gaps for fire rated door assemblies up to FD60 (BS476 Pt.22). *See also BS8214 : 2016.*

### Sealant:

Mastic should be an approved linear gap joint seal, successfully tested in accordance with BS476 Pt. 20 OR BS EN 1366-4 for the required period of fire resistance.

**NOTE 1:** Any substrate materials tested either side of the approved mastic are acceptable as supporting evidence, e.g. timber to concrete, concrete to concrete, flexible partition to timber or flexible partition to concrete. Provided that the mastic has been tested within these parameters, it can be used for the applications described by reference to Figs. 4.7 to 4.18.

Expanded foam (limited to performances up to 30Mins. fire integrity) should be an approved linear gap joint seal, successfully tested in accordance with BS476 Pt. 20 OR BS EN 1366-4 for a minimum period of 30 min. fire resistance.

**NOTE 2:** Provided that the expanded foam has been tested uncapped on both faces (e.g. without architrave) in accordance with BS476 Pt. 20 OR BS EN 1366-4, with a minimum gap width of 20mm and a maximum full fill depth of 100mm, the expanding foam is approved for frame to supporting construction gap widths up to 20mm for all frame depths. Any substrate materials tested either side of the approved expanding foam linear joint seal are acceptable as supporting evidence. e.g. timber to concrete, concrete to concrete, flexible partition to timber or flexible partition to concrete. Provided that the expanded foam has been tested within these parameters, it can be used for applications described by reference to Figs. 4.7 to 4.18.

**NOTE 3:** For expanding foams that have been tested in accordance with BS476 Pt. 20 OR BS EN 1366-4, outside these parameters, the maximum width and required depth of foam is dictated by the manufacturer's tested and approval instructions. This could include restrictions on the type of surrounding structure that is approved for use with the expanding foam.

**NOTE 4:** Mastic and expanded foam seals may be used for the applications described by reference to Figs. 4.7 to 4.18, provided that they have been included within a fire test, between the door frame and the surrounding structure, on a timber based door assembly that has demonstrated a minimum of 30 min. fire resistance in accordance with BS 476 Pt. 22 or BS EN 1634-1.

The manufacturer's instructions should be followed.

**NOTE 5:** The pressure forming intumescent fire seals identified by reference to Figs. 4.7 to 4.18. are defined as door edge intumescent fire seals that have been successfully tested in accordance with BS 476 Pt. 22 or BS EN 1634-1 for the required period of fire resistance.

### Architrave:

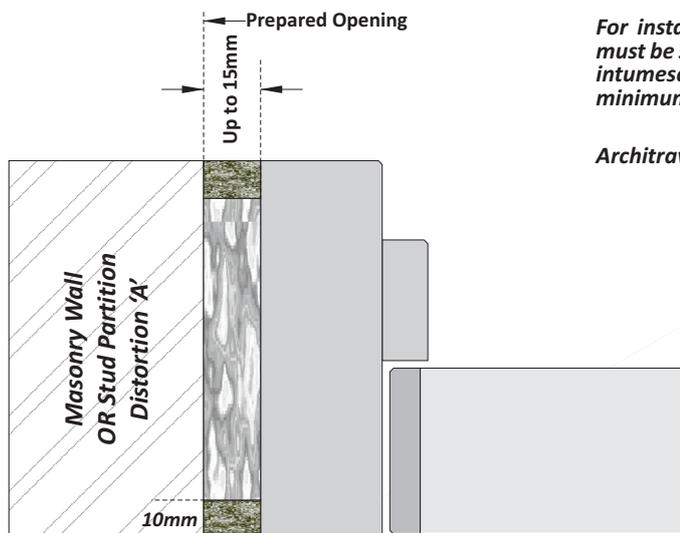
Architraves (and quadrants) should be mechanically fixed, e.g. pins (including pneumatically fired pins), or screws.



## Installation Gaps - BS8214 : 2016:

### Installation Gaps up to 15mm without architrave **30Min.**

Fig. 14.7



For installation gaps up to 15mm the installation gaps must be sealed with tightly packed mineral rock fibre with intumescent mastic capping to both sides of the frame to a minimum depth of 10mm.

Architrave: No Architrave fitted.

BS8214 : 2016  
Table 2 Dwg. 1  
Table 3 Dwg. 1

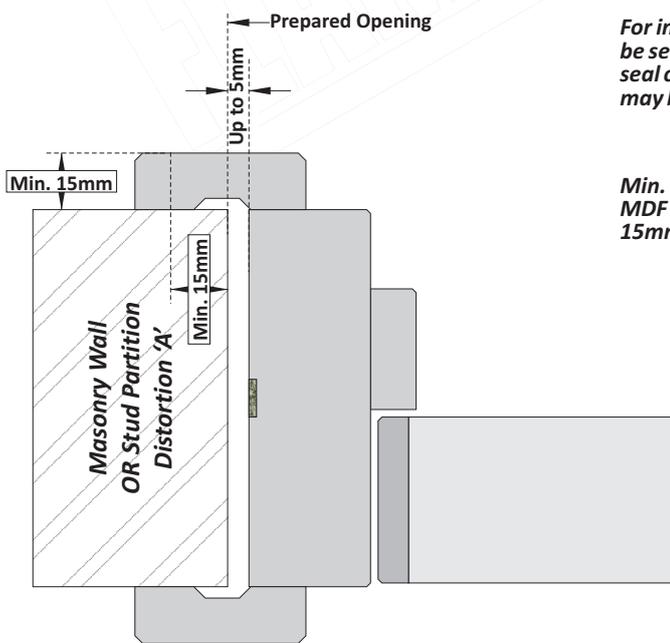
**BS8214 : 2016 - Table References:**

Table 2 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

Table 3 = Supporting structure likely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

### Installation Gaps up to 5mm with architrave **30Min.**

Fig. 14.8



For installation gaps up to 5mm the installation gaps must be sealed with 10x2mm pressure forming intumescent fire seal centrally fitted to the rear of the door frame. (This seal may be recessed or surface fitted).

Not approved for smoke sealed applications.

Min. 15mm thick architrave in softwood, hardwood or MDF fitted to overlap surrounding structure by a Min. 15mm.

BS8214 : 2016  
Table 2 Dwg. 3

**BS8214 : 2016 - Table References:**

Table 2 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

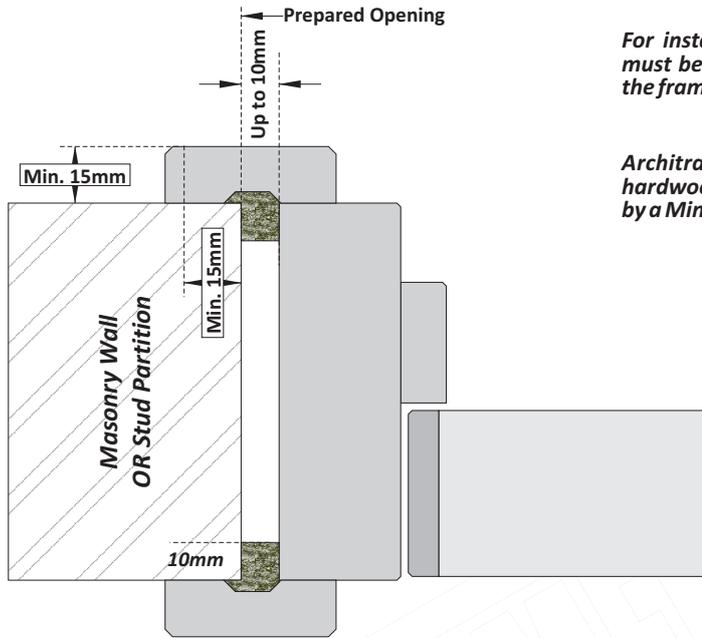


# 14.6 Fire Door Installation

## Installation Gaps - BS8214 : 2016:

### Installation Gaps up to 10mm with architrave **30Min.**

Fig. 14.9



For installation gaps up to 10mm the installation gaps must be sealed with intumescent mastic to both sides of the frame to a minimum depth of 10mm.

Approved for smoke sealed applications.

Architrave: Min. 15mm thick architrave in softwood, hardwood or MDF fitted to overlap surrounding structure by a Min. 15mm.

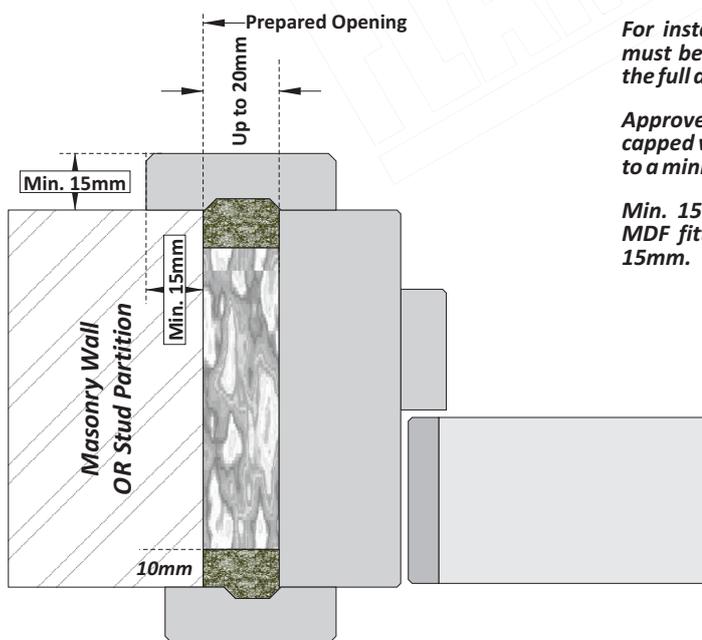
BS8214 : 2016  
Table 2 Dwg. 2

**BS8214 : 2016 - Table References:**

Table 2 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

### Installation Gaps up to 20mm with architrave **30Min.**

Fig. 14.10



For installation gaps up to 20mm the installation gaps must be sealed with tightly packed mineral rock fibre to the full depth of the frame.

Approved for smoke sealed locations with the rock wool capped with intumescent mastic to both sides of the frame to a minimum depth of 10mm. (as illustrated).

Min. 15mm thick architrave in softwood, hardwood or MDF fitted to overlap surrounding structure by a Min. 15mm.

BS8214 : 2016  
Table 2 Dwg. 4  
Table 3 Dwg. 2

**BS8214 : 2016 - Table References:**

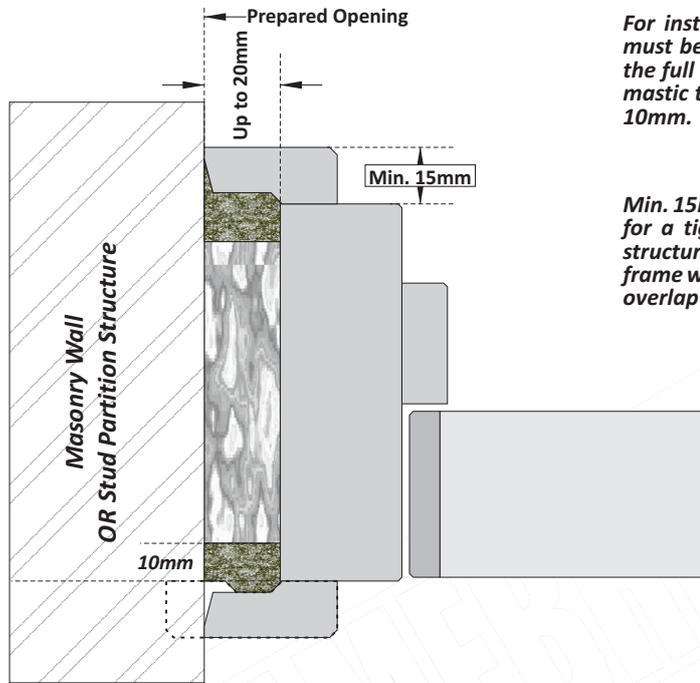
Table 2 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

Table 3 = Supporting structure likely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

## Installation Gaps - BS8214 : 2016:

### Installation Gaps up to 20mm with quadrant **30Min.**

Fig. 14.11



For installation gaps up to 20mm the installation gaps must be sealed with tightly packed mineral rock fibre to the full depth of the frame and capped with intumescent mastic to both sides of the frame to a minimum depth of 10mm.

Approved for smoke sealed applications.

Min. 15mm thick quadrant in hardwood scribed to provide for a tight fit between the frame and the surrounding structure. The quadrant can be to one or both sides of the frame where an approved architrave is used on one face to overlap the surrounding structure.

BS8214 : 2016  
Table 2 Dwg. 7  
Table 3 Dwg. 4

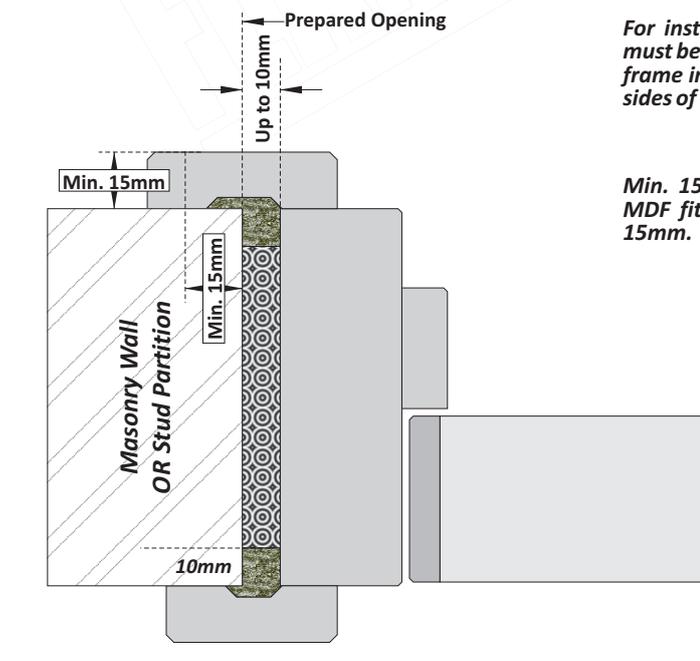
**BS8214 : 2016 - Table References:**

Table 2 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

Table 3 = Supporting structure likely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

### Installation Gaps up to 10mm with architrave **30Min.**

Fig. 14.12



For installation gaps up to 10mm the installation gaps must be sealed with expanded foam to the full depth of the frame including capping with intumescent mastic to both sides of the frame to a minimum depth of 10mm.

Approved for smoke sealed applications.

Min. 15mm thick architrave in softwood, hardwood or MDF fitted to overlap surrounding structure by a Min. 15mm.

BS8214 : 2016  
Table 3 Dwg. 3

**BS8214 : 2016 - Table References:**

Table 3 = Supporting structure likely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

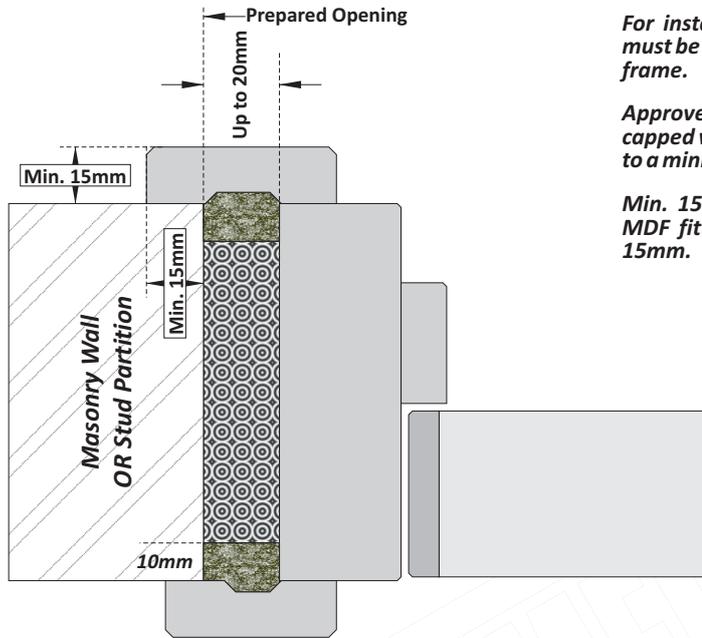


# 14.8 Fire Door Installation

## Installation Gaps - BS8214 : 2016:

### Installation Gaps up to 10mm with architrave **30Min.**

Fig. 14.13



For installation gaps up to 20mm the installation gaps must be sealed with expanded foam to the full depth of the frame.

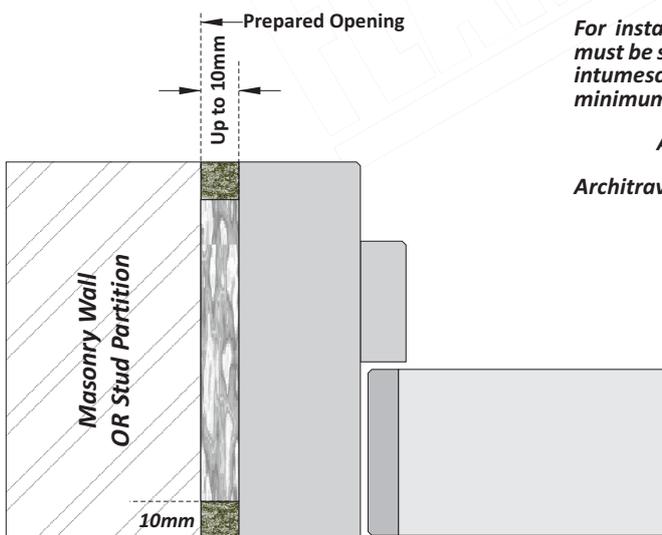
Approved for smoke sealed locations with the rock wool capped with intumescent mastic to both sides of the frame to a minimum depth of 10mm. (as illustrated).

Min. 15mm thick architrave in softwood, hardwood or MDF fitted to overlap surrounding structure by a Min. 15mm.

BS8214 : 2016  
Table 2 Dwgs. 5 & 6  
BS8214 : 2016 - Table References:  
Table 2 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 30Min. fire resistance.

### Installation Gaps up to 10mm without architrave **60Min.**

Fig. 14.14



For installation gaps up to 10mm the installation gaps must be sealed with tightly packed mineral rock fibre with intumescent mastic capping to both sides of the frame to a minimum depth of 10mm.

Approved for smoke sealed applications.

Architrave: No Architrave fitted.

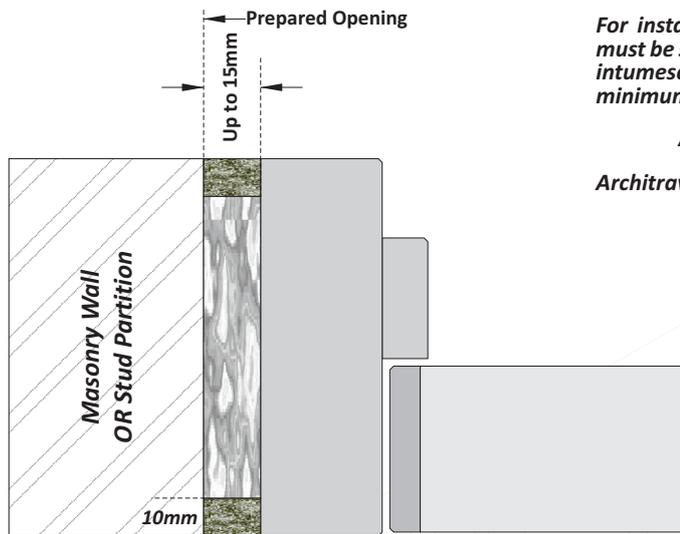
BS8214 : 2016  
Table 5 Dwg. 1  
BS8214 : 2016 - Table References:  
Table 5 = Supporting structure likely to exhibit significant distortion during fire exposure with 60Min. fire resistance.



## Installation Gaps - BS8214 : 2016:

### Installation Gaps up to 15mm without architrave **60Min.**

Fig. 14.15



For installation gaps up to 15mm the installation gaps must be sealed with tightly packed mineral rock fibre with intumescent mastic capping to both sides of the frame to a minimum depth of 10mm.

Approved for smoke sealed applications.

Architrave: No Architrave fitted.

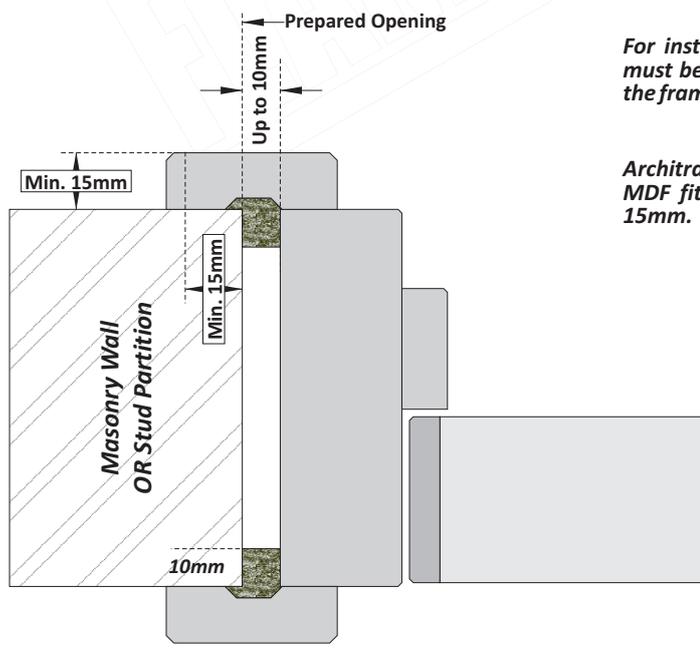
BS8214 : 2016  
Table 4 Dwg. 1

**BS8214 : 2016 - Table References:**

Table 4 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 60Min. fire resistance.

### Installation Gaps up to 10mm with architrave **60Min.**

Fig. 14.16



For installation gaps up to 10mm the installation gaps must be sealed with intumescent mastic to both sides of the frame to a minimum depth of 10mm.

Approved for smoke sealed applications.

Architrave: Min. 15mm thick architrave in hardwood or MDF fitted to overlap surrounding structure by a Min. 15mm.

BS8214 : 2016  
Table 4 Dwg. 2

**BS8214 : 2016 - Table References:**

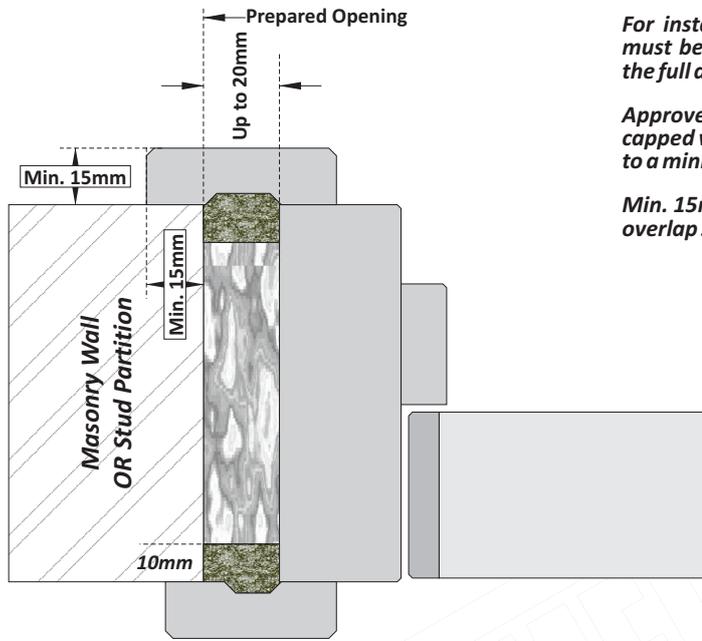
Table 4 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 60Min. fire resistance.

