SYMPHONY

ALUMAX, SURECLOSE AND MOVASTOP

TD027 Symphony Technical and Manufacturing guidelines
February 2023

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Project: Birmingham & Solihull Mental Health NHS Trust

Welcome

Welcome to the Safehinge Primera Symphony Technical and Manufacturing Guidelines.

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

1) Technical Manual
This section focuses on the fire performance capabilities. As a specifier you'll find out what you can achieve with Safehinge Primera Symphony and how to do it.2

2) Manufacturing Guidelines
These sections focus on manufacturing details including doorset sections, rebates and mortices. A must read to ensure compliance.

Installation Instructions are available as a separate download. These contains all the necessary factory fit and on site installation processes.

Symphony - overview

When it comes to protecting the most vulnerable members of society, both safety and a focus on recovery are of paramount importance.

That's why we developed Symphony for the challenging **mental health environment** to be anti-ligature and anti-barricade, reducing the risk of self-harm and injury. Because we refused to compromise on quality, our products offer the same discreet design and durability as always. Plus they're fire rated and thoroughly tested to the highest standards, ensuring ultimate protection for staff and service users.

Symphony is unique because it's the first product package to solve the many issues related to mental health doorsets. And we made it because our customers said they wanted a no-compromise door system that covered every angle when it came to safety and recovery.

Product Summary

Symphony is a tailor-made, fully coordinated door safety system comprising:

1) **Surehinge / Alumax ALU60** - safe door pivot system
2) **Sureclose** - concealed transom door closer
3) **Movastop** - anti-barricade removable doorstop

Surehinge is the mental health derivative of the Alumax ALU60 product - the same pivot system with anti-ligature washers are anti-tamper fixings.

Suitable for door type

Single and double leaf; single / double swing and anti-barricade doors.
54 mm door thickness (primary test evidence generated with Blankfort and Moralt door cores)

Fire/smoke FD30, FD30 (S), FD60, FD60 (S) rating

Surehinge / Alumax ALU60 Finishes (aluminium edge profile)

- Satin anodised as standard
- Oak Timber effect
- Powder coat (any RAL colour) available upon request

2.1m and 2.7m standard supply lengths.

Movastop - Finishes (door stop)

- White Powdercoat as standard (RAL9016)
- Wood and powder coat Special finishes available upon request

Sureclose - Closer Type

Sureclose S87 (EN 1 - 4 (adjustable unit))
Sureclose S80-EMB EN4 (Electromagnetic hold open EN4)
Sureclose S80-EMB EN5 (Electromagnetic hold open EN5)
Sureclose S80F EN4 (Free swing closer)
Note: 'EN' refers to power rating

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 element

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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.

In A12005, Symphony is referred to as Doorset System type 3 - Alumax ALU60 and Transom Closer - 54mm doors

If the Symphony 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

Please read - Key Features - At a Glance

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

**** Closer type ****
The Symphony package is available with standard, free swing or electro-magnetic hold open closers.

** **Door core/blank****
54 mm only (for FD30 and FD60 rating)
Blankfort 60/60+, Halspan IT60/XT60 or Moralt Firesmoke 54 are recommended for all applications, mental health in particular.

**** Frame head - size ****
Sureclose requires a transom closer to be machined into the frame head. This results in a larger frame head section (69 x 119 mm minimum) than typical. See page 16 onwards for details.

**** Opening angle - limit to 100° ****
We strongly recommend you restrict the opening angle of Symphony doors to 100° in normal use as they have a maximum opening angle of 110°. See page 30.

****Double doors - Single swing or double swing?****
Leaves must not be proud of each other by more than 1mm. For unlatched, fire and smoke rated doors, we recommend single swing.

**** L-bracket recommended****
We always recommend using the L-bracket for ease of fitting on-site. See page 28.

**** Underfloor heating - plan ahead ****
The mass of the door is primarily supported by the floor - please account for this at the design stage, page 29.
We recommend using the L-bracket bottom pivot.
Please ensure heating pipes are gathered to centre of structural opening / doorway and clear of both frame jambs by at least 200 mm to allow for fixing.

**** Frame features - need to be accurate ****
The anti-ligature and safety functions of Symphony doorsets means attention to detail is required when it comes to some specific frame features. See page 19.

**** Clearance underneath door - plan ahead ****
The maximum threshold gap for fire performance is 8mm. Do you need a standard or long stem bearing to achieve your desired clearance under the door? See page 29.

**** Anti-barricade requirement****
Does the project have any doors that require a door stop and therefore the inclusion of Movastop? See frame specification on page 16

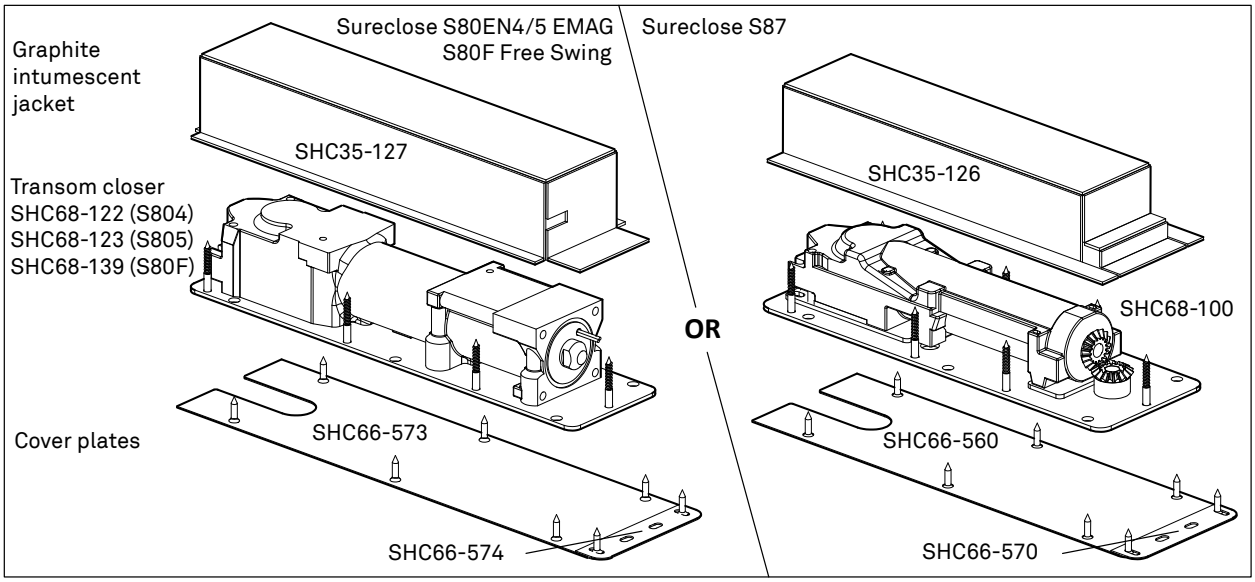
**** Are you using cores, frame materials & intumescent consistent with Safehinge test evidence? ****
Symphony timber frame test evidence was primarily generated with Blankfort and Moralt cores, hardwood frames and Lorient intumescent. We believe these materials are best suited to demands of the mental health market.

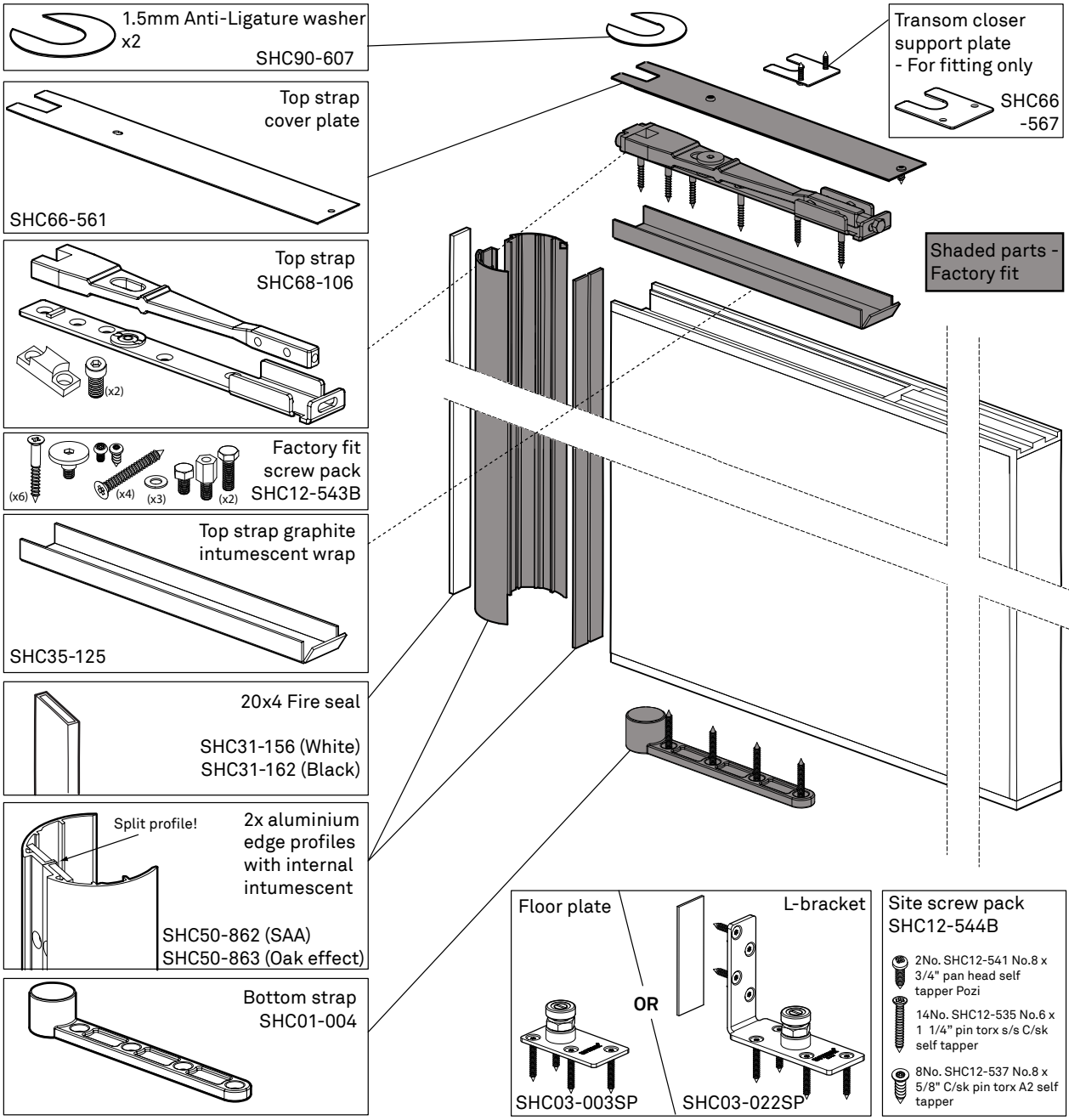
**** Concentric ****
The pivot centre on the door and the rounded aluminium edge profile must always be concentric. Follow mortice / rebate details on page 23 onwards.

