

# ALUMAX<sup>o</sup>

ALU30 & ALU60 INTEGRAL FINGER GUARDS



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#### **Use of Technical and Manufacturing Guidelines**

These guidelines are for use only by parties expressly and directly authorised by Safehinge Limited or its authorised distributors to (a) evaluate the doorset for potential use and/or manufacture and/or (b) manufacture and maintain the doorset. No other use or disclosure of the guidelines is permitted.

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The Safehinge doorset is protected by intellectual property rights and is patent protected.

#### **Disclaimer**

Other than death or personal injury caused by negligence and other liabilities which may not be excluded or limited by law, Safehinge Ltd excludes any and all liability for (a) failure to follow the guidelines or other technical documentation in any manner; and/or (b) defective or inaccurate manufacture, installation and/or maintenance of the doorset and/or any of its components.



safehinge

## Welcome

Welcome to the Safehinge ALUmax  
Technical and Manufacturing Guidelines.

We hope you will find these guidelines easy to use and helpful. This document is laid out as follows:

### Technical Manual

- i) ALU30 (44 mm) product
- ii) ALU60 (54 mm) product

This section focuses on the performance capabilities of the Safehinge ALUmax range in fire, acoustic and mechanical disciplines. As a specifier you'll find out what you can achieve with ALUmax and how to do it.

### Manufacturing Guidelines

- i) ALU30 (44 mm) product
- ii) ALU60 (54 mm) product

These sections focus on manufacturing details including doorset sections, mortices and component installation instructions. A must read to ensure compliance.

### Common installation features

## Finger Trapping – The Problem

The Royal Society for the Prevention of Accidents (RoSPA) estimates that **30,000 children trap and seriously injure their fingers in doors every year** and more than 1,500 of these will need surgery. **Adults too** - particularly those with special needs, physical or mental impairments and the elderly - **are susceptible to finger entrapment.**

The estimated **cost of these injuries to the National Health Service is £200 million** per annum.

Further research carried out at the Royal Sick Children's Hospital in Glasgow highlighted the severity of the injuries which occur. In six months, 136 children were admitted to A&E after trapping their fingers in a door with 45% suffering bone/joint injuries and 11% amputation. The cost of litigation for these injuries can be substantial. The responsibility for reducing these injuries falls to building owners and specifiers.

Safehinge ALUmax eliminates any opportunity for finger trappings to occur. Clever design means there is no opportunity for wandering fingers to be trapped, which is without doubt **the best way to protect against accidents: total prevention.**



## Product Summary

Integrated finger protection kit incorporating specialised pivot set, aluminium edge profile and intumescent.

### Suitable for door type

Single and double leaf; single and double swing  
44 mm and 54 mm door thickness (primary test evidence generated using Halspan / Blankfort / Moralt cores)

### Fire/smoke

FD30, FD30 (S), FD60, FD60 (S) rating

### Mechanical

Maximum recommended load: 120 kg  
Severe Duty rating (DD171)  
Tested to 1.5 million cycles

### Acoustic

Rw rating up to 38 dB maximum (glazed)

### Finishes (aluminium edge profile)

Standard - natural anodised finish.  
To your request: powder coat (any RAL colour) or timber effect foil wrapping.

### Standard lengths

2.1 m and 2.7 m standard supply lengths.

## Our Approach to Testing

**At Safehinge Primera we invest significantly into R&D so you don't have to.** Our focus is on three central disciplines: **fire, mechanical and acoustic testing.**

The Safehinge ALUmax has been **rigorously tested**

**as part of an integrated doorset**, as opposed to individual components.

Integrated testing is recognised as more onerous as it tests the product as part of an overall doorset assembly (replicating real-life scenarios more closely), rather than artificially isolating components.

Successful outcomes from such testing provide the specifier with **total confidence that the product is truly fit for purpose.**



Our approach to testing is simple - we

selected widely used, commercially available (door core, intumescent and door frame) materials to test with to give our customers as many options as possible.

You'll see which materials we've got coverage for in this manual. If you follow the guidelines given, you can **rest assured your product will comply with the performance levels** detailed.

If you don't see the materials you wish to use listed, please contact us to let us know.



## Third party certification

This document is largely governed by the Warrington Fire Field of Application (FoA) A12005 commissioned by Safehinge Primera which relates to the fire resistance only of 30 and 60 minute proprietary fire resisting, timber framed doorset designs fitted with the Alumax hinge system.

**warringtonfire**  
Proud to be part of 

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

**Title**

Field of Application for:  
Safehinge™ Alumax  
combined with Timber  
Frames  
30 and 60 Minutes Fire Resistance  
Performance

**Report No.:**

Chilt/A12005

**Issue Date:**

**Valid Until:**

**Job Reference:**

**Prepared for:**

**Safehinge Primera**  
44 Speirs Wharf  
Glasgow  
G4 9TH  
United Kingdom

This document will be kept up-to-date with A12005 revisions or revalidation.

If the Alumax doorsets are required to be Third Party Certified, it is the responsibility of the door manufacturer to request permission to add A12005 onto their manufacturing scope, guided by the specific requirements of the relevant third part certification scheme - Eg. Q-mark, Certifire, Blue Sky, IFC.

The details for the construction of an Alumax doorset must be taken from A12005. Other Referenced FoAs should only be consulted if the doorset feature is not covered by A12005.

Installation of any third party certified doorset must be installed by qualified persons who are certified by the same certification scheme as the manufactured doorset. It is the responsibility of the manufacturer to provide installation instructions.

For example; the perimeter intumescent specifications are restricted to those prescribed in A12005 (summarised in this document).



## **\*\*At a Glance - Key Features\*\***

Whilst we strongly recommend reading this document in full, here are some key points when specifying / working with Safehinge ALUmax:

### **\*\* Opening angle - limit to 100° \*\***

You must restrict the opening angle of Safehinge ALUmax doors to 100° - 110° maximum. See page 42.

### **\*\* Floor plate or L-bracket \*\***

Which bottom pivot best suits your project?  
See page 29 (ALU30) or page 37 (ALU60).

### **\*\* Underfloor heating - plan ahead \*\***

Whether using floor plate or L-bracket, we always recommend supporting and fixing the bottom pivot firmly to the floor. This should be accounted for at design stage, page 29 (ALU30) and page 37 (ALU60).

### **\*\* Clearance underneath door - plan ahead \*\***

Do you need a standard or long stem bearing to achieve your desired clearance under the door? See "Undercuts & Floor Pivot Adjustment" on page 40.

### **\*\* Door stops - need to be accurate \*\***

The finger safety function of Safehinge ALUmax doorsets means a bit of attention to detail is required when it comes to the door stops. See page 41.

### **\*\* Are you using cores, frame materials & intumescent consistent with Safehinge test evidence? \*\***

Safehinge test evidence was primarily generated with Halspan/Blankfort/Moralt cores and Lorient intumescent seals. Full details contained within Technical Manual.

### **\*\* Frame head - size \*\***

Safehinge ALUmax requires a pivot mechanism to be machined into the frame head. This results in a frame head that is thicker than typical doorsets. See page 23 onwards for details.

### **\*\* Concentric \*\***

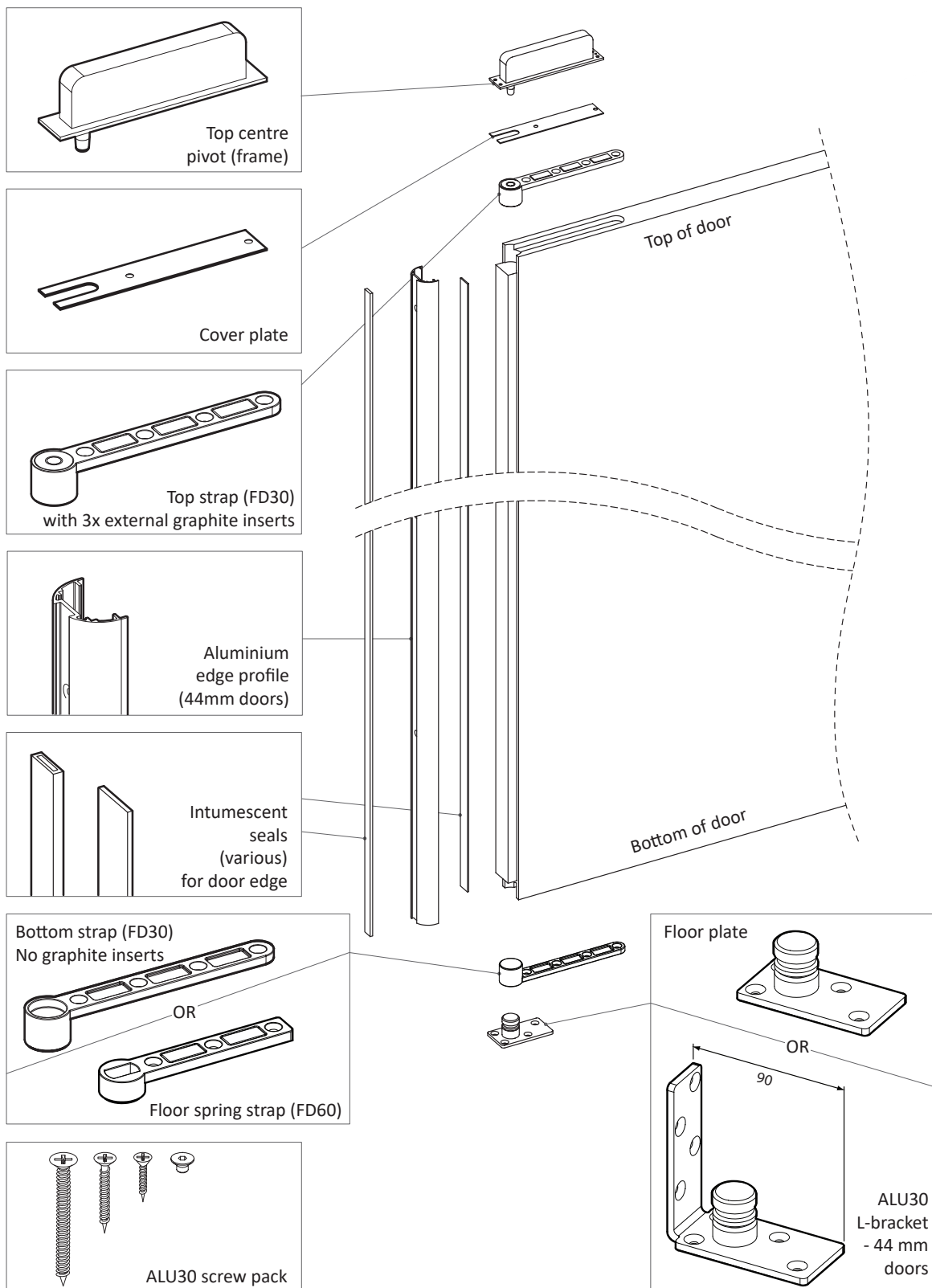
The pivot centre on the door and the rounded aluminium edge profile must always be concentric. Follow mortice / rebate details on page 27 (ALU30) and page 35 (ALU60) to ensure this.

### **\*\* Particleboard core \*\***

If you are planning to use particleboard core, please also ensure you use a T-section lipping to ensure mechanical stability and a firm fixing for the pivot straps. See page 25 (ALU30) and page 33 (ALU60).

# What's in the ALU30 Kit?

Product components explained.



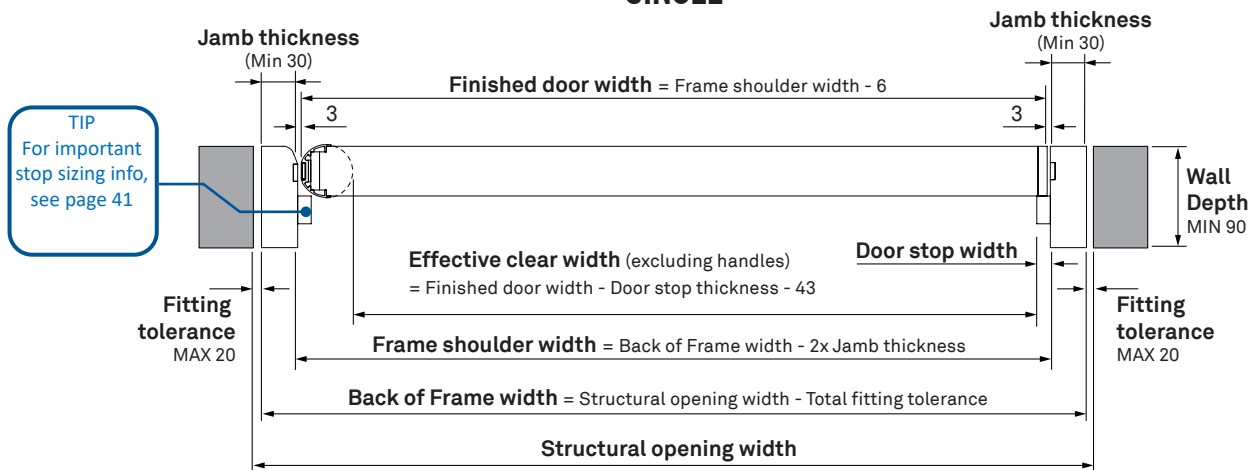
**TIP**  
 For product coding, see page 44



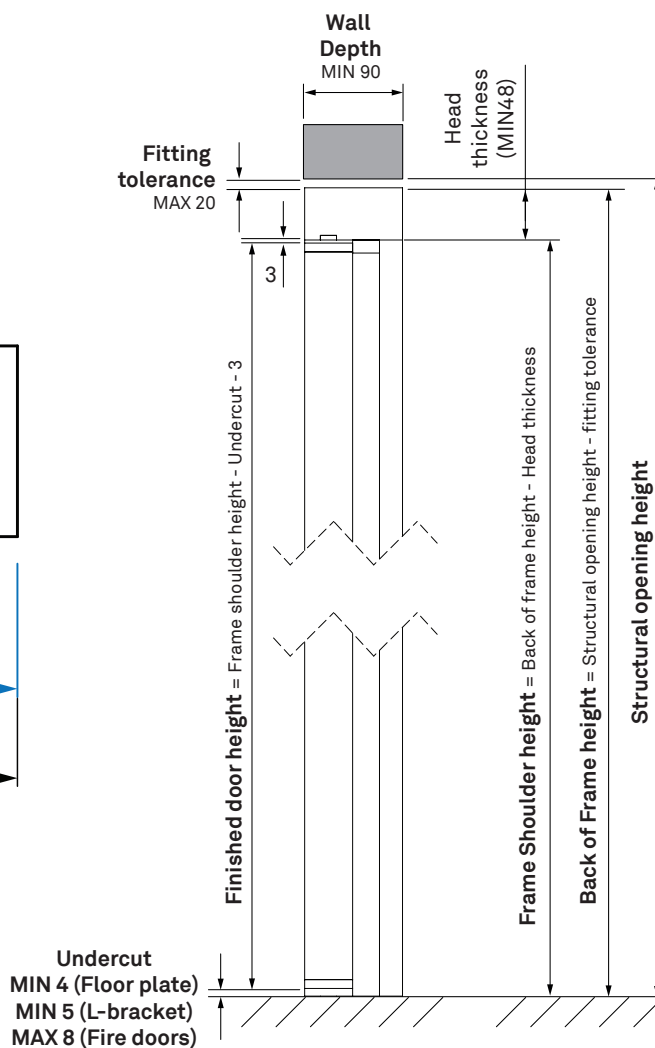
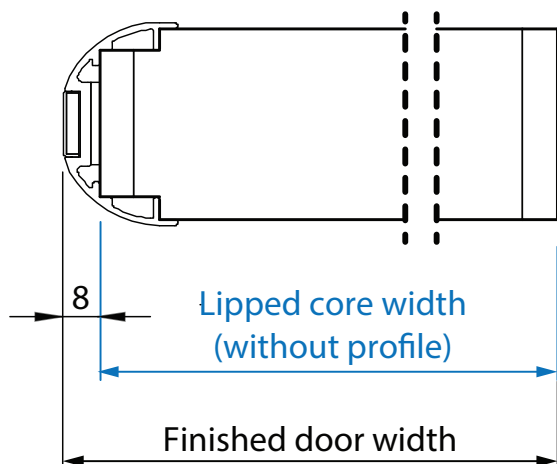
# ALU30 Doorset Dimensions - Single doors

The guide below will help you work out the overall doorset dimensions. You can also use our online ALUmax width calculator at [www.safehingeprimera.com/products/finger-guards/integral-finger-guard-alumax](http://www.safehingeprimera.com/products/finger-guards/integral-finger-guard-alumax)

## SINGLE



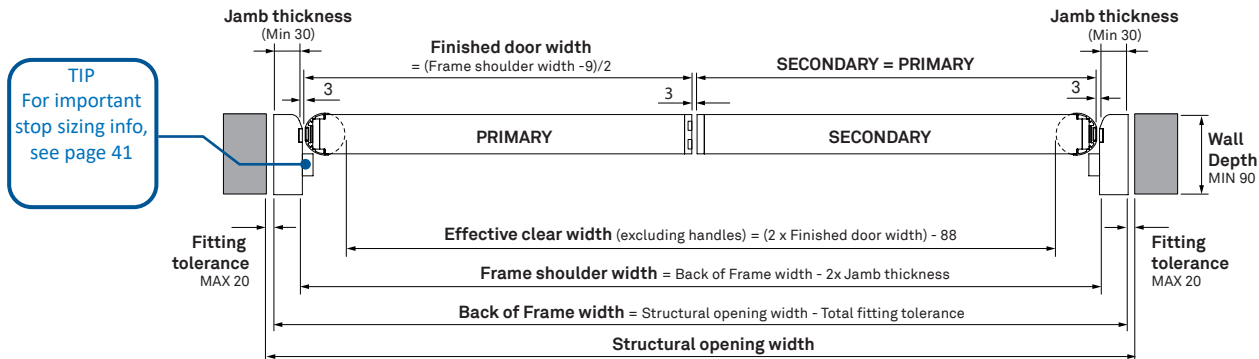
**IMPORTANT**  
The aluminium profile add 8mm onto the total width of the door. The calculations above are inclusive of the aluminium profile



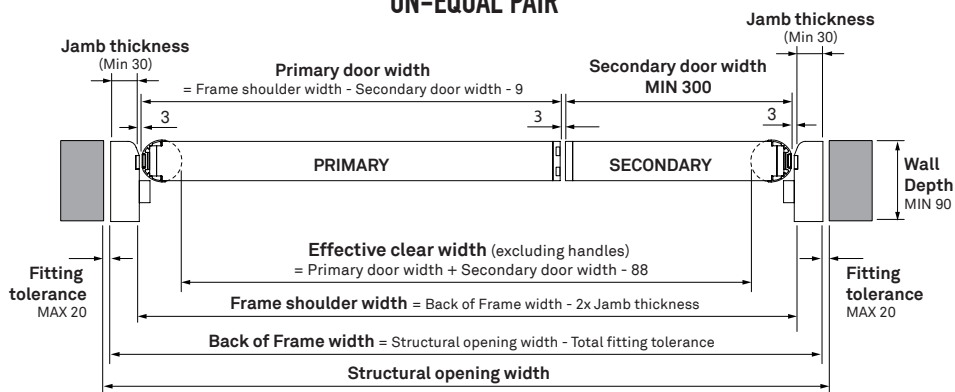
# ALU30 Doorset Dimensions - Double doors

The guide below will help you work out the overall doorset dimensions.