# 14.10 Fire Door Installation

## Installation Gaps - BS8214 : 2016:

### Installation Gaps up to 20mm with architrave **60Min.**

Fig. 14.17



For installation gaps up to 20mm the installation gaps must be sealed with tightly packed mineral rock fibre to the full depth of the frame.

Approved for smoke sealed locations with the rock wool capped with intumescent mastic to both sides of the frame to a minimum depth of 10mm. (as illustrated).

Min. 15mm thick architrave in hardwood or MDF fitted to overlap surrounding structure by a Min. 15mm.

BS8214 : 2016  
Table 4 Dwg. 3  
Table 5 Dwg. 2

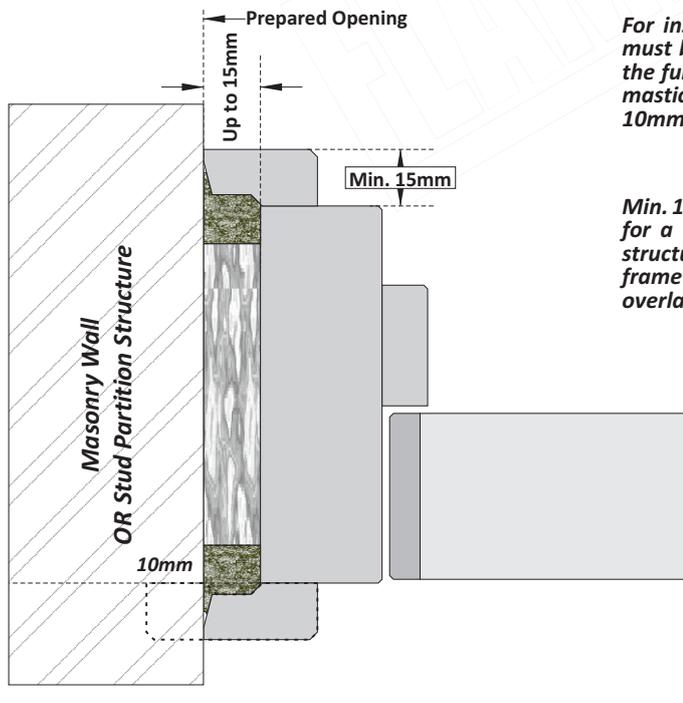
**BS8214 : 2016 - Table References:**

Table 4 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 60Min. fire resistance.

Table 5 = Supporting structure likely to exhibit significant distortion during fire exposure with 60Min. fire resistance.

### Installation Gaps up to 10mm with quadrant **60Min.**

Fig. 14.18



For installation gaps up to 15mm the installation gaps must be sealed with tightly packed mineral rock fibre to the full depth of the frame and capped with intumescent mastic to both sides of the frame to a minimum depth of 10mm.

Approved for smoke sealed applications.

Min. 15mm thick quadrant in hardwood scribed to provide for a tight fit between the frame and the surrounding structure. The quadrant can be to one or both sides of the frame where an approved architrave is used on one face to overlap the surrounding structure.

BS8214 : 2016  
Table 4 Dwg. 4  
Table 5 Dwg. 3

**BS8214 : 2016 - Table References:**

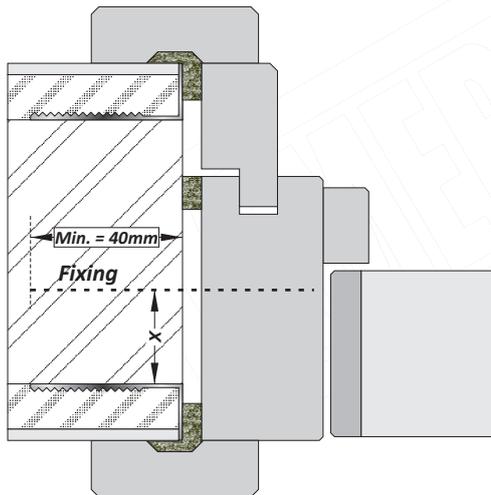
Table 4 = Supporting structure unlikely to exhibit significant distortion during fire exposure with 60Min. fire resistance.

Table 5 = Supporting structure likely to exhibit significant distortion during fire exposure with 60Min. fire resistance.



## Installation - Split Frames & Frames with Extension Linings:

**Q** Installation Frame Designs with Extension Linings: *Fig. 14.19*



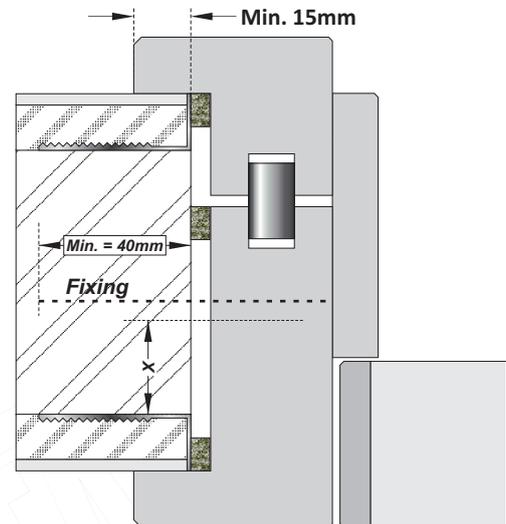
For frame designs using extension linings, the extension lining is essentially a non load bearing trim item and the stability of the installation relies upon the secure fixing of the primary frame section.

Installation fixings for installing the primary frame section must comply with 'Q-Mark' approved details described by reference to Section 14 Page 1 - Installation Fixings.

Sealing between the frame and the surrounding structure must comply with the recommendations defined by reference to Figs. 14.7 ~ 14.18. An additional intumescent bead being used to the back of the primary frame section as illustrated above.

Alternative approved method for intumescent sealing between the frame and the surrounding structure for use with frame designs using extension linings and where installation gap do not exceed 5mm is illustrated by reference to Section 7 - Frames - Fig. 7.52.

**Q** Installation Split Frame Designs : *Fig. 14.20*



For split frame designs the section that supports the door leaf is the primary section with the other half of the split frame being a non load bearing trim item.

Installation fixings for installing the primary frame section must comply with 'Q-Mark' approved details described by reference to Section 14 Page 1 - Installation Fixings.

Structures to receive door assemblies using split frame designs without the use of architrave must be very carefully prepared providing for an installation gap that does not exceed 5mm at any point around the perimeter of the frame. It is essential that the openings to receive the door assemblies are plumb and square and constructed to exacting tolerances. (See Section 9 - Door assembly Coordination).

The nib (moulded architrave) part of the frame must overlap the surrounding structure at the head and jambs by a minimum of 15mm and installation gaps of any size must be sealed with intumescent mastic to a minimum depth of 10mm as illustrated above.

Alternative approved method for intumescent sealing between the frame and the surrounding structure for use with split frame designs is illustrated by reference to Section 7 - Frames - Fig. 7.53.

## Installation - Door Leaf Adjustment:

### Adjusting Door Leaves:

The extent to which door leaves need to be adjusted will be influenced by a number of factors including:

- **Provisions made at the time of manufacture.**
- **Environmental conditions affecting moisture contents during transport and storage.**
- **Quality of installation.**

When installed, the operating gaps between the door and the frame and at the meeting stiles of pairs should comply with BS4787 Pt.1 : 1980 when measured from the opening face of the door leaf (*narrowest point*) with equal gaps at head and stiles (*including meeting stiles*).

Operating gaps at the threshold must not exceed 10mm between the bottom of the door and top of the floor covering.

It is recommended that the moisture content of the door leaf is checked before attempting to adjust door leaves.

**NOTE: Timber can grow or shrink across the grain, on average by 1% for each 4% variation in moisture content. Adjusting door leaves that have absorbed excessive moisture during transport, storage or during installation while wet trades are in attendance, may give rise to subsequent operating gap issues following the commissioning of the building heating and ventilation systems.**

The site adjustment of door leaves may be required to suit individual location requirements. The need for adjustments will be reduced if the door assemblies are installed plumb and square and where the door leaf (*rather than the surrounding structure*) is used as the installation template.

The application of a 'leading edge' may be required for some locations. (See Door Growth Formula - Section 9 - Door Assembly Coordination).

**NOTE: Some door manufacturers offer a 'leading edge' service as a factory applied optional extra. This will usually provide for a fixed chamfer of 2° applied to the closing stiles of doors.**

FLAMEBREAK™ based fire doors may be reduced on site by planing lippings. The extent of the reduction should be the minimum necessary to provide for the correct operation of the door but must not exceed 20% of the original lipping thickness.

For adjustments in widths it is recommended that lippings are reduced equally on both vertical edges of the door.

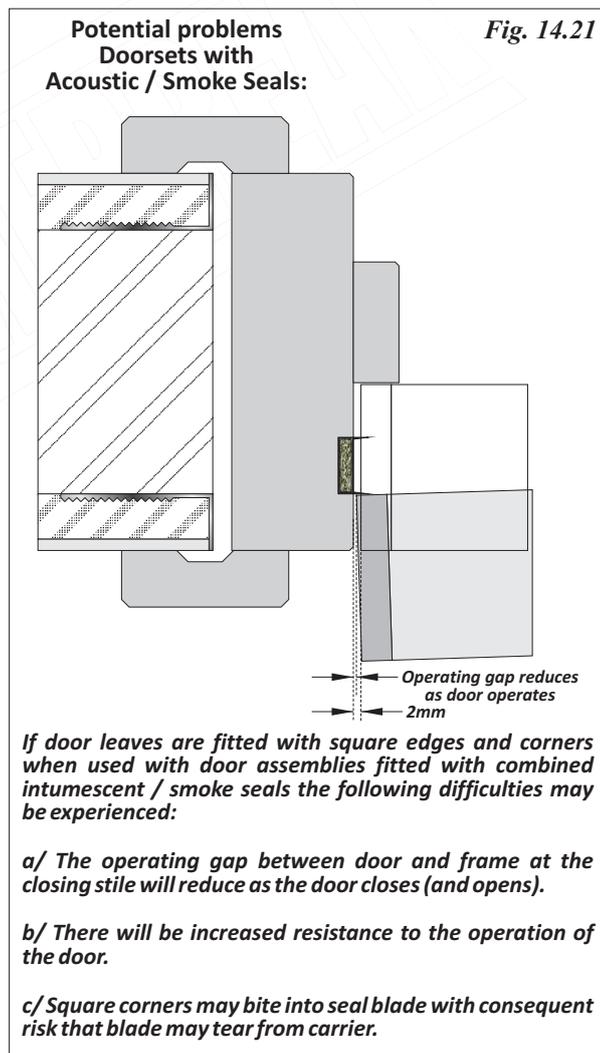
For reductions in height, adjustments may be limited to the bottom edge only unless otherwise required by reference to specific project specifications.

Where intumescent seals are fitted to the door leaf, these must be removed before adjusting the door and refitted (*with additional grooving*) after the adjustments have been completed.

**NOTE: Intumescent seals must be replaced with new seals complying with the same size and specifications of the seals that are removed.**

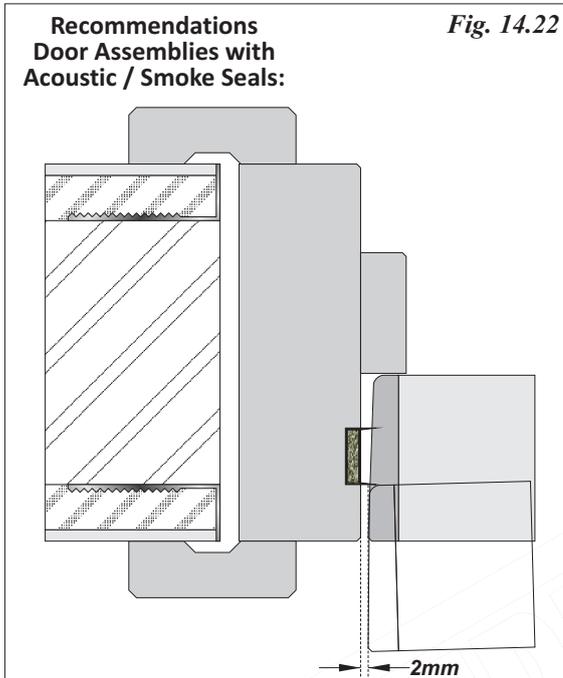
### Door Assemblies with Acoustic / Smoke Seals:

Additional care is required where door assemblies are fitted with smoke or acoustic seals.



## Installation - Door Leaf Adjustment:

Door Assemblies with Acoustic / Smoke Seals  
contd.:



*The following actions are recommended to overcome the potential problems identified by reference to Fig. 14.22:*

*a/ Over recess the intumescent seal by 0.5mm to relieve stress at the blade / carrier junction.*

*b/ Apply a leading edge (particularly to the closing stile) to maintain a constant operating gap as the door closes (opens).*

*c/ Apply a pencil round to the closing edges of the door leaf to act as a lead for the compression of smoke / acoustic seals.*

*NOTE: The use of pencil rounds is recommended for all edges of the doors. Apart from acting as a lead for the compression of seals, this feature will also provide for:*

*i/ Improved application of paint and lacquer finishes.*

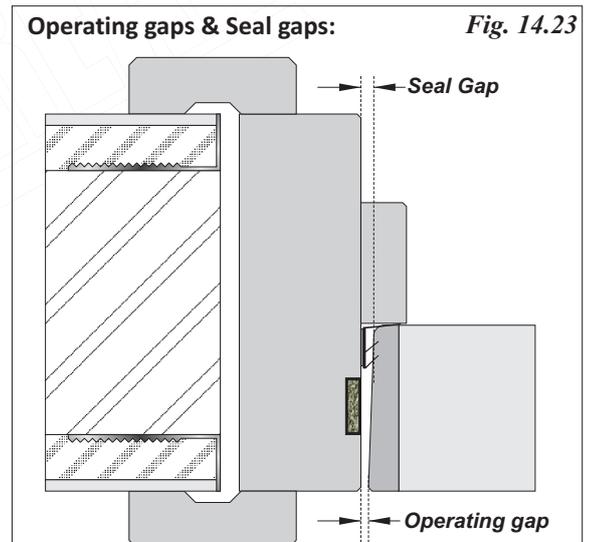
*ii/ Reduced risk of injury to users in the event of impact with door edges.*

### Operating gaps & Seal gaps:

The gap between the door and the frame must be suitable to provide for effective smoke / acoustic sealing at the seal position, particularly in respect of frame reveal fitted seals.

Generally separate seals that fit near to the frame doorstop will provide for reduced influence on the operation of the door.

It is recommended that 'operating gaps' and 'seal gaps' are considered as separate issues and that seal designs should provide for a means of adjustment to suit the particular application.



*The use of separate intumescent and smoke / acoustic seals is recommended by Pacific Rim Wood Ltd. for the following reasons:*

*a/ Smoke / Acoustic seals can generally be located in positions that have a minimal influence on the operation of the door.*

*b/ 'Batwing' and Norsound 710 type seals with adhesive backing can be adjusted by the use of backing tape to provide for the optimum balance between sealing efficiency and influence on operating forces.*

*c/ The smoke / acoustic seals are located in positions with a low risk of damage in use but may be easily replaced if necessary without disturbing intumescent seals.*

## 'Q-Mark' Approval - Installed Door Assemblies:

To maintain the 'Q-Mark' status, the door assembly manufacturer must be a member of the 'Q-Mark' third party certification scheme.

### 'Q-Mark' Approval:

To maintain 'Q-Mark' approval, an installed fire rated door assembly must satisfy the following requirements:

**a/** Lippings must not be reduced by more than 20% of the original sectional thickness.

**b/** Leading edges may be applied but the chamfer must not exceed 2.5°.

**c/** Edge profiling (e.g. pencil rounds) to be Max. 8mm radius.

**d/** The maximum permissible gap at the intumescent seal position(s) within door thickness, must not exceed 4mm.

**e/** The door leaf must not project more than 1mm from the face of the frame lining (before the application of architrave).

**f/** The packing of installation gaps must comply with approved details illustrated in *Section 14 - Fire Door Installation*.

**g/** Frame materials and sectional details must comply with the requirements of *Section 7 - Frames*.

**h/** Fire doors must be lipped to comply with approved details described by reference to *Section 3 - Lippings & Facings*.

**j/** Door facings must comply with details described by reference to *Section 3 - Lippings & Facings*.

**k/** Intumescent seals must be of the size and type suitable for the particular door assembly design by reference to *Section 2 - Fire Door Applications*.

**m/** Intumescent seals must be located as described by reference to *Section 4 - Intumescent Sealing*.

**n/** Glazing in fire doors must comply with details described by reference to *Section 6 - Glazing*, including glass type, glazed area and intumescent glazing / beading system.

**p/** Hardware used with fire rated door assemblies must comply with details provided by reference to *Section 8 - Hardware*, including all intumescent gaskets, sealing and the like.

It would be an impossible task to attempt to anticipate every possible door assembly design or design variant.

The content of this manual will cover most application requirements.

Where particular project designs require applications that fall outside of the scope of this manual it may be possible to provide for a 'Project Assessment' based upon specific details.

Requests for 'Project Assessments' under the 'Q-Mark' scheme may be forwarded by any 'Q-Mark' member to:

Exova BM TRADA  
Stocking Lane,  
Hughenden Valley,  
High Wycombe,  
Buckinghamshire HP14 4ND

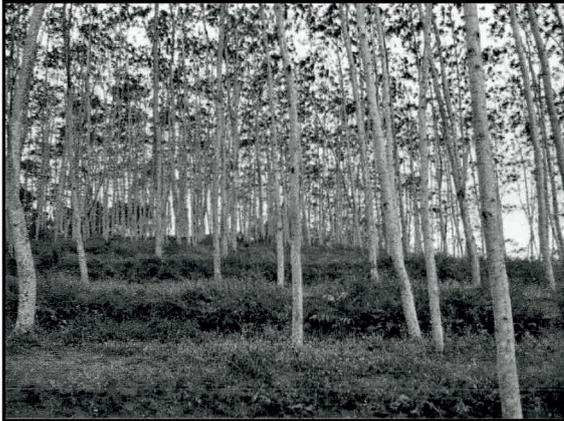
Tel: +44 (0) 1494 569700  
Fax: +44 (0) 1494 569701  
E mail: certification@bctrada.com



FLAMEBREAK



Notwithstanding any other considerations, Pacific Rim Wood Ltd. and P.T. Kutai Timber Indonesia have a vested interest in ensuring the sustainability of the raw materials used for the manufacture of FLAMEBREAK™ door cores and are strong supporters of the FSC (*Forest Stewardship Council*).



*P.T. Kutai Falcatta plantation*



*FSC Meranti*



*FSC Kamarere*

The primary species used for the manufacture of FLAMEBREAK™ is Falcatta which is a fast growing light weight plantation hardwood grown in forests that are either owned or managed by P.T. Kutai Timber Indonesia. Other species used in the manufacture of FLAMEBREAK™ (*and other P.T. Kutai timber products*) include plantation grown Radiata pine from New Zealand, Meranti from Indonesia and plantation grown Kamarere from Papua.

FLAMEBREAK™ cores are available with full FSC certification and with chain of custody records from plantation through to the factory finished product.

Raw materials used in the manufacture of FSC Certified FLAMEBREAK™ are obtained from FSC accredited sources audited by:

- Exova BM TRADA
- Soil Association Certification Ltd.
- The Rainforest Alliance
- SmartWood

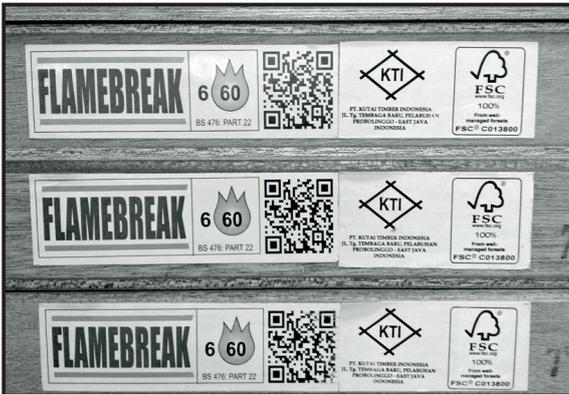
P.T. Kutai plantations and the manufacturing plant meet the requirements of FSC-STD-40-004 (*Version 2.0*) EN and FSC-STD-40-005 (*Version 2.1*) EN for Chain of Custody Certification with audits carried out by Exova BM TRADA.

P.T. Kutai Timber Indonesia meets the Environmental Management System requirements of ISO 14001 : 2004 and is registered within the Exova BM TRADA certification scheme to this effect.

In addition the P.T. Kutai factories operate ISO 9001 : 2008 quality control systems audited by Exova BM TRADA providing for confidence with regard to the consistency of the FLAMEBREAK™ product and full traceability, where required from sapling through to the FLAMEBREAK™ door core.

# 15.2 FSC Certified FLAMEBREAK™

# FLAMEBREAK



FSC Flamebreak™ is supplied with the support of a complete forest to work shop chain of custody.

FSC FLAMEBREAK™ Plywood faced door blanks satisfy specification requirements for labelling as a 100% FSC product.



- 4mm Plywood - FLAMEBREAK™ 430
- 6mm Plywood - FLAMEBREAK™ 630
- 6mm Plywood - FLAMEBREAK™ 660



FSC FLAMEBREAK™ MDF faced door blanks satisfy specification requirements for labelling as a FSC MIX product.



- 6mm MDF - FLAMEBREAK™ FF630
- 6mm MDF - FLAMEBREAK™ FF660





The mark of  
responsible forestry



## CERTIFICATE OF REGISTRATION

This is to certify that

### PT Kutai Timber Indonesia

Jl. Tanjung Tembaga Baru,  
Pelabuhan Probolinggo,  
East Java,  
Indonesia

has been audited and found to meet the requirements of standard(s) FSC-STD-50-001 (Version 1.2) EN and FSC-STD-40-004 (Version 2.1) EN for FSC® Chain of Custody Certification

#### Scope of certification

Manufacture and sales of plywood, door blank, solid wood board, glued laminated timber and particle board made from FSC certified timber and sales of FSC certified round wood

#### Products:

Plywood  
Doors and door frames  
Solid wood board  
Glued laminated timber  
Particle board  
Round wood

Certificate number: TT-COC-002009

Issue number: 2016-01

Certificate start date: 10 January 2015

Certificate expiry date: 9 January 2020

Date of initial certification: 10 January 2005

**Tom Johnston**  
General Manager  
Central Certification Services

Exova (UK) Ltd, (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4ND, UK  
Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No. SC070429.

This certificate remains the property of Exova (UK) Ltd. This certificate and all copies or reproductions of the certificate shall be returned to Exova (UK) Ltd or destroyed if requested. The validity of this certificate and the list of products covered by this certificate should be verified at [www.fsc-info.org](http://www.fsc-info.org) Forest Stewardship Council®

This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC certified (or FSC Controlled Wood). Products offered, shipped or sold by the certificate holder can only be considered to be covered by the scope of this certificate when the required FSC claim is stated on invoices and shipping documents.