**** The Safehinge doorset is protected by intellectual property rights. Patent protection and design rights apply ****

What's in the Symphony Kit?

Product component breakdown, excluding Movastop

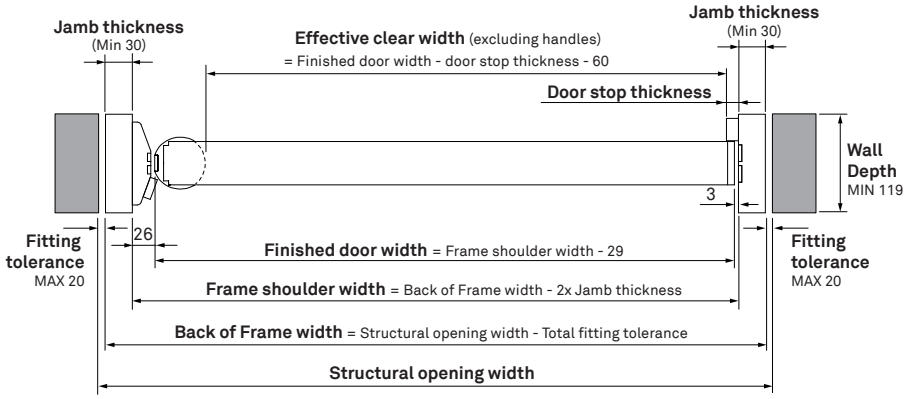




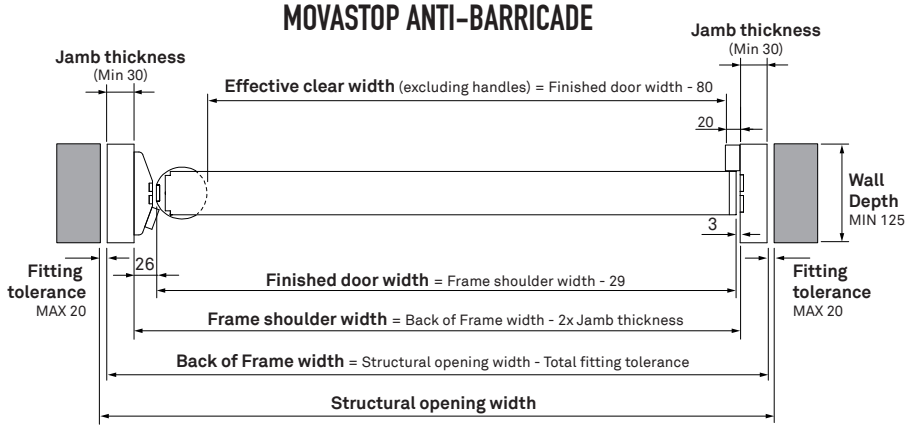
Symphony Doorset Dimensions - Single doors

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

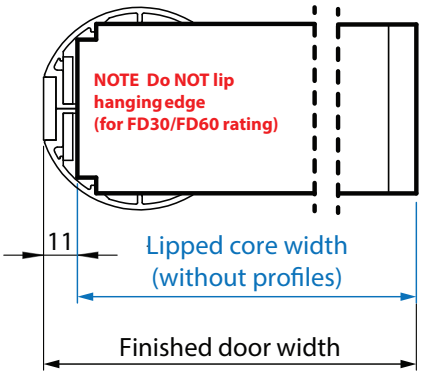
SINGLE

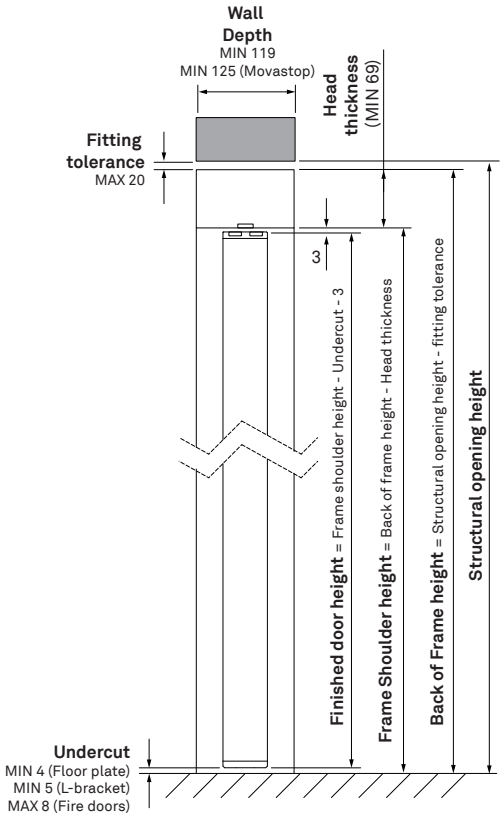


MOVASTOP ANTI-BARRICADE



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

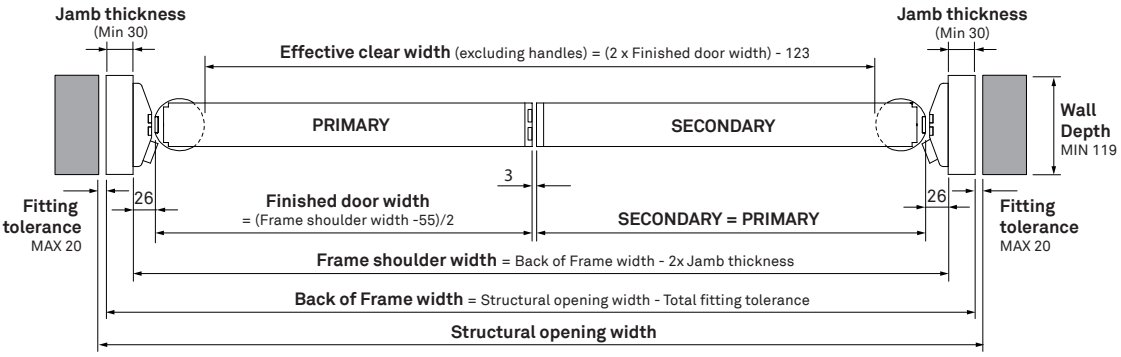




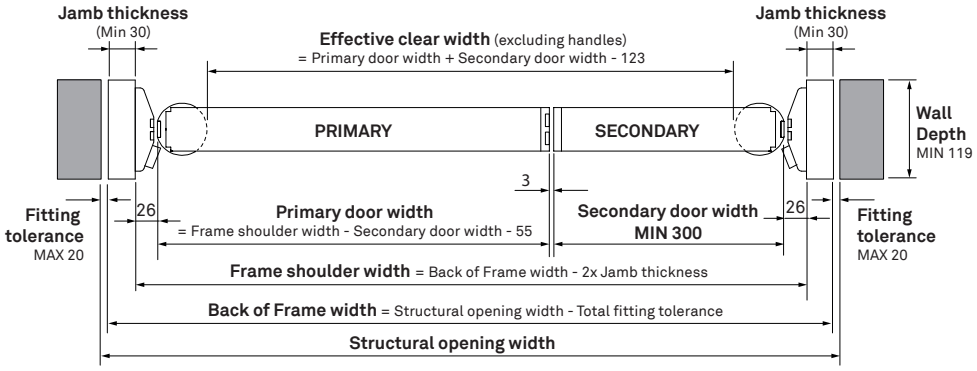
Symphony Doorset Dimensions - Double doors

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

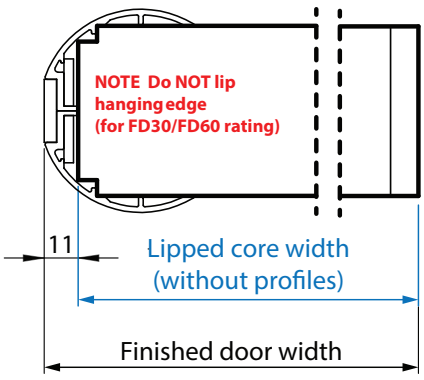
EQUAL PAIR

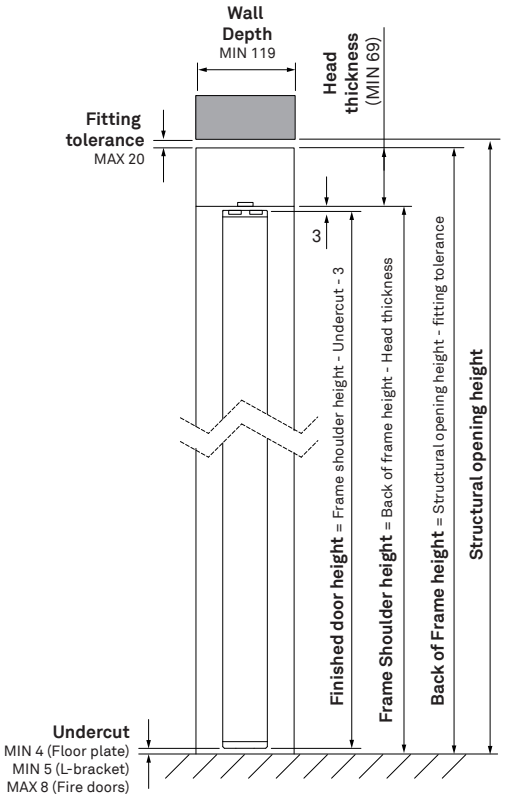


UN-EQUAL PAIR



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

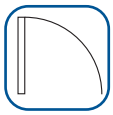




FD30 Fire Performance

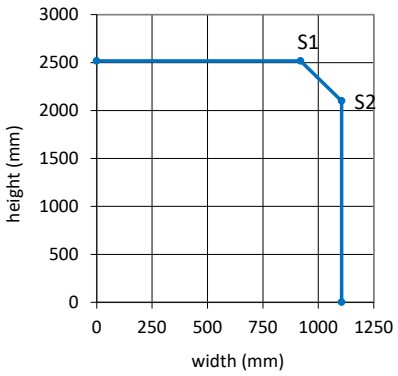
Lorient Polyproducts - FD30 Maximum Leaf Sizes

Latched, single acting, single leaf

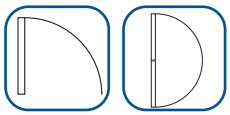


NOTE: 54 mm core must be used for mechanical duty (even for FD30 performance).