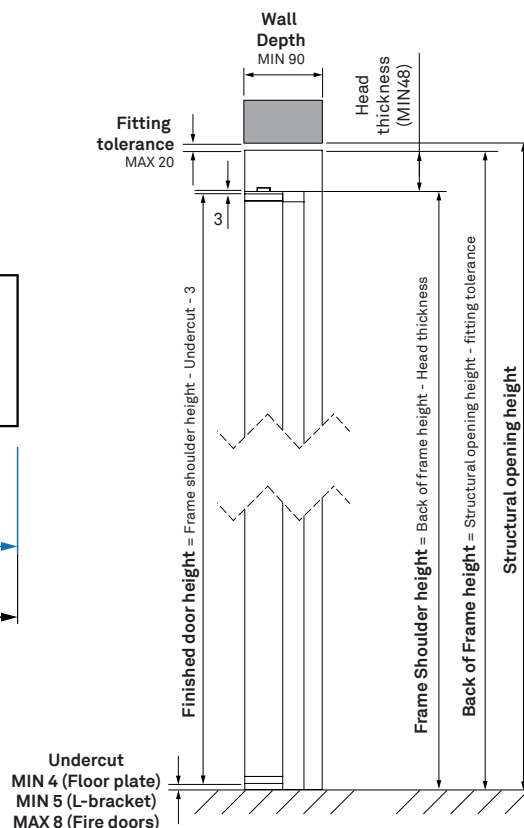
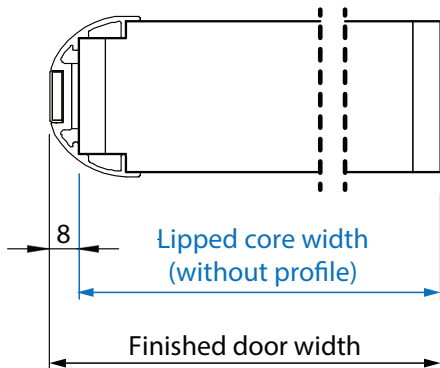
## EQUAL PAIR



## UN-EQUAL PAIR



**IMPORTANT**  
The aluminium profile add 8mm onto the total width of the door. The calculations above are inclusive of the aluminium profile



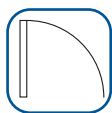
# FD30 Fire Performance



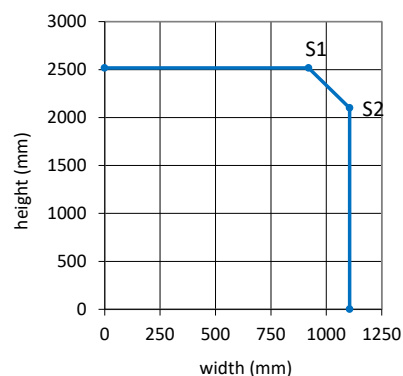
## Lorient Polyproducts - FD30 Maximum Leaf Sizes

Global Assessment Chilt/A12005 permits expansion of leaf sizes, alternative frame materials, glazing, door face finishes and various ancillaries, as summarised below. Please enquire if the information you require is not presented here.

### Latched, single acting, single leaf



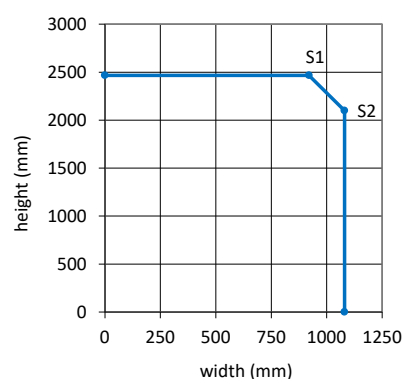
	S1	S2
<b>W</b>	920	1105
<b>H</b>	2517	2100



### Unlatched, single or double acting, single leaf



	S1	S2
<b>W</b>	920	1076
<b>H</b>	2467	2100

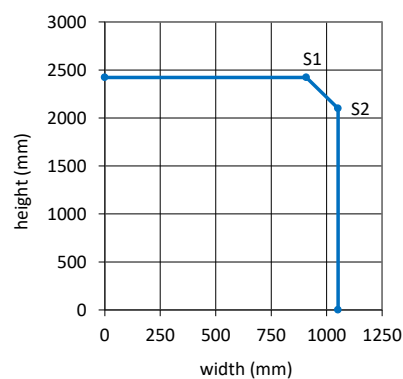


### Latched, single acting, double leaf

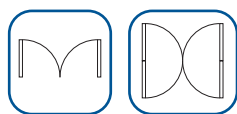


For unequal, double leaf – see “Unequal Double Leaf - Width Restrictions” on page 10.

	S1	S2
<b>W</b>	908	1051
<b>H</b>	2473	2100

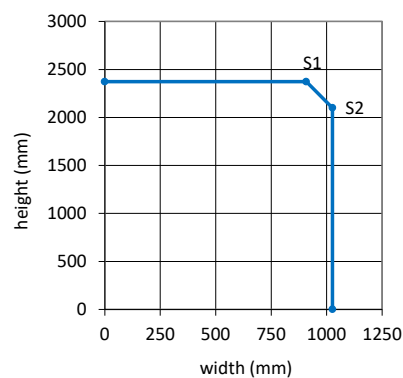


### Unlatched, single or double acting, double leaf



For unequal, double leaf – see “Unequal Double Leaf - Width Restrictions” on page 10.

	S1	S2
<b>W</b>	908	1026
<b>H</b>	2423	2100



# Lorient Polyproducts - ALU30 Doorset Specification



## Lorient - standard specification

In 2015, Safehinge standardised the supply of Lorient seals with all ALUmax kits as we believe this market-leading brand offers our customers the greatest range of technical and product performance.

## Unequal Double Leaf - Width Restrictions

Unequal leaf double doorsets are permitted with a minimum secondary leaf width of 300mm.



## Frame

Softwood or hardwood minimum density 510 kg/m<sup>3</sup>;  
MDF minimum density 700 kg/m<sup>3</sup>  
Minimum sections excluding stops: 90 x 48 mm (head);  
90 x 30 mm (jambs)  
Head/jamb joint: Half Lapped, Mitre, Mortice & Tenon, Butt, Trenched. The door frame joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Frame joints may additionally be reinforced with any of the following adhesives - PU, UF, PVA, PF

## Stops

Machined from solid; pinned and glued, or pinned only.

## Recommended DD171 Severe Duty Frame

Minimum sections excluding stops: 90 x 48 (head); 90 x 30 (jambs). MDF or hardwood.  
Head/jamb joint: butt jointed. Head to jambs fixed 3No. 3.5 mm x 100 mm screws per joint & PU glue.  
Stops: 35x15 mm stops pinned at 200 mm centres with 40 mm pins, or integral.

## Door core/blank

See Page 12 for the ALU30 fire door core options. We would also recommend using the same core options for non-fire rated applications.

Currently, Safehinge acoustic/mechanical testing conducted with Halspan / Blankfort cores only. If an alternative door core is used, Safehinge is unable to offer primary evidence to support acoustic/mechanical

performance; this provision therefore becomes the responsibility of the specifier.

## Lipping

Hardwood minimum density 640 kg/m<sup>3</sup>

T-section lipping recommended - Halspan. Flat section - Blankfort (details - "Lipping Specification" on page 11).

PVC/Plastic laminates must NOT be applied to the edges of leaves

## Gluelines

PU, UF, PVA, PF

## Intumescent/smoke seal

Frame seals (to be procured by door manufacturer):  
Refer to "Table 1" and "Table 2" on page 11.

Door edge seals (supplied by Safehinge):

15x4 PVC-cased Type 617 (white) & 19x2 GPF graphite strip

Ironmongery intumescent (supplied by Safehinge):  
Graphite or Lorient M.A.P gasket wrap and pockets (for top centre pivot & top strap)

## Finishes

Paint (maximum 0.2mm thickness)

Timber veneers/Plastic/PVC laminate (maximum 2 mm thickness)

Cellulosic and non-metallic foils (maximum 0.4mm thickness)

## Glazing

For conventional glazing applications (a single pane of glass mounted on the centreline of the leaf thickness) the full range of leaf glazing options is linked to the particular door core selected. Refer to the relevant door core FoA to establish options.





Multipane vision panels are NOT permitted for use with ALU30 doors.

## ALU30 - 30 minute fire door core options



### 44mm Door core options

The matrix below shows the core options and permitted doorset configurations for ALU30 fire doors.

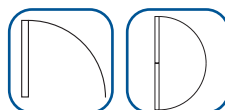
									
		LSASD	ULSASD	LSADD	ULSADD	LDASD	ULDASD	LDADD	ULDADD
1	Blankfort 30	Yes	No	Yes	No	Yes	No	Yes	No
2	Blankfort 30+	Yes	No	Yes	No	Yes	No	Yes	No
3	Halspan Prima 30	Yes	No	No	No	Yes	No	No	No
4	Halspan Optima 30	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
5	Falcon Strebord 44	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

LSASD	Latched Single Acting Single Doorset
ULSASD	Unlatched Single Acting Single Doorset
LSADD	Latched Single Acting Double Doorset
ULSADD	Unlatched Single Acting Double Doorset
LDASD	Latched Double Acting Single Doorset
ULDASD	Unlatched Double Acting Single Doorset
LDADD	Latched Double Acting Double Doorset
ULDADD	Unlatched Double Acting Double Doorset

# Lorient Polyproducts - ALU30 Seal Specification



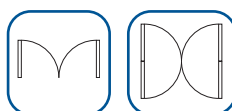
## Single Door (Single/Double Acting)



		Seal Position (see "Frame Specification - Single Doors" on page 23)				R <sub>w</sub> Rating (dB)**	
		Frame head	Hanging jamb	Closing Jamb	Threshold		
Rating		A	B	C			
	" (single acting only)	Fire, smoke & acoustic	15x4 LP1504DS Type 617	Same as A	Same as A	Options: 1) 2x Lorient IS1511* 2) 1x Lorient IS1511* 3) Lorient IS8091si or IS8035si* 4) Lorient IS3080si or IS3081si*	32dB 31dB 32dB 31dB
		"	15x4 LP1504 Type 617 & IS1212 (Option 6)*	15x4 LP1504DS Type 617	Same as A	"	"
		Fire & smoke	15x4 LP1504DS Type 617**	Same as A	Same as A	Refer BS9999:2008 (33.1.7)	N/A
Fire only		15x4 LP1504 Type 617	Same as A	Same as A	N/A	N/A	

Table 1

## Double Doors (Single/Double Acting)



		Seal Position (see "Frame Specification - Double Doors" on page 24)				
		Frame head	Hanging jamb	Meeting edge	Threshold	
Rating		A	B	D	E	
	" (single acting only)	Fire & smoke	20x4 LP2004DS Type 617**	15x4 LP1504DS Type 617	10x4 LP1004DS Type 617	Same as D
Fire only		20x4 LP2004 Type 617	15x4 LP1504 Type 617	10x4 LP1004 Type 617	Same as D	N/A

Table 2

Acoustic results given are for single swing, single leaf doors. The results are based on SRL test report number C/08/5L/20399/R01, supplemented by Lorient acoustic reports.

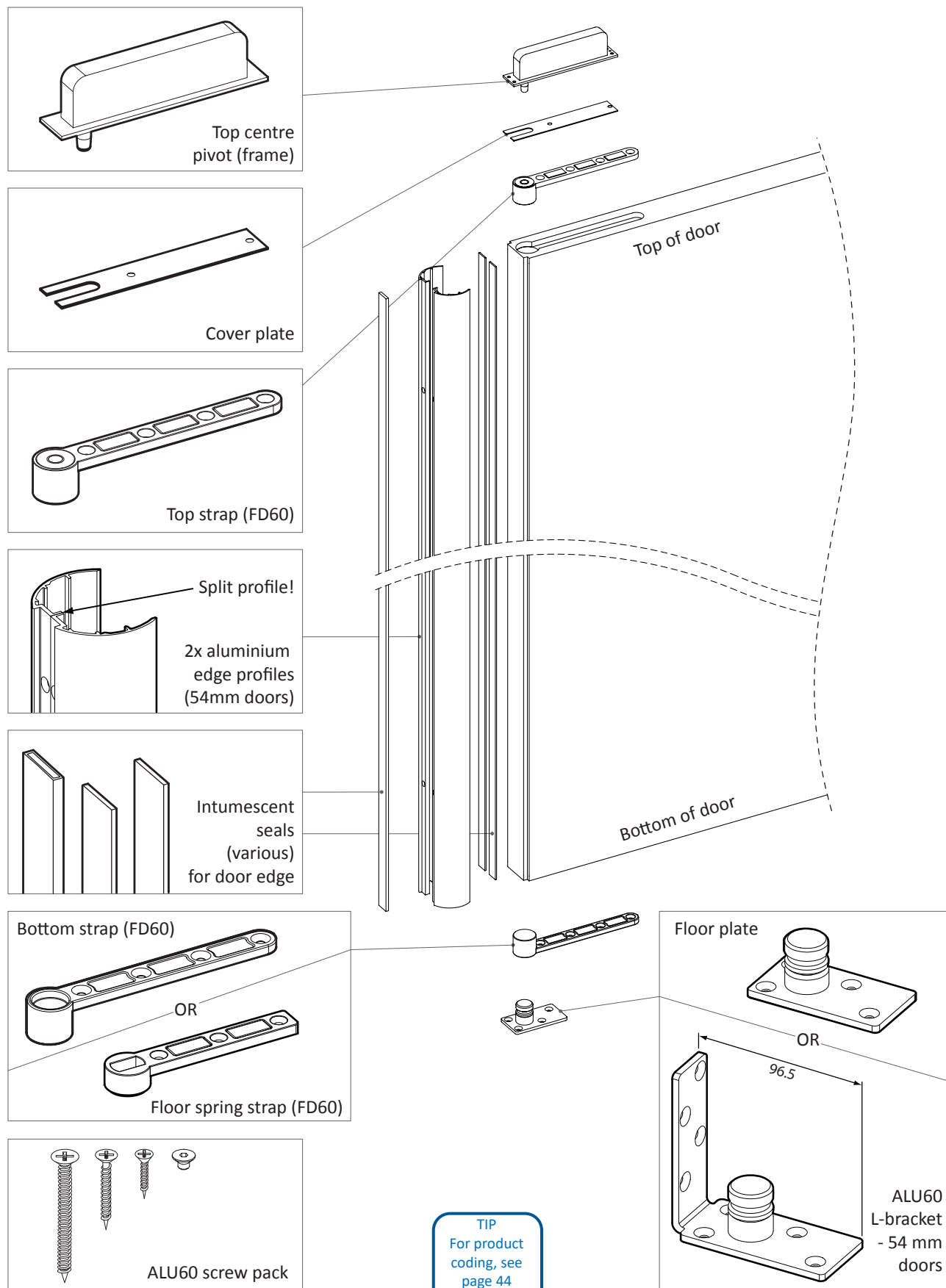
As manufacturers of the hinge arrangement only, we have not acoustically tested pairs, as we feel we have adequately demonstrated the performance of the hinge in a single door arrangement and there is evidence available that demonstrates that a 1 - 2 dB drop can be expected moving from singles to pairs. On this basis, the approach we

would suggest for pairs, is to choose seal arrangements that Safehinge have tested on single doors that over performs the target by 2 dB to be prudent i.e. for 30dB, choose a 32dB option.

\* Details: "ALU30 Acoustic Seal Option Drawings" on page 30.  
\*\* R<sub>w</sub> Ratings indicated in the table above are based on Blankfort 30 core. If Halspan core is used in lieu of Blankfort, a reduction of 1dB can be expected to the R<sub>w</sub> Rating, e.g. Blankfort 30 R<sub>w</sub> Rating fully caulked = 34dB; Halspan (44 mm) R<sub>w</sub> Rating fully caulked = 33dB.

# What's in the ALU60 Kit?

Product components explained.

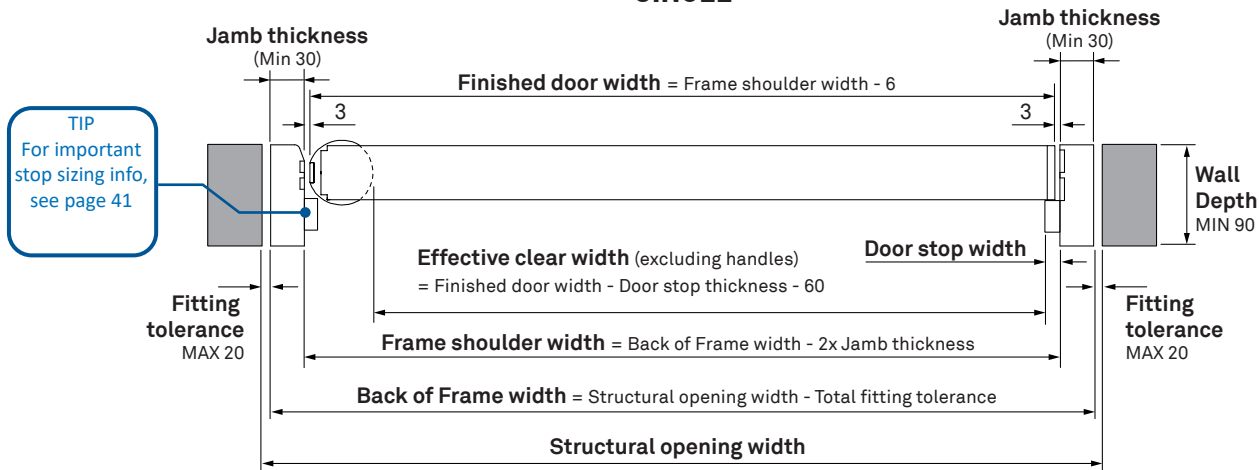


**TIP**  
 For product coding, see page 44

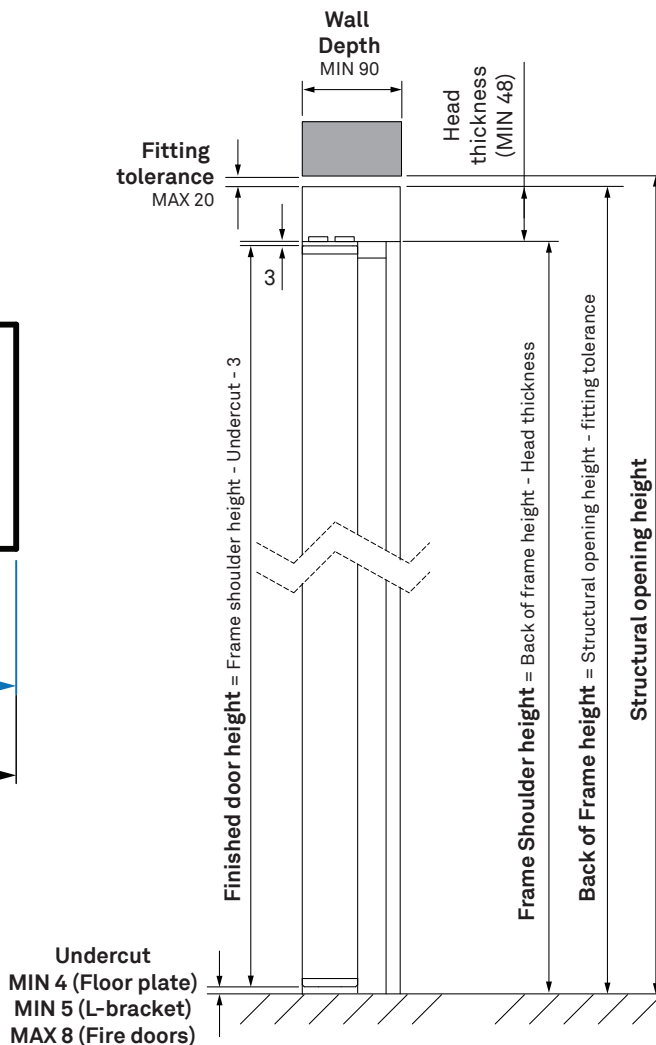
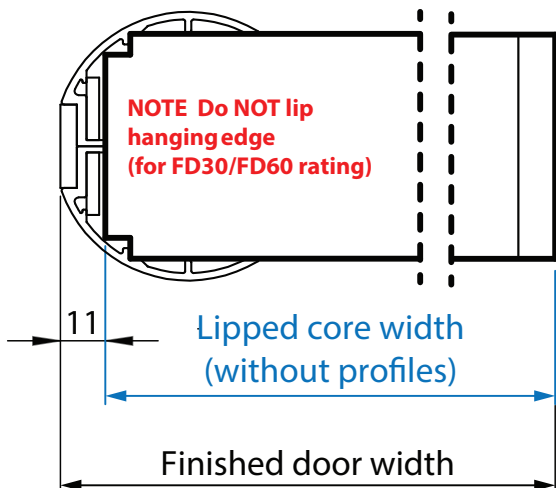
# ALU60 Doorset Dimensions - Single doors