Multisite clients - The scope of certification shown above includes the participating sites shown in appendix A



### CERTIFICATE OF REGISTRATION

This is to certify that

**PT. KUTAI TIMBER INDONESIA**  
Jl. Tanjung Tembaga Baru  
Pelabuhan Probolinggo 67201  
Jawa Timur  
Indonesia



has been audited and found to meet the requirements of standard  
**ISO 14001:2015 Environmental Management System**

**Scope of certification**

Manufacture of Plywood, Woodworking, and Particle Board

**Karen Prendergast**  
Sector Director - Certification  
Exova BM TRADA

Certificate number: 091

Issue number: 2017-01

Certificate start date: 16 September 2016

Certificate expiry date: 15 September 2019

Date of initial certification: 16 September 2013

Exova (UK) Ltd, (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4QJ, UK  
Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH26 8PL United Kingdom. Reg No. SC070429.  
This certificate remains the property of Exova (UK) Ltd. This certificate and all copies or reproductions of the certificate shall be returned to Exova (UK) Ltd or destroyed if requested. Further certification regarding the scope of this certificate and verification of the certificate is available through Exova BM TRADA or at the above address or at [www.exovabmtrada.com](http://www.exovabmtrada.com)  
The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the accreditation certification 012



### CERTIFICATE OF REGISTRATION

This is to certify that

**PT. KUTAI TIMBER INDONESIA**  
Jl. Tanjung Tembaga Baru  
Pelabuhan Probolinggo 67201  
Jawa Timur  
Indonesia



has been audited and found to meet the requirements of standard  
**ISO 9001:2015 Quality Management System**

**Scope of certification**

Manufacture of Plywood, Woodworking, and Particle board

**Karen Prendergast**  
Sector Director - Certification  
Exova BM TRADA

Certificate number: 6232

Issue number: 2017-01

Certificate start date: 16 September 2016

Certificate expiry date: 15 September 2019

Date of initial certification: 16 September 2013

Date of initial certification: 16 September 2013

Exova (UK) Ltd, (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4QJ, UK  
Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH26 8PL United Kingdom. Reg No. SC070429.  
This certificate remains the property of Exova (UK) Ltd. This certificate and all copies or reproductions of the certificate shall be returned to Exova (UK) Ltd or destroyed if requested. Further certification regarding the scope of this certificate and verification of the certificate is available through Exova BM TRADA or at the above address or at [www.exovabmtrada.com](http://www.exovabmtrada.com)  
The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the accreditation certification 012

Click here to visit the FSC UK web site 



Forest Stewardship Council®  
FSC® United Kingdom



## What is the Forest Stewardship Council (FSC)?

So many things in our lives come from forests. FSC helps take care of forests and the people and wildlife who call them home. So you can keep your life full of forest products while keeping our forests full of life.

### Why are forests important?

Forests are good for us. They provide a great environment for hiking and other outdoor pursuits and are even proven to have therapeutic properties. Millions of indigenous people and countless species of plants and animals are wholly dependent on forests. Trees produce oxygen and in the process store carbon dioxide, meaning that forests are our planet's best defence against climate change. Forests also provide many products that we use every day from timber for furniture and construction to paper for books and tissues and even foods and important medicines.

### What's the problem?

Forests are under threat and disappearing at an alarming rate. Deforestation accounts for more greenhouse gas emissions than the global transport sector. Finding a balanced way to both use and protect our forests has become critical.

### How can FSC help?

FSC is an international, non-governmental organisation dedicated to promoting responsible management of the world's forests. FSC has developed a system of forest certification and product labelling that enables people to identify responsibly sourced wood, paper and other forest products.

### How can I help?

Choose FSC certified products whenever you can. Look out for the FSC labels on paper, timber and other forest products including cork, bamboo and natural latex. For unlabelled products, such as sawn timber, choose an FSC certified supplier.

### How does it work?

FSC runs a global forest certification system with two key components: Forest Management and Chain of Custody. The certification process is carried out by independent organisations called certification bodies, which assess forest managers and forest products companies against FSC standards.

#### FSC United Kingdom

The Billiard Room · Town Hall · Great Oak Street · Llanidloes · Powys · SY18 6BN  
01686 413 916 · [info@fsc-uk.org](mailto:info@fsc-uk.org)  
[www.fsc-uk.org](http://www.fsc-uk.org) · FSC® F000231



Click here to visit the FSC UK web site 

## What makes FSC forests special?

FSC certified forests must be managed to the highest environmental, social and economic standards. Trees that are harvested are replanted or allowed to regenerate naturally. The forests must be managed with due respect for the environment, the wildlife and the people who live and work in them. This is what makes the FSC system unique and ensures that a forest is well-managed, from the protection of indigenous people's rights to the methods of felling trees. FSC is the only forest certification scheme endorsed by WWF, Greenpeace and the Woodland Trust.

## What do the labels mean?

An FSC label on a wood or wood based product is your assurance that it is made with, or contains, wood that comes from FSC certified forests or from post-consumer waste. FSC labels can also be found on some non-timber forest products.



**FSC 100%**  
All the timber or fibre in the product comes from an FSC certified forest.



**FSC Mix**  
The timber or fibre in the product is a mixture of some/all of the following:  
• Timber/fibre from an FSC certified forest  
• Reclaimed timber/fibre  
• Timber/fibre from other controlled sources



**FSC Recycled**  
All the timber or fibre in the product is reclaimed material.

## Where can I find FSC certified products?

You can find the FSC labels on garden furniture, decking, sheds, conservatories, tools, bird boxes and bird tables, kitchen, bathroom and general housewares, brushes, wall paper, flooring, doors, shelves, furniture, toilet tissue, paper, books, pencils - in fact most things made from wood! It can also be found on other forest products including essential oils and natural latex. DIY stores such as B&Q and Wickes stock FSC products. You can also find FSC certified products and packaging on the high street in stores such as Marks & Spencer, Sainsbury's, John Lewis, and The Co-operative and from many independent retailers.

## How do I know if it's FSC certified?

Look for the FSC label on the product or packaging (remember that the packaging itself can also be FSC certified) or source from an FSC certified company. Every FSC label contains a unique license code. FSC certified companies should state which products are FSC certified and include their unique FSC certificate number on their invoices. FSC license codes and certificate numbers can be verified using the FSC certificate database at [info.fsc.org](http://info.fsc.org) or by contacting the FSC UK office.

## What should I do if you can't find FSC certified products?

Although more and more FSC certified products are available all the time, there are still gaps in the market. If you cannot find a product you should ask for it; the greater the demand, the bigger the supply. The FSC UK office can also help to identify suppliers of specific products.

### FSC United Kingdom

The Billiard Room · Town Hall · Great Oak Street · Llanidloes · Powys · SY18 6BN  
01686 413 916 · [info@fsc-uk.org](mailto:info@fsc-uk.org)  
[www.fsc-uk.org](http://www.fsc-uk.org) · FSC® F000231



FLAMEBREAK





## CERTIFICATE OF REGISTRATION

This is to certify that

### **Nelson Pine Industries Limited**

Lower Queen Street, Richmond Nelson, 7020 New Zealand

complies with the requirements of

### **Forest Stewardship Council® - Chain of Custody Standard and Controlled Wood Standard**

for the following scope of registration

**Tracking of wood based material.**

**Product groups: W9.2 Laminated Veneer Lumber; W8.3.2. Fibreboard; W7.1 Peeled Veneer Sheets.**

**Claim: FSC Mix, FSC Controlled Wood.**

**Systems used: Volume Credit.**

**Standards: FSC-STD-40-004 v 2-1, FSC-STD-40-005 v2-1, FSC-STD-50-001 v1-2.**

SAI Certificate No.:	CERT-0080074	Issue Date:	June 19, 2014
FSC Code:	SAI-COC-001290	Original Certification Date:	June 23, 2009
	SAI-CW-001290	Current Certification Date:	June 22, 2014
SAI File Number:	1618484	Certificate Expiry Date <sup>(1)</sup> :	June 21, 2019
		Issue Number:	1

Chris Jouppi  
President,  
QMI-SAI Canada Limited

Samer Chaouk  
Head of Policy, Risk and Certification  
SAI Global Certification Services Pty Ltd



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FSC® A000519

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Toronto, Ontario M9W 7K6 Canada (SAI GLOBAL). This registration is subject to the SAI Global Terms and Conditions for Certification. While all due care and  
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Global and must be returned to them upon request.  
To verify that this certificate is current, please refer to the SAI Global maintains an On-Line Certification Register:  
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(1) The validity of this certificate shall be verified on [www.info.fsc.org](http://www.info.fsc.org)  
The list of the products groups included in the scope of this certificate may be obtained from SAI Global Certification Services Pty Ltd upon request or found  
at [www.info.fsc.org](http://www.info.fsc.org). This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC®-certified or FSC®  
Controlled Wood. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required  
FSC® Claim is clearly stated on invoices and shipping documents.





The mark of responsible forestry



## Certificate of Registration

This is to certify that

### **KSU BROMO MANDIRI KTI**

has been certified in accordance with the requirements of the Forest Stewardship Council® A.C. Using the FSC-STD-IDN-01-2013 Indonesia Natural, Plantations and SLIMF EN. Harmonised and that **KSU BROMO MANDIRI KTI** of

### **Jl. Raya Bromo, Ngepung Village, Sukapura District, Probolinggo Regency, Province of East Java, INDONESIA**

is the Group Manager for this Group Certificate and is hereby licensed to describe the management of the certified forest area as 'FSC® Certified' and is hereby licensed to use the FSC Logo on and sell as FSC certified all products which are listed on the attached product schedule which were sourced from the certified forest area.

**Certificate Registration Code:**

**SA-FM/COC-~~115493~~**

Issue Number 1.0

**Licence Code:**

**FSC-C133562**

**Issued By:**

Soil Association Certification Limited  
South Plaza, Marlborough Street  
Bristol, BS1 3NX  
United Kingdom

**Issue Date:**  
**Valid until the Renewal Date:**

**4 January 2017**

**3 January 2022**

Subject to successful annual surveillance

**Signed on behalf of Soil Association Certification**

  
**Kevin Jones, Head of Forestry**

CA-FM-010-10 June 2016 © Prepared by Soil Association Certification Ltd. FSC Licence Code FSC® A000525  
\*This certificate is only valid for sale of FSC products when accompanied by a current product schedule. Validity of this certificate shall also be verified by checking the FSC database: info.fsc.org or by contacting Soil Association Certification: forestry@soilassociation.org This Certificate is the property of Soil Association Certification Ltd and all copies or reproductions of the certificate shall be destroyed or returned to the Soil Association Certification Ltd immediately, on request.  
A description of the products, sites or services that are included in the scope of the certificate may be obtained from Soil Association Certification on request.  
This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC certified (or FSC controlled wood). Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and shipping documents.



## Certificate of Registration



The mark of responsible forestry

**This is to certify that**  
**KSU ALAS MANDIRI KTI**  
"the certified forest area"  
has been certified in accordance with the requirements of the  
**Forest Stewardship Council® A.C.**  
Using the FSC-STD-IDN-01-2013 Indonesia Natural, Plantations and SLIMF EN. Harmonised  
and that

### **Koperasi Alas Mandiri KTI**

of

**Jl. Tanjung Tembaga Baru Probolinggo, JAWA TIMUR, INDONESIA**

**is the Group Manager for this Group Certificate and is hereby licensed to describe the management of the certified forest area as 'FSC® Certified' and is hereby licensed to use the FSC Logo on and sell as FSC certified all products which are listed on the attached product schedule which were sourced from the certified forest area.**

This certificate is only valid for sale of FSC products when accompanied by a current product schedule.  
Validity of this certificate may also be verified by checking the FSC database: [www.fsc-info.org](http://www.fsc-info.org) or by contacting Woodmark: [wm@soilassociation.org](mailto:wm@soilassociation.org)

Certificate Registration Code:

**SA-FM/COC-002083**

**Issue Number: 2.1**

Issued By:

Soil Association Certification Ltd,  
Woodmark Programme  
South Plaza, Marlborough Street  
Bristol, BS1 3NX  
United Kingdom

Issue Date:

22 December 2013

Valid until the Renewal Date:

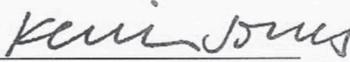
21 December 2018

Reissued with new standard:

11 June 2015

*Subject to successful annual surveillance*

Signed on behalf of Soil Association Certification

  
Kevin Jones Head of Forestry

CA-FM-010-09 Nov 13 © Prepared by Soil Association Certification Ltd

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# CERTIFICATE

for

## SUMITOMO FORESTRY (SINGAPORE) LTD

55 Market Street #11-02, Singapore, 048941, Singapore

### CERTIFICATE SCOPE

**Certificate Type:** Single Chain of Custody

**Standard(s):** FSC-STD-40-004 V3-0

**Product Group(s):** Roundwood (logs); Wood chips; Wood pellets; Solid wood boards; Raw wood for parquet flooring; Dimensional lumber, finished; Non-dimensional timber and lumber; Boards, finished; Peeled veneer; Sliced veneer; Plywood; Particleboard; Fibreboard; Finger jointed wood; Laminated veneer lumber (LVL); Solid-wood board; Glued laminated timber (GLULAM); I-joists, I-beams; Composite board

**Valid from** January 28, 2018 **to** January 27, 2023

**Certificate Registration Code:** RA-COC-005542 / RA-CW-005542

**FSC® License Code:** FSC-C018718

**Certificate Issue Number:** IN-2018-1

Additional details regarding the scope, including a full list of products and species are available at [info.fsc.org](http://info.fsc.org).

Laura Terrall, Director, Certification

Rainforest Alliance  
233 Broadway, 28th Floor  
New York, NY 10279 USA

Rainforest Alliance is an FSC accredited certifier FSC® A000520

*The validity of this certificate shall be verified on [info.fsc.org](http://info.fsc.org). This certificate does not constitute evidence that a particular product supplied by the certificate holder is FSC certified and/or FSC Controlled Wood. Products offered, shipped or sold by the certificate holder can only be considered covered by the scope of this certificate when the required FSC claim is clearly stated on invoices and shipping documents.*

*This certificate is the property of Rainforest Alliance. This certificate and all copies or reproductions of this certificate shall be returned or destroyed if requested by Rainforest Alliance.*





## CERTIFICATE OF REGISTRATION

This is to certify that

### PT. KUTAI TIMBER INDONESIA

Jl. Tanjung Tembaga Baru  
Pelabuhan Probolinggo 67201  
Jawa Timur  
Indonesia



has been audited and found to meet the requirements of standard  
**ISO 14001:2015 Environmental Management System**

#### Scope of certification

Manufacture of Plywood, Woodworking, and Particle Board

Certificate number: 091

Issue number: 2017-01

Certificate start date: 16 September 2016

Certificate expiry date: 15 September 2019

Date of initial certification: 16 September 2013

**Karen Prendergast**  
Sector Director - Certification  
Exova BM TRADA

Exova (UK) Ltd, (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4ND, UK  
Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No. SC070429.

This certificate remains the property of Exova (UK) Ltd. This certificate and all copies or reproductions of the certificate shall be returned to Exova (UK) Ltd or destroyed if requested. Further clarification regarding the scope of this certificate and verification of the certificate is available through Exova BM TRADA or at the above address or at [www.exovabmtrada.com](http://www.exovabmtrada.com)

The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the accreditation certification 012



## CERTIFICATE OF REGISTRATION

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### PT. KUTAI TIMBER INDONESIA

Jl. Tanjung Tembaga Baru  
Pelabuhan Probolinggo 67201  
Jawa Timur  
Indonesia



has been audited and found to meet the requirements of standard  
ISO 9001:2015 Quality Management System

#### Scope of certification

Manufacture of Plywood, Woodworking, and Particle board

Certificate number: 6232

Issue number: 2017-01

Certificate start date: 16 September 2016

Certificate expiry date: 15 September 2019

Date of initial certification: 16 September 2013

Date of re or ini inion certification: 2013

**Karen Prendergast**  
Sector Director - Certification  
Exova BM TRADA

Exova (UK) Ltd, (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4ND, UK  
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The use of the UKAS accreditation mark indicates accreditation in respect of those activities covered by the accreditation certification 012



The mark of  
responsible forestry



## CERTIFICATE OF REGISTRATION

This is to certify that

### PT Kutai Timber Indonesia

Jl. Tanjung Tembaga Baru,  
Pelabuhan Probolinggo,  
East Java,  
Indonesia

has been audited and found to meet the requirements of standard(s) FSC-STD-50-001 (Version 1.2) EN and FSC-STD-40-004 (Version 2.1) EN for FSC® Chain of Custody Certification

#### Scope of certification

Manufacture and sales of plywood, door blank, solid wood board, glued laminated timber and particle board made from FSC certified timber and sales of FSC certified round wood

#### Products:

Plywood  
Doors and door frames  
Solid wood board  
Glued laminated timber  
Particle board  
Round wood

Certificate number: TT-COC-002009

Issue number: 2016-01

Certificate start date: 10 January 2015

Certificate expiry date: 9 January 2020

Date of initial certification: 10 January 2005

Tom Johnston  
General Manager

Central Certification Services

Exova (UK) Ltd, (T/A Exova BM TRADA), Chiltern House, Stocking Lane, High Wycombe, Buckinghamshire, HP14 4ND, UK  
Registered Office: Exova (UK) Ltd, Lochend Industrial Estate, Newbridge, Midlothian EH28 8PL United Kingdom. Reg No. SCO70429.

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This certificate itself does not constitute evidence that a particular product supplied by the certificate holder is FSC certified (or FSC Controlled Wood). Products offered, shipped or sold by the certificate holder can only be considered to be covered by the scope of this certificate when the required FSC claim is stated on invoices and shipping documents.

Multisite clients - The scope of certification shown above includes the participating sites shown in appendix A

## REGISTRATION CERTIFICATE

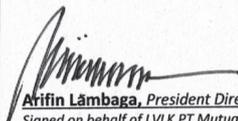


PT MUTUAGUNG LESTARI, operating as Independent Assessment and Verification Agency declares that,  
**PT KUTAI TIMBER INDONESIA**

**Unit Probolinggo** : Jl. Tanjung Tembaga Baru, Kelurahan Mayangan, Kec. Mayangan, Kota Probolinggo, Jawa Timur, INDONESIA.  
**Unit Lumajang** : Desa Jarit, Kecamatan Candipuro, Kabupaten Lumajang, Provinsi Jawa Timur, INDONESIA.

Complies with the criteria and indicators for Timber Legality Verification according to Director General of Sustainable Production Forest Management Regulation Number : P.14/PHPL/SET/4/2016 dated April 29, 2016 concerning Standards and Guidelines on Assessment of Performance in Sustainable Production Forest Management and Timber Legality Verification Annex 2.5. Timber Legality Verification Standard in the Industry License (IUIPHK and IUI), for the scope as specified in the appendix.



  
**Arifin Lambaga, President Director**  
Signed on behalf of LVLK PT Mutuagung Lestari  
Jl. Raya Bogor KM. 33.5 No. 19  
Cimanggis – Depok 16953, INDONESIA  
Telp. (021) 874-0202, Fax (021) 877-40746  
[www.mutucertification.com](http://www.mutucertification.com)

Certificate Number  
**LVLK-003/MUTU/LK-007**   
Date of Initial Registration  
**29 December 2010**  
Date of Last Issued  
**29 December 2016**  
Date of Expiry  
**28 December 2019**  
Issued Number  
**3**

## REGISTRATION CERTIFICATE



Appendix : Timber Legality Certification - Certificate Number : LVLK-003/MUTU/LK-007  
SCOPE OF CERTIFICATION

<b>Company Name and Address :</b> PT KUTAI TIMBER INDONESIA <b>Unit Probolinggo</b> : Jl. Tanjung Tembaga Baru, Kelurahan Mayangan, Kec. Mayangan, Kota Probolinggo, Jawa Timur, INDONESIA <b>Unit Lumajang</b> : Desa Jarit, Kecamatan Candipuro, Kabupaten Lumajang, Provinsi Jawa Timur, INDONESIA <b>Phone / Fax</b> : (0335) 422412 / (0335) 421669 <b>Contact Person</b> : Mr. Capt. H. M. Saint Latief	<b>Date of Initial Registration :</b> <b>29 December 2010</b> <b>Date of Last Issued :</b> <b>29 December 2016</b> <b>Date of Expiry :</b> <b>28 December 2019</b> <b>Issued Number : 3</b>
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Industry License Holder	Kind of Products	Capacity (M <sup>3</sup> /Year)
<b>I. Primary Industry (IUIPHK) :</b> a. Keputusan Menteri Kehutanan No. SK.63/MENHUT-VI/BPPHH/2006 (Unit Probolinggo), Tanggal 16 Januari 2006	Plywood	148.500
	Penggergajian kayu	36.000
b. Keputusan Menteri Kehutanan RI Nomor: SK.483/Menhut-II/2011 tanggal 19 Agustus 2011 (Unit Lumajang)	Veneer	42.000
	Penggergajian kayu	18.000
<b>II. Downstream Timber Industry (Advanced IUI) :</b> a. Keputusan Kepala Badan Pelayanan Perijinan Kota Probolinggo Nomor: 503/001/425.202/IP/2011 tanggal 19 Desember 2011  b. Keputusan Kepala BKPM Nomor: 294/IT/INDUSTRI/2008 tanggal 02 April 2008	Fancy Panel	4.800
	Lumber Core/ Joint Board	67.500
	Wood Working/ Moulding	9.600
	Scarf Joint/ Jumbo Panel	10.800
	Door Component	36.000
	Blockboard	42.000
	Produk Lainnya Turunan Kayu Lapis	22.800
	Particle Board	128.000

Approved by LVLK of PT Mutuagung Lestari

  
**Arifin Lambaga**  
President Director



**P.T. KUTAI TIMBER INDONESIA****PLYWOOD, PARTICLE BOARD AND WOOD INDUSTRY**FACTORY : Jl. Tanjung Tembaga Baru / Pelabuhan Probolinggo 67201- Jawa Timur  
Telp. : (0335) 422412 (Hunting) ; Fax. : (0335) 421669  
E-mail :pr@kti.co.id.**LETTER OF STATEMENT**

No. 459/VI/KTIP/D-3/2017

We, the undersigned below hereby certify that

1. Flamebreaks are eco-friendly, and the core was made from wholly wood with no chemical contents except glue.
2. We have official statement from our supplier that glue used for flamebreaks are Zero Ozone Depletion Potential.

This is the statement I have made truly.