	S1	S2
W	920	1105
H	2517	2100

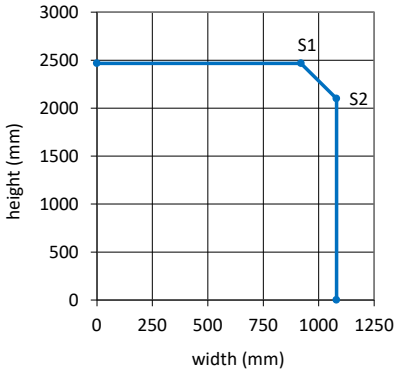


Unlatched, single or double acting, single leaf



NOTE: Leaf sizes shown are for Alumax with Sureclose. For standard Alumax leaf sizes - see Alumax Technical Manual.

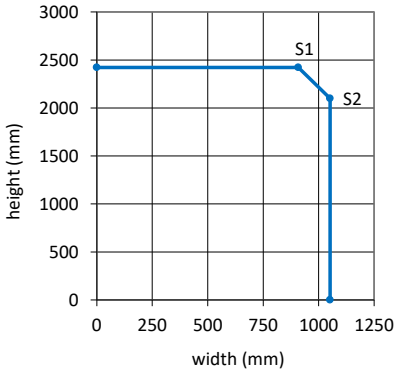
	S1	S2
W	920	1076
H	2467	2100



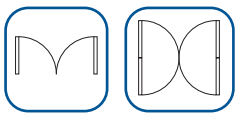
Latched, single acting, double leaf*

*Unequal leaf double doorsets are permitted with no restriction on the smaller leaf dimension other than it must be within the maximum leaf sizes shown.

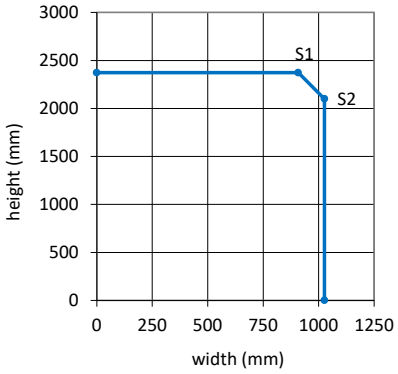
	S1	S2
W	908	1051
H	2473	2100



Unlatched, single or double acting, double leaf*



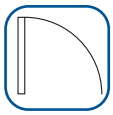
	S1	S2
W	908	1026
H	2423	2100



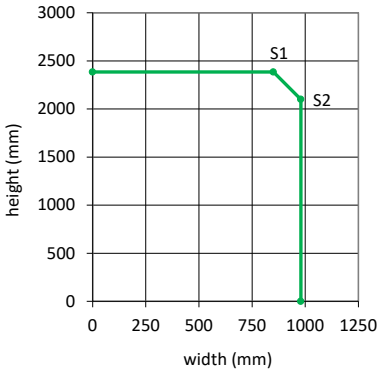
FD60 Fire Performance

Lorient Polyproducts - FD60 Maximum Leaf Sizes

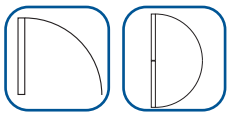
Latched, single acting, single leaf



	S1	S2
W	850	979
H	2384	2100

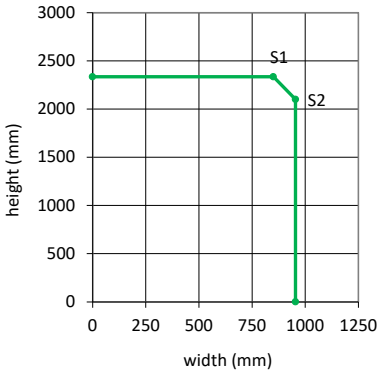


Unlatched, single or double acting, single leaf



NOTE: Leaf sizes shown are for Alumax with Sureclose. For standard Alumax leaf sizes - see Alumax Technical Manual.

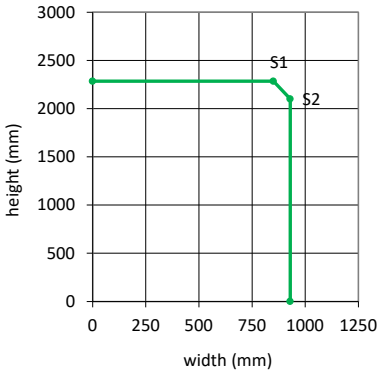
	S1	S2
W	850	954
H	2334	2100



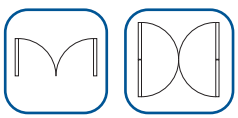
Latched, single acting, double leaf*

*Unequal leaf double doorsets are permitted with no restriction on the smaller leaf dimension other than it must be within the maximum leaf sizes shown.

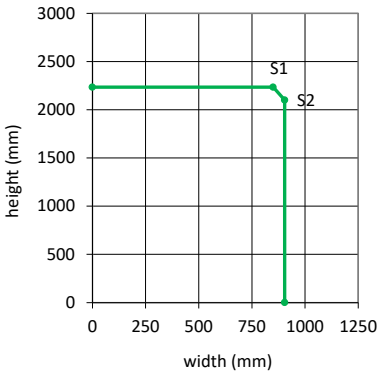
	S1	S2
W	850	929
H	2284	2100



Unlatched, single or double acting, double leaf*



	S1	S2
W	850	904
H	2234	2100



Symphony Doorset Specification

LORIENT

Door core/blank

54 mm only (for FD30 and FD60 rating)
Blankfort 60/60+, Halspan IT60/XT60 and Moralt Firesmoke 54 recommended for mental health market
Others cores permitted within Chilt/A12005 - see page 13. If an alternative core is used, it is the responsibility of the specifier to underwrite mechanical performance.

Frame

Hardwood minimum density 640 kg/m^3
Minimum sections excluding stops: 119 x 69 mm (head); 119 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

We recommend horizontal butt joint as this accommodates the mortice detail in the frame head most readily.

Stops

For fixed stops: machined from hardwood; screwed (anti-tamper) and pelleted (recommended) or pinned and glued.
For emergency release: Movastop (from Safehinge Primera).

Lipping

Hardwood minimum density 640 kg/m^3
Flat section - (details - see page 21).
No lipping on hanging edge (for fire rating).

Gluelines

PU, UF, PVA, PF

Intumescent/smoke seal

NOTE: frame and door head seals to be procured by door manufacturer from Lorient. See “Table 1” on page 15.

Door - hanging edge seals (supplied by Safehinge):
20x4 PVC-cased Type 617 (white)
2No. 15x3 GPF graphite strip (Pre fitted behind each aluminium profile)

Ironmongery intumescent (supplied by Safehinge):
Lorient RL type graphite gasket wrap (for transom closer)
Dual pocket graphite (bottom strap)
Graphite gasket wrap (top strap)
2No. L-bracket intumescent upstand pads

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.

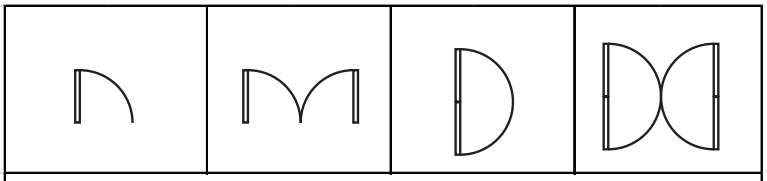
Multipane vision panels are permitted for use with certain core options with 30 or 60 minute performance. See Page 13 for further details.

30 & 60 minute fire door core options

LORIENT

54mm Door core options

The matrix below shows the core options and permitted doorset configurations.

Core reference # as per Chilt/ A12005									
		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

IMPORTANT
Blankfort 60/60+, Halspan IT60/XT60 and Moralt Firesmoke 54 recommended for mental health market

Multi-pane vision panel options

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

Vision panel 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: -

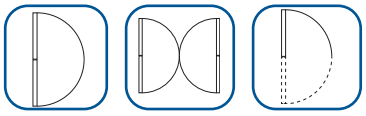
Safehinge Primera - Sureview
Vistamatic - Vista Safe
Kingsway - Visilux, Duralux, Pyrolux

		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

FD30 & FD60 Seal Specification

LORIENT

Single/Double Doors (Double Acting / Single Acting with Emergency Release)



Please see below for the required seal specification when manufacturing a Symphony doorset, as outlined in Chilt/A12005. NOTE seal specification is the same for FD30 and FD60 (only the leaf sizes permitted change).

		SIngle Leaf seal positions (See page 16-17)						
		Frame	Door head		Hanging jamb		Closing jamb	
		A	B	C	D	E	F	G
Rating	Fire & smoke	20x4 LP2004 Type 617	15x4 LP1504DS Type 617	15x4 LP1504 Type 617	10x4 LP1004DS Type 617	10x4 LP1004 Type 617	20x4 LP2004DS Type 617	Same as A
	Fire only	20x4 LP2004 Type 617	15x4 LP1504 Type 617	Same as B	10x4 LP1004 Type 617	Same as D	Same as A	Same as A
Position	Single & Double acting	Fit A central to door	Fit B and C spaced 15mm central to door		Fit D and E spaced 5mm central to door		Fit F and G spaced 5mm central to door	

Table 1

		Double leaf (See page 16-17)		
		Meeting Stile		Threshold
		H	I	
Rating	Fire & smoke	15x4 LP1504DS Type 617	15x4 LP1504 Type 617	Refer BS9999:2008 (33.1.7)
	Fire only	15x4 LP1504 Type 617	Same as H	N/A
Position	Single & Double acting	Fit H and I spaced 10mm central to door		

NOTE: Safehinge supply seals that are in direct contact with the ironmongery components supplied as part of the Symphony kit. The door manufacturer is responsible for procurement of all intumescent seals for the frame/door.