The guide below will help you work out the overall doorset dimensions using the frame width, clear opening width or preferred door leaf dimension as the starting point. You can also use our online ALUmax width calculator at [www.safehingeprimera.com/products/finger-guards/integral-finger-guard-alumax](http://www.safehingeprimera.com/products/finger-guards/integral-finger-guard-alumax)

## SINGLE



**IMPORTANT**  
The aluminium profiles add 11mm onto the total width of the door. The calculations above are inclusive of the aluminium profiles



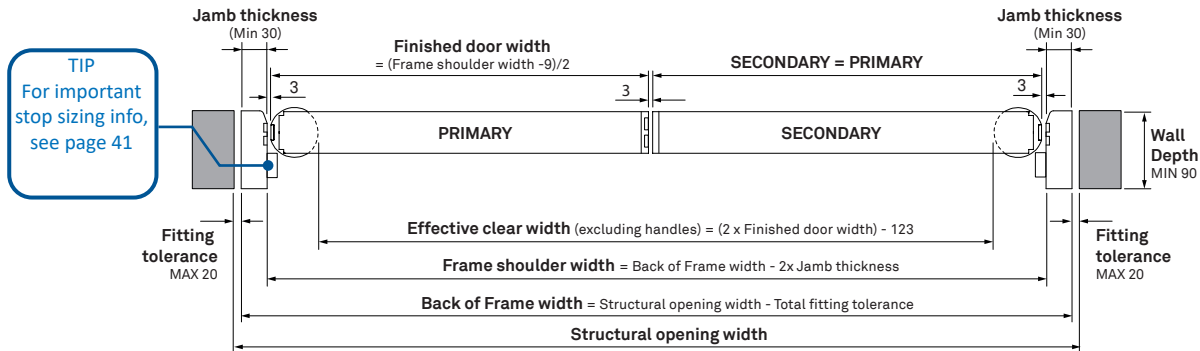


# ALU60 Doorset Dimensions - Double doors

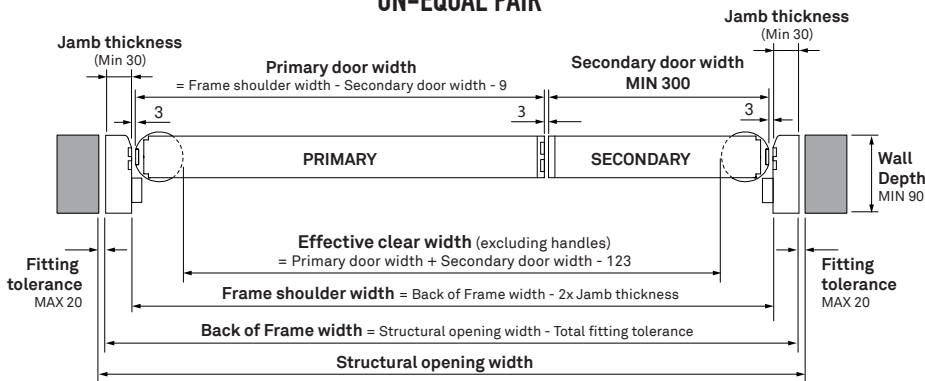
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[www.safehingepriera.com/products/finger-guards/integral-finger-guard-alumax](http://www.safehingepriera.com/products/finger-guards/integral-finger-guard-alumax)

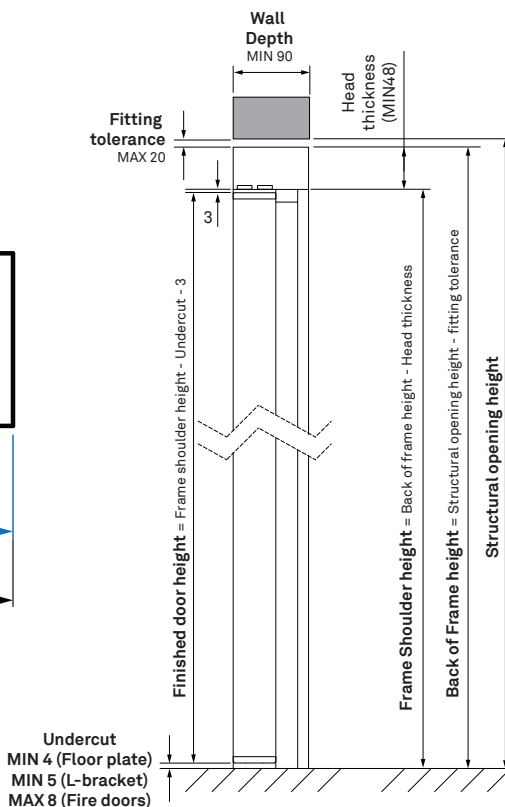
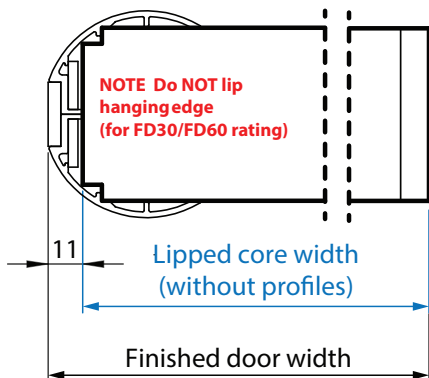
## EQUAL PAIR



## UN-EQUAL PAIR



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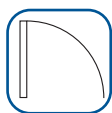
# FD60 Fire Performance



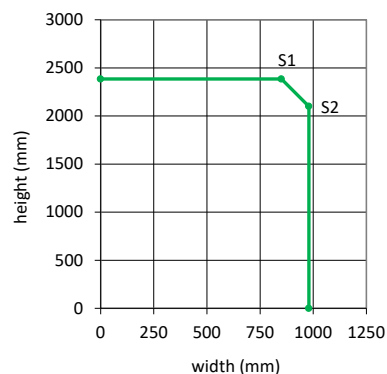
## Lorient Polyproducts - FD60 Maximum Leaf Sizes

Global Assessment Chilt/A12005 permits expansion of leaf sizes, alternative frame materials, glazing, door face finishes and various ancillaries, as summarised below. Please enquire if the information you require is not presented here.

### Latched, single acting, single leaf



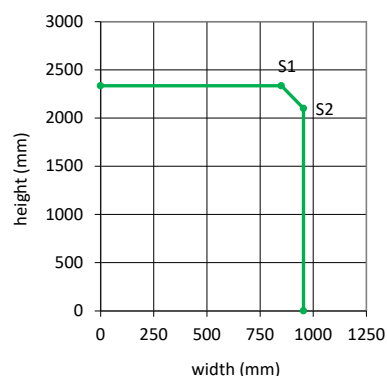
	S1	S2
<b>W</b>	850	979
<b>H</b>	2384	2100



### Unlatched, single or double acting, single leaf



	S1	S2
<b>W</b>	850	954
<b>H</b>	2334	2100

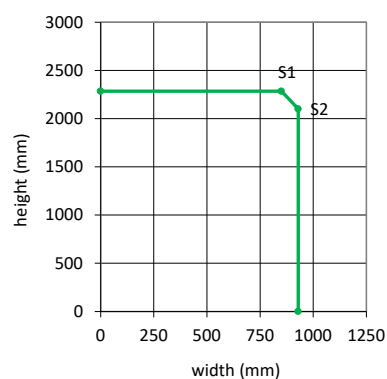


### Latched, single acting, double leaf

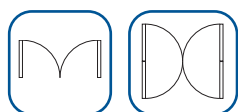


For unequal, double leaf – see “Unequal Double Leaf - Width Restrictions” on page 10.

	S1	S2
<b>W</b>	850	929
<b>H</b>	2284	2100

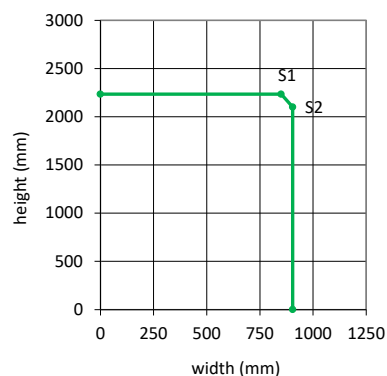


### Unlatched, single or double acting, double leaf



For unequal, double leaf – see “Unequal Double Leaf - Width Restrictions” on page 10.

	S1	S2
<b>W</b>	850	904
<b>H</b>	2234	2100



# Lorient Polyproducts - ALU60 Doorset Specification



## Lorient - standard specification

In 2015, Safehinge standardised the supply of Lorient seals with all ALUmax kits as we believe this market-leading brand offers our customers the greatest range of technical and product performance.

## Unequal Double Leaf - Width Restrictions

Unequal leaf double doorsets are permitted with a minimum secondary leaf width of 300mm.



## Frame

Hardwood minimum density 640 kg/m<sup>3</sup>  
 Minimum sections excluding stops: 90 x 48 mm (head);  
 90 x 30 mm (jambs)  
 Head/jamb joint: Half Lapped, Mitre, Mortice & Tenon, Butt, Trenched. The door frame joints are required to be tight, with no gaps, and require mechanical fixing with the appropriate size ring shank nails or screws. Frame joints may additionally be reinforced with any of the following adhesives - PU, UF, PVA, PF

## Stops

Machined from solid; pinned and glued, or pinned only.

## Recommended DD171 Severe Duty Frame

Minimum sections excluding stops: 90 x 48 (head); 90 x 30 (jambs). Hardwood only.  
 Head/jamb joint: butt jointed. Head to jambs fixed 3No. 3.5 mm x 100 mm screws per joint & PU glue.  
 Stops: 35x15 mm stops pinned at 200 mm centres with 40 mm pins, or integral.

## Door core/blank

See Page 18 for the ALU60 fire door core options. We would also recommend using the same core options for non-fire rated applications.

Currently, Safehinge acoustic/mechanical testing conducted with Halspan / Blankfort cores only. If an alternative door core is used, Safehinge is unable to offer primary evidence to support acoustic/mechanical performance; this provision therefore becomes the

responsibility of the specifier.

## Lipping

Hardwood minimum density 640 kg/m<sup>3</sup>  
 PVC lippings are permitted for Blankfort 60/60+ doors only

## Gluelines

PU, UF, PVA, PF

## Intumescent/smoke seal

Frame seals (to be procured by door manufacturer):  
 Refer to "Table 3" and "Table 4" on page 21.

Door edge seals (supplied by Safehinge):  
 20x4 PVC-cased Type 617 (white) & 2No. 15x3 GPF graphite strip.

Ironmongery intumescent (supplied by Safehinge):  
 Graphite or Lorient M.A.P gasket wrap and dual pockets (for top centre pivot, top & bottom straps (both sides).

## Finishes

Paint (maximum 0.2mm thickness)  
 Timber veneers/Plastic/PVC laminate (maximum 2 mm thickness)  
 Cellulosic and non-metallic foils (maximum 0.4mm thickness)

## Glazing

For conventional glazing applications (a single pane of glass mounted on the centreline of the leaf thickness) the full range of leaf glazing options is linked to the particular door core selected. Refer to the relevant door core FoA to establish options.




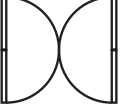
Multipane vision panels are permitted for use with certain ALU60 door core options with 30 or 60 minute performance. See Page 18 for further details.

# ALU60 - 30 & 60 minute fire door core options



## 54mm Door core options

The matrix below shows the core options and permitted doorset configurations for ALU60 fire doors.

									
		FD30 AND FD60							
		LSASD	ULSASD	LSADD	ULSADD	LDASD	ULDASD	LDADD	ULDADD
6	Halspan XT 60	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
7	Halspan IT 60	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
8	Halspan Prima 60	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
9	Halspan Optima 60	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
10	Falcon Strebord 54	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
11	Moralt Laminesse Firesmoke 54	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
12	Blankfort 60	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
13	Blankfort 60+	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
		FD30 ONLY							
14	Flamebreak 54	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

LSASD	Latched Single Acting Single Doorset
ULSASD	Unlatched Single Acting Single Doorset
LSADD	Latched Single Acting Double Doorset
ULSADD	Unlatched Single Acting Double Doorset
LDASD	Latched Double Acting Single Doorset
ULDASD	Unlatched Double Acting Single Doorset
LDADD	Latched Double Acting Double Doorset
ULDADD	Unlatched Double Acting Double Doorset

## Multi-pane vision panel options

The matrix below shows which vision panels can be used in ALU60 doors.

Vision panels are typically required in mental health applications where observations are required through the door. The panels generally offer privacy via obscured banding and options on operation on one or both sides. The options permitted with ALU60 doors from the following ranges: -

**Safehinge Primera - Sureview**

**Vistamatic - Vista Safe**

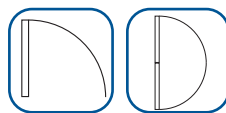
**Kingsway - Visilux, Duralux, Pyrolux**

		All vision panel options	Sureview 36mm Pyroswiss designs only
		FD30	FD60
6	Halspan XT 60	Yes	Yes
7	Halspan IT 60	Yes	Yes
8	Halspan Prima 60	No	No
9	Halspan Optima 60	No	No
10	Falcon Strebord 54 Doorsets	No	No
11	Moralt Laminesse Firesmoke 54	Yes	Yes
12	Blankfort 60	Yes	No
13	Blankfort 60+	Yes	No
14	Flamebreak 54	No	No

# Lorient Polyproducts - ALU60 Seal Specification



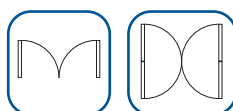
## Single Door (Single/Double Acting)



		Seal Position (see "Frame Specification - Single Doors" on page 31)						Threshold	R <sub>w</sub> Rating (dB)
		Frame head		Hanging jamb		Closing Jamb			
		A	B	C	D	E	F		
Rating	<b>Fire, smoke &amp; acoustic</b> (single acting only)	20x4 LP2004 Type 617 & IS1212*	20x4 LP2004DS Type 617	10x4 LP1004DS Type 617	10x4 LP1004 Type 617 & Lorient IS1511 Firtree*	Same as B	Same as A	Options: 1) 2x Lorient IS1511* 2) Lorient IS8091si*	Up to 38dB.
	<b>Fire &amp; smoke</b>	20x4 LP2004 Type 617	20x4 LP2004DS Type 617	10x4 LP1004DS Type 617	10x4 LP1004 Type 617	Same as B	Same as A	Refer BS9999:2008 (33.1.7)	N/A
	<b>Fire only</b>	20x4 LP2004 Type 617	Same as A	10x4 LP1004 Type 617	Same as C	Same as A	Same as A	N/A	N/A
Position	<b>Single acting</b>	Fit A and B spaced 5mm, central to door		Fit C and D spaced 5mm, <b>offset</b>		Fit E and F spaced 5mm, central to door			
	<b>Double acting</b>	Fit A and B spaced 5mm, central to frame		Fit C and D spaced 5mm, central to frame		Fit E and F spaced 5mm, central to frame			

Table 3

## Double Doors (Single/Double Acting)



		Seal Position (see "Frame Specification - Double Doors" on page 32)						Threshold	
		Frame head		Hanging jamb		Meeting edge			
		A	B	C	D	G	H		
Rating	<b>Fire &amp; smoke</b>	20x4 LP2004 Type 617	20x4 LP2004DS Type 617	10x4 LP1004DS Type 617	10x4 LP1004 Type 617	15x4 LP1504DS Type 617	Same as G	Refer BS9999:2008 (33.1.7)	
	<b>Fire only</b>	20x4 LP2004 Type 617	Same as A	10x4 LP1004 Type 617	Same as C	15x4 LP1504 Type 617	Same as G	N/A	
Position	<b>Single acting</b>	Fit A and B spaced 5mm, central to door		Fit C and D spaced 5mm, <b>offset</b>		Fit G and H spaced 10mm, central to door			
	<b>Double acting</b>	Fit A and B spaced 5mm, central to frame		Fit C and D spaced 5mm, central to frame		Fit G and H spaced 10mm, central to door			

Table 4

Acoustic results given are for single swing, single leaf doors. The results are based on SRL test report number C/09/5L/20662/R01a, supplemented by Lorient acoustic reports.

As manufacturers of the hinge arrangement only, we have not acoustically tested pairs, as we feel we have adequately demonstrated the performance of the hinge in a single door arrangement and there

is evidence available that demonstrates that a 1 - 2 dB drop can be expected moving from singles to pairs. On this basis, the approach we would suggest for pairs, is to choose seal arrangements that Safehinge have tested on single doors that over performs the target by 2 dB to be prudent i.e. for 30dB, choose a 32dB option.

\* Details: "ALU60 Acoustic Seal Option Drawings" on page 38.