Probolinggo, June 2nd 2017  
P.T. Kutai Timber Indonesia



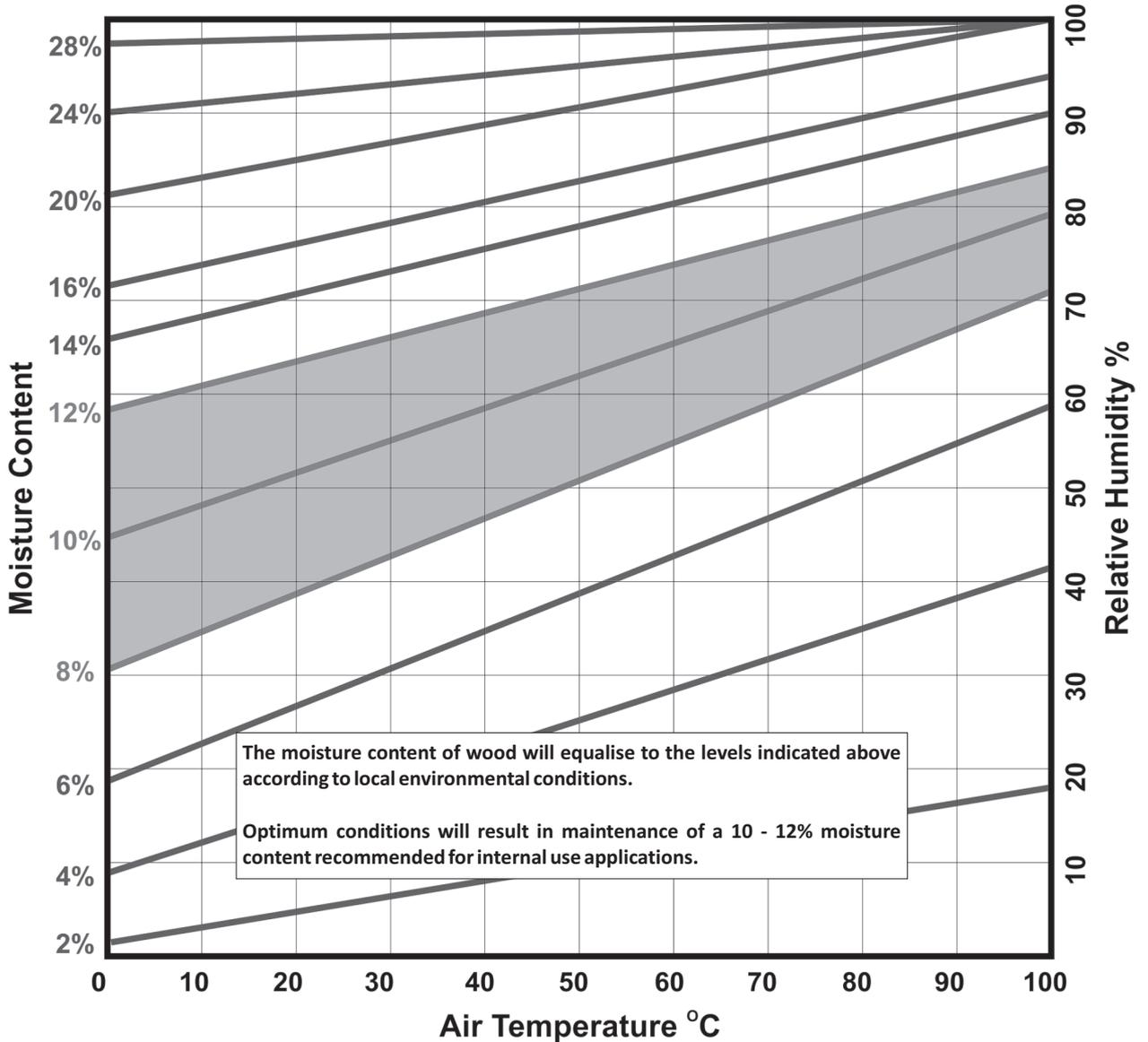
Satoshi Kawanami  
President Director



HEAD OFFICE : Jakarta 12190, Telephone : (021) 2521260  
BRANCH : Surabaya 60272, East Java, Telephone : (031) 5343835  
Samarinda 75117, East Kalimantan, Telephone : (0541) 741966  
PLANTATION & LABORATORY : Sepuh Gembol, Bermi - Kerucil Kab. Probolinggo,  
Kelatakan-Tanggul, Jember - Jawa Timur



**Equilibrium Moisture Content Conditions for Wood**



The moisture content of wood will equalise to the levels indicated above according to local environmental conditions.

Optimum conditions will result in maintenance of a 10 - 12% moisture content recommended for internal use applications.

**NOTE:**

The above graph should be referred to for the purpose of storing FLAMEBREAK™ Door Blanks and subsequently for the storage and use of finished goods.

FLAMEBREAK™ Door Blanks, are wood products that are naturally hygroscopic. They will absorb or lose moisture according to local environmental conditions. Variations in moisture content will result in growth or shrinkage, (particularly across the grain of wood). This graph shows the environmental conditions that should prevail during storage (and subsequent use) to ensure that FLAMEBREAK™ products remain stable.

Rapid changes in environmental conditions, even within indicated tolerances, can give rise to more dramatic effects.

## **General Recommendations Installation Procedure (Door Assemblies):**

1/ Check the opening into which the door assembly is to be fitted to ensure that it has been prepared to the correct dimensions and that it is plumb and square, within reasonable tolerances.

*NOTE: Acceptable tolerances will vary according to the door assembly design. In particular, the standard required to receive door assemblies that are not fitted with architrave is more demanding.*

2/ Position the frame centrally in the width of the opening and fix the hanging jamb using fixings worked against wedges to ensure that the hanging jamb is plumb and square and aligns correctly with the opening.

*NOTE: For pairs of doors select one hanging jamb as the primary jamb for this purpose.*

3/ Hang the door leaf and align the secondary jamb and head such that the operating gaps between the door and frame are equal. This can be done by visual assessment.

*NOTE: The important thing is that the door leaf (leaves) is / are used as the installation template and not the surrounding structure.*

4/ Remove the doors and ensure that the frame is fixed firmly in the opening.

5/ Rehang the doors and check for operation. Adjust installation fixings as necessary to obtain correct operation while maintaining operating gaps within BS4787 tolerances.

*NOTE: For some locations (particularly where edge fixed smoke or acoustic seals are used) it might be necessary to apply a leading edge (trim the closing stile of the doors). The minimum amount of lipping material should be removed for this purpose with the closing stile bevelled such that the closing face of the door is narrower than the opening face.*

6/ Cover fixings using pellets or by other means.

*NOTE: Fixings can be covered by door stops, suitably sized intumescent seals (where these form part of the door assembly design (DO NOT USE ADDITIONAL HIGH PRESSURE INTUMESCENT SEALS FOR THIS PURPOSE)).*

7/ If a loose doorstop is used, fix the doorstop to suit the face of the door using 32 - 38mm steel pins, fixed at an angle, punched with pin holes filled.

*NOTE 1: Use suitably coloured wood filler or hard beeswax to fill pin holes.*

*NOTE 2: Where smoke (acoustic) seals are used with the doorstop, ensure that sufficient space is left to accommodate the smoke (acoustic) seal or that the smoke (acoustic) seal is fitted to the doorstop before fitting the doorstop to the frame.*

8/ Apply packing to the void between the frame and the surrounding structure to comply with recommendations to be found by reference to BS8214 : 2016.

*NOTE 1: If in doubt, pack these voids with mineral wool.*

*NOTE 2: Some frame designs might allow for the insertion of intumescent seals at the back of the frame to the satisfaction of BS8214. These should be fitted to the frame before installation of the door assembly.*

*NOTE 3: Building Control Officers may wish to inspect the door assembly installation at this time to ensure compliance with the regulations applicable to the building for fire certification reasons.*

9/ Cut architrave to the lengths required for the particular location and apply mitres as necessary. Fix architrave using 32 - 40mm steel pins, fixed at an angle, punched with pin holes filled as described for door stops.

10/ Fix projecting hardware and test the door assembly for the correct operation.

*NOTE: It is recommended that the environmental conditions are measured at the time of installation of the door assembly with this information recorded for possible reference in the event of later moisture content related problems resulting from variations in environmental conditions.*

11/ Clean the installed door assembly and offer for handover to the Main Contractor (Client).

12/ Apply protection to the door set as required for the particular project.

*NOTE: It might be necessary to remove some items of hardware for this purpose.*

### **GENERAL NOTES:**

1/ The above sequence may be varied to suit the normal working practices of the Installation Contractor.

2/ For edge fixing into FLAMEBREAK™ cores always drill suitably sized pilot holes and fix using fully threaded 'Twinfast' or course threaded chipboard screws. The screw length should be min. 11/2in. (38mm) for load bearing hardware.

## 1 Installer Qualifications

It is strongly recommended that the installer is a member of a recognised quality assurance scheme to ensure that best practice is used.

In respect of fire doors, inspection authorities may require evidence that the installation process complies with the tested specification including:

- *Intumescent systems.*
- *Compliance of the glazing with the tested detail supplied by the door manufacturer.*
- *The size of all operating gaps.*
- *Intumescent protection around hardware and the quality of the preparation.*
- *The quality of the supporting construction and the prepared opening.*
- *The fixing of the fire door.*
- *Fire and smoke stopping methods used in fitting-in gaps and voids.*

## 2 Pre-installation preparation.

### 2.1 First or second fix.

Best practice is a second-fix operation with openings prepared as construction proceeds and pre-hung door assemblies installed later. The advantages are:

- *Operating gaps (which may contain edge seals) can be maintained.*
- *Doors are delivered when site conditions are suitable.*

Using the 'first-fix' method, doorframes are built in during construction and door leaves are fitted later. This can be unsatisfactory because:

- *Construction operations and wet trades can damage finishes and cause distortion and / or swelling. The cost of remedial and protection can be high.*
- *Door leaves may have to be tailored to each opening.*

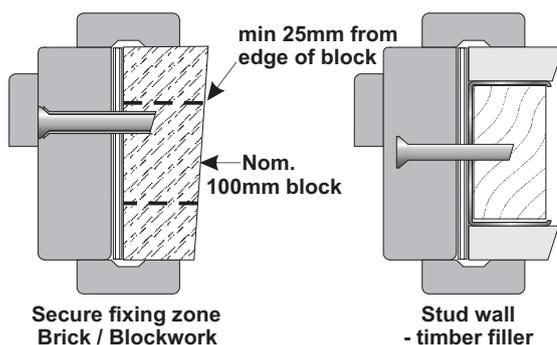
### 2.2 Doorframe design

The doorframe design must allow for secure fixing.

**Note 1:** Fixing within 35mm from the edge of masonry (excluding any plaster) should be attempted.

**Note 2:** Fixings into metal stud partitions should be made into a full length timber filler in the stud.

Make fixings to each jamb spaced 100mm from the top and bottom of the frames with intermediate fixings positioned at max. 500mm centres. (A centre fixing through the head is sometimes used where deflection is a risk).



### 2.3 Co-ordinating dimensions

The co-ordinating height, width and thickness of prepared openings, the fitting-in margin and allowed tolerances must be planned. This information must be available before the commencement of door manufacture.

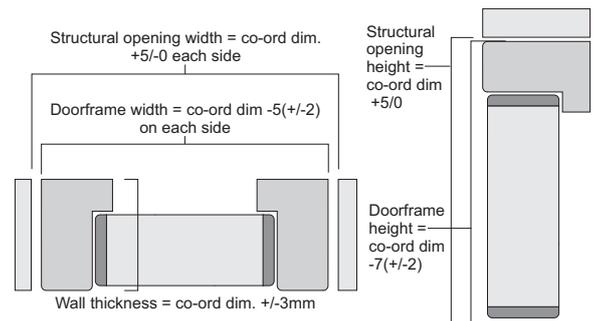
#### 2.3.1 Prepared openings

Prepared openings must be plumb, square and built to the co-ordinating dimensions subject to a tolerance of +5/-0mm at each jamb and +5/-0mm at the head and be of a constant co-ordinating thickness around their perimeter within a tolerance of +/-3mm. It is vital to control partition thickness if architraves are to be fitted without excessive trimming and scribing.

- *Check accuracy of prepared openings as early as possible so that any remedial work can be completed before any attempt is made to install the doors.*

#### 2.3.2 Doorframe size and fitting-in margin

The overall doorframe dimensions should be the co-ordinating height and width -5mm (+/-2mm) on each jamb and -7mm (+/-2mm) at the head.



### 2.4 Recessing for floor mounted closer boxes

- *Plan pockets to receive closer boxes in floors and screeds. The pockets must be formed and located with great accuracy to co-ordinate with the doorframe position.*

## 3 Site reception

### 3.1 Moisture content

Timber doors are manufactured with a moisture content of 10~12% for internal use and 12~14% for external use. The applicable standard on this subject is BS EN 942 : 2007 Timber in joinery. General classification of timber quality.

- *Do not bring joinery to site until moisture readings are between 40~60% RH and until any forced-drying procedure has been completed.*

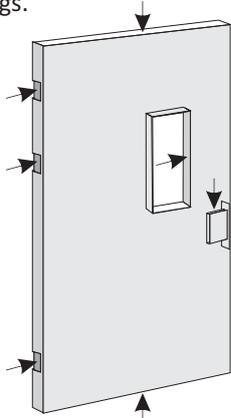
### 3.2 Storage area

- *The store must be clean, level, suitable for stacking doors and provide sufficient space for doors to be moved around, sorted and re-stacked as installation proceeds. The floor should be suitable to allow the use of pallet moving equipment.*

### 3.3 Priming and sealing

The applicable British Standard is BS 6150 : 1991 Code of practice for painting buildings.

- Prime or seal all items supplied 'in the white' immediately following delivery including top and bottom edges, apertures and preparations for hardware.
- Apply further coats within a reasonable time and before door leaves are hung or assemblies are installed.



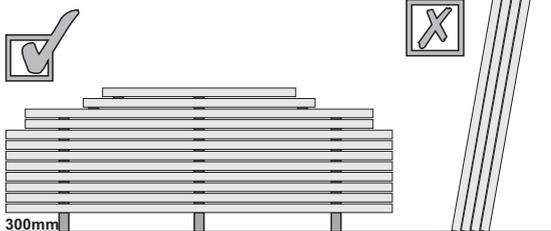
### 3.4 Handling

- Avoid bruising and damage caused by heavy contact with the ground. Wear clean gloves to avoid leaving finger marks.

### 3.5 Stacking

#### 3.5.1 Door leaves

- Do not store door leaves standing upright or leaning as this causes bowing.



- Stack horizontally on level supports that extend across the full width of the bottom door leaf. Provide a minimum of 3 No. supports located 300mm from each end and centre in door height with additional intermediate supports if the door is over 2100mm in height.
- Cover the supports with cardboard or similar to prevent marking.
- Stack with the largest door leaf at the bottom with size reducing up the stack. Plain flush doors can be stacked to a maximum of around 20 door leaves. When door leaves have projections such as glazing beads or pre fitted hardware, provide level intermediate battens between door leaves to allow clearance.

#### 3.5.2 Assemblies

The same principles apply when storing door assemblies.

- Stack with the door leaf lying in the closed position on the door frame doorstep. Separate each assembly with level battens to ensure that projections such as hinge knuckles do not cause damage.

#### 3.5.3 Covering

Exposure to light may fade timber.

- Cover stacks with opaque sheeting to prevent fading and keep doors clean. This is very important with veneered doors.

## 4 Hardware

### 4.1 Preparation for hardware

- Before installation, prepare doors to receive hardware using instructions provided by the hardware manufacturer or supplier.

**Note:** Preparations are often available from the door manufacturer. These may be supplied 'off machine' i.e. with corners not squared out. Factory assembled doors can be made available fully prepared for hardware with door leaves hung in position though possibly removed for transit.

### 4.2 Fitting hardware

- Fit hardware using instructions provided by the hardware manufacturer or supplier.
- Fit morticed hardware before hanging door leaves or installing door assemblies.
- Fit intumescent materials exactly in accordance with details supplied.
- Fit face fixed hardware at any convenient stage in the installation programme.

**Note:** This work is often done immediately prior to handover to avoid risk of loss or damage. The drilling of door leaf faces for latch spindles and keyways or cylinders is best left until there is no further risk of further adjustment to the position of the lock cases or keeps.

- Lubricate hardware as required by manufacturers instructions.

## 5 Glazing

The applicable standard is BS 6262 Code of practice for glazing of buildings.

- Glaze fire doors strictly in accordance with a specification for each type provided by the supplier and supported by evidence of test or assessment by a recognised authority.

## 6 Door Installation

- Install doors only when site conditions are suitable.

**Note:** Operating gaps around door leaves will vary between 1.5 ~ 4mm. Any movement of the structure after doors are installed will definitely affect these margins and cause malfunction. Movement results from:

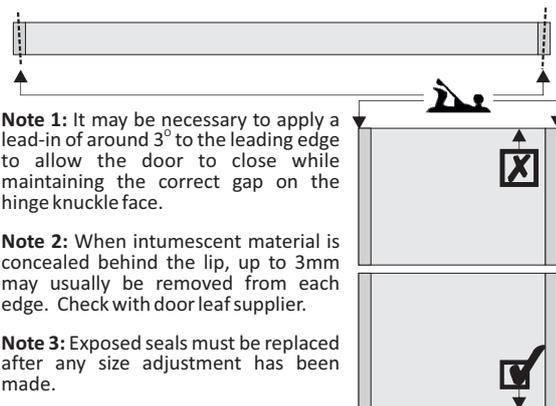
- Shrinkage due to drying out.
- Growth due to increased moisture.
- Deflection of structural members.

- Defer installation if conditions are unsuitable

### 6.1 Hanging Door leaves

#### 6.1.1 Trimming edges

- When it is necessary to trim door leaves, remove equal amounts from each vertical edge and make all height adjustment to the bottom of the door leaf.



**Note 1:** It may be necessary to apply a lead-in of around 3° to the leading edge to allow the door to close while maintaining the correct gap on the hinge knuckle face.

**Note 2:** When intumescent material is concealed behind the lip, up to 3mm may usually be removed from each edge. Check with door leaf supplier.

**Note 3:** Exposed seals must be replaced after any size adjustment has been made.

### 6.1.2 Hinges

Hinges must be able to support loads imposed by the door leaf and hardware functions such as self-closing and back check.

Consult the hardware supplier if necessary.

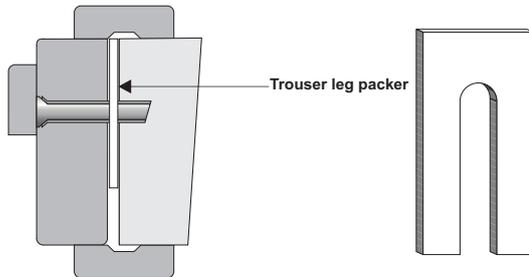
- Use 3 hinges per door leaf for all fire doors above 1500mm in height unless otherwise specified.
- When door leaves exceed 2250mm in height or 160kgs (weight), consult the hardware supplier. One or more additional hinges may be required.

**Note:** Hinges should be located to conform to the hinge manufacturers recommended position. In the absence of such guidance it is recommended that the top hinge should be located to centre 200mm from the top of the door. The bottom hinge should be centred 250mm from the bottom of the frame jamb (this will clear most kick plate requirements). The third hinge may be centred between the top and bottom hinge (if required by reference to fire test / assessment data) OR approx. 200mm below the top hinge.

### 6.2 Installation second fix

#### 6.2.1 Packing

- Pack between the doorframe and the prepared opening immediately above each fixing position. Ensure that the door assembly, when in position is perfectly plumb and square. The best practice is to use the hung door leaf as the fixing template. Avoid later shrinkage by using packing that is durable, hard and stable. The use of proprietary 'trouser leg' packers is recommended. Alternatives are off-cuts of laminate, or plywood.
- Ensure that jambs are straight, operating gaps are even and within tolerance and that fixing screws cannot distort the frame when tightened.

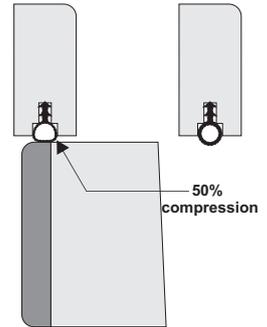


**Note:** The lateral force at the bottom hinge position can compress packings and metal studs causing the leading edge to drop. Before installing, ensure that studs are secure and that fillings are dry.

#### 6.2.2 Fixing

- When the doorframe has been packed into the prepared opening, remove door leaves if necessary to facilitate fixing.
- Fix doorframes in masonry in conjunction with plugs and woodscrews with minimum 50mm penetration into the masonry.
- Fix doorframes in metal stud partitions with woodscrews having drilled a pilot hole through the stud into the timber stud filler. Ensure that the doorframe fixing pulls the timber filling tightly into the stud and pulls the stud tight against the packing.

- Re-hang door leaves. Check and adjust for correct gaps and operation of seals. Compression seals should be 50% compressed along their entire length. Blade and brush contact seals should overlap the opposing face by 0.5~1mm



**Note:** Adjustment to the fit of door leaves at the installation stage should be deferred until the site is completely dry when the need for adjustment will be fully apparent and can be remedied in a single operation:

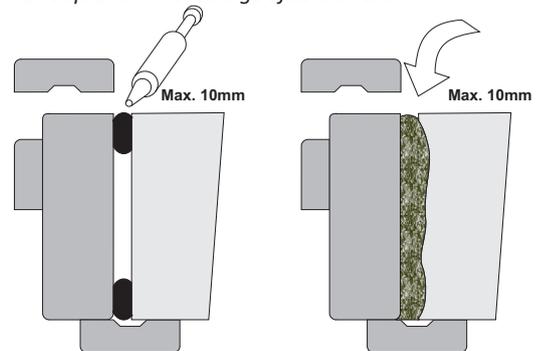
- Adjustments made too early can result in excessive gaps as the building dries.
- If possible, carry out adjustments by reducing or increasing packing. Alternatively, pack out behind hinges or recess them further.
- Only as a last resort should door leaf edges be trimmed, this may necessitate replacement of seals and repositioning of hardware affecting the quality and integrity of the door.

#### 6.2.3 Doorstops

- Fix loose doorstops after all adjustment. Fit to suit the shape of the door leaf, permit an easy latching action and ensure any seals are in correct contact with the door face.

#### 6.2.4 Stopping the fitting in gap

- Fill the fitting-in gap to suit fire, smoke or acoustic requirements before fitting architraves or installing the second half of split frames with integral architraves. Architraves alone may fire stop gaps for FD30 doors but do not prevent the leakage of cold smoke.



**Note 1.** To prevent cold smoke leakage the filler must completely close the gap and have some flexibility.

**Note 2.** When the fitting-in gap is constant and does not exceed 10mm the options include:

- Gun-applied intumescent mastic suitable for both fire and smoke stopping.
- Intumescent strips (with conventional mastic for smoke).

**Note 3.** Large or irregular gaps or voids can be filled with cementitious material, packed with mineral wool or sealed with intumescent material. The intumescent options for gaps up to 35mm that can accommodate some movement and close voids in the case of fire are intumescent plasters, acrylic emulsions and dry foams.

- Fix architrave only when any required stopping is complete.

## 6.2.5 Concealment of fixings

- Dress exposed fixings of doorframes, doorstops and architraves as specified.

**Note 1:** This operation and the final fitting of architraves should be left until all adjustments to gaps and door leaf operation have been made.

**Note 2:** Screws are normally concealed with timber or plastic pellets. Pins are punched and filled with hard beeswax coloured to match.

## 6.2.6 Cleaning

- Remove all dust, clean the installed door and make good any damage to finishes according to instructions provided by the manufacturer.

## 7 Handover

The installation process will usually conclude with an inspection and handover procedure when the installation at the point of delivery from the responsible contractor is verified as compliant with any certification and is operating satisfactorily.

A maintenance period normally follows during which the responsible contractor will correct defects that are his responsibility. Beyond this, ongoing maintenance of the installation is the responsibility of the owner (or user) of the premises. A suggested checklist of routine maintenance is given by reference to Appendix 16B.9 & 11.

## 8 Specialist services

Because door installation and maintenance is a specialised trade, it may be considered advantageous to employ a specialist contractor to carry out a planned routine combining the inspection and corrective action procedures.