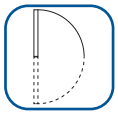
Symphony Manufacturing Guidelines

Frame Specification - Anti-barricade Single Doors with Movastop

E.g. "Anti-barricade bedroom door"

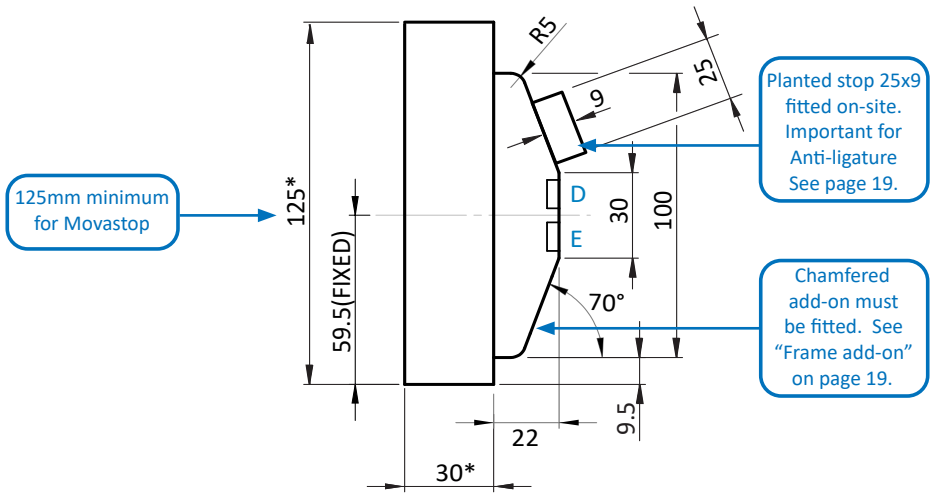
Single swing normal operation with emergency release

Asterisk (*) indicates the minimum permitted size.

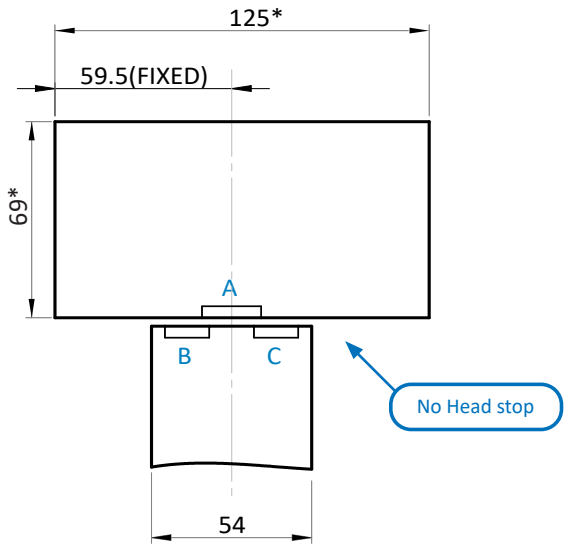


Hanging Jamb

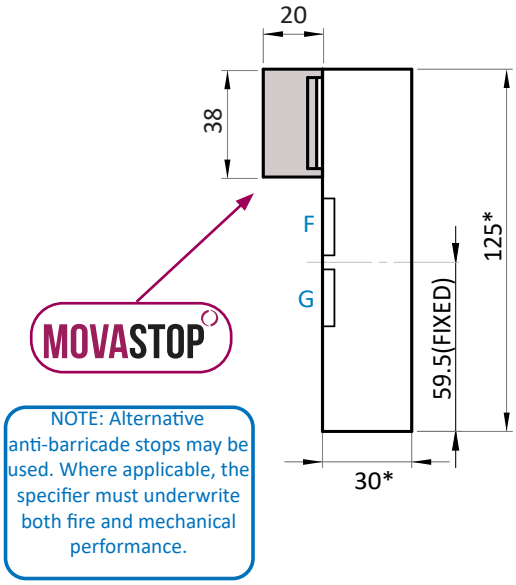
Seal spec - See "Table 1" on page 15.



Frame Head



Closing Jamb



Permitted frame materials (FD30 & FD60): Hardwood minimum density 640 kg/m^3.

Head/jamb joint: we recommend horizontal butt joint with screw fixings and non-thermally softening adhesive (e.g. PU, UF, PVA). This joint arrangement accommodates the mortice detail in the frame head most readily.

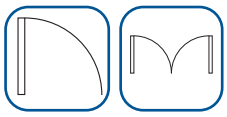
For Anti-barricade configurations, avoid using double sided strike plates.

Frame Specification - Single acting single and Double Doors

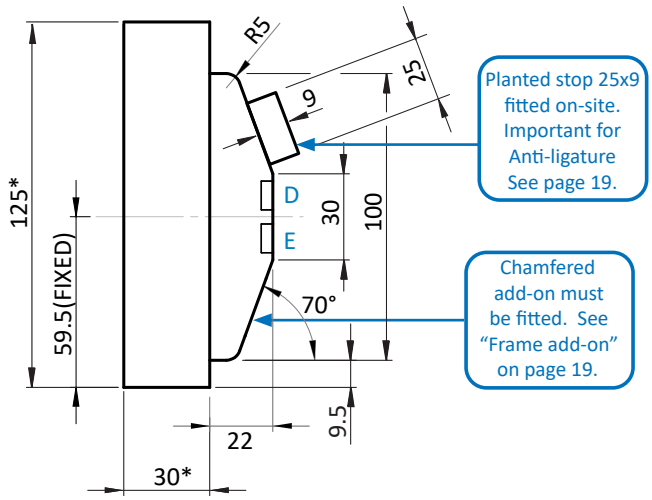
E.g. "Communal door"

Double swing normal operation

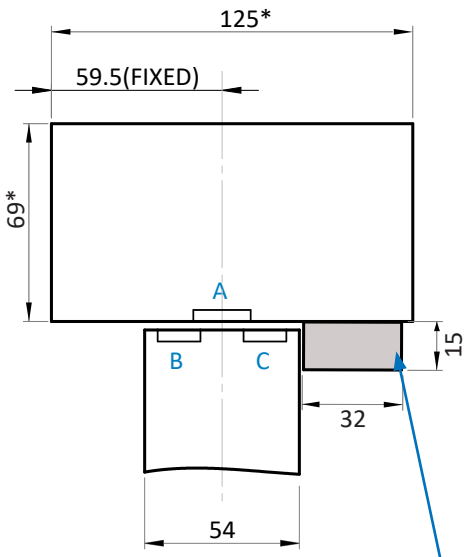
Asterisk (*) indicates the minimum recommended size.

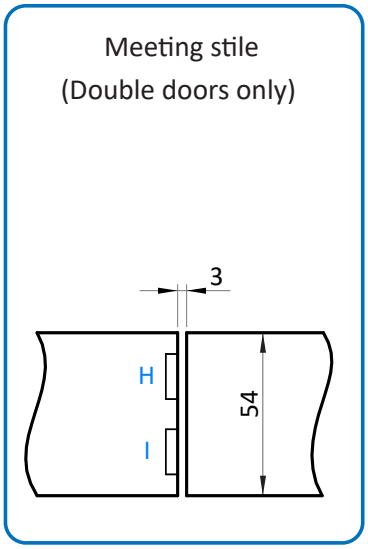


Hanging Jamb

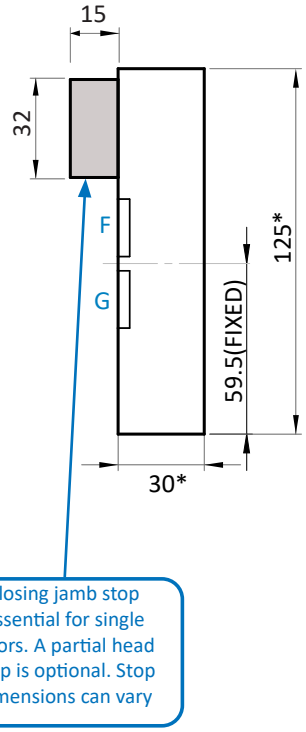


Frame Head





Closing Jamb



Permitted frame materials (FD30 & FD60): Hardwood minimum density 640 kg/m^3.

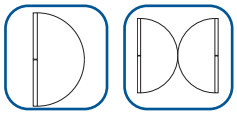
Head/jamb joint: we recommend horizontal butt joint with screw fixings and non-thermally softening adhesive (e.g. PU, UF, PVA). This joint arrangement accommodates the mortice detail in the frame head most readily.

Frame Specification - Double acting single and Double Doors

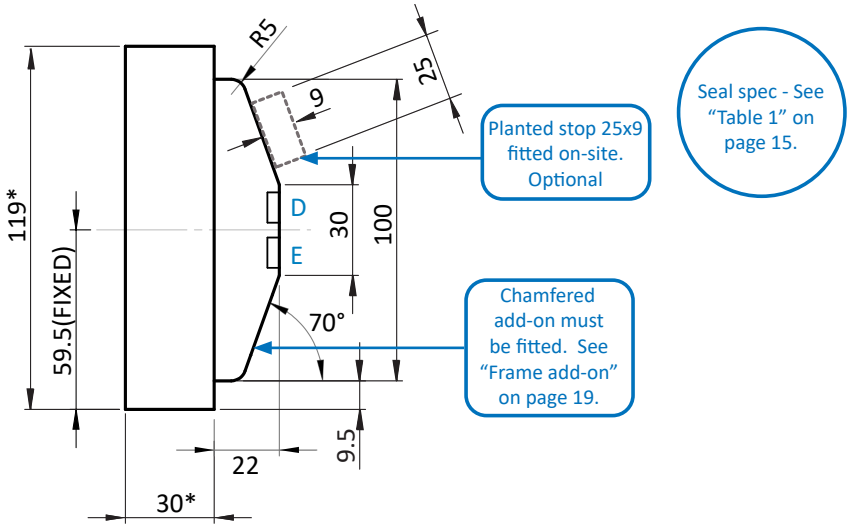
E.g. "Cross-corridor"

Note: Double swing doors are rare in mental health, but where they are needed, careful consideration should be given to the opening angle restriction in both directions. Leaves must not be proud of each other by more than 1mm. For unlatched, fire and smoke rated doors, we recommend single swing.

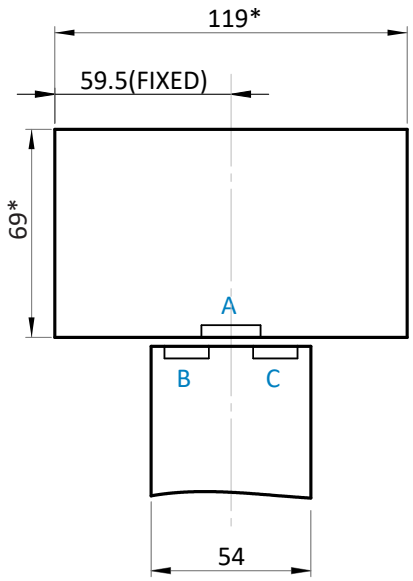
Asterisk (*) indicates the minimum recommended size.



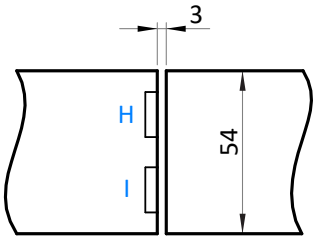
Hanging Jamb



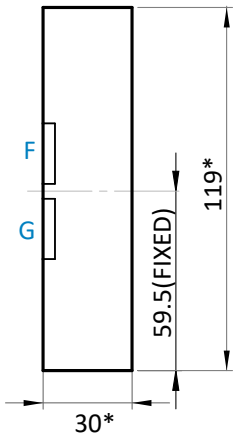
Frame Head



Meeting stile
(Double doors only)



Closing Jamb



Permitted frame materials (FD30 & FD60): Hardwood minimum density 640 kg/m^3.