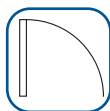


**ALUMAX**<sup>®</sup>  
Manufacturing Guidelines

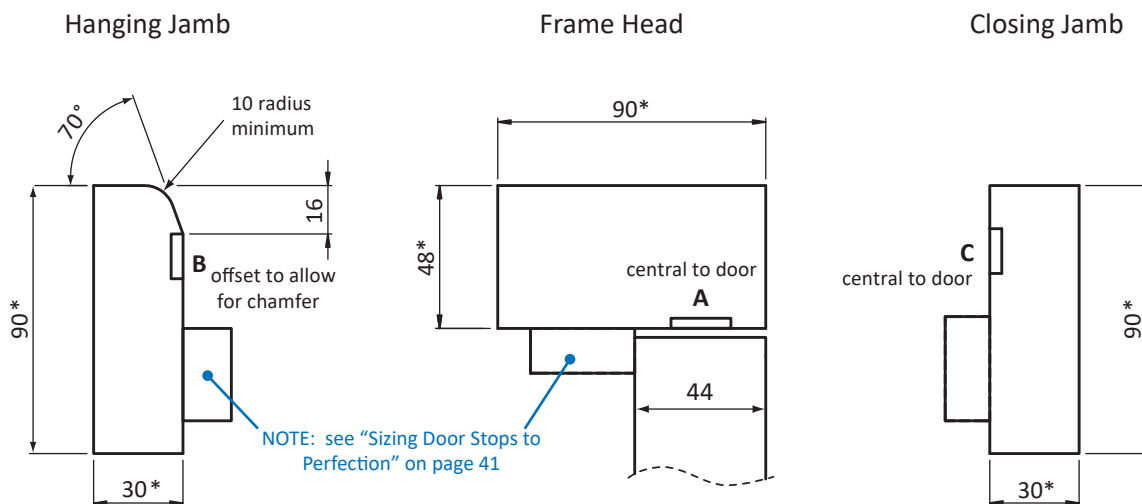
# ALU30 Manufacturing Guidelines

## Frame Specification - Single Doors

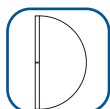
### Single Door (Single Acting)



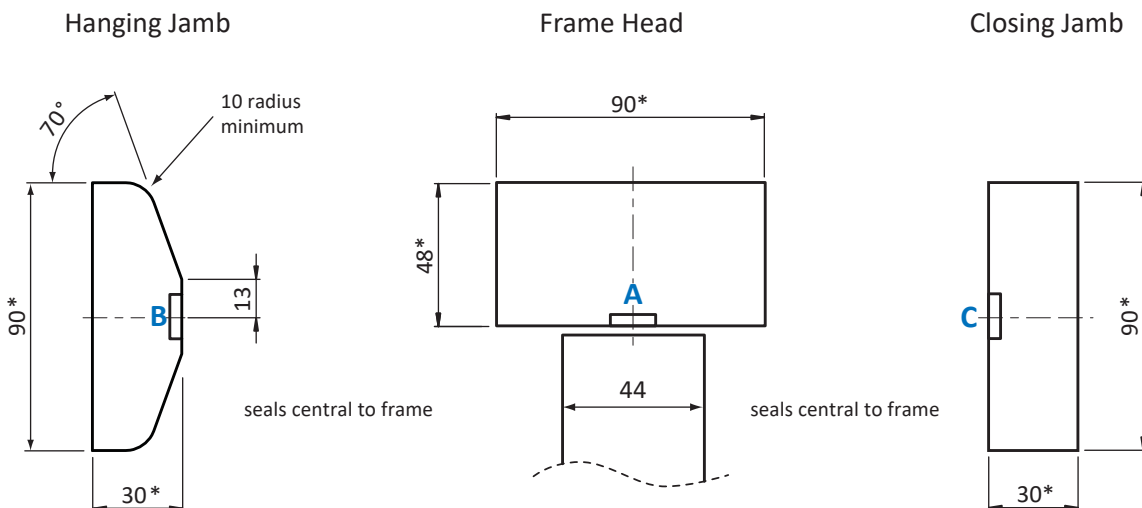
Asterisk (\*) indicates the minimum permitted size.



### Single Door (Double Acting)



Seal spec - See "Table 1" on page 14 (Lorient)



### Frame Assembly Details

**Permitted frame materials (FD30):** Softwood or hardwood minimum density 510 kg/m<sup>3</sup>. MDF minimum density 700 kg/m<sup>3</sup> (MDF frames may consist of laminated sections to achieve required width dimensions. PU adhesive recommended.) **IMPORTANT:** See "Recommended DD171 Severe Duty Frame" on page 24.

**Head/jamb joint:** mortice & tenon or half-lapped joint with head twice screwed to jambs; mitred joint glued with non-thermally softening adhesive (e.g. PU, UF, PVA) and twice screwed, or horizontal butt joint screwed with two screw fixings.

**Stops:** Machined from solid; pinned and glued, or pinned only.

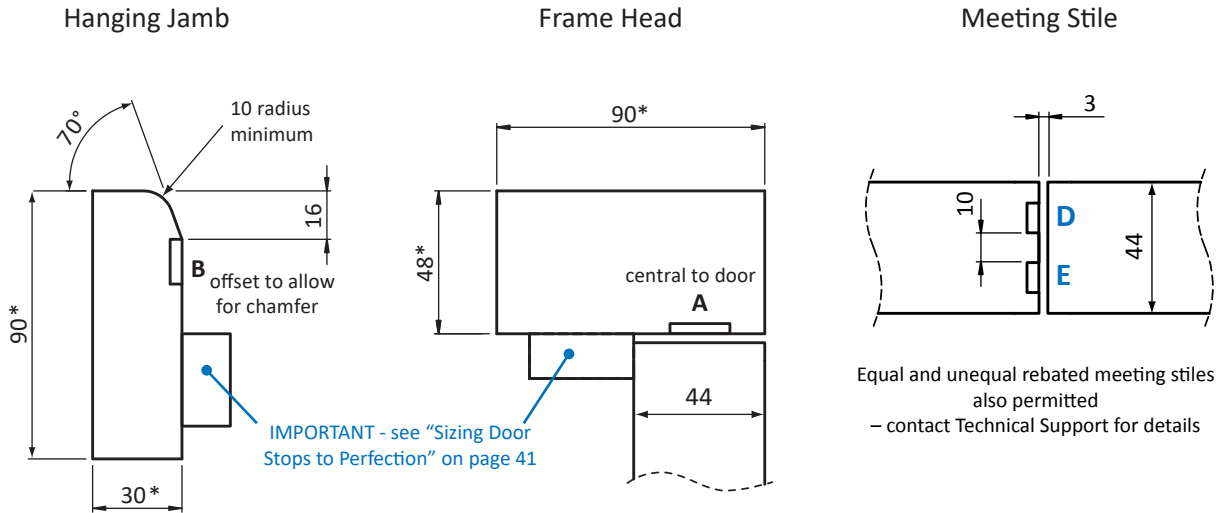
**Note:** For double swing doors with deeper frame section, you may need to adjust the geometry of the chamfered hanging jamb.

# Frame Specification - Double Doors

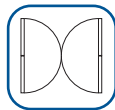
## Double Door (Single Acting)



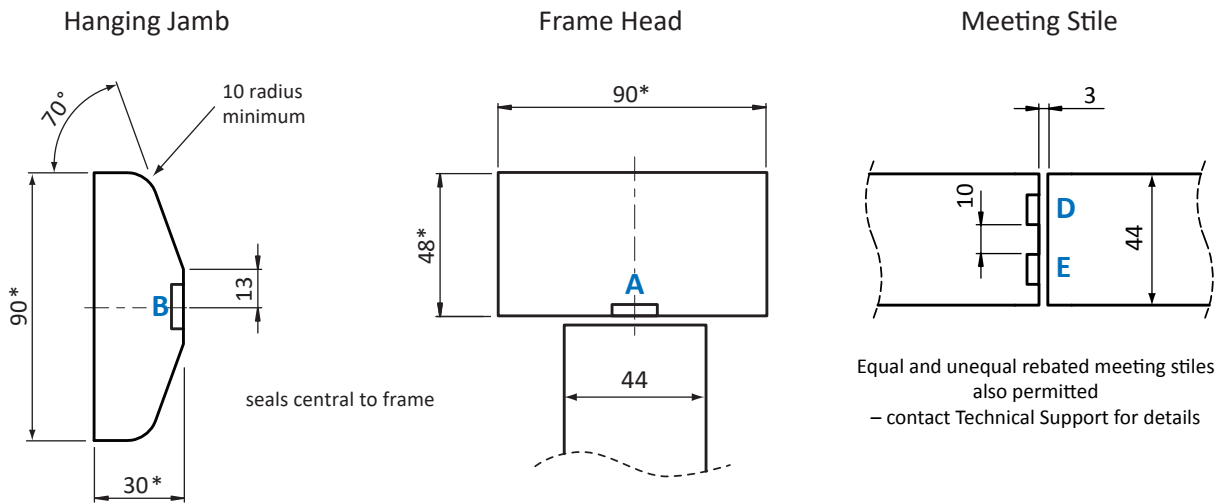
Asterisk (\*) indicates the minimum permitted size.



## Double Door (Double Acting)



Seal spec - See "Table 2" on page 14 (Lorient)



### Recommended DD171 Severe Duty Frame

Safehinge recommends the following specification for heavy/severe duty applications.

*Frame:* minimum section 90 x 48 (head) and 90 x 30 (jambs). MDF or hardwood.

*Frame joints:* butt jointed. Head to jambs fixed using 3No. 3.5 mm x 100 mm screws per joint & PU glue.

*Stops:* 35x15 mm stops pinned at 200 mm centres with 40 mm pins, or integral.

Note: For double swing doors with deeper frame section, you may need to adjust the geometry of the chamfered hanging jamb.



## Lipping Specification - 44mm doors

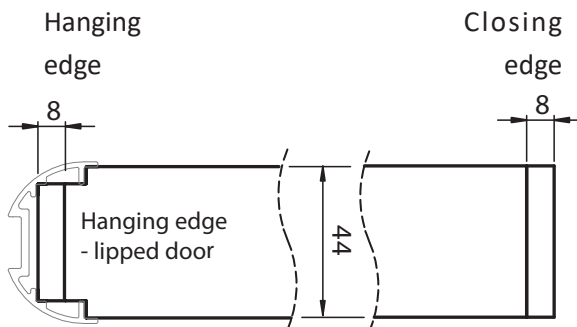
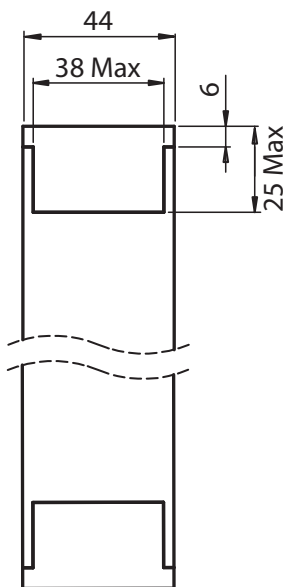
The recommended lipping sections for Halspan and Blankfort door blanks are shown below.

### Particle Board cores

Halspan Prima 30
Halspan Optima 30
Falcon Strebord 44



Door Top and bottom



IMPORTANT - Flat section lipping tolerance permitted 6-10mm thick  
A 2.5° chamfer is permitted to vertical leaf edge lippings

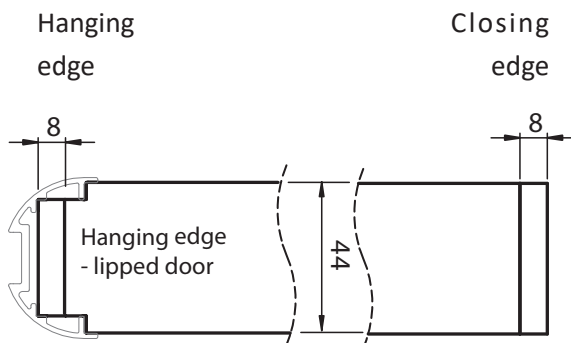
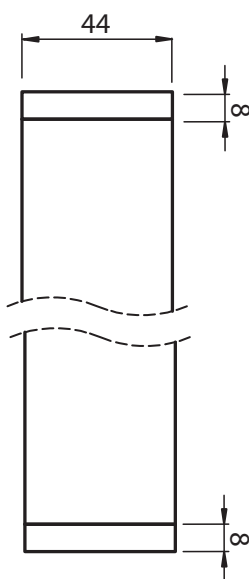
NOTE: T-section lipping is **essential** to ensure mechanical stability of doorset when using particleboard core. Safehinge has achieved DD171 "Severe Duty" rating with the configuration shown.

### Solid timber cores

Blankfort 30
Blankfort 30+



Door Top and bottom



NOTE: If you are using this product within a mental health environment, we strongly recommend the use of 54mm Blankfort door cores to ensure the fixings are robust enough to capture repeated aggressive attacks.

### Lipping Details

Hardwood minimum density 640 kg/m<sup>3</sup>

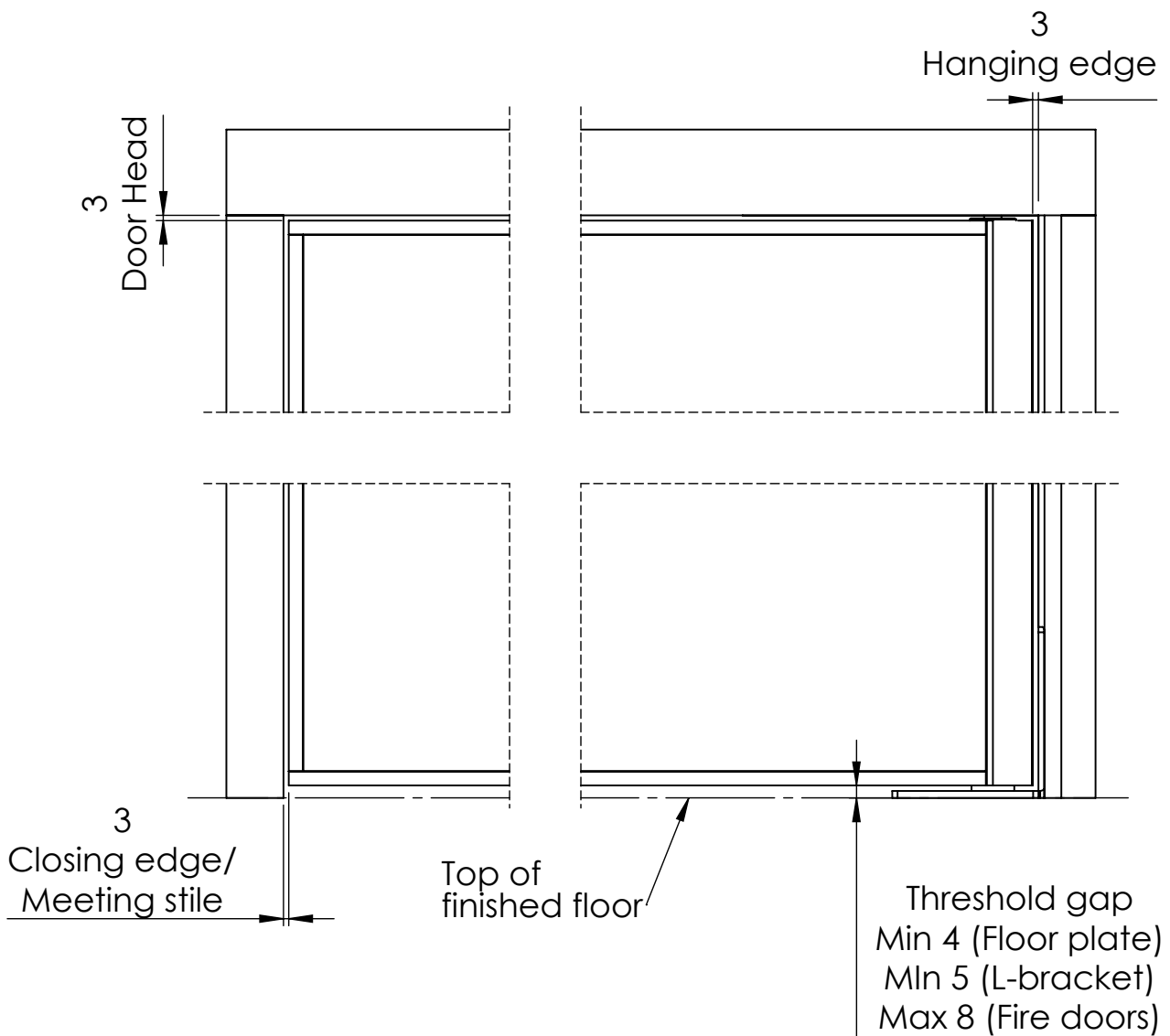
Gluelines: PU, UF, melamine-UF, cross-linked PVA, PVA, PF

## Door to Frame and floor Gaps - 44mm doors

Door to frame edge gaps permitted are 2mm minimum and 4mm maximum.

Leaves must not be proud of each other or from the door frame by more than 1mm.

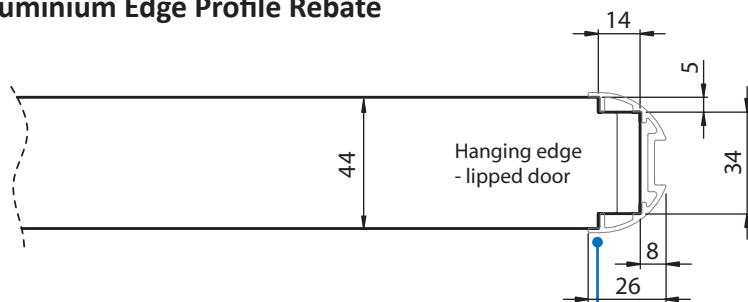
For fire resistance, the maximum gap between the bottom of the door and top of the floor covering is 8mm



## Rebate & Mortice Details

IMPORTANT: Care should be taken to position rebates/mortices correctly as these influence the finger-safe gap between the door and the frame.

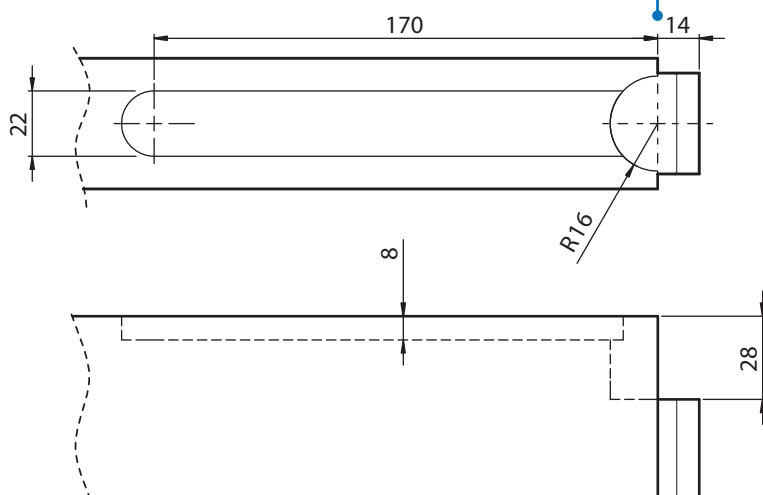
### 1. Aluminium Edge Profile Rebate



Apply to hanging side only of pre-lipped door leaf.

IMPORTANT: aluminium edge profile and pivot strap must have same centre point and be concentric.

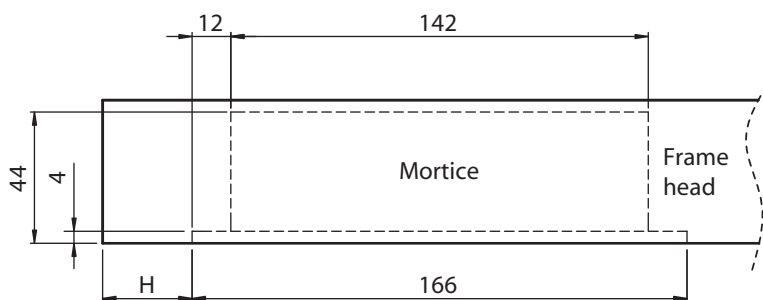
### 2. Pivot Strap Mortice



Mortice detail for pivot strap - door top and bottom

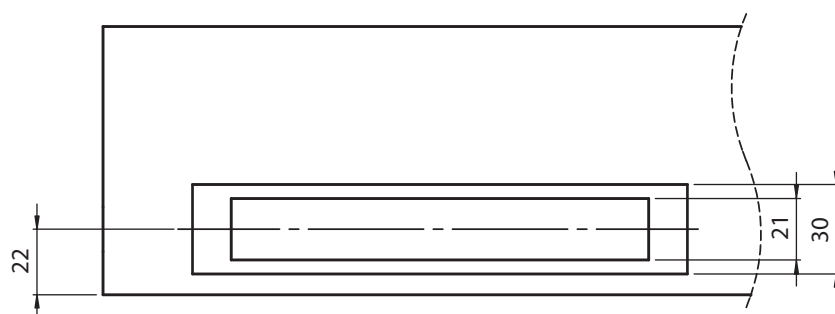
If using a floor spring, this requires an alternative bottom strap. See "Floor Spring with ALU30 kits" on page 28

### 3. Top Centre Pivot Mortice



Mortice to frame head.