## 9 Priority actions

Priority should be given to:

- The continued correct operation of the doors.
- The preservation of operating gap sizes within the range described in test or assessment reports relating to the installed fire doors.
- The preservation or replacement of elements of the door that may be subject to degradation through wear or damage e.g.:
  - Glass and hardware.
  - Intumescent, acoustic and smoke seals.
  - Applied finishes.

### 9.1 Pre-emptive inspection programme

The objective must be to pre-empt malfunction and defects helped by a planned programme of inspection.

Corrective action is likely to be required more frequently during the early life of an installation. The small movements that occur in the building fabric at this stage can affect gap sizes. The presence of smoke or acoustic seals can make door operation even more sensitive to small changes in gap sizes.

## 9.2 Reporting of malfunctions

It is also vital to the quality of the installation that building users report malfunctions immediately and that there is a system that provides for recording these and for prompt corrective action.

## 10 Damage prevention

Much damage to doors is caused by abusive use of the building. This may be unintentional and result from inadequate planning or briefing of personnel on the correct operation of the door system. Those who use equipment that is potentially damage-causing can be trained and encouraged to prevent this.

Personnel using the building can make an important contribution to maintaining the quality and safety of the door installation if they are encouraged to use the installation in a caring manner.

### 10.1 Protective measures

Planning the operation and protection of doors will play an important part in the avoidance of damage to the door installation. The following measures will reduce the more predictable causes of damage:

Type of damage	Preventative measure
Damage caused by objects being wheeled or dragged through the doorway:	The use of a hold open device with doors on frequently trafficked corridors linked in with a fire detection system, if applicable.
Damage to faces and the leading edge of door leaves.	Delayed action closers set to allow for the passage of encumbered users and wheeled items.
Broken lippings, damaged smoke and intumescent seals.	
Damage caused by impact by wheeled equipment.	Rail or guards that will deflect the equipment.
Dislocation of doorframe fixings.	Recesses in corridor walls within which held-open door leaves will be protected from edge damage.
Damage to doorframes, door faces and edges.	Fit buffers to equipment.

## 11 Troubleshooting door malfunction

Malfunctions arise from a variety of causes. It is important that these be corrected promptly to minimise damage and avoid any compromising of safety.

### 11.1 Binding

The most common malfunction is a loss of operating gaps that result in door leaves sticking or failing to close correctly. It may be that the leading edge binds on the doorframe or at meeting edges of double leaf doors. Often the bottom edge of a door will bind on the floor.

The causes of and suggested remedies for this can be:

Defect	Possible cause	Remedial options
Swelling of door components due to moisture intake.	Moisture content in the building is too high.	Reduce humidity. Do not adjust doors unless essential until the moisture content is stable at 12% (for internal use).
Hinges have worked loose allowing door leaf to fall away from the hanging jamb.	Stressing caused by racking or blocks put in hinge side rebate to hold doors open. Wrong size screw fixings. Not all screw positions have been used.	Remove obstructions. Tighten fixing screws. If necessary increase screw size. Replace if defective. Provide restraint to prevent racking
Hinges have worn allowing door leaf to drop.	Hinges are not to the correct BS EN 1935 class for the application.	Replace with correct class of hinge.
Doorframe jambs have spread at the bottom allowing the leading edge of the door leaf / leaves to drop.	Door leaf weight may cause compression of packing or stud due to the effect of lateral load at the bottom hinge position.	Check that the background is stable and that it will support the lateral load. Re-pack at fixing positions particularly at the bottom, until the door leaves hang correctly. Re-fix doorframe.
Doorframe fixings are loose.	Racking exerting leverage on doorframe fixings. Overdrilling or breakout of fixing positions. Impact from wheeled loads.	Re-pack and correct the hang of the door leaf. Tighten fixing screws and if necessary replace failed plugs or make new fixing positions. Provide restraint to prevent racking. Provide protective rails / guards to deflect wheeled traffic away from the door frame.
Door leaf binding on floor.	Floor covering may be over planned thickness. Possible high spot in screed within the arc of the door. Doorframe not set plumb.	Re-fix the door as necessary. Packing under frame jambs may raise the door sufficient to clear obstacle.
Binding and none of the previous apply.	It is possible that the edge gap has been set too fine.	Adjust the gap by deepening or moving the hinge recess/es in the door frame or leaf. Bevel closing stile to maintain a minimum gap on the hinge knuckle face.

*Note: The edges of door leaves should not be planed or otherwise modified unless it is impossible to correct the fault by other means. If door leaves are adjusted, any intumescent and smoke seal that is damaged will have to be replaced.*

**11.2 Oversize gaps**

Operating gaps may become enlarged and may exceed the range permitted by specifications and test and assessment reports.

The causes and suggested remedies can be these:

Defect	Possible cause	Remedial options
<p><b>When no smoke or acoustic seal is present:</b> Gaps in excess of range permitted by test / assessment reports.</p>	Shrinkage of door components, packings and timber grounds, studs or subframes.	Pack out behind hinges. If necessary re-pack and re-fix doorframe. Re-lip (by manufacturer) and replace seals.
<p><b>When smoke or acoustic seal is present:</b> Any visible gap.</p>	Shrinkage or disturbance caused by impact. Seals have worn or have become permanently compressed. Extended pivot centre hanging devices.	Pack out behind hinges. If necessary re-pack and re-fix doorframe. Replace seals with new or larger. Profile closing stile of leaf to suit closing arc of door.

*Note: The edges of door leaves should not be planed or otherwise modified unless it is impossible to correct the fault by other means. If door leaves are adjusted, any intumescent and smoke seal that is damaged will have to be replaced.*

**11.3 Failure to close**

In addition to closing failure caused by loss of operating gaps, other defects can develop or become apparent:

Defect	Possible cause	Remedial options
Hinge binding resulting in the door leaf tending to spring open.	Hinges have not been sufficiently recessed. The doorstop is too tight on the closing face of the door leaf at the hinged edge.	Modify fitting of hinges. Adjust position of doorstops. Reset hinge positions when doorframe has an integral doorstop.
Door leaves twisted, bowed or cupped.	Twist caused by hold open device tht is not level with the closing force. Hygrothermal differences on faces.	Remove the cause; the door leaf may return to a flat condition. If not, replace door leaf. Relocate hold open device. Reduce the effect by relocating hinges.
Door leaves fail to latch	Closer failing to overcome resistance of latch or seals. Latch bolt and keep plate may have become misaligned. Door bolts may not be engaged. Misalignment of door bolts and sockets.	Adjust closer speed and latching action. If necessary fit larger closer. Change seals. Reposition keep plate. Ensure that users engage bolts at top and bottom of door leaf. Realign bolts with sockets by adjustment of the doorframe fixings.
Binding of smoke or acoustic seals when none of the previous problems apply.	It is possible that the leading edge gap has been set too fine. Seals may be broken or disrupted by wear due to incorrect fitting.	When applicable, modify retaining grooves to suit. The seals, if in good condition, may be refitted. Fit smaller seals. If damaged, seals should be replaced with attention to correct fitting and cause of disruption.

## Maintenance check list for doors

Premises \_\_\_\_\_

### Door

Door No.  
Location  
Door Manufacturer  
Fire Assessment Ref.  
Date Installed  
Hardware supplier  
Hinge type  
Closer type  
Lock / Latch Type  
Bolts

### Door Leaf

Is it warped  
Is it split / cracked  
Other evident damage  
Edge lipping condition  
Meeting edge gap double doors closing correctly  
Closer effective  
Modifications added since last inspection

### Doorframe

Signs of damage  
Well fixed / sealed to surrounding structure  
Max. leaf / doorframe gap  
Max. leaf / threshold gap  
Max. leaf doorstop gap

### Seals

Are edge seals complete  
Any damaged seals  
Protection where necessary at hardware  
Are smoke seals fitted  
If yes, are they in good condition and effective

### Glazing

Glass damage  
Retaining system in good condition  
Retaining system correctly fixed  
Any change since last inspection  
(e.g. broken glass replaced)

### Hardware

#### Hinges

Correctly fixed  
Working correctly  
Need lubrication

#### Closers & Selectors

Correctly fixed  
Working correctly  
Double doors closing in correct order  
(where applicable)  
Needing lubrication  
Overrides any latch mechanism / seals

#### Locks / Latches

Correctly fixed  
Working correctly  
Needing lubrication

#### Hold open devices

Fixed in correct position  
Releases correctly

#### Bolts

Aligned with sockets  
Well fixed  
Working correctly  
Damage around bolts

#### Signs

Correct fire signage on both sides of door

#### Additional Hardware

Added since last inspection  
(e.g. letterplates, bolts etc.)

*Appendix 16B of this document are reproduced from the Architectural and Specialists Door Manufacturers Association publications.*

### Pacific Rim Wood Ltd.,

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Somerton Road  
Langport,  
Somerset TA10 9SJ

**Tel:** +44 (0) 1458 252 305

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Pacific Rim Wood Ltd.  
are members of:



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Burnside House, 3 Coates Lane, High Wycombe,  
Buckinghamshire HP13 5EY  
Telephone: 01494 447370  
Fax: 01494 462094  
[www.asdma.com](http://www.asdma.com)

**11.2 Oversize gaps**

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The causes and suggested remedies can be these:

Defect	Possible cause	Remedial options
<p><b>When no smoke or acoustic seal is present:</b> Gaps in excess of range permitted by test / assessment reports.</p>	Shrinkage of door components, packings and timber grounds, studs or subframes.	Pack out behind hinges. If necessary re-pack and re-fix doorframe. Re-lip (by manufacturer) and replace seals.
<p><b>When smoke or acoustic seal is present:</b> Any visible gap.</p>	Shrinkage or disturbance caused by impact. Seals have worn or have become permanently compressed. Extended pivot centre hanging devices.	Pack out behind hinges. If necessary re-pack and re-fix doorframe. Replace seals with new or larger. Profile closing stile of leaf to suit closing arc of door.

*Note: The edges of door leaves should not be planed or otherwise modified unless it is impossible to correct the fault by other means. If door leaves are adjusted, any intumescent and smoke seal that is damaged will have to be replaced.*

**11.3 Failure to close**

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Door leaves twisted, bowed or cupped.	Twist caused by hold open device tht is not level with the closing force. Hygrothermal differences on faces.	Remove the cause; the door leaf may return to a flat condition. If not, replace door leaf. Relocate hold open device. Reduce the effect by relocating hinges.
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Binding of smoke or acoustic seals when none of the previous problems apply.	It is possible that the leading edge gap has been set too fine. Seals may be broken or disrupted by wear due to incorrect fitting.	When applicable, modify retaining grooves to suit. The seals, if in good condition, may be refitted. Fit smaller seals. If damaged, seals should be replaced with attention to correct fitting and cause of disruption.

**General Maintenance Recommendations:**

FLAMEBREAK™ cores are maintenance free.

**Veneered Doors:**

Polish occasionally as required using standard household furniture polish.

Every 5 years refurbish veneered doors and polished frames as follows:

Clean with white spirit.

Apply soft coloured beeswax using grade 00 wire wool working in a circular motion to ensure that the wax fills the grain.

Remove surplus wax using a clean knap free cloth.

Reduce the gloss level by buffing with clean grade 00 wire wool.

**Laminate faced Doors:**

Clean as necessary using warm soapy water.

Treat frames and hardwood lippings as described for Veneered Doors.

*NOTE: Alternatively lightly sand lippings and re apply clear lacquer.*

**Paint grade Door Assemblies:**

Clean as necessary with warm soapy water.

Re paint at approx. 5 year intervals following paint manufacturers instructions.

**Hardware:**

Lubricate hardware as required by reference to ironmongery suppliers data.

*NOTE: Some items of hardware e.g. Hinges with oilite bearings should not be lubricated.*

Where it is necessary to remove and replace worn hardware, any intumescent seals or gaskets used for the original fit should also be replaced.

**Intumescent Seals:**

Intumescent seals should be inspected monthly for the first year of operation and thereafter at quarterly intervals.

Any worn or damaged intumescent seals should be replaced with seals of an identical brand / type.

*NOTE: High pressure seals should not be replaced with low pressure seals and vice versa.*

**Smoke Seals:**

Smoke seals should be inspected monthly for the first year of operation and thereafter at quarterly intervals.

Any worn or damaged smoke seals should be replaced with similar seals.

*NOTE: Door assemblies receiving replacement smoke seals should be tested and eased as necessary to ensure that the seals do not interfere with the operation of the doors. The doors should close and latch from any open angle position under closer force only.*

**Glass & Glazing:**

Where glass is to be replaced the replacement glass should be of the same type as the original glass. All glazing intumescent and beading should also be replaced to the same detail as the original installation.

**Door Adjustments:**

Adjustment of Fire Doors after installation is not recommended. However, where this is necessary, the resultant operating gaps after adjustment should satisfy BS4787 Pt. 1 : 1980.

**GENERAL NOTE:**

*Refer to BS8214 : 2016 for further advice concerning maintenance of Fire doors.*

# Appendix 16C.

## 16C.1 3rd. Party Certification Providers

# FLAMEBREAK

Whereas this Manual is based upon 3rd. party certification provided by Exova BM TRADA under the 'Q-Mark' scheme, Pacific Rim Wood Ltd. recognise that users of FLAMEBREAK™ may prefer to belong to alternative schemes.

Pacific Rim Wood Ltd. will support users of FLAMEBREAK™ by providing base test data for use by the following UKAS approved 3rd. party certification bodies and may assist in other ways.

The following information has been provided by leading 3rd. party certification providers to describe brief details of their services and contact details.



Fire Door  
Manufacture



### Exova BM TRADA:

Exova BM TRADA is a UK and internationally recognised provider of high quality customer focused independent third party certification. Part of Exova (UK) Ltd. with 75 years experience, the company is UKAS (United Kingdom Accreditation Service) accredited and offers the 'Q-Mark' certification scheme, one of the most rigorous certification processes available.

### Q-Mark certification scheme:

Q-Mark is a voluntary-based certification scheme which companies can join either as manufacturers, system/blank suppliers or fabricators using Q-Mark approved products. Additional schemes are also available for registered installers and maintainers of windows and doors. Q-Mark product certification provides the reassurance to customers and specifiers that the certified products are not only fit for purpose and therefore safe to use, but they have satisfied the most stringent of quality processes.

Specifiers are increasingly using Q-Mark to ensure that their products meet the highest standards. This is particularly important in life saving products such as fire doors. Approved Document B recommends the use of independent third party product certification such as Q-Mark for demonstrating performance of fire doors.

### Product certification criteria:

To achieve Q-Mark product certification, companies are required to prove to Exova BM TRADA's own team of specialist auditors that their products perform to the relevant standard and that stringent factory production control processes are in place. All customers must have independent test evidence in the form of a product test report from a UKAS or recognised equivalent accredited laboratory. Any variations in the fire door specification from the tested product can be catered for with a Exova WarringtonFire Global Assessment Report. Customers also need to provide evidence of a traceable documented factory production control system which controls the specification, quality and consistency of manufacture.

### On-going certification requirements:

Ensuring that our members maintain the very highest standards of product quality is a stringent criterion of the Q-Mark product certification scheme. Annual and in certain cases twice-yearly audits are carried out to confirm that the original certified specification is fully adhered to throughout the production process. In addition we periodically insist on undertaking full product testing to prove that not only do our members' products continue to perform to standard, but that the specifications accurately reflect those of the originally tested product.

**Exova BM TRADA**  
**Chiltern House**  
**Stocking Lane**  
**Hughenden Valley**  
**High Wycombe**  
**Buckinghamshire HP14 4ND**  
**United Kingdom**

Tel: +44 (0) 1494 569 800

Email: [productcertification@exova.com](mailto:productcertification@exova.com)

Web: [www.exovabmtrada.com](http://www.exovabmtrada.com)

**certifire****Certifire – A mark of Fire  
Safety**

**Warringtonfire deals with all aspects of fire safety from developing fire safety design strategies, through testing and certification of fire protection products, to certification of installers and inspection of completed buildings. Certification is provided via a separate company – Warrington Certification.**

Warrington Certification provides certification of products, installers and quality management systems in accordance with internationally recognised standards. Where appropriate, each scheme is approved or accredited nationally, normally via UKAS. All schemes are operated under the direction of an independent management board representing all stakeholders in fire safety.

Product certification can be divided into 2 categories; Voluntary and Mandatory.

**Voluntary certification** is chosen freely to promote performance and quality. Products are certificated under **CERTIFIRE** and companies that install fire protection products are certificated under **FIRAS**

Both **CERTIFIRE** and **FIRAS** offer significant advantage in promotion and recognition of products and services and provide confidence to the end user.

The Certifire scheme is accredited by UKAS to EN45011 and complies with the requirements of Level 5 certification as specified in ISO/IEC Guide 67:2004, Conformity assessment – Fundamentals of product certification.

Certifire is the only independent third party product conformity scheme dedicated to passive fire protection products. To obtain certification products are required to undergo:

- o Initial type testing
- o Factory production control audits or inspections
- o Independent audit testing and independent sampling of the products
- o Quality management system certification to ISO 9001:2015
- o Product labelling

A comprehensive field of application document is produced following the certification process and this has proven to be a much valued aid to sales.

Certifire has been in operation over 15 years and has become the flagship mark for the fire performance of passive fire safety products and is now recognised as a true 'Mark of Fire Safety'

Products must satisfy the requirements of detailed Technical Schedules that prescribe the performance and design characteristics required of a product to perform its fire protection function. The specific Technical Schedules are listed adjacent. Testing for fire performance and other attributes such as mechanical and durability performance is carried out. The Schedules, drafted by Warrington Certification and industry experts, draw on harmonised European tests where available, or British Standard tests or other recognised International standards. Type and audit testing is conducted on independently sampled product and manufacture is subject to independent factory production control inspection. The BWF-Certifire Timber fire door scheme is nationally recognised as the leading certification scheme for timber fire doors with the vast majority of the fire doors sold in the UK being covered by this certification

Certifire certification offers significant advantage in promotion and recognition of fire safety products showing that the product has been assessed by an independent third party and that these assessments are ongoing. This provides confidence to the end user. The presence of the Certifire mark shows that the product is a Fire Safety product. Certifire certification is backed up by entry into a free issue Directory which is divided into relevant product sectors. This is available via <https://www.warringtoncertification.com/certifire/technical-schedules.html> and full copies of all current Certifire certificates can also be accessed via this link and are available for download.

**Mandatory certification** is that required by regulation e.g. in Europe the Construction Products Directive and the Marine Equipment Directive, which require products to be marked (e.g. CE marked) to indicate compliance. Within Europe Exova (UK) Limited trading as Warrington Certification operates as both a Notified Body and as a European Technical Approvals issuing body.

**Warrington Certification, Holmesfield Road, Warrington, Cheshire WA1 2DS. Great Britain**

**Tel: +44(0) 1925 646 777**

**Email: [EWCL@exova.com](mailto:EWCL@exova.com)**

**Web: [www.warringtoncertification.com](http://www.warringtoncertification.com)**

Appendix 16C.  
**16C.3** 3rd. Party Certification  
Providers

**FLAMEBREAK**



IFC Certification Ltd (IFCC), a member of the IFC Group, provides UKAS accredited customer focussed independent third party certification of fire protection products.

### Product Certification

The IFC Certification quality mark is designed for manufacturers to demonstrate the superiority of their products over those which may not be subject to such stringent approval processes. Certification requires not only initial type testing but includes procedures to ensure that subsequent production will also have the same performance.



All IFCC schemes are accredited by UKAS and meet the requirements of an increasing number of jurisdictions that recognise and demand the benefits that third-party product certification brings.

Certificated products are required to be labelled to ensure traceability even in the completed building. All certificated products and company details are listed in our online register at [www.ifccertification.com](http://www.ifccertification.com)

IFCC product certification schemes are complemented by the IFCC schemes for the certification of installers. Together they provide a system to give confidence to specifiers, contractors, enforcement authorities, regulators, end clients and building users that proven products together with good installation will achieve the required level of fire performance.

### Installer Certification

IFC Certification Ltd (IFCC) provides independent third party certification to installers of fire protection products. To be effective in preventing or controlling the spread of fire, products need to be installed properly, to a high standard of workmanship and within their approved field of application. Failure to do so risks compromising fire performance with consequent risk to property and ultimately life safety.

The IFC Certification quality mark enables installer companies to demonstrate the superiority of their installations over those which are not subject to such stringent third party inspection processes.

For further details of all our schemes and other certification services or to discuss your individual requirements please contact:

IFC Certification Ltd  
20 Park Street  
Princes Risborough  
Buckinghamshire  
HP27 9AH  
United Kingdom

Tel: +44 (0) 1844 275500  
Fax: +44 (0) 1844 274002  
E-mail: [info@ifccertification.com](mailto:info@ifccertification.com)  
Web: [www.ifccertification.com](http://www.ifccertification.com)





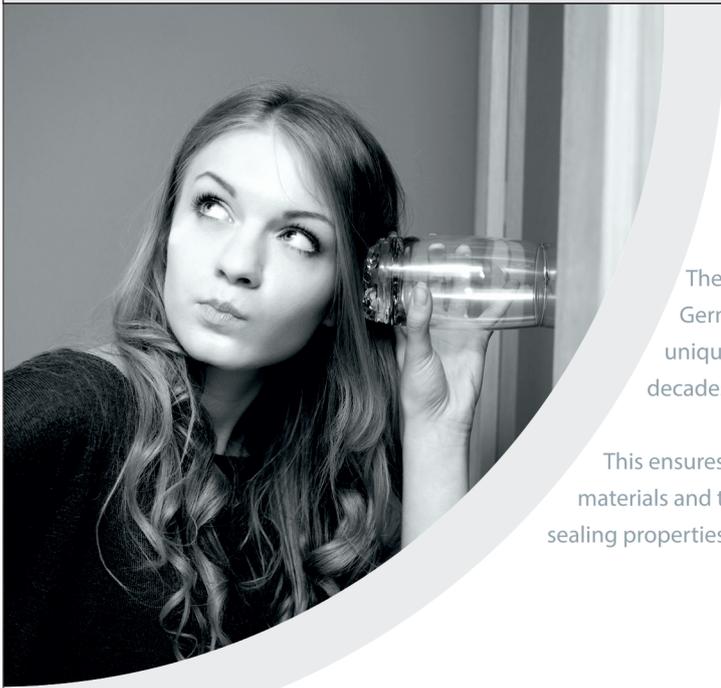
# ACOUSTIC SELECTOR

**NORSOUND**

Specialists in the design and manufacture of  
high performance acoustic door seals.

<http://www.acousticselector.com/>

**FLAMEBREAK**



The Norsound range of sealing solutions are made in Germany by our dedicated manufacturing plant, where unique production processes have been refined over decades.

This ensures our products are produced with long lasting materials and the smoothest mechanics, providing effective sealing properties up to 97% of a door's fully caulked performance.



**NOR710 Acoustic Perimeter Seal**

- 'Dual air pocket' technology
- Smoke seal in accordance with BS476: Pt 31:1983
- Anti-microbial - ideal for hospitals & care homes
- Unaffected by door furniture



**NOR810<sup>®</sup> Acoustic Drop Seal**

- Parallel drop technology
- Fire door compatible BS476: Pt 22:1987
- Silicone seal covers 20mm gap
- Removable actuator



**NOR720 Acoustic Perimeter Seal & Intumescent Fin**

- Substitute NOR720 for any intumescent fin on FR doors
- Identical acoustic performance
- Co-extruded for extra durability



**NOR650 Acoustic Threshold Plate<sup>\*\*</sup>**

- Incorporates acoustic gasket
- Additional acoustic performance
- Document 'M' compliant



<sup>\*\*</sup> With reference to test data, the use of other thresholds in the NOR600 range are optional.