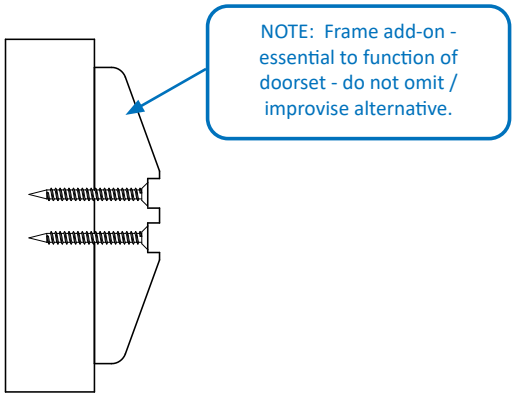
Head/jamb joint: we recommend horizontal butt joint with screw fixings and non-thermally softening adhesive (e.g. PU, UF, PVA). This joint arrangement accommodates the mortice detail in the frame head most readily.

Frame Features and Details

NOTE: For all exposed joinery fixings security screws are recommended; screwed and pelleted or as per mental health trust guidelines.

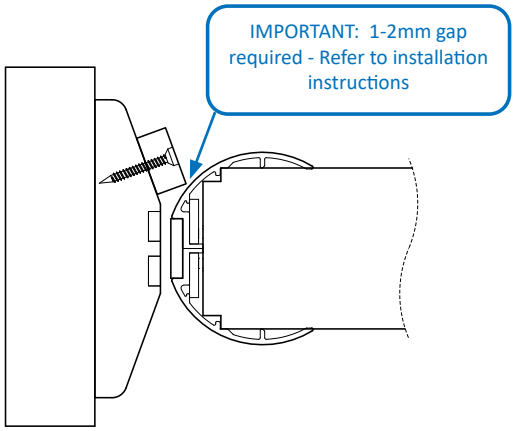
Frame add-on

- Allows for correct opening angle of door (100°)
- Prevents transom closer undercutting jamb.
- Enables correct installation sequence.
- Length equals internal frame shoulder height.
- Machined from hardwood; recommended to be screwed to the hanging jamb through intumescent rebates.
- Site fit recommended as frame fixings can be hidden.



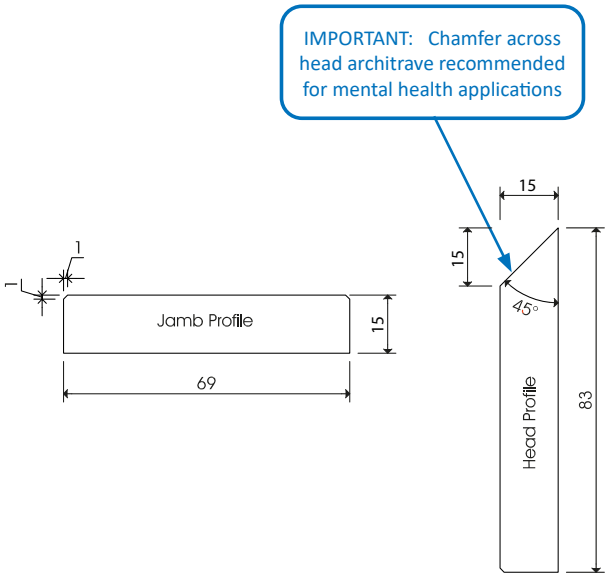
Planted door stop

- This stop is recommended for 100° regular operation – 90° emergency release (i.e. bedroom door).
- 1mm minimum gap to the aluminium profile to ensure the frame intumescent will exepand in the event of fire.
- 2mm Maximum gap to the aluminium profile - *important* - minimises ligature risk and reduces light leakage (see right).
- To achieve the correct gap from the aluminium profile, the door stop should be fitted after the door is hung and in the closed position.
- Length equals internal frame shoulder height.



Architraves / Facings

- Drawings show recommended sections.
- Chamfer across head architrave recommended for mental health applications.
- Machined from hardwood.
- Minimum 15mm thickness for fire performance.
- Supplied loose, cut to length and fitted on site.
- Guidance for methods of sealing the frame to structural opening gap is also given in BS 8214:2016, “Timber-based fire door assemblies. Code of practice” which may be referred to and implemented where appropriate.

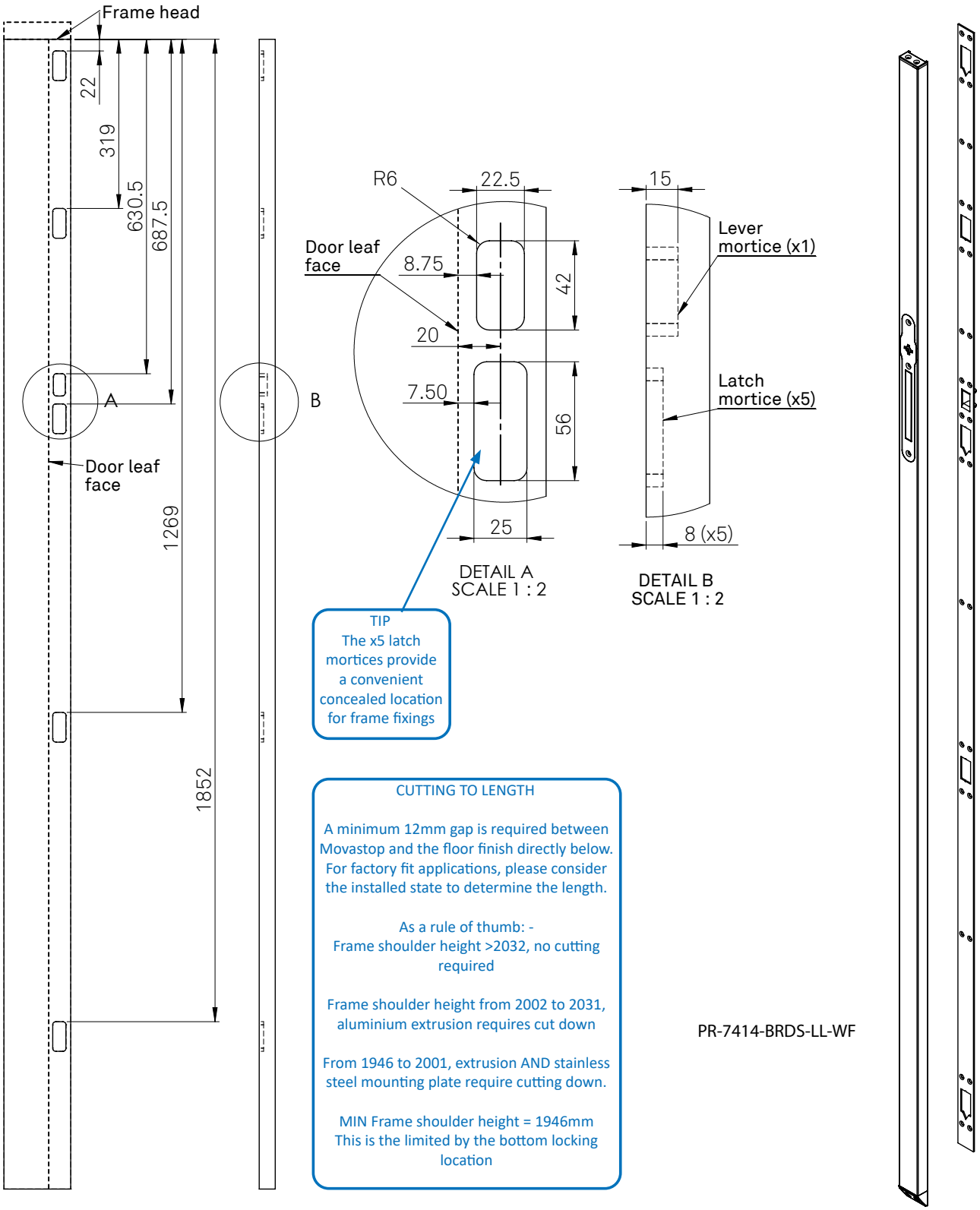


Strike plate compatability

- Due to the 59.5mm offset door centre line, an extended strike will be required.
- When using Safehinge Primera locksets, contact us for further information.

Frame Features and Details - Movastop

Movastop is supplied in a standard length of 2020mm. It is supplied with fixings, Lifeline keys sold separately. The diagram below explains the mortice requirements on the closing jamb.
Refer to the Movastop fitting guide for further information.



TIP
The x5 latch mortices provide a convenient concealed location for frame fixings

CUTTING TO LENGTH

A minimum 12mm gap is required between Movastop and the floor finish directly below. For factory fit applications, please consider the installed state to determine the length.

As a rule of thumb: -
Frame shoulder height >2032, no cutting required

Frame shoulder height from 2002 to 2031, aluminium extrusion requires cut down

From 1946 to 2001, extrusion AND stainless steel mounting plate require cutting down.

MIN Frame shoulder height = 1946mm
This is the limited by the bottom locking location

PR-7414-BRDS-LL-WF

Lipping Specification

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

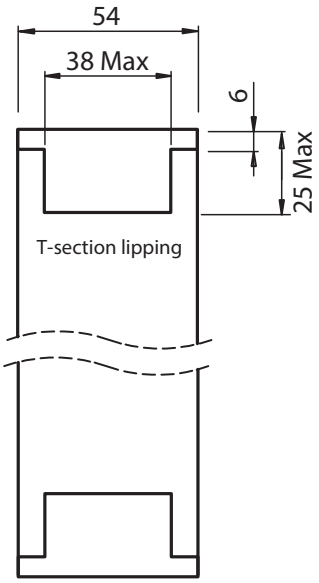
Particle Board cores (Not recommended)

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



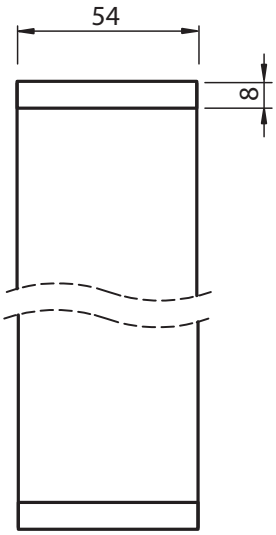
TIP
T-section lipping is essential to ensure mechanical stability of doorset when using particleboard core.

Safehinge has achieved DD171 "Severe Duty" rating with the configuration shown.