H = frame jamb width  
e.g. H = 30 mm

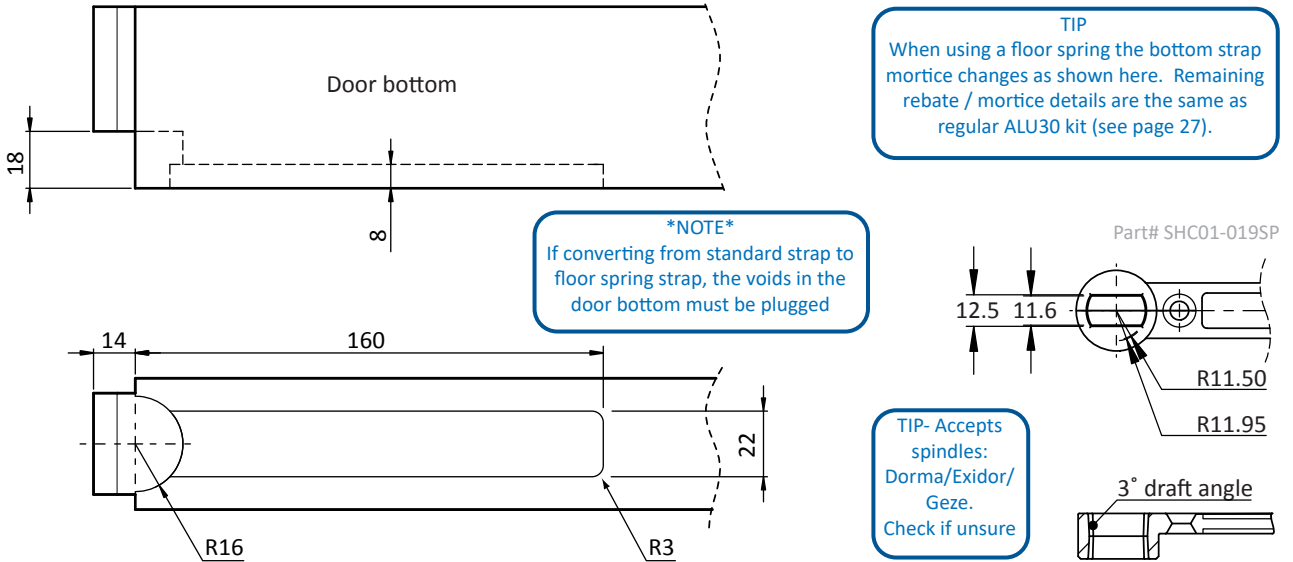


NOTE: mortice position shown assumes single swing (opening face of door to sit flush with opening face of frame).

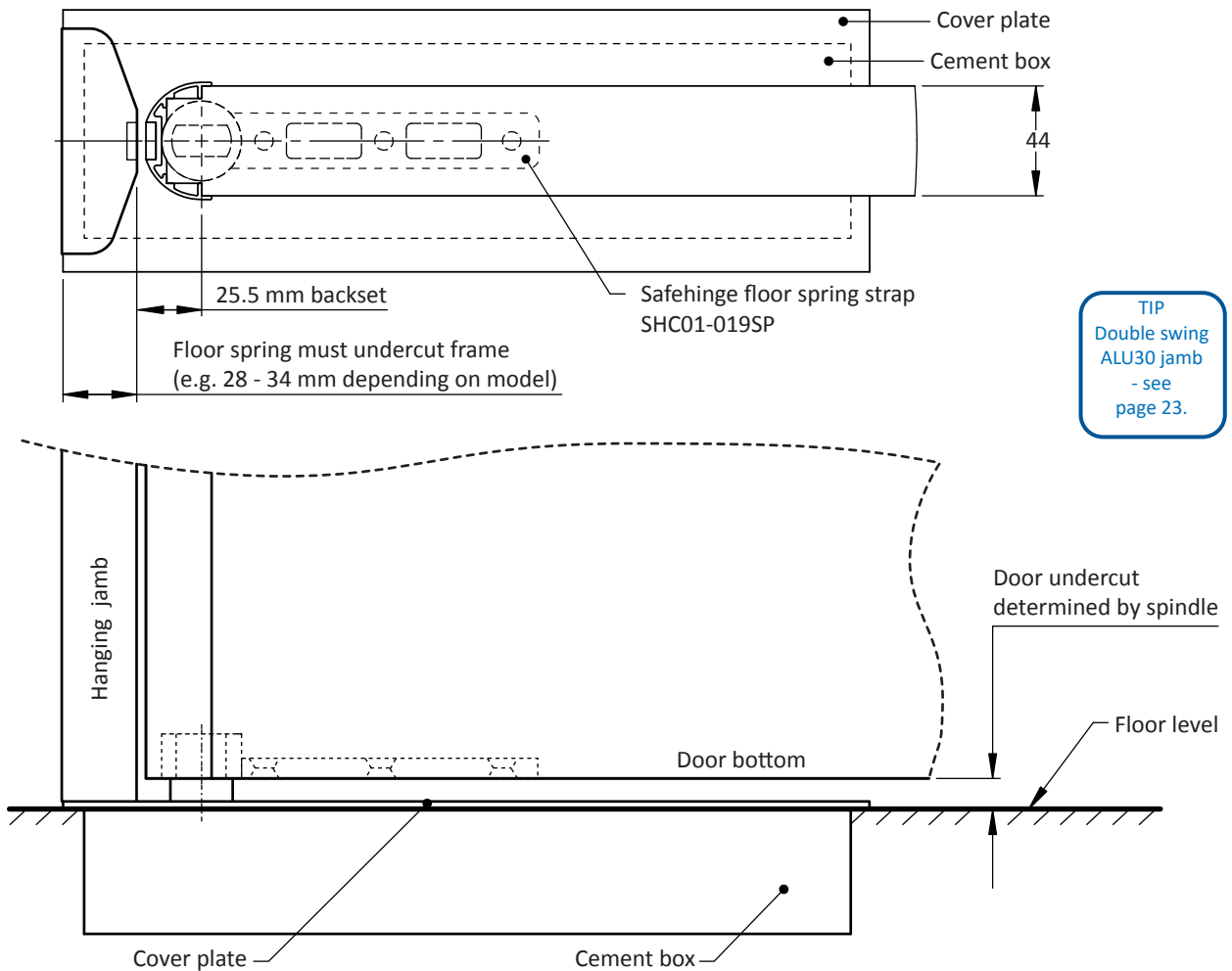
Mortice should be centred on frame for double swing.

# Floor Spring with ALU30 kits

## Floor Spring Strap Mortise for ALU30



## Floor Spring Layout with ALU30

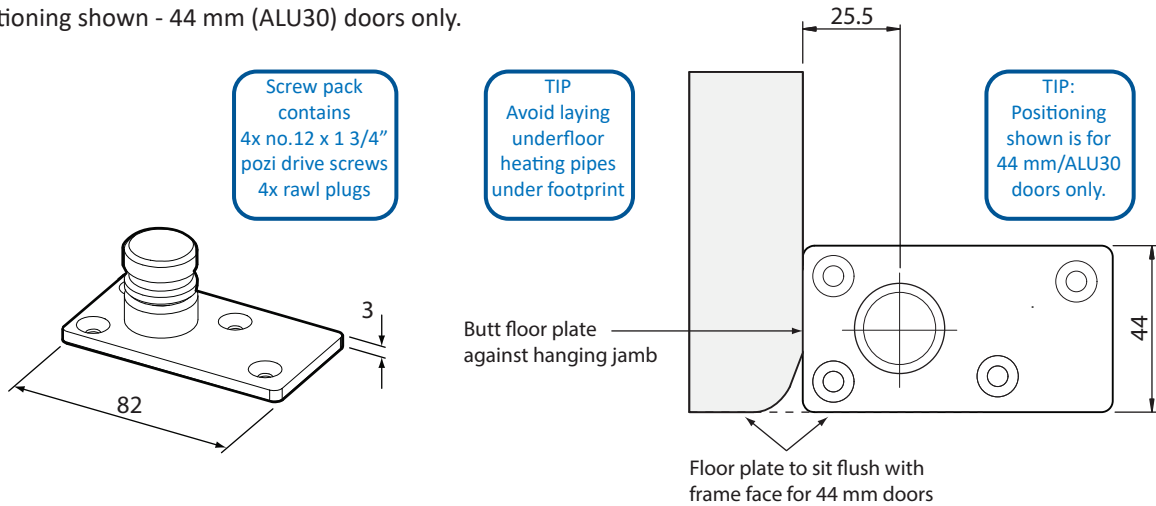


## Floor Pivot Positioning (44 mm doors)

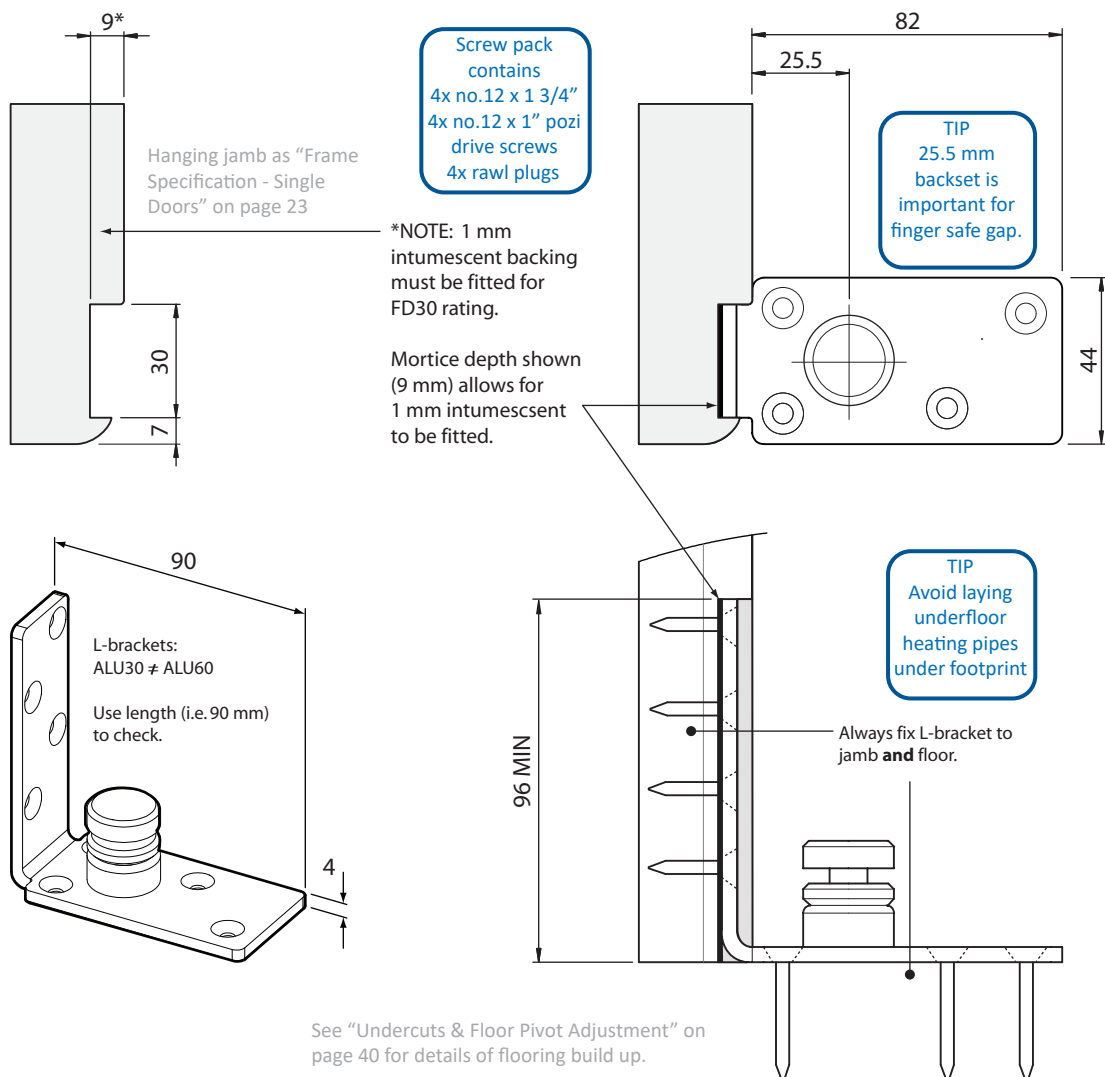
Care should be taken to position components correctly as these will influence the finger safe gap between the door and the frame. **Please ensure heating pipes are gathered to centre of structural opening / doorway and clear base of both frame jambs by at least 200 mm.**

### Floor Plate (ALU30-100 kits)

Positioning shown - 44 mm (ALU30) doors only.



### L-Bracket for 44 mm doors (ALU30-150 kits)



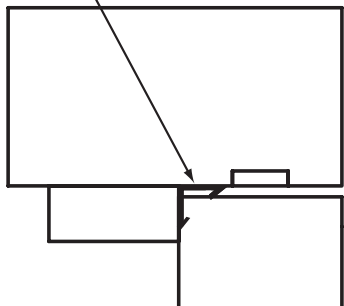
See "Undercuts & Floor Pivot Adjustment" on page 40 for details of flooring build up.

# ALU30 Acoustic Seal Option Drawings

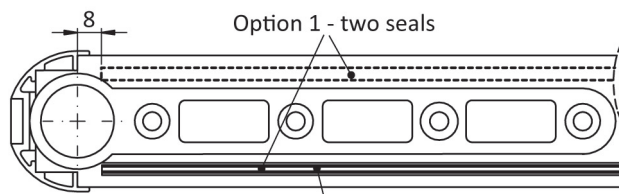
PLEASE NOTE: This page only shows the placement of ALU30 **acoustic** seals which are **additional** to the combined intumescent smoke seals (A - C), detailed under "Lorient Polyproducts - ALU30 Seal Specification" on page 14.

## Option 1 - two seals: 32dB

## Option 2 - one seal (door stop side): 31dB



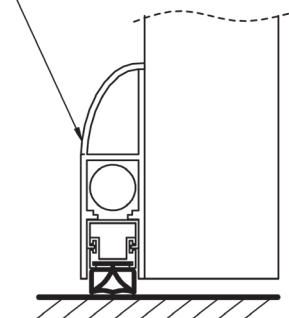
\*to achieve 3mm, recommend compatible raised threshold plate



Option 2 - one seal (on door stop side)

## Option 3: 32dB

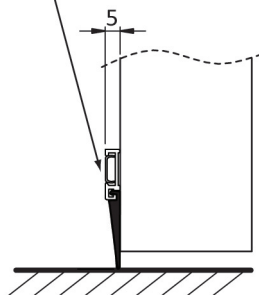
Lorient LAS8006si or IS8035si face-fixed drop seal



## Option 4: 31dB

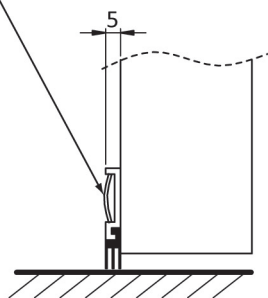
Lorient IS3080 si or IS3081si

Options 3 & 4: size the face-mounted seal to butt against the aluminium edge profile on the hanging side and leave a clearance gap on the closing side as per the manufacturer's instructions.



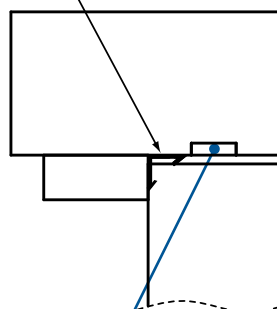
## Option 5: 31dB

Norsound NOR855



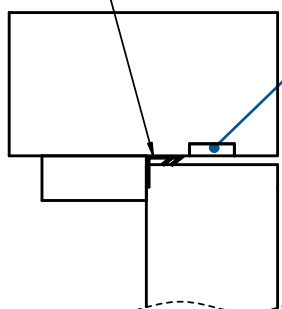
## Option 6 (Frame Head / Closing Jamb)

Lorient IS1212



## Option 7 (Frame Head / Closing Jamb)

Norsound NOR710

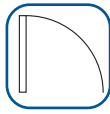


For other perimeter seal spec - page 14 (Lorient)

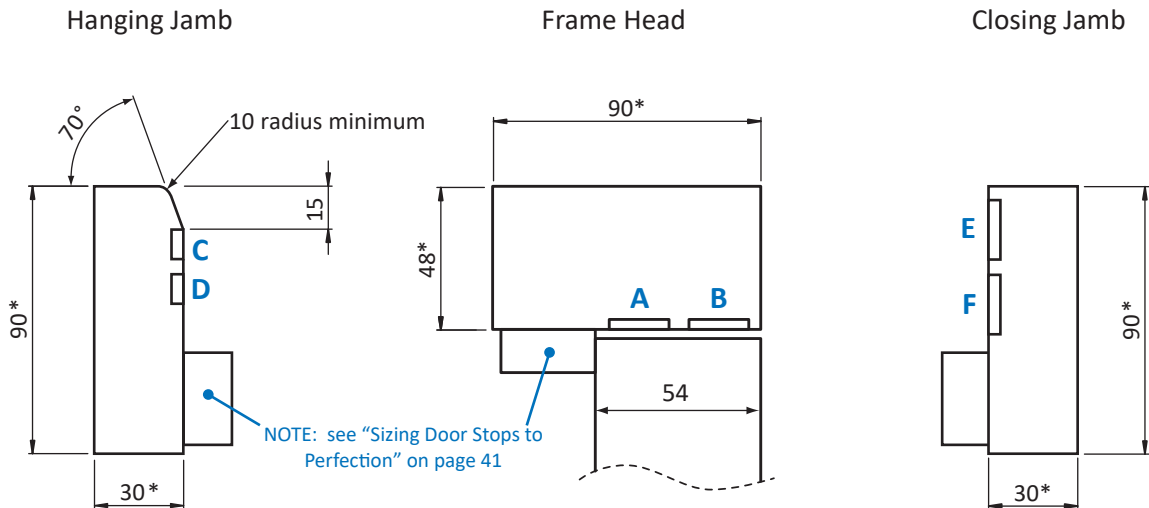
# ALU60 Manufacturing Guidelines

## Frame Specification - Single Doors

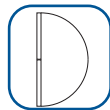
### Single Door (Single Acting)



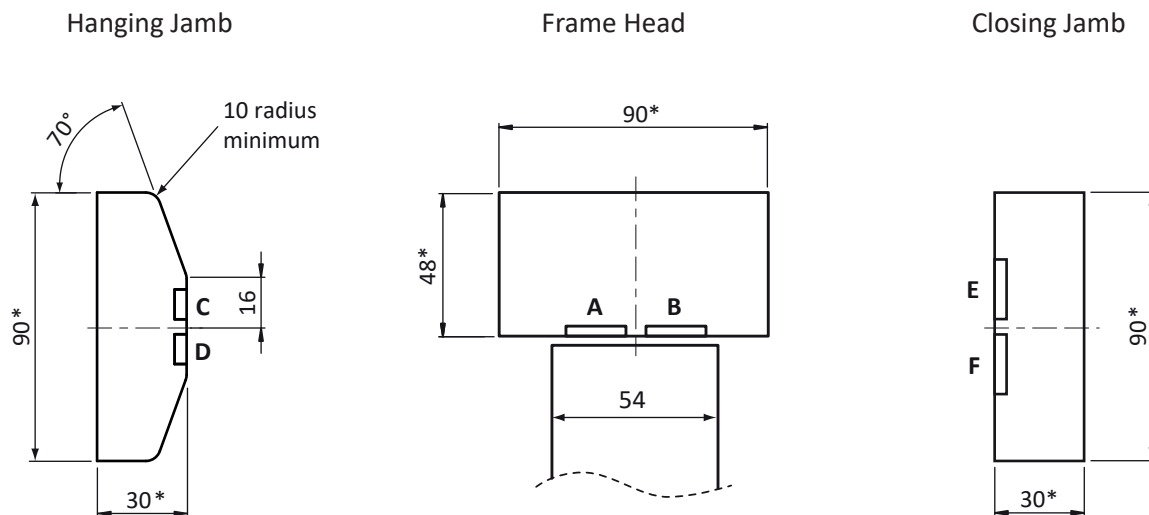
Asterisk (\*) indicates the minimum permitted size.