### SINGLE DOOR

44MM / 54MM FLUSH & GLAZED



#### SINGLE DOOR FLUSH

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	NOR710	NOR810	<b>29</b>
45mm	630	NOR710	NOR810	<b>29</b>
54mm	660 FF660	NOR710	NOR810	<b>32</b>



#### SINGLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	dBRw
44mm	430 FF630	NOR710	NOR810	>6mm	<b>32</b>
45mm	630	NOR710	NOR810	>6mm	<b>32</b>
54mm	660 FF660	NOR710	NOR810	>6mm	<b>33</b>
54mm	660 FF660	NOR710	NOR810	>7mm	<b>34</b>



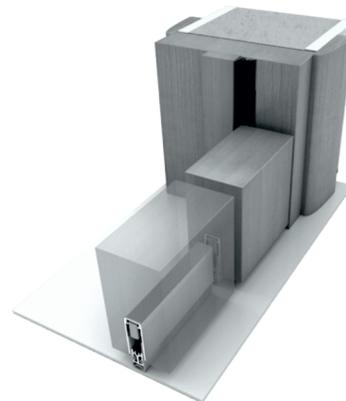
**DOUBLE DOOR**

44MM / 54MM FLUSH & GLAZED



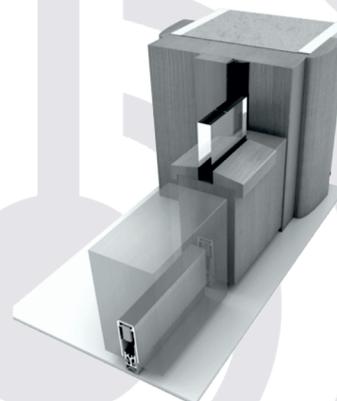
DOUBLE DOOR FLUSH

Width	Core	Perimeter	Threshold	Meeting Stile	dBRw
44mm	430 FF630	NOR710	NOR810	NOR720	<b>30</b>
44mm	430 FF630	NOR710	NOR810	2 x NOR720	<b>31</b>
45mm	630	NOR710	NOR810	NOR720	<b>30</b>
45mm	630	NOR710	NOR810	2 x NOR720	<b>31</b>
54mm	660 FF660	NOR710	NOR810	NOR720	<b>33</b>
54mm	660 FF660	NOR710	NOR810	2 x NOR720	<b>34</b>
54mm	660 FF660	NOR710	NOR810	2 x NOR720	<b>35</b>



DOUBLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	Meeting Stile	dBRw
44mm	430	NOR710	NOR810	>6mm	2 x NOR720	<b>30</b>
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45mm	630	NOR710	NOR810	>7mm	2 x NOR720	<b>33</b>
44mm	FF630	NOR710	NOR810	>6mm	2 x NOR720	<b>32</b>
54mm	660 FF660	NOR710	NOR810	>6mm	NOR720	<b>33</b>
54mm	660 FF660	NOR710	NOR810	>6mm	2 x NOR720	<b>35</b>



For fire rated applications NOR720 can be substituted with an intumescent fin seal of any variant.

<http://www.acousticselector.com/>

## SPECIALIST APPLICATIONS



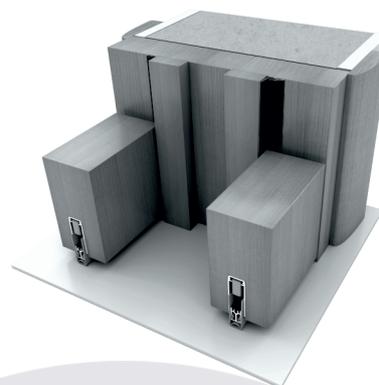
Norsound have a wealth of acoustic evidence for a wide range of specialist doorset applications, including back-to-back doors for lobbies and hotel interconnecting rooms, double action doors for areas of multi-directional high traffic as well as specialist overpanel details.

### INTERCONNECTING DOORSETS



#### INTERCONNECTING SINGLE DOOR FLUSH

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	NOR710	NOR810	<b>40</b>
45mm	630	NOR710	NOR810	<b>40</b>
54mm	660 FF660	NOR710	NOR810	<b>40</b>



<http://www.acousticselector.com/>

**DOUBLE ACTION DOORS**

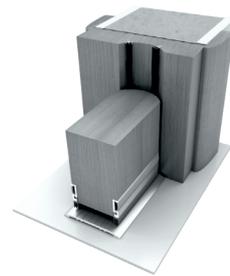


44MM / 54MM SINGLE & DOUBLE FLUSH & GLAZED



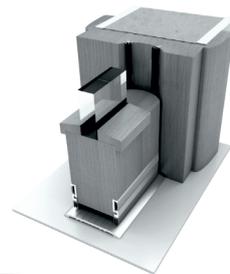
DOUBLE ACTION SINGLE DOOR FLUSH

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	2 x NOR720	2 x NOR855	<b>28</b>
45mm	630	2 x NOR720	2 x NOR855	<b>28</b>
54mm	660 FF660	2 x NOR720	2 x NOR855	<b>30</b>



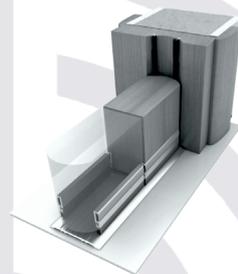
DOUBLE ACTION SINGLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	dBRw
44mm	430 FF630	2 x NOR720	2 x NOR855	>7mm	<b>31</b>
45mm	630	2 x NOR720	2 x NOR855	>10mm	<b>33</b>
54mm	660 FF660	2 x NOR720	2 x NOR855	>12mm	<b>35</b>



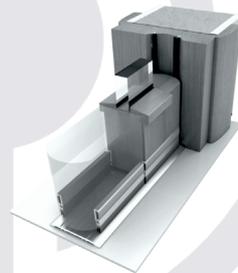
DOUBLE ACTION DOUBLE DOOR FLUSH

Width	Core	Perimeter	Threshold	Meeting Stile	dBRw
44mm	430 FF630	2 x NOR720	2 x NOR855	2 x NOR720	<b>29</b>
45mm	630	2 x NOR720	2 x NOR855	2 x NOR720	<b>29</b>
54mm	660 FF660	2 x NOR720	2 x NOR855	2 x NOR720	<b>31</b>



DOUBLE ACTION DOUBLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	Meeting Stile	dBRw
44mm	430 FF630	2 x NOR720	2 x NOR855	>7mm	2 x NOR720	<b>32</b>
45mm	630	2 x NOR720	2 x NOR855	>10mm	2 x NOR720	<b>32</b>
54mm	660 FF660	2 x NOR720	2 x NOR855	>12mm	2 x NOR720	<b>34</b>



The use of a threshold plate from the NOR600 range is required  
For fire rated applications NOR720 can be substituted with an intumescent fin seal of any variant.

<http://www.acousticselector.com/>

## TRANSOM OVERPANEL

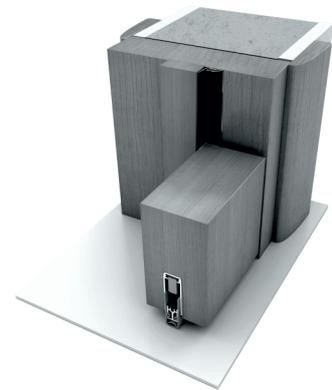


44MM / 54MM SINGLE FLUSH & GLAZED



### TRANSOM OVERPANEL SINGLE DOOR FLUSH

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	NOR710	NOR810	<b>29</b>
45mm	630	NOR710	NOR810	<b>29</b>
54mm	660 FF660	NOR710	NOR810	<b>32</b>



### TRANSOM OVERPANEL SINGLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	dBRw
44mm	430 FF630	NOR710	NOR810	>6mm	<b>32</b>
45mm	630	NOR710	NOR810	>6mm	<b>32</b>
54mm	660 FF660	NOR710	NOR810	>6mm	<b>33</b>
54mm	660 FF660	NOR710	NOR810	>7mm	<b>34</b>



<http://www.acousticselector.com/>

**TRANSOM OVERPANEL**

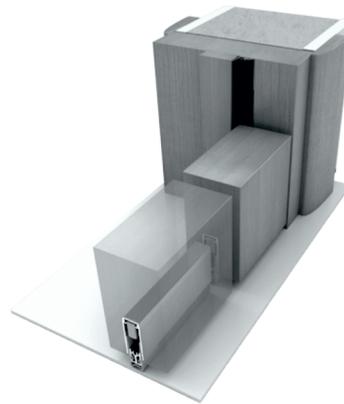


44MM / 54MM DOUBLE FLUSH & GLAZED



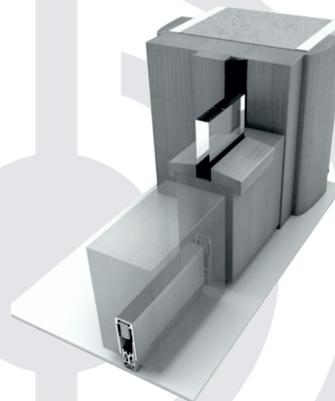
TRANSOM OVERPANEL DOUBLE DOOR FLUSH

Width	Core	Perimeter	Threshold	Meeting Stile	dBRw
44mm	430 FF630	NOR710	NOR810	NOR720	<b>30</b>
44mm	430 FF630	NOR710	NOR810	2 x NOR720	<b>31</b>
45mm	630	NOR710	NOR810	NOR720	<b>30</b>
45mm	630	NOR710	NOR810	2 x NOR720	<b>31</b>
54mm	660 FF660	NOR710	NOR810	NOR720	<b>33</b>
54mm	660 FF660	NOR710	NOR810	2 x NOR720	<b>34</b>
54mm	660 FF660	NOR710	NOR810	2 x NOR720	<b>35</b>



TRANSOM OVERPANEL DOUBLE DOOR GLAZED

Width	Core	Perimeter	Threshold	Glazing	Meeting Stile	dBRw
44mm	430	NOR710	NOR810	>6mm	2 x NOR720	<b>30</b>
44mm	430 FF630	NOR710	NOR810	>7mm	2 x NOR720	<b>33</b>
45mm	630	NOR710	NOR810	>6mm	2 x NOR720	<b>32</b>
45mm	630	NOR710	NOR810	>7mm	2 x NOR720	<b>33</b>
44mm	FF630	NOR710	NOR810	>6mm	2 x NOR720	<b>32</b>
54mm	660 FF660	NOR710	NOR810	>6mm	NOR720	<b>33</b>
54mm	660 FF660	NOR710	NOR810	>6mm	2 x NOR720	<b>35</b>



For fire rated applications NOR720 can be substituted with an intumescent fin seal of any variant.

<http://www.acousticselector.com/>

## FLUSH OVERPANEL



44MM / 54MM SINGLE & DOUBLE FLUSH & GLAZED



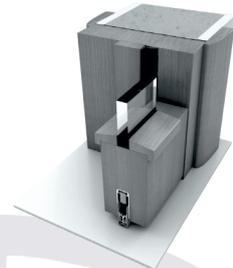
FLUSH OVERPANEL SINGLE DOOR FLUSH USED WITH ASTRAGAL

Width	Core	Perimeter	Threshold	dBRw
44mm	430 FF630	NOR710	NOR810	<b>29</b>
45mm	630	NOR710	NOR810	<b>29</b>
54mm	660 FF660	NOR710	NOR810	<b>30</b>
54mm	660 FF660	NOR710 NOR720	NOR810 NOR650	<b>32</b>



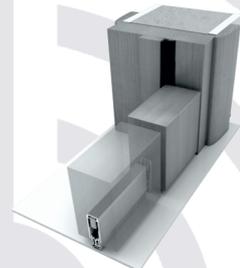
FLUSH OVERPANEL SINGLE DOOR GLAZED USED WITH ASTRAGAL

Width	Core	Perimeter	Threshold	Glazing	dBRw
44mm	430 FF630	NOR710	NOR810	>7mm	<b>32</b>
45mm	630	NOR710	NOR810	>10mm	<b>33</b>
54mm	660 FF660	NOR710	NOR810	>12mm	<b>34</b>



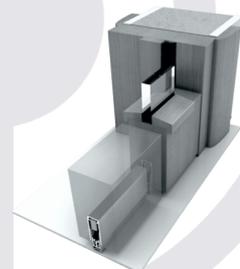
FLUSH OVERPANEL DOUBLE DOOR FLUSH USED WITH ASTRAGAL

Width	Core	Perimeter	Threshold	Meeting Stile	dBRw
44mm	430 FF630	NOR710	NOR810	2 x NOR720	<b>29</b>
45mm	630	NOR710	NOR810	2 x NOR720	<b>29</b>
54mm	660 FF660	NOR710	NOR810	2 x NOR720	<b>31</b>



FLUSH OVERPANEL DOUBLE DOOR GLAZED USED WITH ASTRAGAL

Width	Core	Perimeter	Threshold	Glazing	Meeting Stile	dBRw
44mm	430 FF630	NOR710	NOR810	>7mm	2 x NOR720	<b>30</b>
45mm	630	NOR710	NOR810	>10mm	2 x NOR720	<b>30</b>
54mm	660 FF660	NOR710 NOR720	NOR810	>12mm	2 x NOR720	<b>35</b>



For fire rated applications NOR720 can be substituted with an intumescent fin seal of any variant.

<http://www.acousticselector.com/>

**16D.10**

Appendix 16D.  
Acoustic Seals  
Sealed Tight Solutions Ltd.

**FLAMEBREAK**



**SEALED TIGHT SOLUTIONS**

SEALED TIGHT SOLUTIONS  
Sealed Tight Solutions LTD  
Unit 1B & 1C, Princess Court  
Low Prudhoe Industrial Estate  
Prudhoe, Northumberland  
NE42 6PL

[www.sealedtightsolutions.com](http://www.sealedtightsolutions.com)



SEALED TIGHT SOLUTIONS

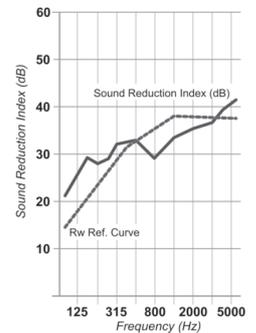
# acoustic

## acoustic test data

All STS acoustic data is sourced, supplied and verified by independent, UKAS-accredited test facilities in accordance with all relevant British and European standards.

- Approved Document - 'E' (Passage of Sound)
- Approved Document - 'B' (Fire Safety)
- Approved Document - 'M' (Access To and Use of Buildings)
- Building Bulletin - 93 (Acoustic design in schools)\*

\* See also: "Acoustic Performance Standards for the Priority Schools Building Programme" including: "Technical Guidance Document TGD-021-5 Acoustic Performance in Schools"



## STS 1009 Acoustic/smoke perimeter seal

:20

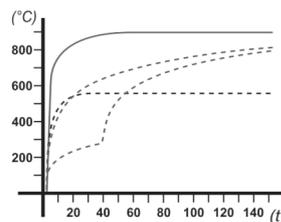
### Characteristics / features

Product code	Size / Length	Colour(s)	Material(s)
STS 1009 * "COLOUR/SIZE"	2100mm	● B BROWN	NEOPRENE/BUTYL
See below	2400mm	● BK BLACK	
	2700mm	○ CL CLEAR	
	3000mm	● G GREY	
		○ W WHITE	

### Characteristics / features

Protects against / Resists	Fitting / installation	Performance
SMOKE	STS 1009 - self-adhesive	ACOUSTIC -
SOUND	STS 1009K* - kerf/push-fit	See STS data sheets :01 - :16
DRAUGHT		
DUST		
INFESTATION		

SMOKE / FIRE -  
STS test data available on request

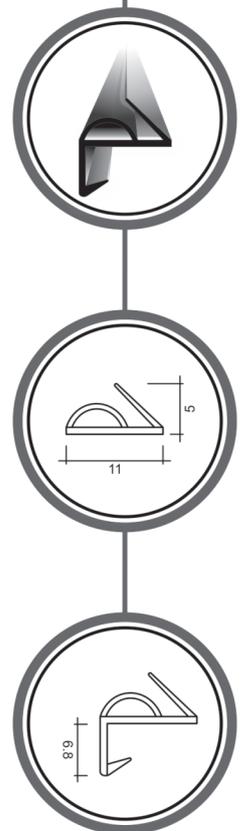


### STS 1009

#### Perimeter acoustic/smoke seal

Available in both kerf-fit and self-adhesive versions, the ST1009 is the most versatile, cost-effective perimeter seal on the market. It offers simple solutions and is specifically designed to have adverse effects on the operational integrity of the door.

Used in "compression", the ST1009 fits to the active face of the door-stop and thus has a minimal effect on the force required to close the door. The low co-efficient of the material ensures even less resistance to compression and excellent product recovery when the door is opened.





SEALED TIGHT SOLUTIONS

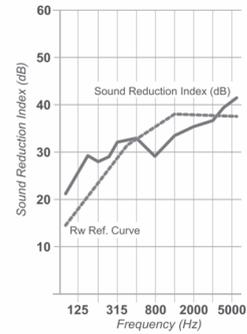
# acoustic

### acoustic test data

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- Approved Document - 'E' (Passage of Sound)
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## STS 422 Door-bottom seal

:16

### Characteristics / features

Product code	Size / Length	Colour(s)	Performance
STS 422 - "SIZE"	VARIOUS	N / A	ACOUSTIC -
See table below	See table below		See STS data sheets :01 - :16

### Characteristics / features

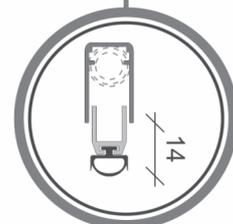
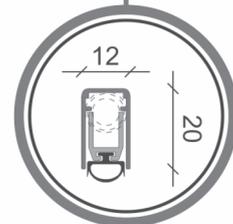
Protects against / Resists	Fitting / installation	Material(s)
FIRE	See STS data sheet :17	Casing: ALUMINIUM (T60/60)
SMOKE		Seal: NEOPRENE/BUTYL
SOUND		Mechanism: STEEL/NYLON
DRAUGHT		
DUST		
INFESTATION		

### Sizes

Product size (pre-cut) mm
330 530 730 830 930 1030 1130 1330
70 200 200 200 200 200 200 200
Product cuts back by (maximum) mm

### Please note

Pre-cut sizes are available at 925mm, 825mm & 725mm to suit standard width doorsets.



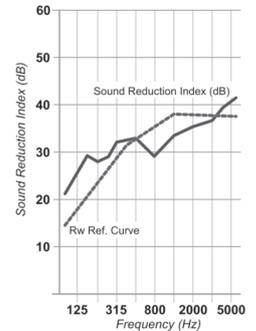


## acoustic test data

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- Approved Document - 'E' (Passage of Sound)
- Approved Document - 'B' (Fire Safety)
- Approved Document - 'M' (Access To and Use of Buildings)
- Building Bulletin - 93 (Acoustic design in schools)\*

\* See also: "Acoustic Performance Standards for the Priority Schools Building Programme" including: "Technical Guidance Document TGD-021-5 Acoustic Performance in Schools"



## STS 422GT Door-bottom seal

:18

### Characteristics / features

Product code	Size / Length	Colour(s)	Performance
STS 422GT - "SIZE" See table below	VARIOUS See table below	N / A	ACOUSTIC - See STS data sheets :01 - :16

### Characteristics / features

Protects against / Resists	Fitting / installation	Material(s)
FIRE	See STS data sheet :19	Casing: ALUMINIUM (T60/60)
SMOKE		Seal: NEOPRENE/BUTYL
SOUND		Mechanism: STEEL/NYLON
DRAUGHT		
DUST		
INFESTATION		

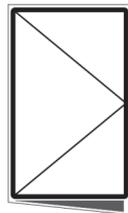
### Sizes

mm	Product size (pre-cut) mm					
	430	530	730	930	1130	1330
	150	160	200	200	200	200
	Product cuts back by (maximum) mm					

### Adjustment

#### Uneven Threshold

Left to right

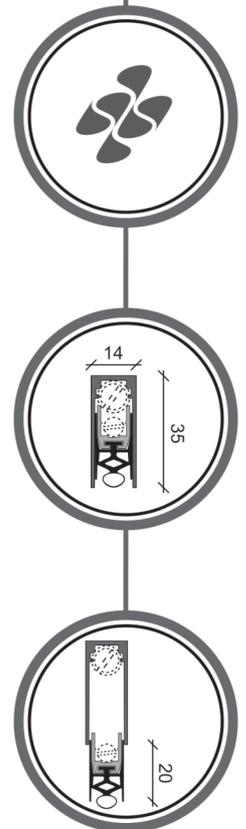


1. ↻
  2. ↻
- RHS

Adjust seal to close gap  
Turn for more downward pressure

1. ↻
  2. ↻
- LHS

Right to left





SEALED TIGHT SOLUTIONS

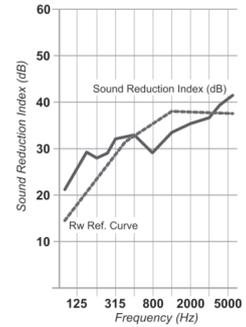
# acoustic

### acoustic test data

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- Approved Document 'E' (Passage of Sound)**
- Approved Document 'B' (Fire Safety)**
- Approved Document 'M' (Access To and Use of Buildings)**
- Building Bulletin 93 (Acoustic design in schools)\***

\* See also: "Acoustic Performance Standards for the Priority Schools Building Programme" including: "Technical Guidance Document TGD-021-5 Acoustic Performance in Schools"



:01

## FLAMEBREAK

### 44mm

#### 44mm - Single / Flush



Head / Jambs	Door-bottom	Sound Reduction (dB <sub>Rw</sub> )
ST1009 perimeter seal	STS 422 drop seal	<b>31</b> <small>see STS ref: 37</small>

#### 44mm - Single / Glazed



Head / Jambs	Door-bottom	Glass	Sound Reduction (dB <sub>Rw</sub> )
ST1009 perimeter seal	STS 422 drop seal	7mm	<b>33</b> <small>see STS ref: 10</small>

#### 44mm - Pair / Flush

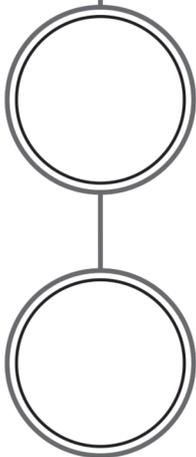


Head / Jambs	Door-bottom	Meeting stile	Sound Reduction (dB <sub>Rw</sub> )
ST1009 perimeter seal	STS 422 drop seal	STS 104FL single-blade seal	<b>32</b> <small>see STS ref: 66</small>

#### 44mm - Pair / Glazed



Head / Jambs	Door-bottom	Meeting stile	Glass	Sound Reduction (dB <sub>Rw</sub> )
ST1009 perimeter seal	STS 422 drop seal	STS 104FL single-blade seal	6mm	<b>33</b> <small>see STS ref: 68</small>
ST1009 perimeter seal	STS 422 drop seal	STS 104FL single-blade seal	7mm	<b>33</b> <small>see STS ref: 69</small>
ST1009 perimeter seal	STS 422 drop seal	STS 104FL single-blade seal	10mm	<b>33</b> <small>see STS ref: 71</small>



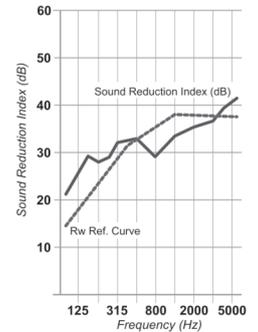


## acoustic test data

All STS acoustic data is sourced, supplied and verified by independent, UKAS-accredited test facilities in accordance with all relevant British and European standards.