IMPORTANT - Flat section lipping tolerance permitted 6-10mm thick

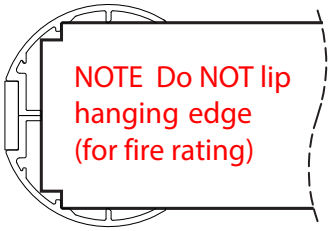
For flat lippings it is permitted to apply maximum 8mm radius to the corners of the lipping at vertical edges to create a maximum 2mm edge profiling

Door top and bottom



Shared detail: All 54mm ALU60 doors

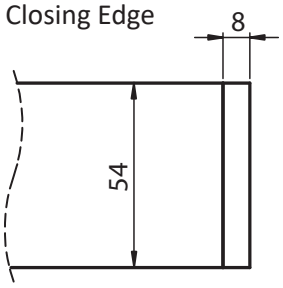
Hanging Edge



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^3

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

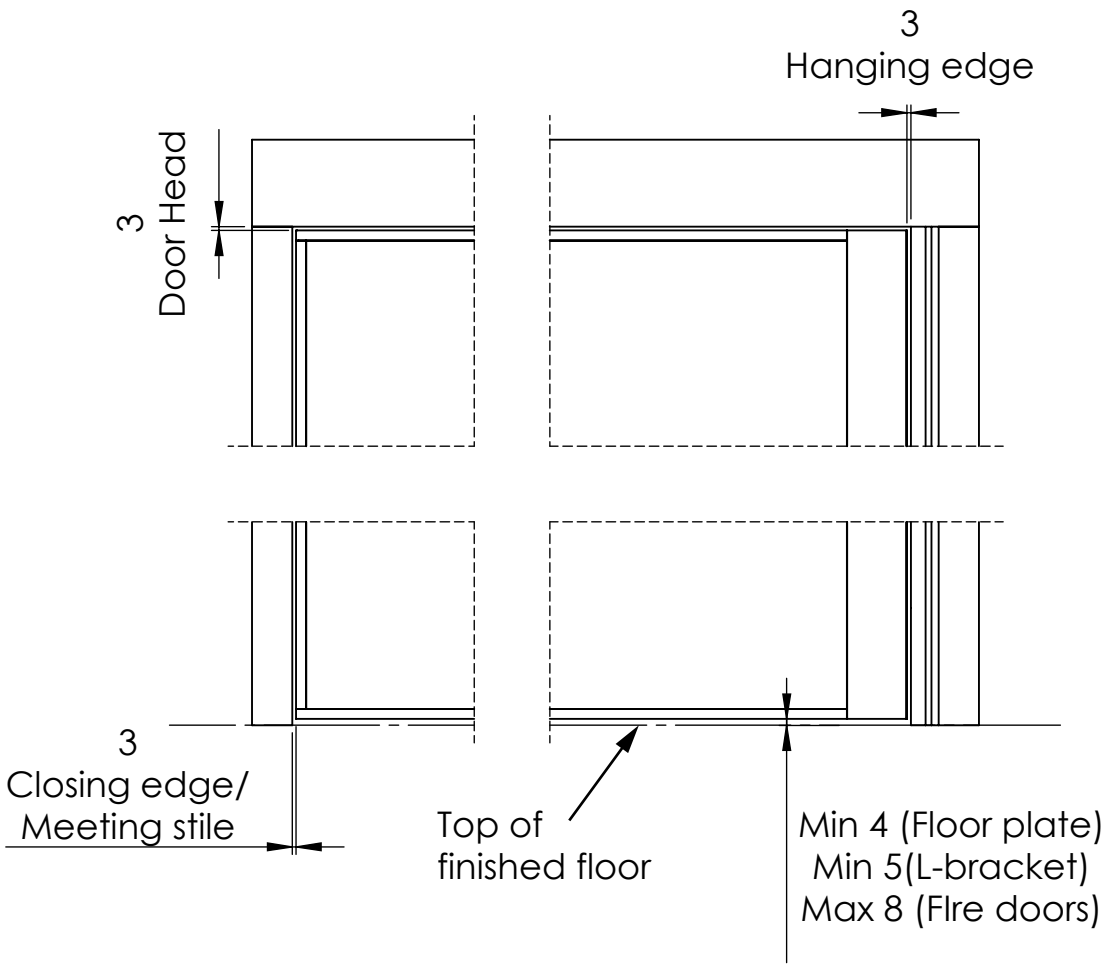
Gluelines: PU, UF, melamine-UF, cross-linked PVA, PVA, PF

Door to frame and floor gaps

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

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

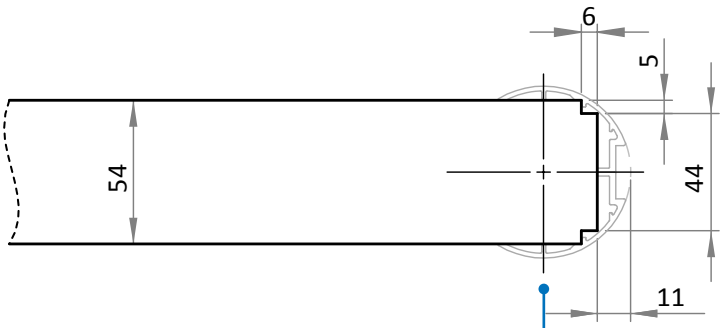
For fire resistance, the maximum gap between the bottom of the door and top of the floor covering is 8mm



Door Leaf Rebate & Mortice Details

IMPORTANT: Care should be taken to position rebates/mortices correctly as these influence the correct function of the whole doorset.

1. Aluminium Edge Profile Rebate

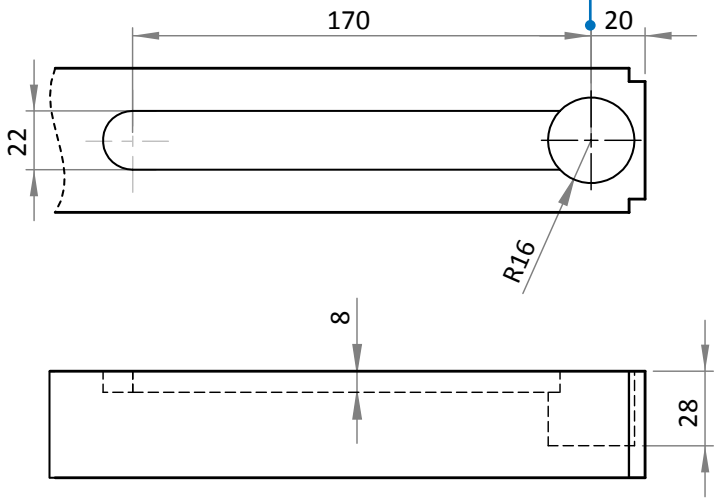


Apply to hanging edge only of door leaf.

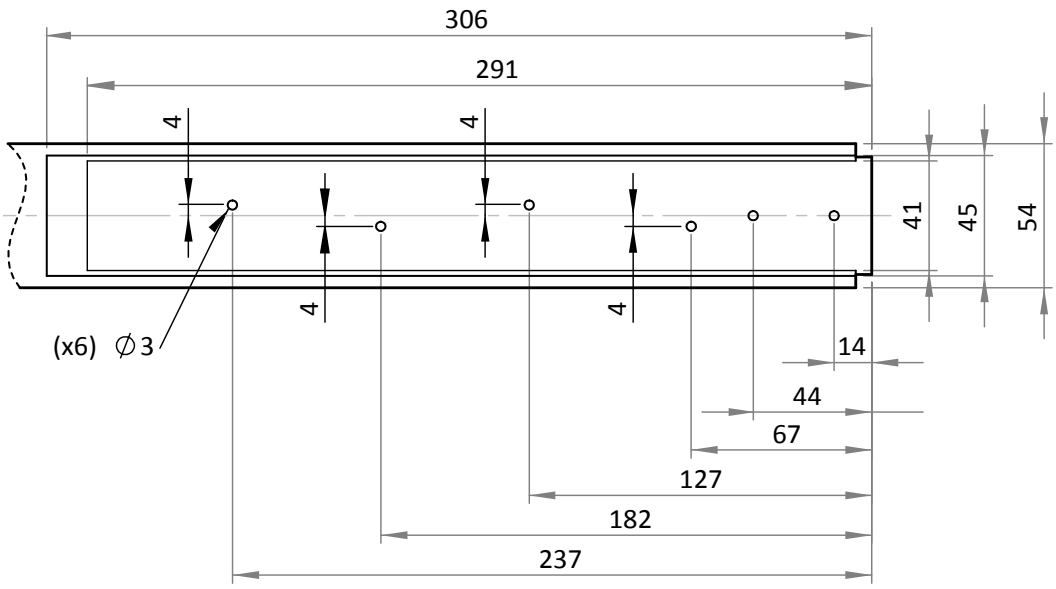
NOTE: hanging edge un-lipped for FD30/FD60 rating.

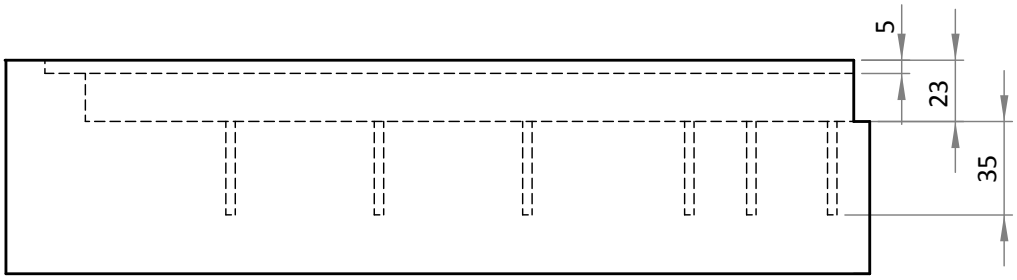
IMPORTANT: aluminium edge profile and pivot strap must have same centre point and be concentric.

2. Bottom Pivot Strap Mortice



3. Top Strap Mortice (critical position)

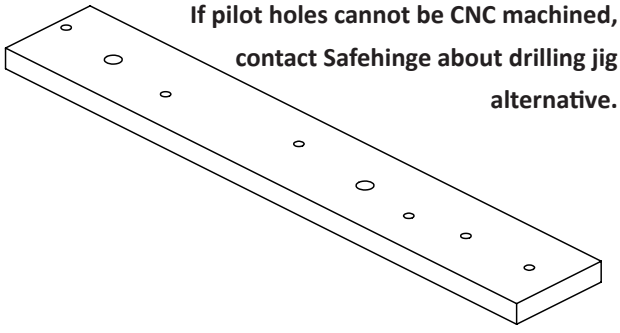




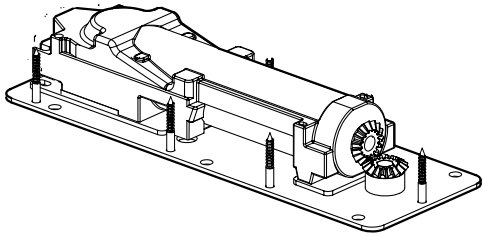
CRITICAL: pilot hole positions must be within a tolerance of +/- 1 mm from the hanging edge and +/-0.5 mm relative to centre line.