### Single Door (Double Acting)



Seal spec - See "Table 3" on page 21 (Lorient)



### Frame Assembly Details

*Permitted frame materials (FD60):* Hardwood minimum density 640 kg/m<sup>3</sup>.

**IMPORTANT:** See "Recommended DD171 Severe Duty Frame" on page 32.

*Head/jamb joint:* mortice & tenon or half-lapped joint with head twice screwed to jambs; mitred joint glued with non-thermally softening adhesive (e.g. PU, UF, PVA) and twice screwed, or horizontal butt joint screwed with two screw fixings.

*Stops:* Machined from solid; pinned and glued, or pinned only.

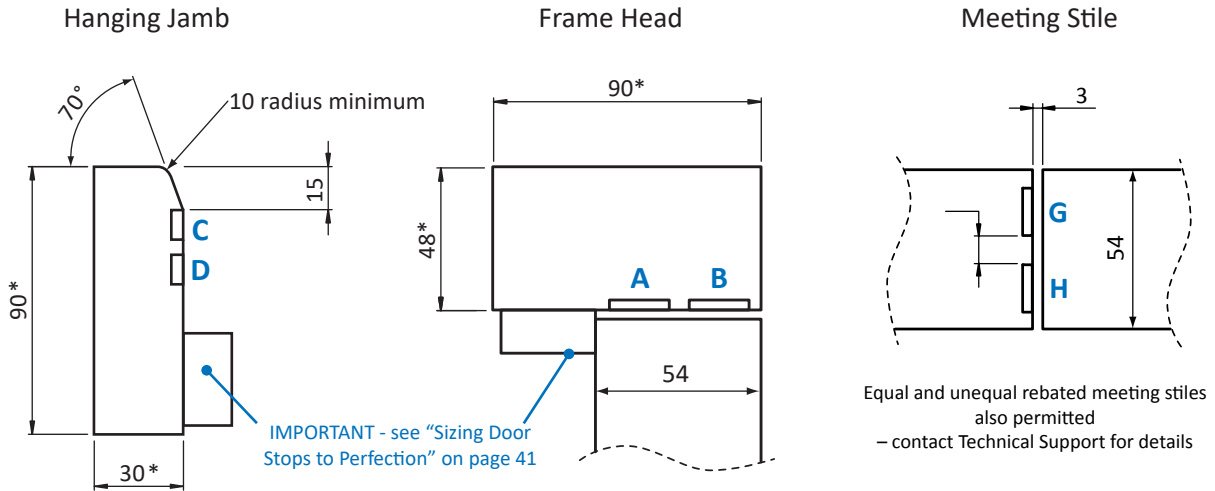
Note: For double swing doors with deeper frame section, you may need to adjust the geometry of the chamfered hanging jamb.

# Frame Specification - Double Doors

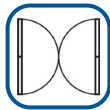
## Double Door (Single Acting)



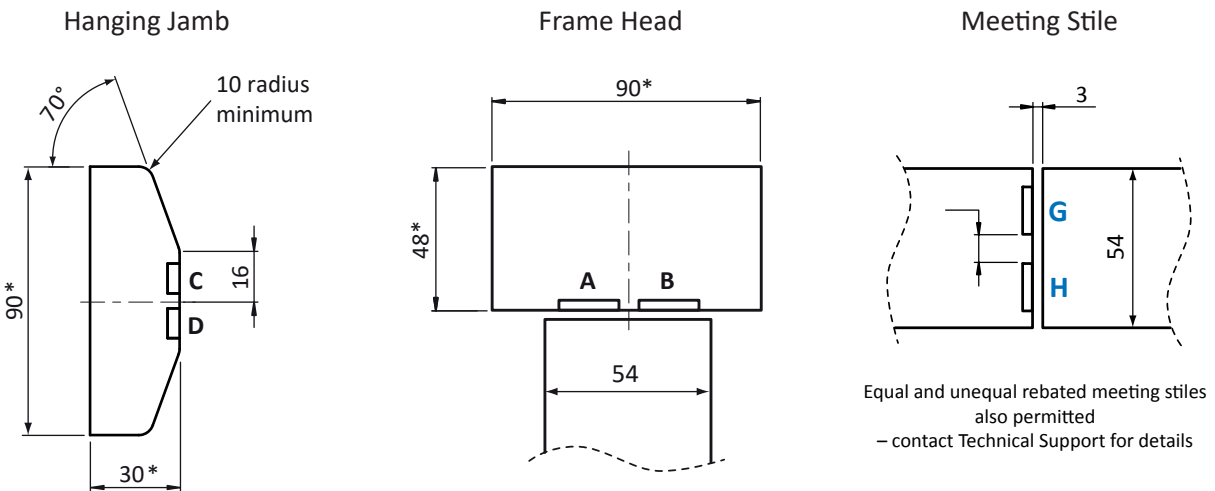
Asterisk (\*) indicates the minimum permitted size.



## Double Door (Double Acting)



Seal spec - See "Table 4" on page 21 (Lorient)



### Recommended DD171 Severe Duty Frame

Safehinge recommends the following specification for heavy/severe duty applications.

**Frame:** minimum section 90 x 48 (head) and 90 x 30 (jambs). Hardwood.

**Frame joints:** butt jointed. Head to jambs fixed using 3No. 3.5 mm x 100 mm screws per joint & PU glue.

**Stops:** 35x15 mm stops pinned at 200 mm centres with 40 mm pins, or integral.

Note: For double swing doors with deeper frame section, you may need to adjust the geometry of the chamfered hanging jamb.



## Lipping Specification

The recommended lipping sections sizes for 54mm door blanks are shown below.

### Particle Board cores

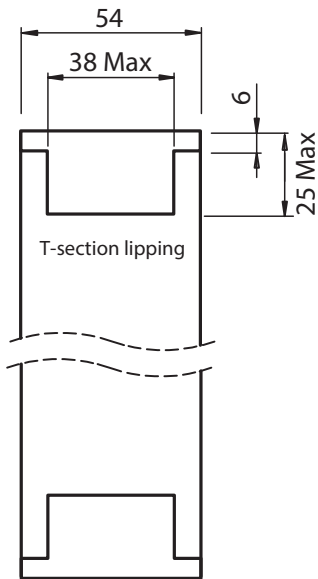
Halspan Prima 60
Halspan Optima 60



### Solid Timber Cores

Halspan XT 60
Halspan IT 60
Moralt Laminesse Firesmoke 54
Blankfort 60
Blankfort 60+
Flamebreak 54

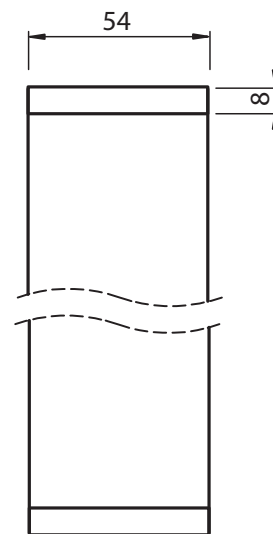
Door top and bottom



**TIP**  
T-section lipping is essential to ensure mechanical stability of doorset when using particleboard core.  
Safehinge has achieved DD171 "Severe Duty" rating with the configuration shown.

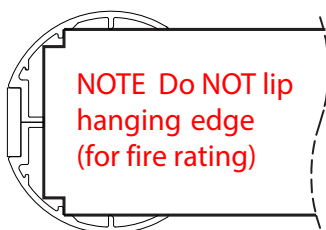
**IMPORTANT - Flat section lipping**  
tolerance permitted 6-10mm thick  
For flat lippings it is permitted to apply maximum 8mm radius to the corners of the lipping at vertical edges to create a maximum 2mm edge profiling

Door top and bottom



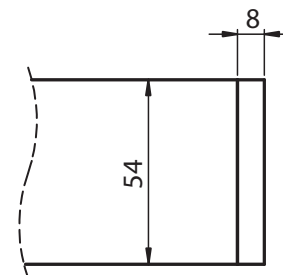
### Shared detail: All 54mm ALU60 doors

Hanging Edge



**IMPORTANT**  
DO NOT lip the hanging edge for FD30 or FD60 rating.  
This detail applies to all 54mm cores

Closing Edge



NOTE: If you are using this product within a mental health environment, we strongly recommend the use of 54mm Blankfort/Halspan IT60/Moralt Firesmoke door cores to ensure the fixings are robust enough to capture repeated aggressive attacks.

### Lipping Details

Hardwood minimum density 640 kg/m<sup>3</sup>

Flat 6mm thick PVC lippings are permitted on Blankfort cores only, with a maximum of 2mm profiling at the corners.

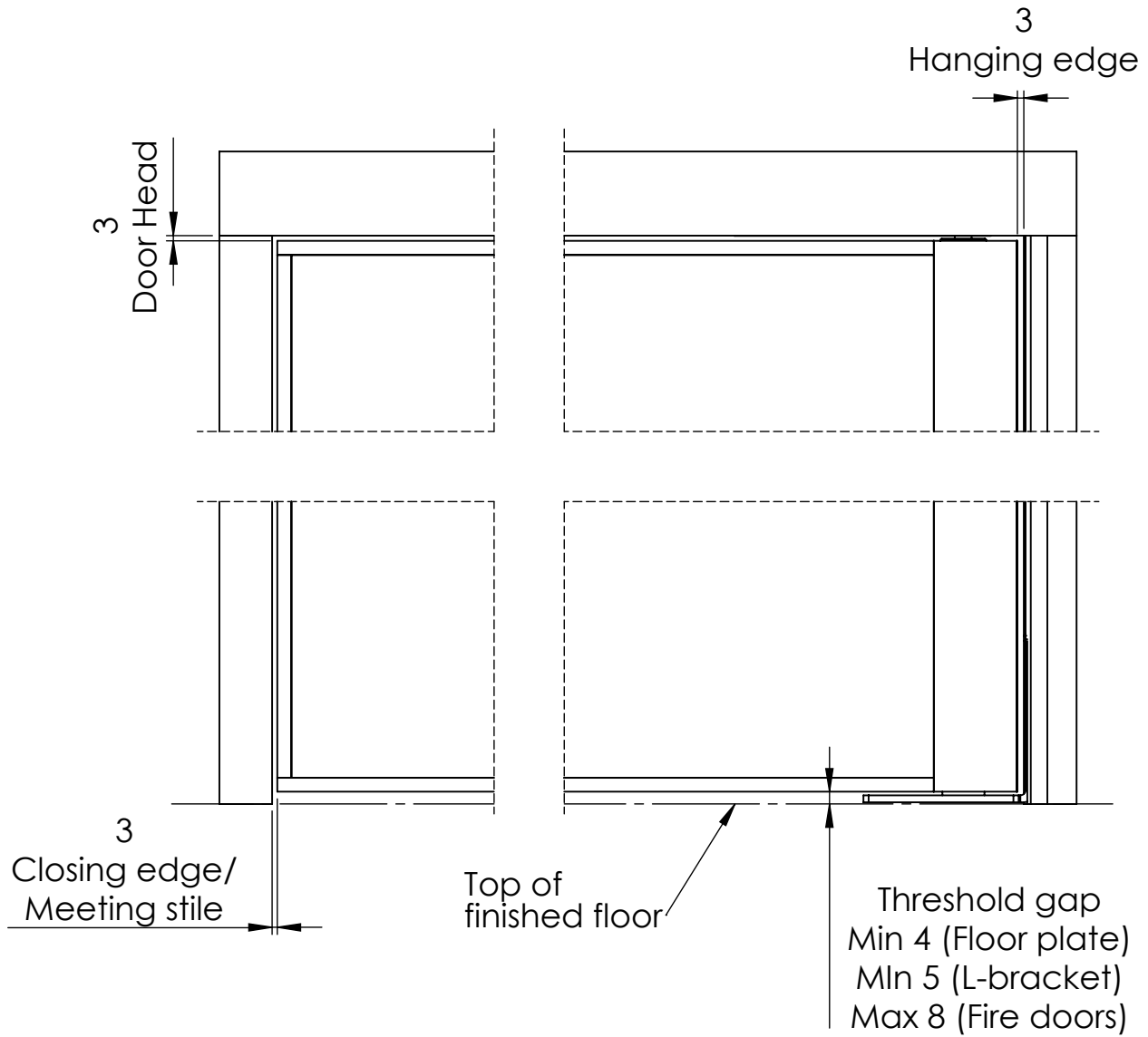
Gluelines: PU, UF, melamine-UF, cross-linked PVA, PVA, PF

## Door to Frame and Floor Gaps - 54mm doors

Door to frame edge gaps permitted are 2mm minimum and 4mm maximum.

Leaves must not be proud of each other or from the door frame by more than 1mm.

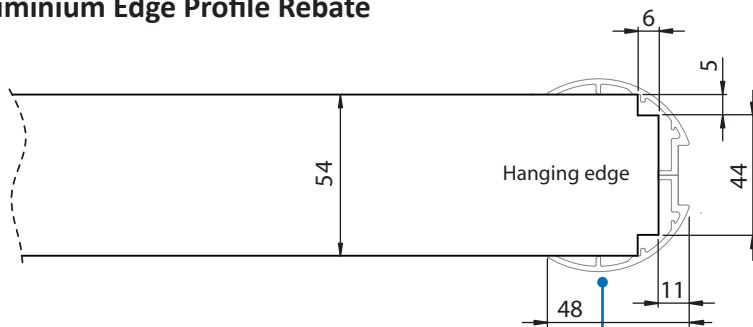
For fire resistance, the maximum gap between the bottom of the door and top of the floor covering is 8mm



## Rebate & Mortice Details

IMPORTANT: Care should be taken to position rebates/mortices correctly as these influence the finger-safe gap between the door and the frame.

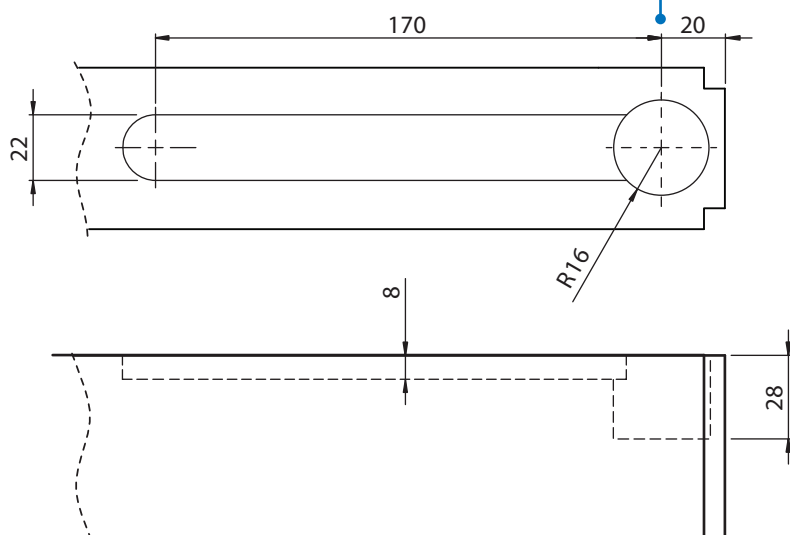
### 1. Aluminium Edge Profile Rebate



Apply to hanging edge only of door leaf.

NOTE: hanging edge un-lipped for FD60 rating.

### 2. Pivot Strap Mortice

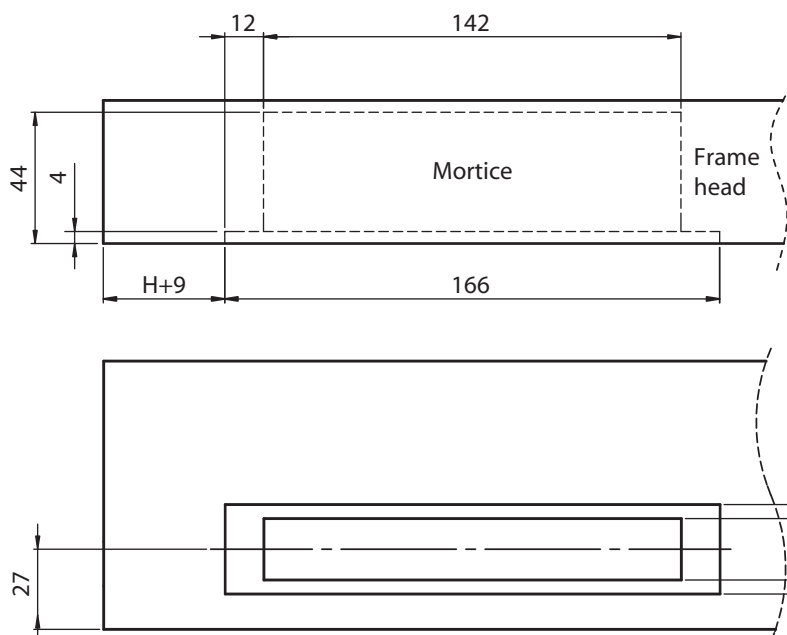


IMPORTANT: aluminium edge profile and pivot strap must have same centre point and be concentric.

Mortice detail for pivot strap - same at head and threshold of door.

If using a floor spring, this requires an alternative bottom strap. See "Floor Spring with ALU60 kits" on page 36

### 3. Top Centre Pivot Mortice



Mortice to frame head.