**Approved Document 'E' (Passage of Sound)**  
**Approved Document 'B' (Fire Safety)**  
**Approved Document 'M' (Access To and Use of Buildings)**  
**Building Bulletin 93 (Acoustic design in schools)\***

\* See also: "Acoustic Performance Standards for the Priority Schools Building Programme" including: "Technical Guidance Document TGD-021-5 Acoustic Performance in Schools"

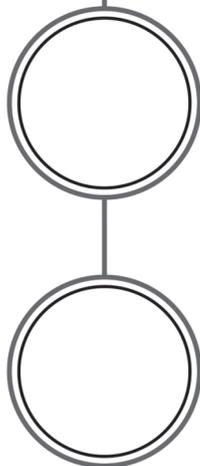


:02

## FLAMEBREAK

### 54mm

54mm - Single / Flush				Sound Reduction (dBRw)		
Head / Jambs	Door-bottom					
 ST1009 perimeter seal	STS 422 drop seal			<b>31</b>	see STS ref: 19	
54mm - Single / Glazed				Glass	Sound Reduction (dBRw)	
Head / Jambs	Door-bottom					
 ST1009 perimeter seal	STS 422 drop seal			10mm	<b>34</b> see STS ref: 18	
54mm - Pair / Flush					Sound Reduction (dBRw)	
Head / Jambs	Door-bottom	Meeting stile				
 ST1009 perimeter seal	STS 422 drop seal	STS 154FL single-blade seal			<b>32</b> see STS ref: 57	
54mm - Pair / Glazed					Glass	Sound Reduction (dBRw)
Head / Jambs	Door-bottom	Meeting stile				
 ST1009 perimeter seal	STS 422 drop seal	STS 154FL single-blade seal			10mm	<b>33</b> see STS ref: 54
 ST1009 perimeter seal	STS 422 drop seal	STS 154FL single-blade seal			15mm	<b>33</b> see STS ref: 55



**Pilkington Glass types - Performance Guidance:**

*This table provides only a general description of the products. Further, more detailed, information may be obtained from local suppliers of Pilkington products. It is the responsibility of the user to ensure that the use of these products is appropriate for any particular application and that such use complies with all relevant legislation, standards, codes of practice and other requirements. To the fullest extent permitted by applicable laws, Nippon Sheet Glass Co. Ltd. and its subsidiary companies disclaim all liability for any errors in or omissions from this publication and for all consequences of relying on it.*

**Physical Data**

Glass Type	Product Code	Fire resistance Integrity/Insulation	Nominal Glass Thickness approx. mm	Light Transmission	Weight approx. kg/m <sup>3</sup>	Glass Thickness Tolerance approx. mm	Sound Reduction approx. dB <sub>(a)</sub>	BS6206 / BS EN 12600 Impact (b)
Pilkington Pyrostop™(c)	30 - 103	30 30	14	0.88	35.0	±1.0	38	B / 2
Pilkington Pyrostop™(d)	30 - 10	30 30	15	0.85	35.0	±1.0	38	B / 2
Pilkington Pyrostop™	30 - 20	30 30	18	0.84	42.0	±1.0	38	A / 1
Pilkington Pyrostop™	60 - 101	60 60	23	0.88	55.0	±2.0	40	A / 1
Pilkington Pyrostop™	60 - 201	60 60	27	0.86	61.0	±2.0	41	A / 1
Pilkington Pyrodur™Plus	30 - 104	30 15	7	0.88	17.0	±1.0	35	B / 2
Pilkington Pyrodur™	30 - 105	30 15	7	0.90	17.5	±1.0	34	C / 3
Pilkington Pyrodur™	30 - 201	30 15	10	0.88	24.0	±1.0	36	B / 2
Pilkington Pyrodur™ (c)(d)	20 - 203	30 15	11	0.88	27.5	±1.0	37	A / 1
Pilkington Pyrodur™ (e)	30 - 184	30 15	24	0.79	33.0	±2.0	(f)	(f)
Pilkington Pyrodur™ (e)	30 - 185	30 15	24	0.79	33.0	±2.0	(f)	(f)
Pilkington Pyrodur™ (e)	30 - 251	30 15	24	0.78	40.0	±2.0	(f)	(f)
Pilkington Pyrodur™	60 - 10	60 15	10	0.88	24.0	±1.0	35	C / 3
Pilkington Pyrodur™	60 - 20	60 15	13	0.86	31.0	±1.0	38	B / 2
Pilkington Pyroshield 2™Safety Clear		30 0	6	0.77	16.6	-0, + 1.4	32	C / 3
Pilkington Pyroshield 2™Texture		30 0	7	0.79	16.7	±0.7	31	N/A

- a. R<sub>w</sub> Index (weighted sound reduction) corrected for human ear based on internal measurements.
- b. BS 6206 / BS EN 12600 classifies individual panes of glass only. (BS 6206 is withdrawn)
- c. Tested to BS EN 356 Glass in building. Security glazing. Testing and classification of resistance against manual attack
- d. Satisfies P(1)A performance - for Approved Document 'Q' applications.
- e. Sealed double glazed units.
- f. Variable according to assembly - consult Pilkington UK Ltd.

**Thermal Safety** - The possibility of excessive thermal stress being developed in the glass due to solar radiation should be considered at all stages of design and construction. It is recommended that a thermal safety check is performed for all sloping installations or when used in insulating glass units or secondary glazing.

**Handling & Storage** - Glass should be stored in dry conditions and out of direct sunlight, stacked upright and fully supported in a manner which prevents the glass from sagging. It should be stood on edge on strips of wood, felt or other relatively soft material. Special care should be taken to protect glass, especially the edges and the edge protection tape, from impact damage (knocks abrasions and excessive local pressure). Upon receipt and before glazing, each glass should be checked for damage. Damaged glass should not be glazed. Water must not be allowed to reach the edges of stacked glass as it can be drawn between the plates by capillary action and cause damage that may affect fire performance. The glass must be protected from site contamination such as welding, cementitious, plaster products or adhesives.



**Pilkington United Kingdom Ltd**  
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pilkington@respond.uk.com

[www.pilkington.co.uk](http://www.pilkington.co.uk)



## Fire-Resistant Glass Range

- Pilkington **Pyrostop**®
- Pilkington **Pyrodur**®
- Pilkington **Pyrodur**® Plus
- Pilkington **Pyroclear**®
- Pilkington **Pyroshield**™ 2



- Pilkington **Pyrostop**®
- Pilkington **Pyrodur**®
- Pilkington **Pyrodur**® Plus
- Pilkington **Pyroclear**®
- Pilkington **Pyroshield**™ 2



## The UK's most versatile and reliable suite of fire-resistant glass solutions. Tried, tested, trusted.

### Application

- Doors and door sets, with side and over glazed panels, internal and external
- Glazed partitions and screen assemblies
- Units with integral blinds available
- Stairwells, lobbies and escape routes
- Protected fire fighter shafts
- Overhead glazing and façades
- Load-bearing glass floors (for safety, must be insulation rated)
- A wide range of practical framing options, glazing configurations and glass sizes. Available in a comprehensive size range and can be used in various combinations with other glass types in Insulating Glass Units (IGUs)

### Key Guidance

- Test evidence must be available, appropriate to the application
- Customers, installers and users should make sure that the test evidence is available and applicable
- The glazed system must be installed according to the evidence
- Edge protection tape must not be removed
- Please observe guidelines on product handling and storage

### Taking Responsibility

The Regulatory Reform (Fire Safety) Order 2005 emphasizes responsibility in law for the provision of fire safety measures in buildings, starting with those in control of the premises. That includes suppliers and installers, who have a duty of care to ensure that the product is fit for purpose and appropriate.

### Benefits

- Comprehensive range of approvals for a wide range of applications
- Reliable and robust proprietary technologies backed by the renowned Pilkington brand
- Consistent and reproducible fire resistance performance, tested internally to our quality requirements
- Personal guidance on the key elements governing applications: regulations, legislation, fire safety principles, custom and design practice
- Fire test summaries provide ready reference support documentation
- All products in the range CE Marked and have their own DoP (Declaration of Performance)
- Certifire certification available, reference: CF5140, CF328, CF718
- Detailed guidance on glazing, handling, quality and product performance data, readily available as downloads

Specify our on-line specification tool  
– to help find the right glazing solution.  
[www.pilkington.co.uk/specifire](http://www.pilkington.co.uk/specifire)

To find out more,  
visit [www.pilkington.co.uk/fire](http://www.pilkington.co.uk/fire)  
email [pilkington@respond.uk.com](mailto:pilkington@respond.uk.com)  
or call our customer contact centre  
on 01744 692000.





## Insulation

### Pilkington **Pyrostop**<sup>®</sup>

- Highly successful intumescent technology
- Forms opaque and robust insulating barrier against heat, flames and fumes
- A sodium silicate interlayer (therefore not liable to flame or smoke on non-fire side)
- Classes 30, 60, 90, 120 and 180 minutes insulation & integrity (EI)<sup>(2)</sup>
- Impact safety up to class 1(B)1<sup>(1)</sup>
- Extensively specified worldwide in timber and metal framing systems
- Good visual and optical quality

## Integrity

### Pilkington **Pyrodur**<sup>®</sup>

- Based on intumescent technology
- Class 30 and 60 mins integrity (E)<sup>(2)</sup>
- Protection from radiant heat (EW30) and added insurance of insulation for 15 minutes (EI)<sup>(2)</sup>
- Impact safety class up to 1(B)1<sup>(1)</sup>

### Pilkington **Pyrodur**<sup>®</sup> Plus

- A unique and special intumescent technology
- Only 7 mm thick, integrity 30 minutes (E)<sup>(2)</sup>
- Protection from radiant heat (EW30) and added insurance of insulation for 15 minutes (EI)<sup>(2)</sup>
- Ideal for internal applications in partitions, doors and door set glazed screens
- 2(B)2 Impact safety class<sup>(1)</sup>
- Insulating Glazing Units also available

### Pilkington **Pyroshield**<sup>™</sup> 2

- Traditional Georgian wired glass
- Safety, 30 and 60 minutes integrity (E)<sup>(2)</sup>, impact safety class 3(B)3<sup>(1)</sup>
- Texture version – integrity 30 minutes (E)<sup>(2)</sup>
- Extensively used by the trade over decades
- NEW test evidence for 60 minutes integrity (E)<sup>(2)</sup>

### Pilkington **Pyroclear**<sup>®</sup>

- A unique, NEW, special modified toughened glass, 30 and 60 minutes integrity (E)<sup>(2)</sup>
- Designed for consistency: proprietary NSG processing technology, a special toughening specification and specific control criteria
- Product design and use backed by a new validated computer model
- Achieved 50 successive tests in timber frames before launch
- Less sensitive to edge cover relative to standard modified toughened glasses
- Impact safety 1(C)1, i.e. at highest drop height in the impact test<sup>(1)</sup>
- Large sizes and flexible use in timber, metal and composite doors and screens
- Ideal for safe escape before fire conditions become untenable

## Fire resistance

### Integrity

A physical barrier against flames, smoke and fumes.

### Insulation

A heat and physical barrier against fire, based on measured surface temperature limits under test in standard conditions. For protection against all heat, i.e. by conduction, radiation and convection.

## Protection from noise

Pilkington **Pyrostop**<sup>®</sup> and Pilkington **Pyrodur**<sup>®</sup> provide good acoustic performance, which can be further enhanced in Insulating Glass Units and by combination with acoustic laminated glass. Acoustic design is now important for many situations, e.g. in schools, hospitals and offices. Options from R<sub>w</sub>34 to R<sub>w</sub>48 dB available.

## Notes:

(1) BS EN 12600, Impact test and classification. Class C indicates mode of breakage as toughened safety glass.

Class B indicates mode of breakage as toughened laminated glass.

(2) BS EN 13501-2, Classification from fire resistance tests. I = Insulation; E = Integrity; W = radiation (not in UK regulations).

[www.pilkington.co.uk/fire](http://www.pilkington.co.uk/fire)

This publication provides only a general description of the products. Further, more detailed, information may be obtained from your local supplier of Pilkington products. It is the responsibility of the user to ensure that the use of these products is appropriate for any particular application and that such use complies with all relevant legislation, standards, codes of practice and other requirements. To the fullest extent permitted by applicable laws, Nippon Sheet Glass Co. Ltd. and its subsidiary companies disclaim all liability for any error in or omission from this publication and for all consequences of relying on it.

**Please note that imagery throughout is for illustration purposes only.**



CE marking confirms that a product complies with its relevant harmonised European Norm.  
The Declaration of Performance for each product, including declared values, can be found at  
[www.pilkington.com/CE](http://www.pilkington.com/CE)



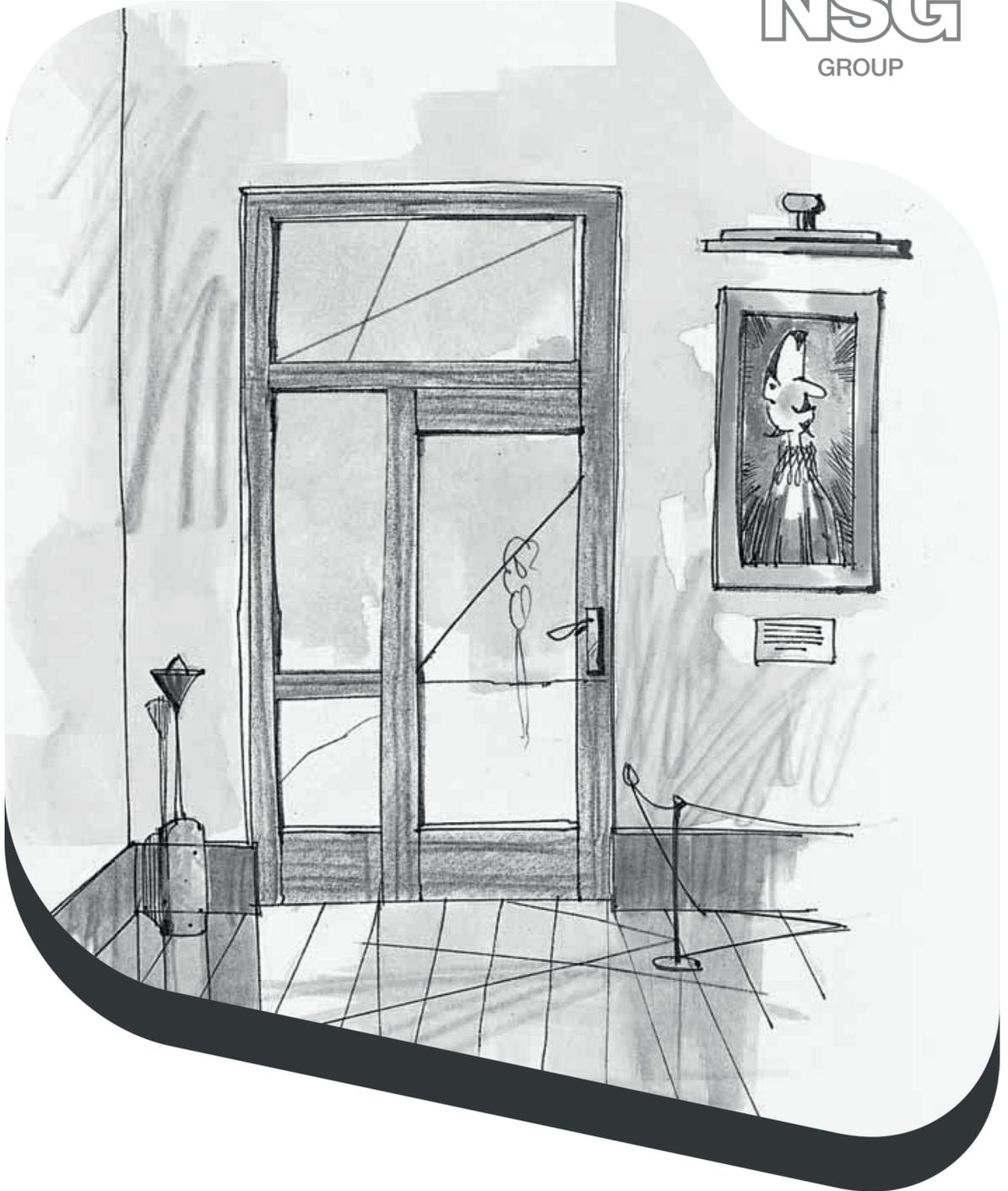
**Pilkington United Kingdom Ltd**  
European Technical Centre, Hall Lane, Lathom, Nr Ormskirk, Lancashire L40 5UF  
Telephone 01744 692000 Fax 01744 692880  
[pilkington@respond.uk.com](mailto:pilkington@respond.uk.com)  
[www.pilkington.co.uk](http://www.pilkington.co.uk)

CI/SfB Ro8 (Aq)

October 2012



**NSG**  
GROUP



## Pilkington **Pyroclear**<sup>®</sup>

### Fire Test Summary

For timber door sets and glazed screens  
30 and 60 minutes integrity



Pilkington **Pyroclear**® in Single Leaf, Single Acting  
 Timber Doorset with Fanlight and Glazed Side Screen  
 for 30 minutes integrity

Pilkington **Pyroclear**® is a clear, monolithic, high performance fire-resistant glass providing integrity with impact resistance for screens and doors.

**30 minutes integrity – monolithic**

**Test reference:**

RF 11150

**Test laboratory:**

Chiltern International Fire Ltd

**Test date:**

13th October 2011

**Test sponsor:**

Pilkington

**Test standard:**

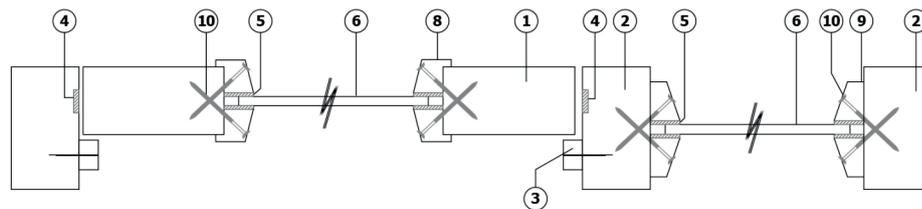
BS EN 1634-1:2008 and BS EN 1363-1:1999

**General description of the assembly:**

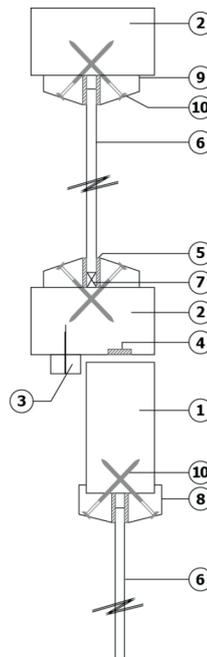
- Pilkington **Pyroclear**® 30-001 (6 mm)
- Pane sizes – refer to summary of fire test evidence in timber
- Single leaf, single acting timber doorset with fanlight and glazed side screen

**Key to figures 1 and 2**

1. Door leaf stiles and rails – European Redwood (density 508 kg/m<sup>3</sup>) 100 mm x 45 mm thick
2. Framing – head, jambs, sidelight and fanlight - European Redwood (density 481 kg/m<sup>3</sup>) 80 mm x 44 mm thick Fixed with steel wood screws 100 mm long placed at 600 - 800 mm centres
3. Door stop – planted (pinned) - European Redwood (density 481 kg/m<sup>3</sup>) 20 mm wide x 12 mm thick
4. Lorient Polyproducts Ltd LP1504 Type 617, 15 x 4 mm (fitted centrally in the frame reveal)
5. Fibrefrax ceramic glazing tape, 20 x 5 mm – compressed to 3 mm (fitted between the glass and bead on both faces)
6. Pilkington **Pyroclear**® 30-001 (6 mm)
7. Glazing packers - Sapele 6 mm thick x 10 mm high x 40 mm long (fitted along the bottom edge of the glass in each aperture)
8. Beading (leaf) – Sapele (density 738 kg/m<sup>3</sup>), 25 mm high x 21 mm deep including 5 mm x 5 mm bolection return and 20° chamfer
9. Beading (fanlight and side screen) - Sapele (density 738 kg/m<sup>3</sup>), 20 high x 25 mm deep with a 20° chamfer
10. 50 mm long steel screws, fitted at nominally 70 mm in from corners, at 150 mm (max) centres at 45° to face of glass



**Figure 1: Horizontal section**



**Figure 2: Vertical section**

**Note:** Full details of the test (including hardware) are available upon request.

### 30 minutes integrity – Insulating Glass Unit

Pilkington **Pyroclear**® in a single leaf, single acting timber doorset with a fanlight and glazed side screen for 30 minutes integrity.

**Test reference:**

RF 12034

**Test laboratory:**

Chiltern International Fire Ltd

**Test date:**

22nd March 2012

**Test sponsor:**

Pilkington

**Test standard:**

BS EN 1634-1:2008 and BS EN 1363-1:1999

**General description of the assembly:**

- Pilkington **Pyroclear**® 30-361 (IGU), comprising 4 mm Pilkington **Optitherm**™ S3 toughened outer pane, 6 mm airspace and Pilkington **Pyroclear**® 30-001 (6 mm) inner pane (exposed to the fire)
- Pane sizes – refer to summary of fire test evidence in timber
- Single leaf, single acting doorset
- Single leaf, single acting timber doorset with fanlight and glazed side screen

The glazing details are summarised in Tables 1-5.

**Table 1: Door leaf – both doorsets**

	Species/type	Dimensions (mm)
Stiles and rails	None fitted	–
Core	Falcon Panel Products Strebord particleboard (density 630 – 635 kg/m <sup>3</sup> )	44 thick
Adhesives/lippings	PU	–
Lippings (vertical edges only)	Sapele (density 640 kg/m <sup>3</sup> )	6 thick

**Table 2: Framing – both doorsets, fanlight and side screen of doorset B**

	Species/type	Dimensions (mm)
Head, jambs, sidelight and fanlight	European Redwood (density 510 kg/m <sup>3</sup> )	80 deep x 44 thick
Door stop – planted (pinned)	European Redwood (density 510 kg/m <sup>3</sup> )	20 wide x 12 thick
Frame fixings	Steel wood screws at 600 - 800 mm centres	100 long

**Table 3: Intumescent materials – both doorsets**

	Make/type	Size (mm)	Location
Door frame reveal – head and jambs	Lorient Polyproducts Ltd LP1504 Type 617	15 x 4	Fitted centrally in the frame reveal
Around glazing perimeter – leaf, fanlight and side screen	Fibrefrac ceramic glazing tape	20 x 3 (compressed to 20 x 2)	Fitted between the glass and bead on both faces
	Interdens	10 x 2	Fitted lining the glazing aperture

**Table 4: Hardware – both doorsets**

	Make/type	Size (mm)	Location
Hinges type hinge	3No Royde and Tucker H101 lift off	100 x 35 (blade size)	Fitted 148 mm, 988 mm and 1830 mm from the head of the leaf
Closer	Rutland TS3204 overhead type closer	220 x 59 (footprint size)	Fitted on the exposed face as per the manufacturer's instructions
Latch - disengaged	E*S Easi T tubular mortice latch	57 x 26 (forend size) 57 x 26 (keep size)	Fitted 1000 mm from the threshold of the leaf
Furniture	Aluminium lever type handle	100 x 38 (footprint size)	Fitted appropriate to the latch

**Table 5: Glazing – both doorsets**

	Overall aperture size (mm)	Glass size (mm)
Leaf	470 wide x 1020 high	450 wide x 1000 high
Fanlight – doorset B	930 wide x 470 high	910 wide x 450 high
Side screen – upper aperture	470 wide x 470 high	450 wide x 450 high
Side screen – middle and lower apertures	470 wide x 1020 high	450 wide x 1000 high
Edge clearance between glazing and frame	10 mm on all edges	
Glazing packers	Supalux 16 mm thick x 10 mm high x 40 mm long. Fitted along the bottom edge of the glass in each aperture (2 No per aperture)	
Beading	Sapele (640 kg/m <sup>3</sup> nominal density)	
Beading size – leaf	20 mm high x 17 mm deep including a 5 mm x 5 mm bolection return and a 20° chamfer	
Beading size – fanlight and side screen	20 mm high x 25 mm deep with a 20° chamfer	
Beading fixing	50 mm long steel screws, fitted at nominally 70 mm in from the corners, at 150 mm (max) centres at 45° to the face of the glass	

**Summary of fire test evidence in timber**

The fire test evidence for Pilkington **Pyroclear**<sup>®</sup> is summarised in Tables 6 and 7.