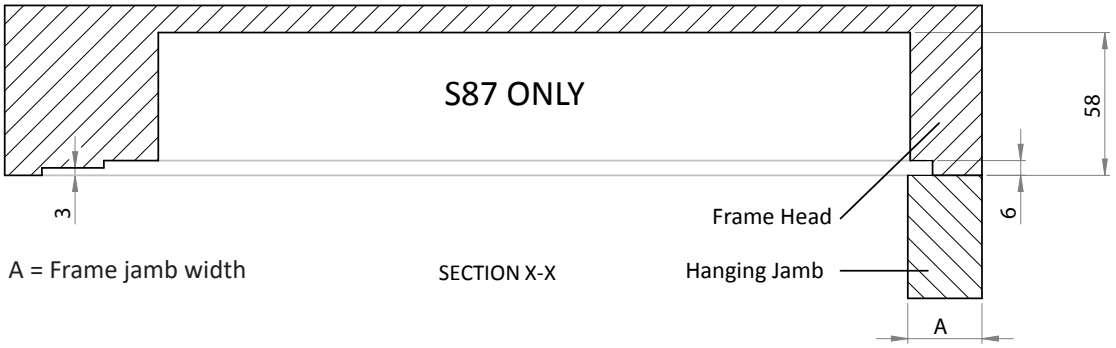
Pilot holes Ø 3mm, sized for No.10 x 1.5” self- tapping screws

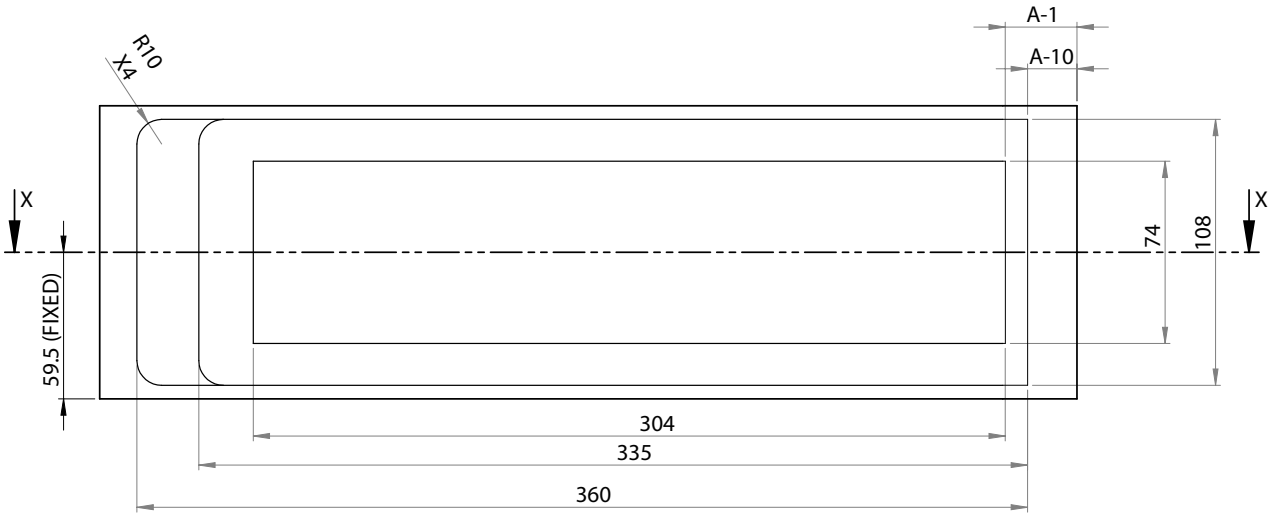
If pilot holes cannot be CNC machined, contact Safehinge about drilling jig alternative.

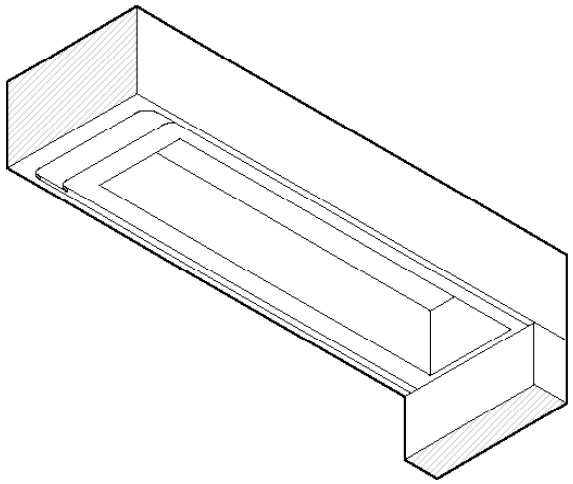


4a. Frame Head Mortice: Sureclose S87





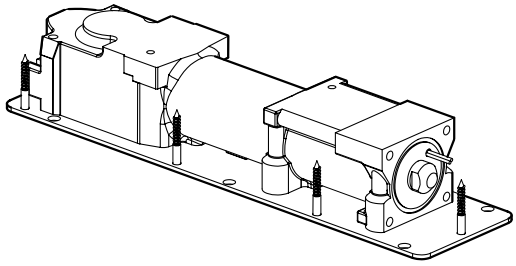


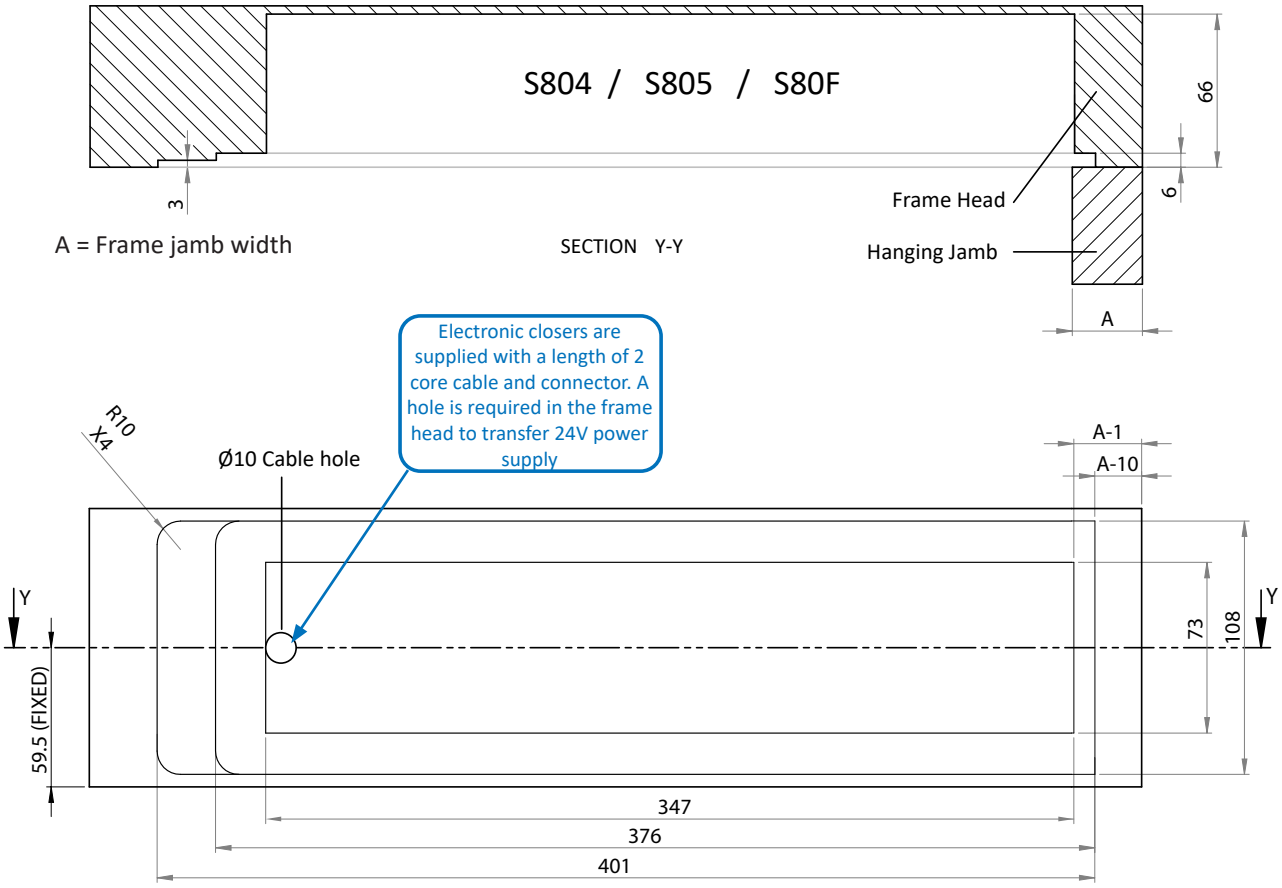


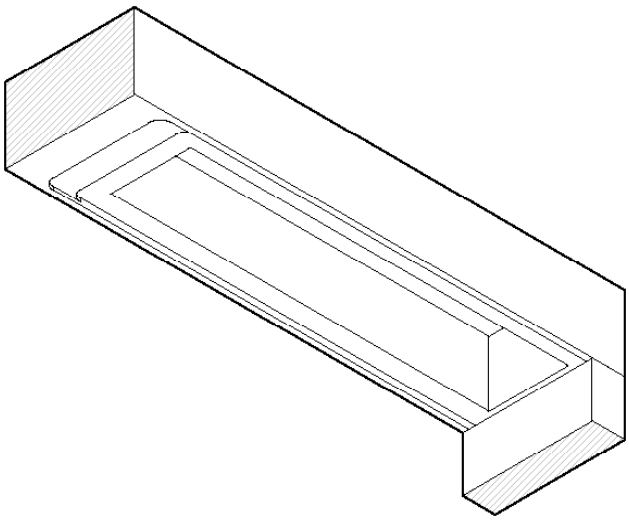
IMPORTANT: Care should be taken to position rebates/ mortices accurately as these influence the function of the whole doorset.