H = frame jamb width

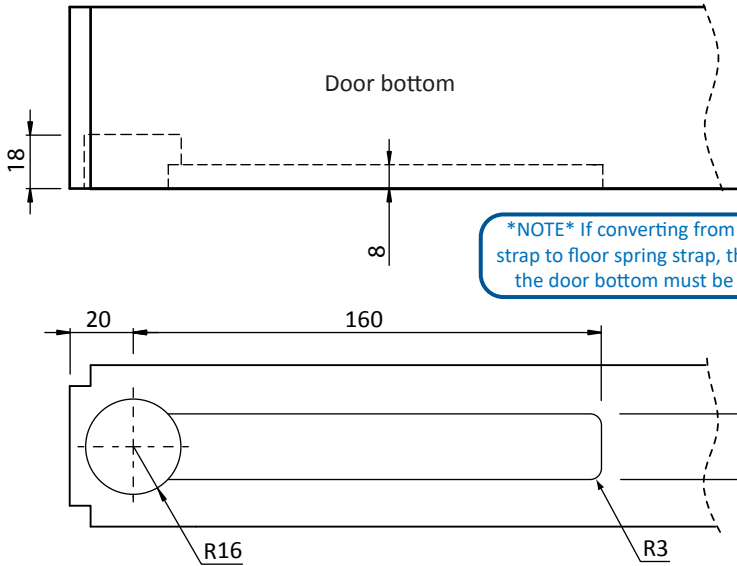
e.g. H = 30 mm

H+9 = 39 mm

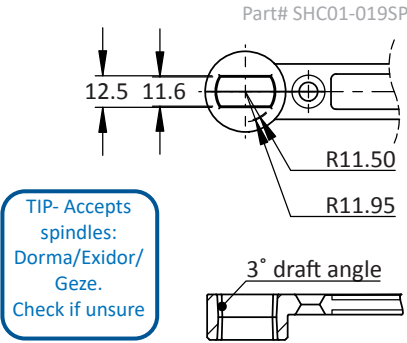
NOTE: mortice shown assumes opening face of door is required to sit flush with opening face of frame.

# Floor Spring with ALU60 kits

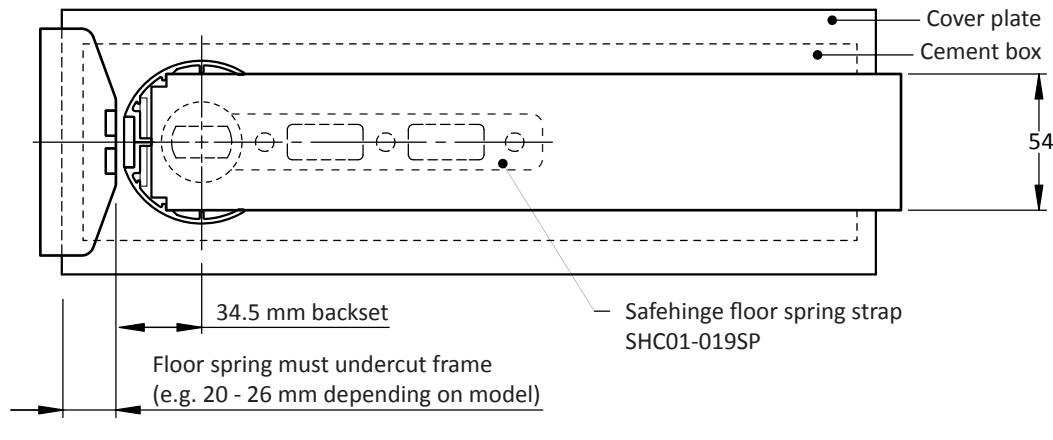
## Floor Spring Strap Mortise for ALU60



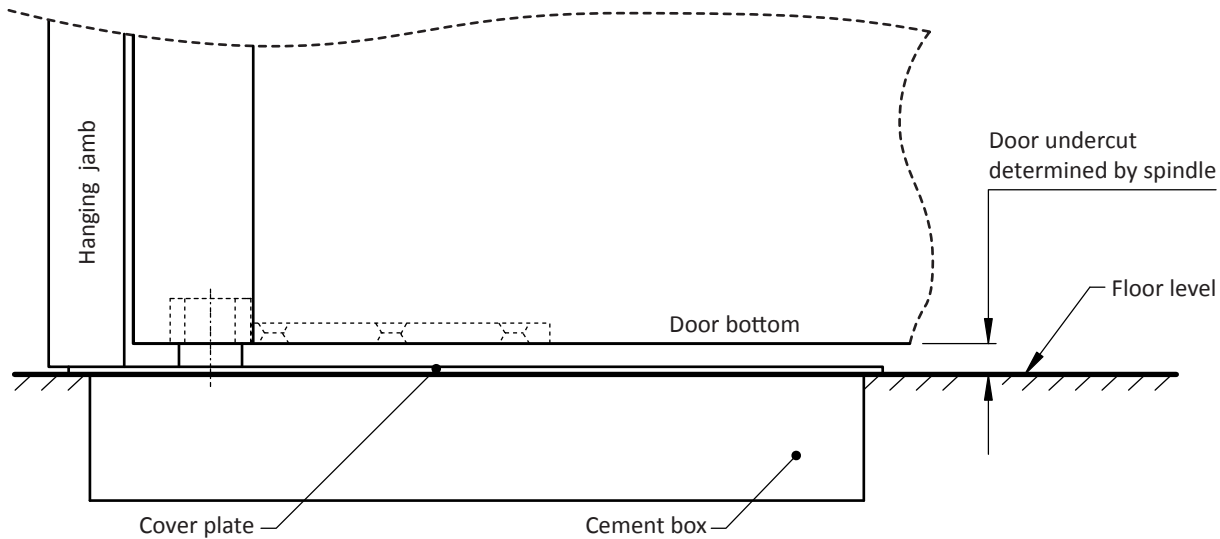
**TIP**  
 When using a floor spring the bottom strap mortise changes as shown here. The remaining rebate / mortise details are the same as regular ALU60 kit (see page 35).



## Floor Spring Layout with ALU60



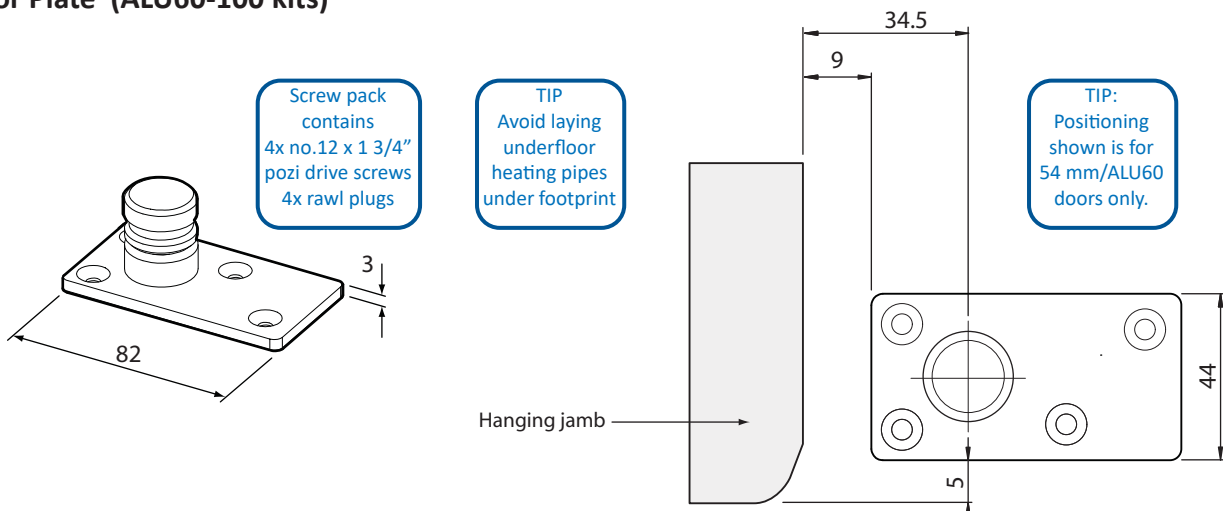
**TIP**  
 Double swing ALU60 jamb - see page 31.



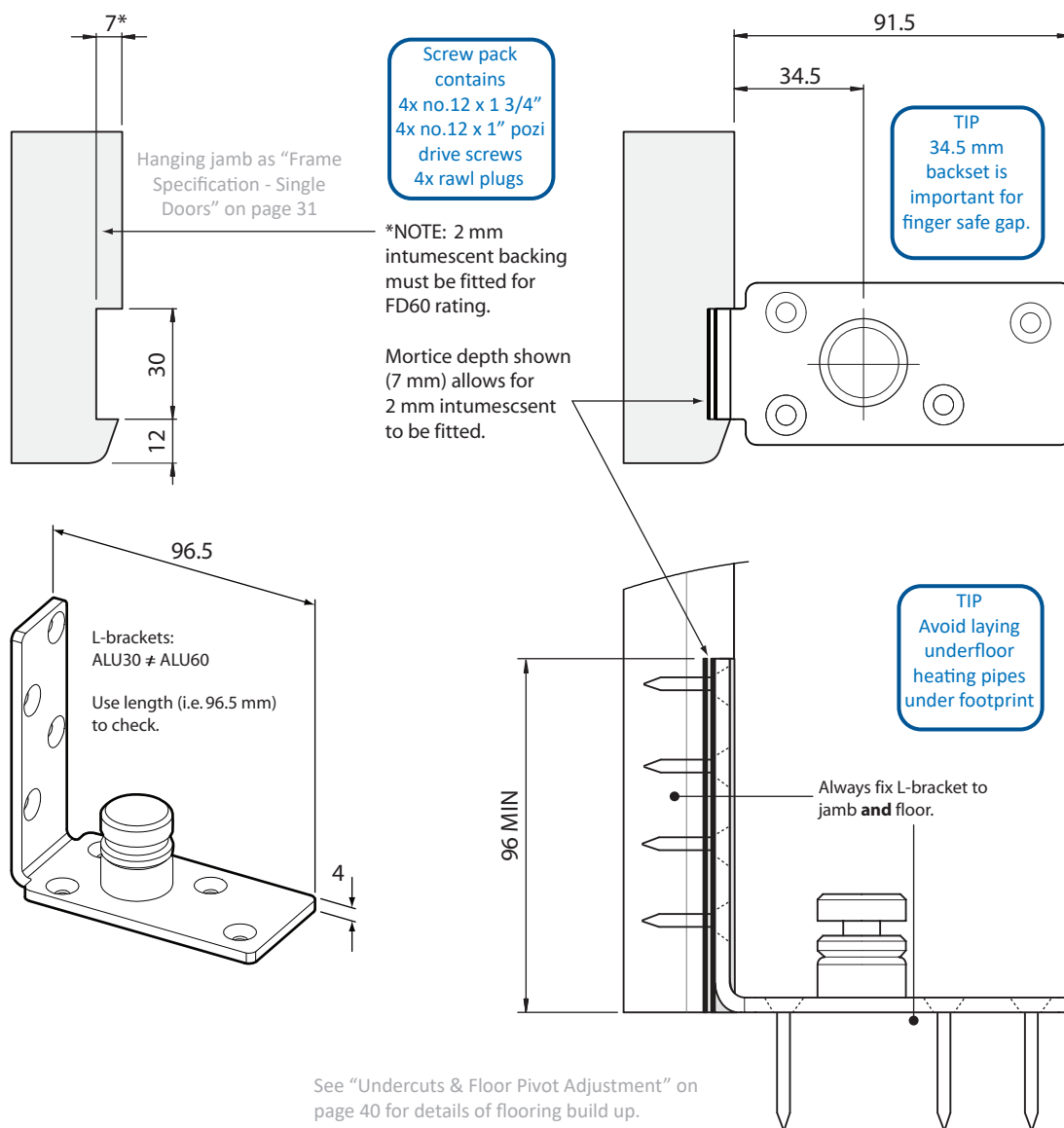
## Floor Pivot Positioning (54 mm doors)

Care should be taken to position components correctly as these will influence the finger safe gap between the door and the frame. **Please ensure heating pipes are gathered to centre of structural opening / doorway and clear base of both frame jambs by at least 200 mm.**

### Floor Plate (ALU60-100 kits)



### L-Bracket for 54 mm doors (ALU60-150 kits)



# ALU60 Acoustic Seal Option Drawings

PLEASE NOTE: This page only shows the placement of ALU60 **acoustic** seals which are **additional** to the combined intumescent smoke seals (A - F), detailed under "Lorient Polyproducts - ALU60 Seal Specification" on page 21.

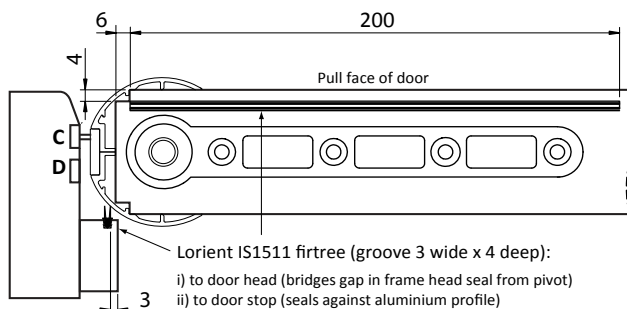
## Acoustic Ratings

		dB Reduction	
		Threshold Option 1	Threshold Option 2
		Lorient IS1511	Lorient 8091si
Door core	Blankfort 60 (glazed)	38	37
	Blankfort 60 (unglazed)	36	35
	Halspan (glazed)	36	35
	Halspan (unglazed)	34	33

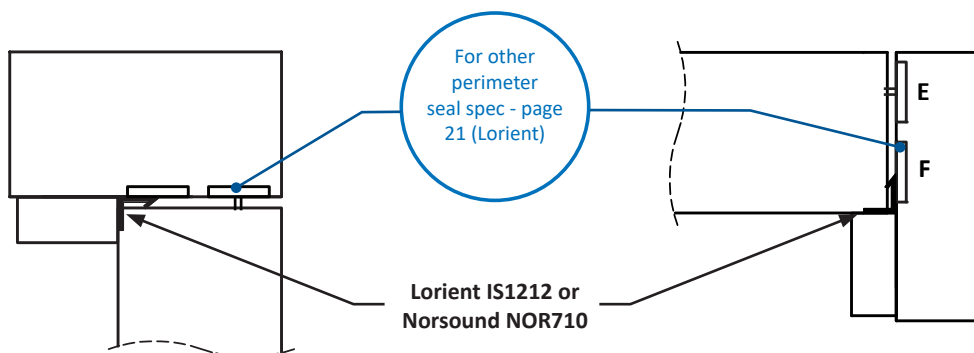
Table 5

Glazed tests conducted with 23 mm Pilkington Pyrostop. Other types of glass can offer comparable performance - please refer to glass manufacturer data.

## Hanging Jamb



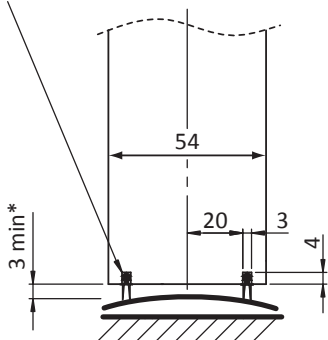
## Frame Head



## Closing Jamb

## Threshold Option 1

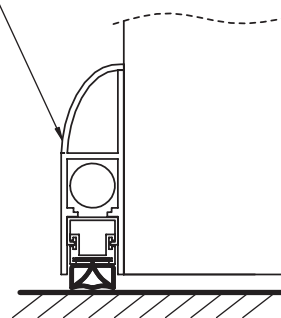
Lorient IS1511  
6mm firtree



\*to achieve 3mm, recommend compatible raised threshold plate

## Threshold Option 2

Lorient LAS8006si  
face-fixed drop seal



To enable the face-mounted seal to actuate on door stop/frame, recommend a check is made in ALU60 aluminium hanging edge profile and seal cut to length to sit between stops/jambs. Leave a clearance gap on the closing side as per the seal manufacturer's instructions.

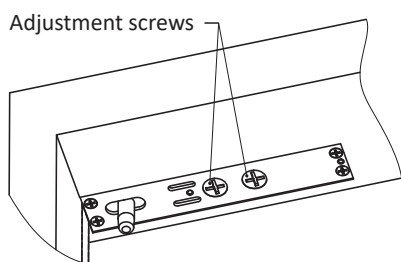
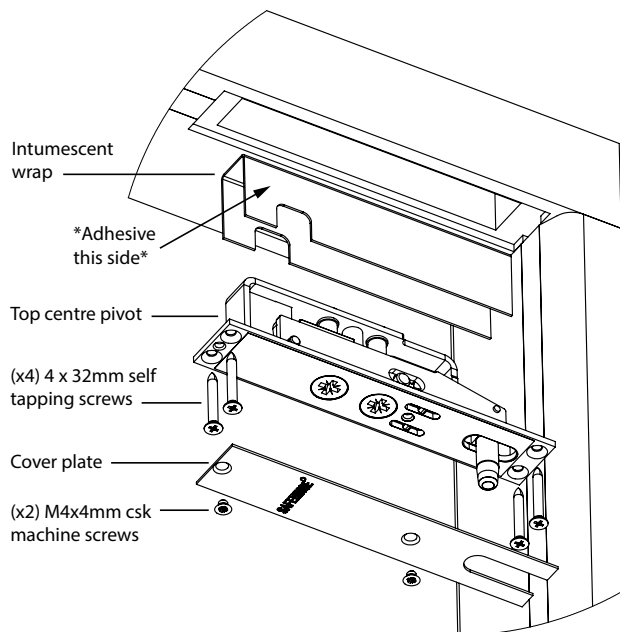
# Shared Details: ALU30 & ALU60

## Fitting Components

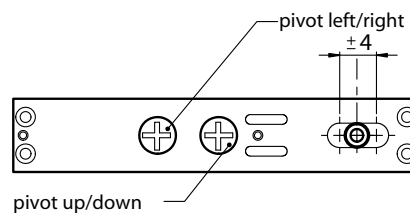
### 1. Fitting the Top Centre Pivot

i) Ensure the intumescent wrap is adhered to the frame, NOT to the top centre pivot.

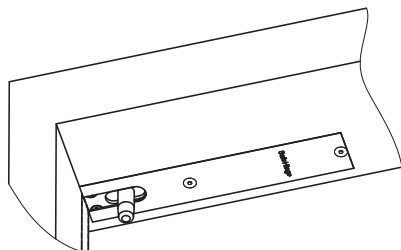
Adhering to the pivot may restrict adjustment



ii) Use supplied 4No. 4 mm x 32 mm screws to fit the top centre to the frame.



TIP - Final fix cover plate in case access to adjustment screws req'd.

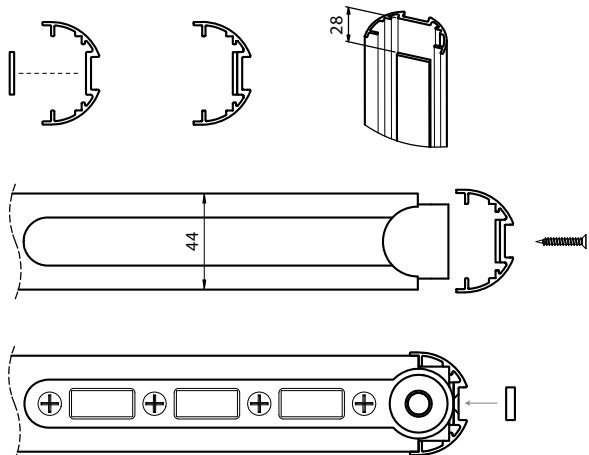


iii) Use supplied 2No. M4 x 4 mm csk machine screws to fit the cover plate.