**Table 6: 30 minutes integrity**

Product	Test	Class	Application	Pane sizes (mm) <sup>1</sup>	Test reference
Pilkington <b>Pyroclear</b> <sup>®</sup> 30-001 (6 mm)	BS EN 1634-1 and BS EN 1363-1	E30 and EW30	SLD with top and side lights	467 x 2023 (P) 1450 x 605 (L) 710 x 1850 (D)	RF 11150_A
Pilkington <b>Pyroclear</b> <sup>®</sup> 30-001 (6 mm)	BS EN 1634-1 and BS EN 1363-1	E30	SLD with top and side lights	1000 x 2013 (P) 710 x 1750 (D)	RF 11177
Pilkington <b>Pyroclear</b> <sup>®</sup> 30-361 (IGU) <sup>2</sup>	BS EN 1634-1 and BS EN 1363-1	E30 and EW30	SLD and SLD with top and side lights	450 x 1000 (P) 910 x 450 (L)	RF 12034  450 x 1000 (D)

Notes:

<sup>1</sup> For pane sizes: P = portrait, L = landscape and D = door

<sup>2</sup> Pilkington **Pyroclear**<sup>®</sup> 30-361 (IGU) comprises 4 mm Pilkington **Optitherm**<sup>™</sup> S3 (toughened) outer pane, 6 mm airspace and Pilkington **Pyroclear**<sup>®</sup> 30-001 (6 mm) inner pane

**Table 7: 60 minutes integrity**

Product	Test	Class	Application	Pane sizes (mm)	Test reference
Pilkington <b>Pyroclear</b> <sup>®</sup> 60-001 (6 mm)	BS 476: Part 22	60 minutes integrity	3 single leaf single acting doorsets	200 x 1000 (Door A) 300 x 1200 (Door B) 300 x 1200 (Door C)	RF 12077

For fire test evidence in steel glazing systems, please refer to Fire Test Summary for Pilkington **Pyroclear**<sup>®</sup> in steel frames.

**Safety**

Pilkington **Pyroclear**<sup>®</sup> is classified as a 1 (C) 1 safety glass according to BS EN 12600 and has been tested in accordance with BS EN 1363-1, BS EN 1364-1 and BS 476 : Part 22: 1987 for fire-resistance.

For technical advice on the Pilkington range of fire protection glass, please refer to **[www.pilkington.com/specifire](http://www.pilkington.com/specifire)** or contact us by telephone on **01744-69-2000** or email at **[pilkington@respond.uk.com](mailto:pilkington@respond.uk.com)**

**General**

Glazing must be installed fully in accordance with Pilkington tested details and installation requirements, particularly with respect to edge cover and expansion tolerances.

For guidance on installation, please refer to Pilkington **Pyroclear**<sup>®</sup> Glazing and Handling Guidelines for Fire-resistant Glass.

This publication provides only a general description of the products. Further, more detailed, information may be obtained from your local supplier of Pilkington products. It is the responsibility of the user to ensure that the use of these products is appropriate for any particular application and that such use complies with all relevant legislation, standards, codes of practice and other requirements. To the fullest extent permitted by applicable laws, Nippon Sheet Glass Co. Ltd. and its subsidiary companies disclaim all liability for any error in or omission from this publication and for all consequences of relying on it. Pilkington "Pyroclear" and "Optitherm" are trademarks owned by Nippon Sheet Glass Co. Ltd, or a subsidiary thereof.



CE marking confirms that a product complies with its relevant harmonised European Norm.  
The CE marking label for each product, including declared values, can be found at [www.pilkington.com/CE](http://www.pilkington.com/CE)

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# SAFEHINGE SIMPLY DIFFERENT

The industry standard for durable finger guards.

Engineered to last in high traffic environments. Designed for every project and budget.

## FINGER GUARDS



## INTEGRAL FINGER GUARD Alumax

Perfect for new builds and major refurbishments, our discreet integral finger guard offers unrivalled safety and durability.

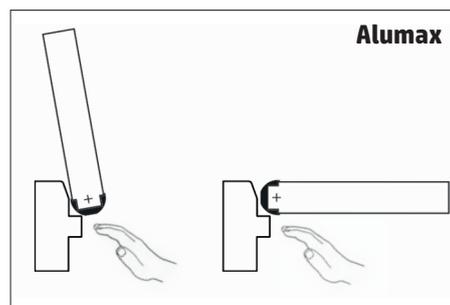
Alumax designs out the problem of trapped fingers using pivots and a rounded door edge to minimise the gap between door and frame. As the door opens and shuts, this gap remains constant at just 2mm – too small for fingers to get into harm's way.

Once fitted, it will last the **lifetime of the door**, removing the need for regular replacements and saving between £500 and £1,000 per door over 25 years compared with plastic.

As well as providing **superior finger safety**, it **blends seamlessly** into any environment through its range of finishes, including timber finish and RAL colour.

The onsite adjustment also ensures that it's installed right first time – every time.

Patent protected (GB1902103, FR1902103, DE602006020281.4)



<http://www.safehinge.com/alumax>

SAFEHINGE SIMPLY DIFFERENT

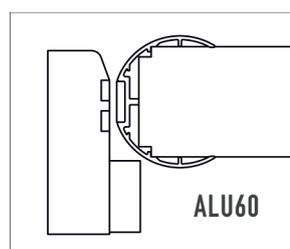
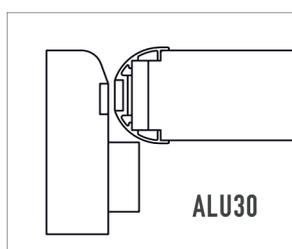


## TECHNICAL AND SPECIFICATION INFORMATION

For more in-depth technical information, including user manuals and installation advice, please refer to the “Technical Tools” section on our website – <http://www.safehinge.com/alumax>

# TECHNICAL SUMMARY

	ALUMAX (ALU30)	ALUMAX (ALU60)	ALUMINI	ALUFAST
<b>Finger guard description</b>	Integral		Retrofit finger-ejecting	Retrofit extreme duty
<b>Door type</b>	Single / Double swing		Single swing	
<b>Door thickness</b>	44mm	54mm	Up to 54mm	
<b>Max. opening angle</b>	100°		180°	100°
<b>Fire rating</b>	NFR / FD30	FD60	As door	
<b>Acoustic rating</b>	Up to 32db	Up to 38db	As door	
<b>Supply lengths</b>	2100mm and 2700mm*		1925mm	1800mm and 1925mm
<b>Codes</b>	See Technical & Manufacturing Guidelines document		Standard version up to 44mm doors (MINI - 1925) Extension pack for 54mm doors (MINI - PK2)	Two guiderail as standard FAST-G2-1800 or 1925 Three guiderail - extra strength FAST-G3-1800 or 1925
<b>Finishes</b>	Anodised silver RAL colours Timber effect		Anodised silver	
<b>Frame head</b>	48mm		As door	



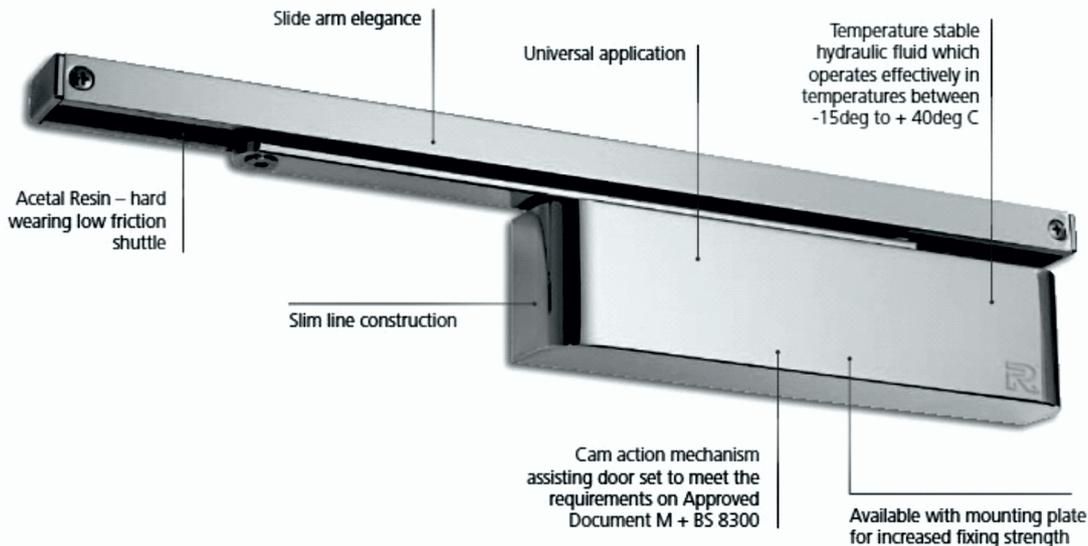


# Door Controls

[www.rutlanduk.co.uk](http://www.rutlanduk.co.uk)

# TS.11204

## Surface Slide Arm Closer



## Product Overview

The Cam Action Door Closers, with their renown high efficiency and ease of opening, are what specifiers have come to learn and expect from Rutland door closers. Cam Actions have been used for decades in many and varied applications globally where the characteristics of the Cam, breed the performance, quality, reliability and design associated with Rutland.

# TS.11204



## Surface Slide Arm Closer

### Specification Overview



Fire Tested  
up to 60 mins



Max Door Weight  
up to 60kg



Opening Angle  
120°



Max Door Width  
950mm



Universal  
Application



Adjustable  
Closing Speed



Power Size  
3



Adjustable  
Latch Speed



Guarantee



11204CPR01.07.13



Min Door  
857mm fig30



Rut Lock

### Technical Information

#### BS EN 1154 Classification

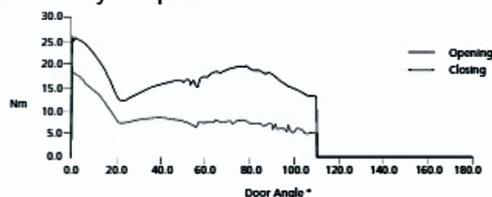
TS.11204 door closers have been independently tested to conform with the EN 1154 performance standard. They are CE marked and classified as follows:

3 8 3 1 1 3

#### BS EN 1634 Fire Test

TS.11204 door closers have been tested to EN 1634 Fire Pressure Test for, 30 and 60 minutes on a TFTDoor and TFCDoor.

#### Efficiency Graphs



### Options

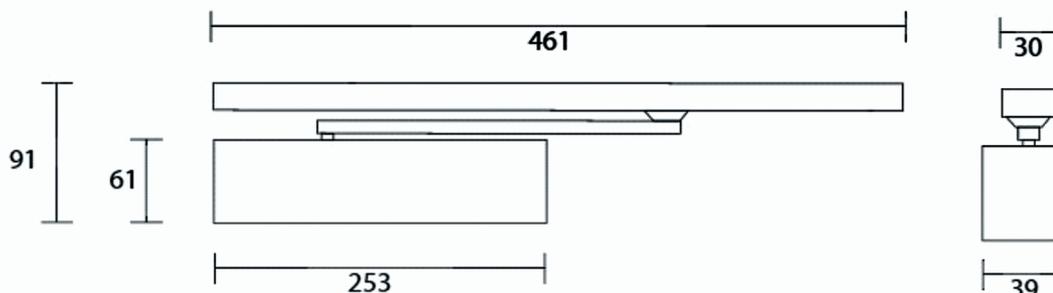
- Mechanical hold open slide rail (*Not to be used on fire doors*)
  - EN2 & EN4
  - Back check available as a cushion stop in the rail
- Options not covered by CE.*

### Other Benefits

- DDA door closer helping the less able (min door size 857mm)

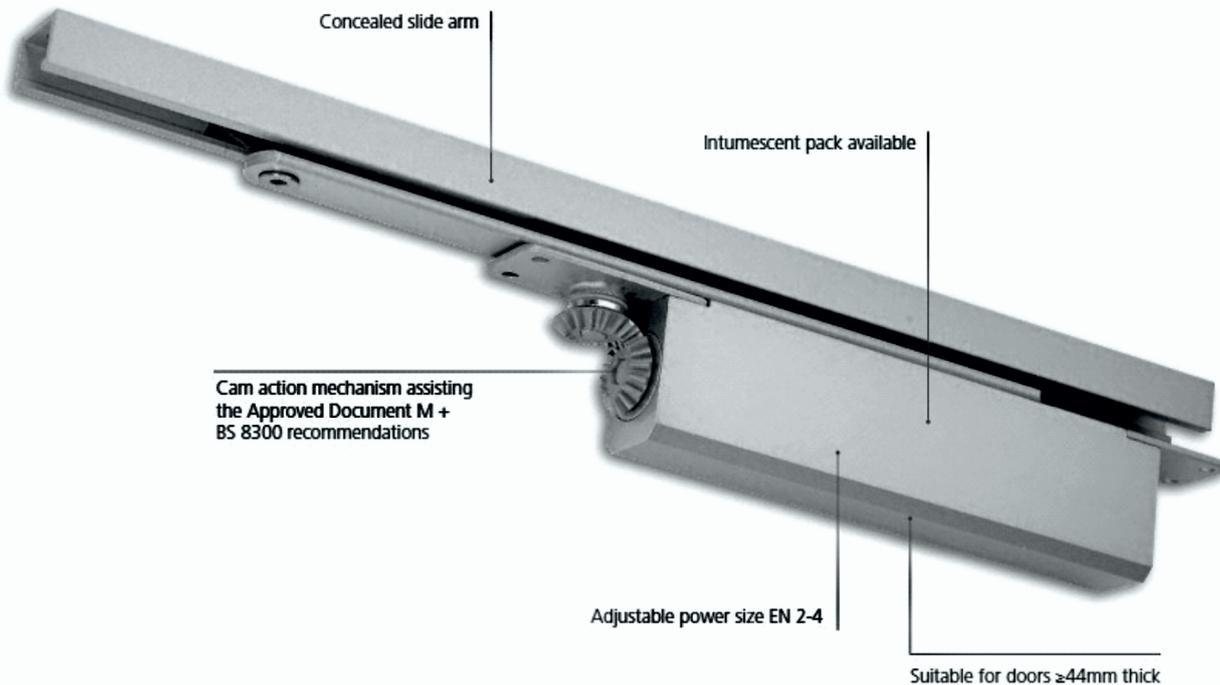


All dimensions shown are in mm.



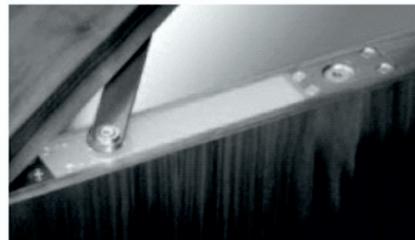
# ITS.11204

## Concealed Slide Arm Closer



## Product Overview

The Rutland ITS.11204 concealed door closer with cam and roller mechanism makes it an easy to open door closer helping to assist with Document M of the building regulations and the BS 8300 recommendations. This very slim - non-handed 2-4 power adjustable door closer is suitable for a variety of metal and timber doors for use in projects such as hospitals, care homes, schools, colleges and other areas. Also helps in areas subject to vandalism as the unit is fully concealed when the door is closed.



# ITS.11204



## Concealed Slide Arm Closer

### Specification Overview



Fire Tested  
up to 60 mins



Max Door Weight  
up to 60kg



Opening Angle  
120°



Max Door Width  
950mm



Universal  
Application



Adjustable  
Closing Speed



Power Size  
3



Adjustable  
Latch Speed



Guarantee



11204CPR01.07.13



Min Door  
857mm fig30



Rut Lock

## Technical Information

### BS EN 1154 Classification

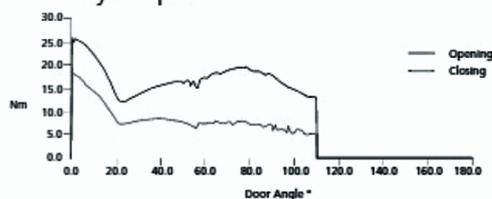
TS.11204 door closers have been independently tested to conform with the EN 1154 performance standard. They are CE marked and classified as follows:

3 8 3 1 1 3

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TS.11204 door closers have been tested to EN 1634 Fire Pressure Test for, 30 and 60 minutes on a TFTDoor and TFCDoor.

### Efficiency Graphs



## Options

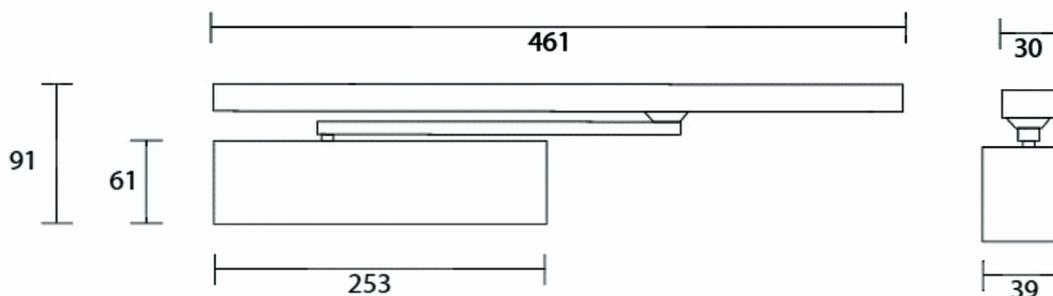
- Mechanical hold open slide rail (*Not to be used on fire doors*)
  - EN2 & EN4
  - Back check available as a cushion stop in the rail
- Options not covered by CE.*

## Other Benefits

- DDA door closer helping the less able (min door size 857mm)



All dimensions shown are in mm.





## C/S ACROVYN® DOOR EDGE PROTECTORS

Using C/S Acrovyn® Door Edge Protectors will help reduce damage and expensive repair costs to door edges.

Door Edge Protectors are available for non-fire rated and fire-rated doors and are easy to install to new or existing doors.



- High impact protection channel in through-colour 2mm thick Acrovyn sheet, with an 8mm thick toughened and recycled Acrovyn internal lipping and fire seal to match fire rating of the door
- Available in 30 solid Acrovyn colours
- Differentiates door edges for Approved Document M compliance
- Co-ordinates with Acrovyn® Kick Plates, Push Plates and Door Frame Protection
- Formed to suit radiused or square edged doors
- Available in widths to suit door thicknesses from 44 to 54mm
- Suitable for non fire rated and fire rated doors
- Supplied with fire and smoke seals tested up to 30 minutes and 1 hour to BS 476 part 22 and 31.1
- Easy to install to new and existing doors
- Acrovyn Door Edge Protectors have chamfered edges to provide a safe, smooth return on door face once fitted
- Standard door edge protector length 2200mm

## C/S ACROVYN® DOOR EDGE PROTECTORS

### INSTALLATION

1.

a - Acrovyn® Door Edge Protector on existing door.

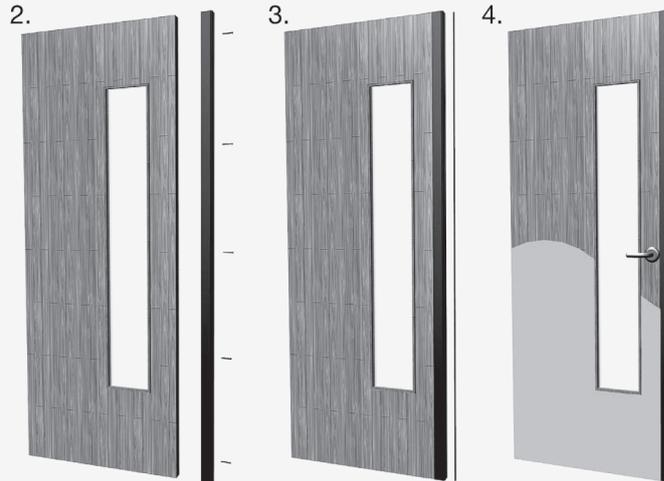


Reduce door width and thickness on either side of the door to accommodate the Door Edge Protector

b - Acrovyn® Door Edge Protector and Kick Plates on new or existing door.



Flush finished door protector and plates

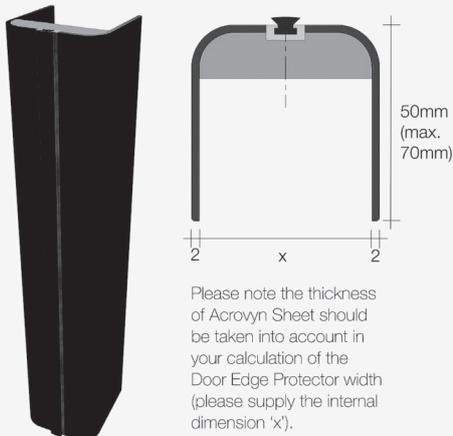


### 1. DOOR PREPARATION

Remove door from door frame and remove ironmongery on door edges to be protected. Reduce door width and thickness as appropriate to accommodate Acrovyn® Door Edge Protectors and any Acrovyn® Kick Plates or Push Plates required (refer to drawing 1a. or 1b. above).

2. Cut Door Edge Protector to suit height of door, then align to door to mark and cut out for ironmongery. Cut as required. Position Door Edge Protector over door edge and using countersunk screws, fix the edge protector into place through the recess groove in the edge protector.
3. Remove the backing tape from the intumescent strip and insert into the recess groove. Press firmly.
4. Re-hang the door, re-fit the ironmongery and fit new Acrovyn® Kick Plates or Push Plates as required.

### HOW TO ORDER



Please note the thickness of Acrovyn Sheet should be taken into account in your calculation of the Door Edge Protector width (please supply the internal dimension 'x').

The following details are required to enable us to process your order for Acrovyn® Door Edge Protectors:

No. required	
Acrovyn colour reference	
Fire rating - 30min., 60min. or NFR	
Length of Door Edge Protector (max. 2200mm)	
Internal width of Door Edge Protector ('x')	
Leg length 'y' (50mm as standard, max. 70mm)	
Radius or square edge	

Please also include delivery and invoice addresses and contact name and number.



# Revision E



## SAFE AND SOUND



# FLAMEBREAK

Pacific Rim Wood Ltd.  
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