### 2. Fitting the Aluminium Edge Profiles

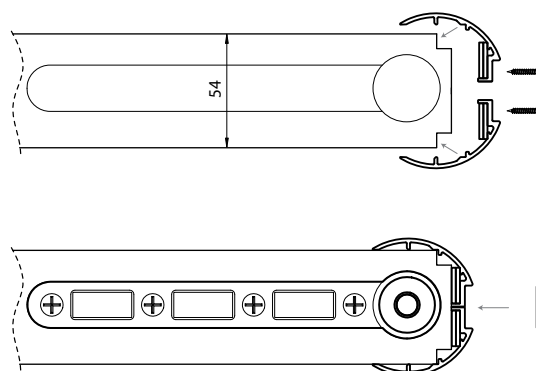
#### ALU30

Intumescent supplied loose. Fit for FD30 rating.



#### ALU60

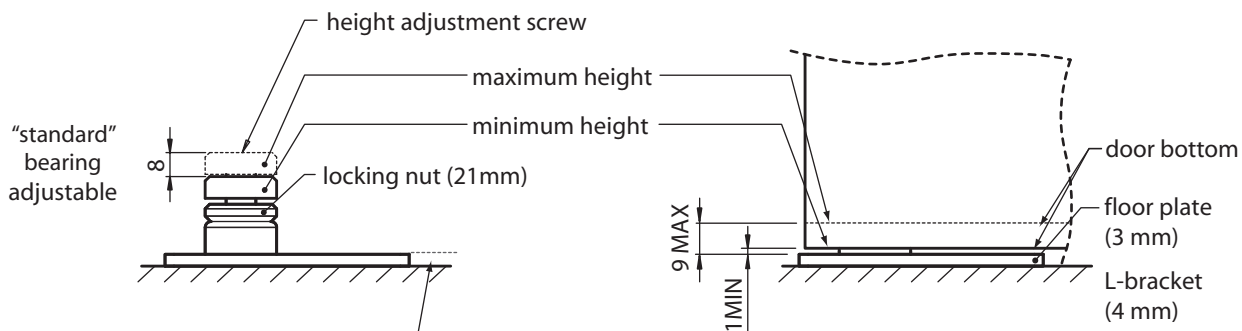
Intumescent behind profile comes pre-fitted as standard



## Undercuts & Floor Pivot Adjustment

The flooring configurations shown in the following section should be regarded as illustrative only. The exact design and configuration of flooring is not the responsibility of Safehinge Ltd.

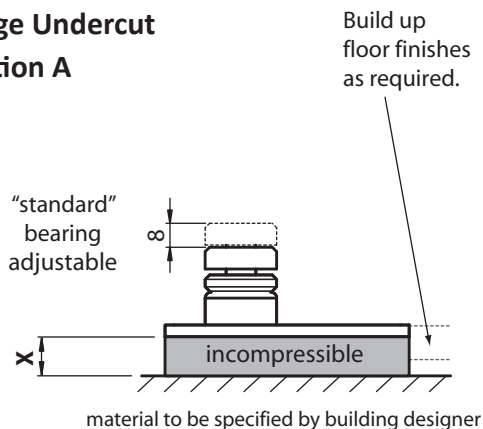
### Standard Undercut



The "standard" bearing is supplied with all regular Safehinge kits.

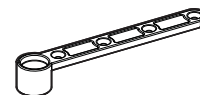
85210035 RTS85 Pinch Free Arm

### Large Undercut Option A

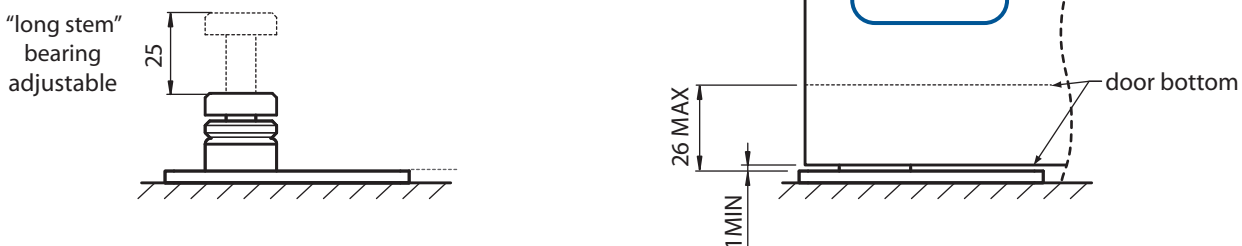


The "standard" bearing is supplied with all regular Safehinge kits.

TIP - Save time - use a loose strap on bearing to check undercut of door instead of taking door on and off!



### Large Undercut Option B

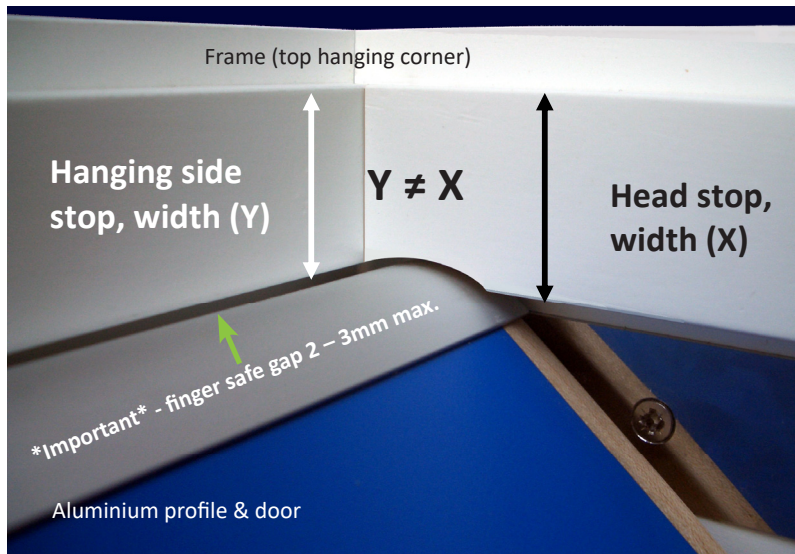


TIP To order your kits with long stem bearings see page 44



## Sizing Door Stops to Perfection

The hanging side stop is not always the same width as the head stop because of the important finger-safe 2-3mm gap between aluminium profile and stop.



### Helpful gap check!

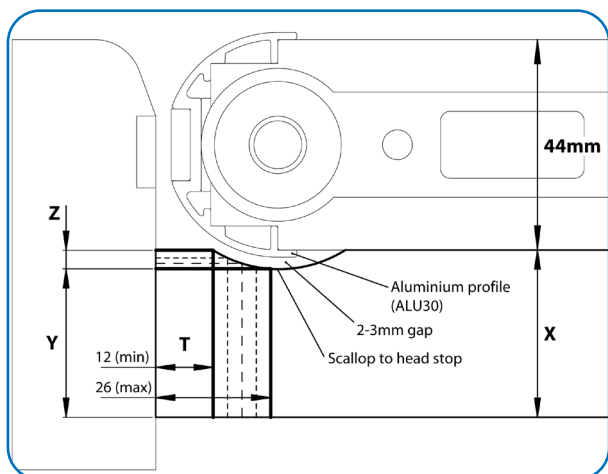


1 pound coin DOES fit



2x 20 pence piece DOES NOT fit

### ALU30 (44 mm) Hanging Side Stop



$$Y = X - Z$$

T (mm) stop thickness	Z (mm)
12	0
15	2
18	3
21	4
26 (max for hanging stop)	4

**Example:** If head stop is 35x15 mm, then

X = 35 mm T = 15 mm.

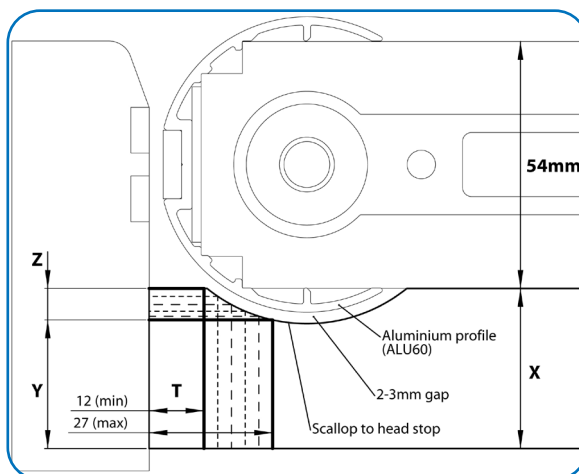
Z = 2 mm (taken from table)

$$Y = X - Z$$

$$Y = 35 - 2 = 33 \text{ mm}$$

**TIP**  
Use pinned door stops. These can be moved if req'd.

### ALU60 (54 mm) Hanging Side Stop



$$Y = X - Z$$

T (mm) stop thickness	Z (mm)
12	0
15	2
18	3
21	5
24	6
27 (max for hanging stop)	7

**Example:** If head stop is 40x18 mm, then

X = 40 mm T = 18 mm.

Z = 3 mm (taken from table)

$$Y = X - Z$$

$$Y = 40 - 3 = 37 \text{ mm}$$

## Opening Angle Limit

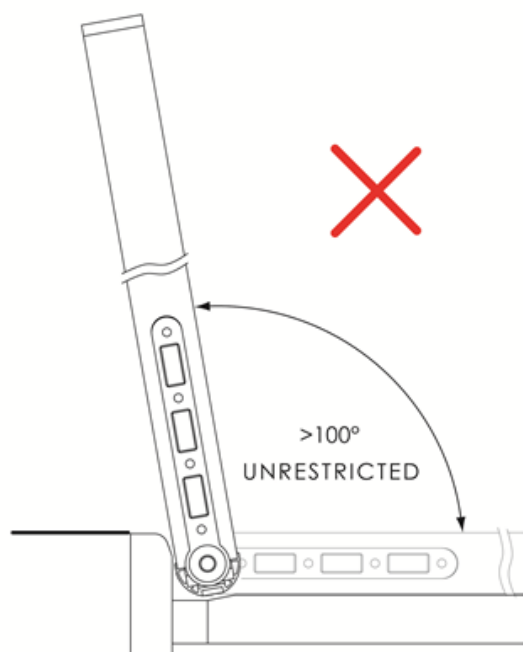
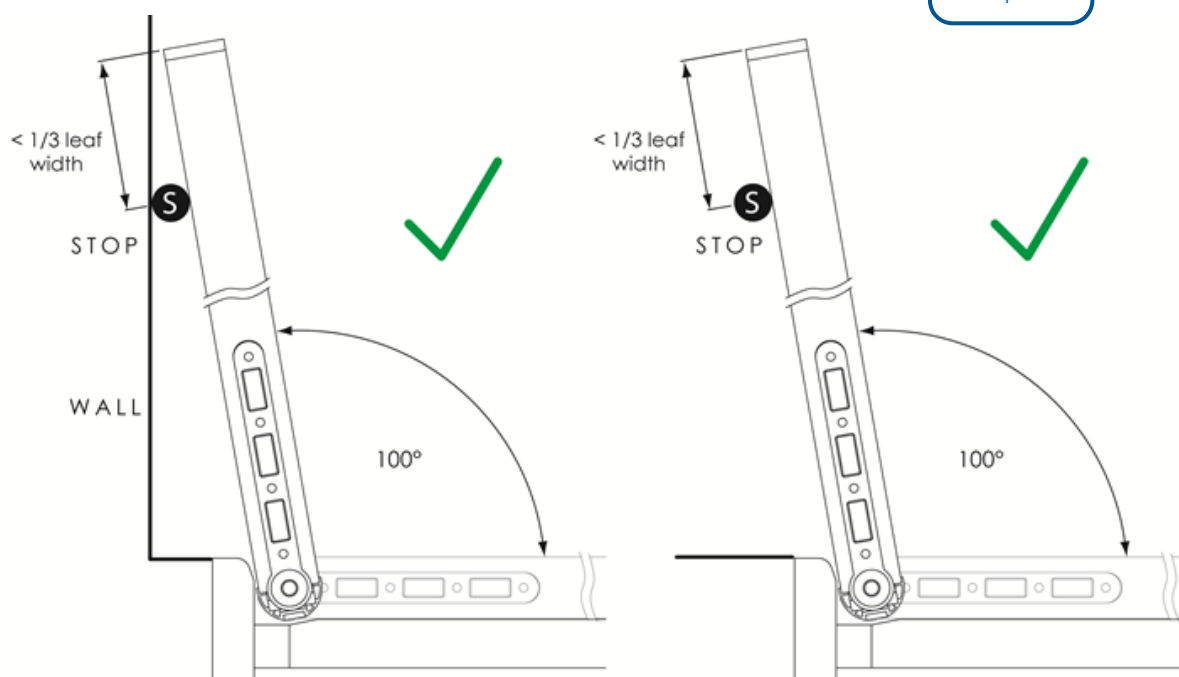
All pivot doors - whether Safehinge ALUmax or not - have a maximum opening angle beyond which they will “bind” on the door frame. It is strongly recommend that measures are taken to prevent binding from occurring.

Where the option exists to use a floor / wall stop, Safehinge would always recommend this design detail. Where these are not an option, the specifier must ensure they are satisfied with the chosen alternative. If a limiter stay forms the sole basis of the opening angle restriction, then careful consideration should be given to the robustness of the product selection and to the way the stay may create pressure on the pivots under load, particularly when using this design within a high traffic area of a building. Considering the opening direction during specification is also worthwhile.

**Recommended stop angle: 100°**

(Maximum opening angle: 110°)

**TIP**  
Always use floor  
or wall stops  
where possible



**WARNING** - Door binding on frame exerts extreme force on door, frame and ironmongery and may lead to damage/failure.

Door closers with back check improves situation, but should not be used in place of suitable opening angle restriction solution.

## Installation Instructions

### Step 1 - Install Frame

Install the frame assembly into the structural opening. For fire, smoke and acoustic doors, pack the gap between the door assembly and the wall in accordance with BS8214:2016 and ASDMA Best Practice Guide to Timber Fire Doors. Take particular care to ensure hanging jamb is set straight as this will influence the finger-safe gap between the door and the frame.

### Step 2 - Positioning of Bottom Pivot

Position the bottom pivot (floor plate or L-bracket) as directed on page 29 (ALU30) or page 37 (ALU60).

Use the supplied screws and plugs to fix the bottom pivot in position. Always fix the L-bracket to both floor and frame.

**IMPORTANT:** Care should be taken to position correctly as this will influence the finger-safe gap between the door and the frame.

Recommended to rebate the bottom pivot into the floor to eliminate a minor trip hazard.

### Step 3 – Height Adjustment of Bottom Pivot

Determine the desired gap at the threshold and then set the height of the pivot bearing accordingly.

**IMPORTANT:** Ensure the thread of pivot bearing is securely engaged with the threaded boss bottom pivot. After height adjustment has been made, securely tighten locking nut against thread. This will require a flat head screwdriver and spanner.

### Step 4 – Prepare the Top Centre Pivot

Remove and store the top centre cover plate (if fitted). Check that the pivot pin is fully retracted and central **(not positioned to the Left or Right extremes)**.

**IMPORTANT:** Do not operate the adjustment screws with power tools.

### Step 5 – Hanging the Door

**IMPORTANT:** It is Recommended to follow Health and Safety Executive guidelines when lifting ([www.hse.gov.uk](http://www.hse.gov.uk))

With the door in a 90° open position and tilted slightly, lift the door and carefully locate the bottom strap cup onto the pivot bearing. When this has been located, raise the door to align the retracted top centre pivot pin with the top strap bearing (**NOTE - it can help to mark the pivot centre of strap on the door edge to help align when hanging.**). Extend the pivot pin to locate it in the bearing.

**IMPORTANT:** Ensure the pin is fully extended and securely located in the top strap bearing (this requires approximately eight full turns of the “retract/extend” adjustment screw). Additionally, on the top centre adjustment ruler, look for the markers - these should be visible when the pin is fully down.

If required, a half turn in the “retract” direction (after fully extending) can ease the “hanging edge gap” adjustment screw.

### Step 6 – Check Threshold Gap

Check the gap at the threshold hanging side is as required. If height adjustment is necessary, remove the door, adjust the floor plate and then re-hang the door in accordance with Steps 3 – 5.

### Step 7 – Set the Finger-Safe Gap

The finger safe gap (hanging edge) should be 2-3 mm. Adjust the “pivot left/right” adjustment screw on top centre until this dimension is achieved at the top of the door. Check the gap is consistent the full height of the door (test as shown on page 41).

### Step 8 – Check Swing

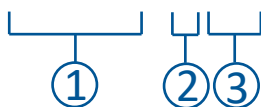
Check the door is swinging correctly. Check that gap sizes around the perimeter are correct and that there is no excessive rubbing on the hanging side. Make necessary adjustments. Fix the cover plate in position over the top centre pivot when complete.

## Ordering Safehinge ALUMAX Kits

Product coding explained.

Note: The letter X denotes choice and will not be included in the actual kit ordered

ALU30 - 1 00



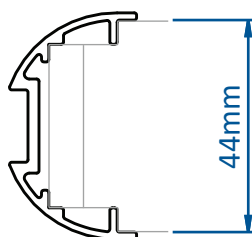
### 1. Choose kit type

Non-Fire rated

FD30

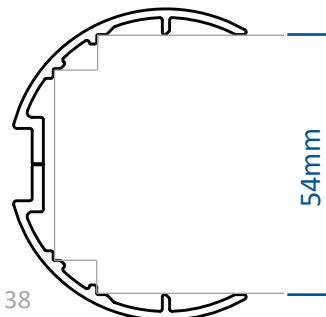
up to 32dB

**ALU30-XXX**



44mm

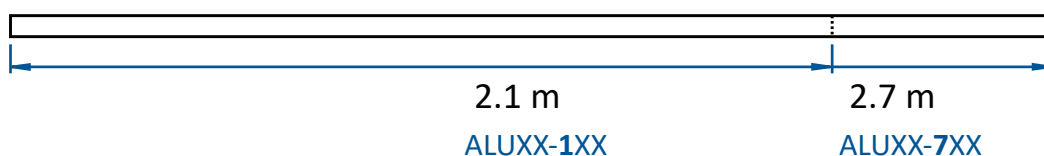
FD30/60  
up to 38dB\*  
**ALU60-XXX**



54mm

\* Glazed - see page 38

### 2. Choose kit length (door height)



2.1 m

**ALUX-1XX**

2.7 m

**ALUX-7XX**

### 3. Choose bottom pivot

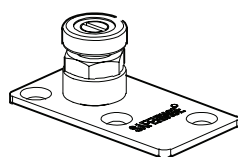
Floor Plate

**ALUX-X00**

(Standard bearing)

**ALUX-X00LS**

(Long stem bearing)



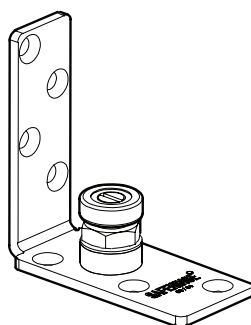
L-bracket

**ALUX-X50**

(Standard bearing)

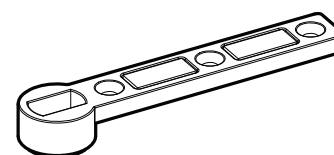
**ALUX-X50LS**

(Long stem bearing)



Floor Spring (slotted strap)

**ALUX-X26FS**



Standard finish: Silver anodised

Alternative finish options include: -

- RAL colour matched powder coat

- Timber effect foil

Please contact for further information.