4b. Frame Head Mortice: E-mag & Free swing

Sureclose S804 (E-mag hold open EN4)
Sureclose S805 (E-mag hold open EN5)
Sureclose S80F (Free swing closer)







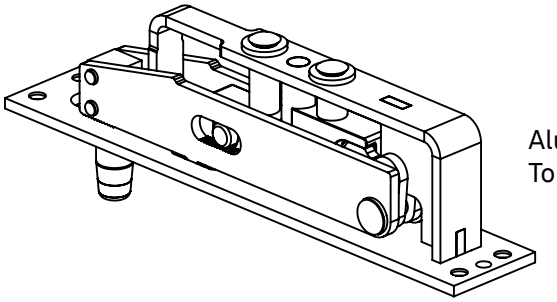
IMPORTANT: Care should be taken to position rebates/ mortices accurately as these influence the function of the whole doorset.

4c. Frame Head Mortice: Top centre pivot

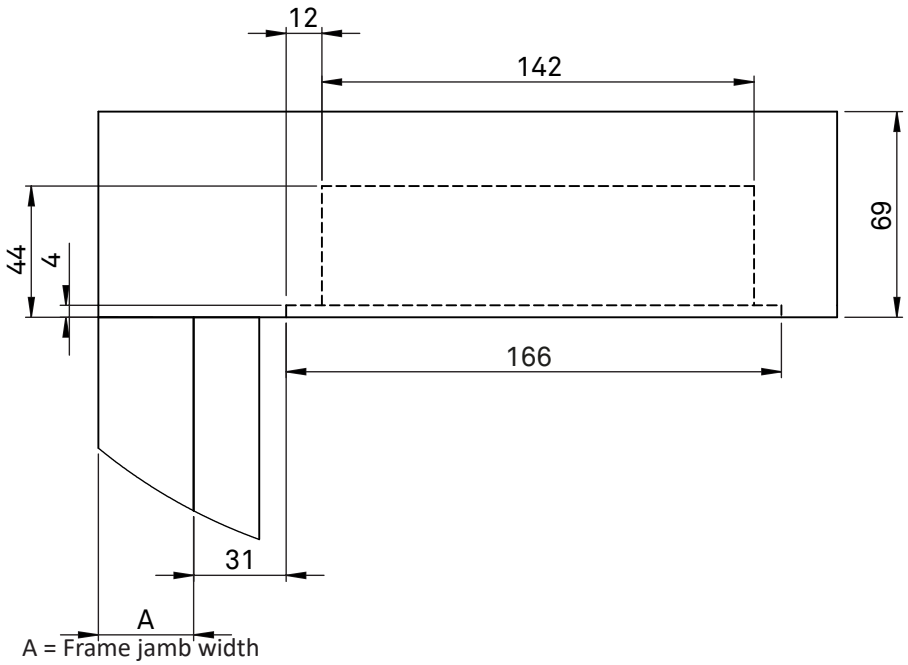
In certain applications, a closer may not be required for the secondary leaf eg. Unequal pair with the secondary leaf normally locked on flush bolts.

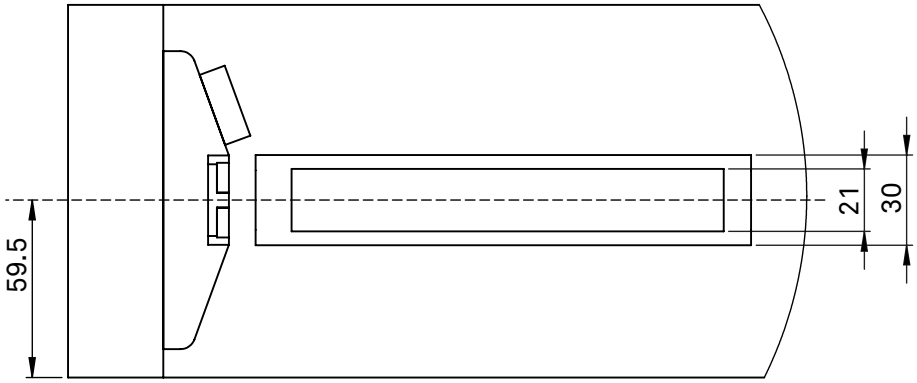
An Alumax top centre pivot can be used. Refer to TD018 ALumax Technical and Manufacturing guidelines for further information.

The kit required for the Secondary leaf would be one of the following: -
ALU60-100 ALU60 (54MM) 2.1M PROFILE WITH FLOOR PLATE
ALU60-150 ALU60 (54MM) 2.1M PROFILE WITH L-BRACKET
OR for mental health applications
SYM60-100 SH60 (54MM) 2.1M PROFILE WITH FLOOR PLATE
SYM60-150 SH60 (54MM) 2.1M PROFILE WITH L-BRACKET



Alumax
Top Centre Pivot



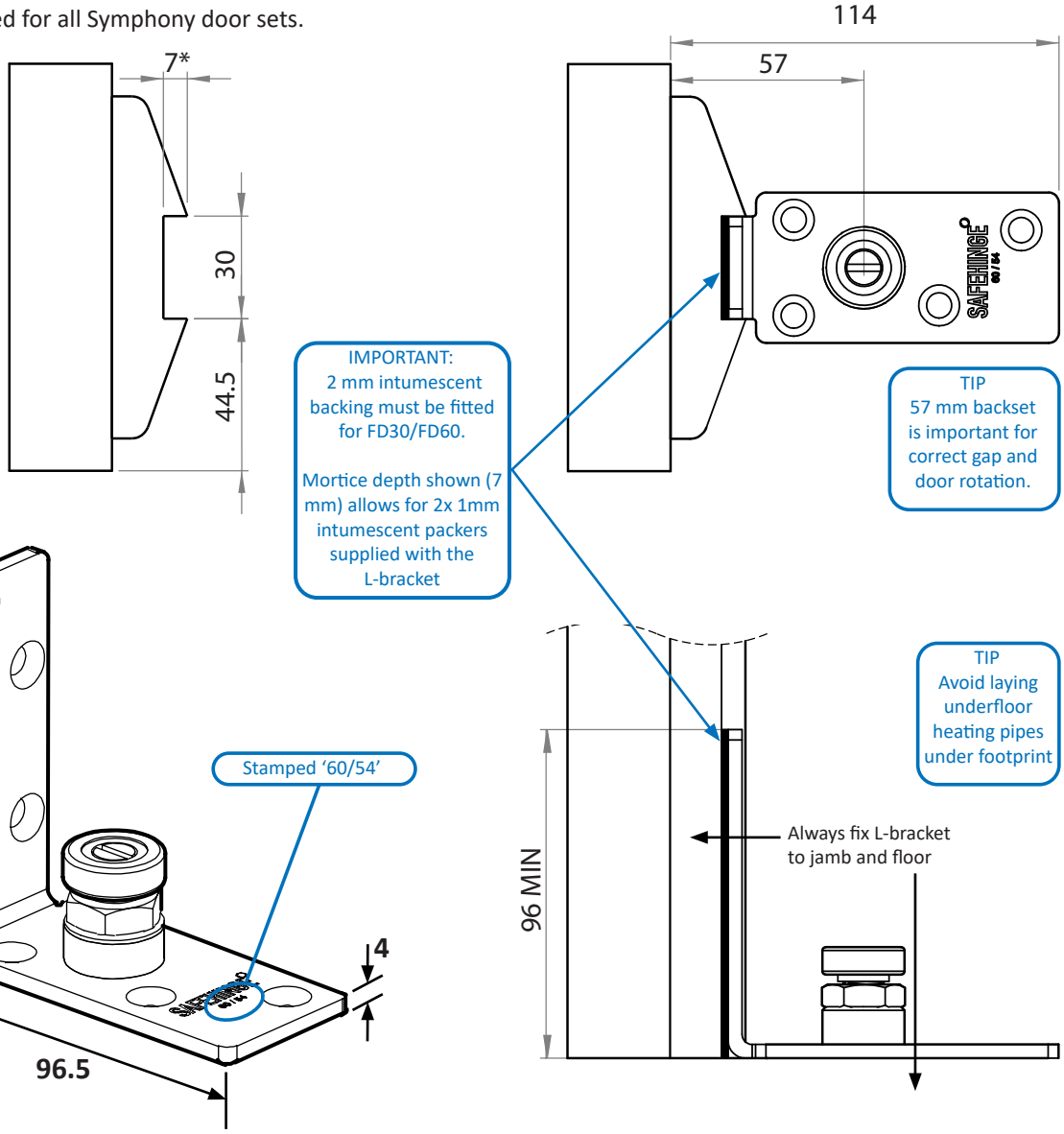


Floor Pivot Positioning

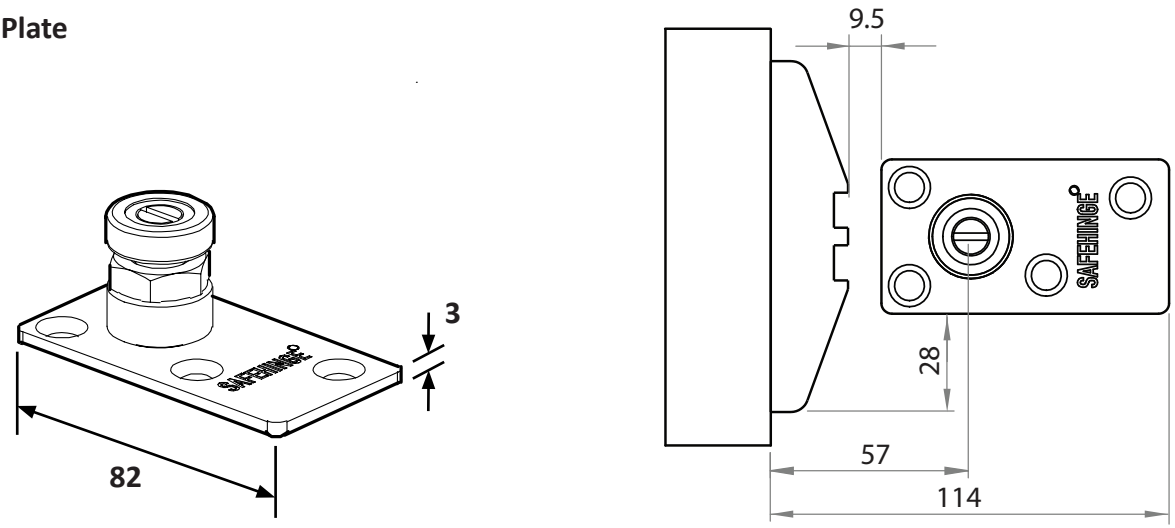
IMPORTANT: Care should be taken to position rebates/mortices accurately as these influence the correct function of the whole doorset.

L-bracket (mortice required in frame add-on)

Recommended for all Symphony door sets.



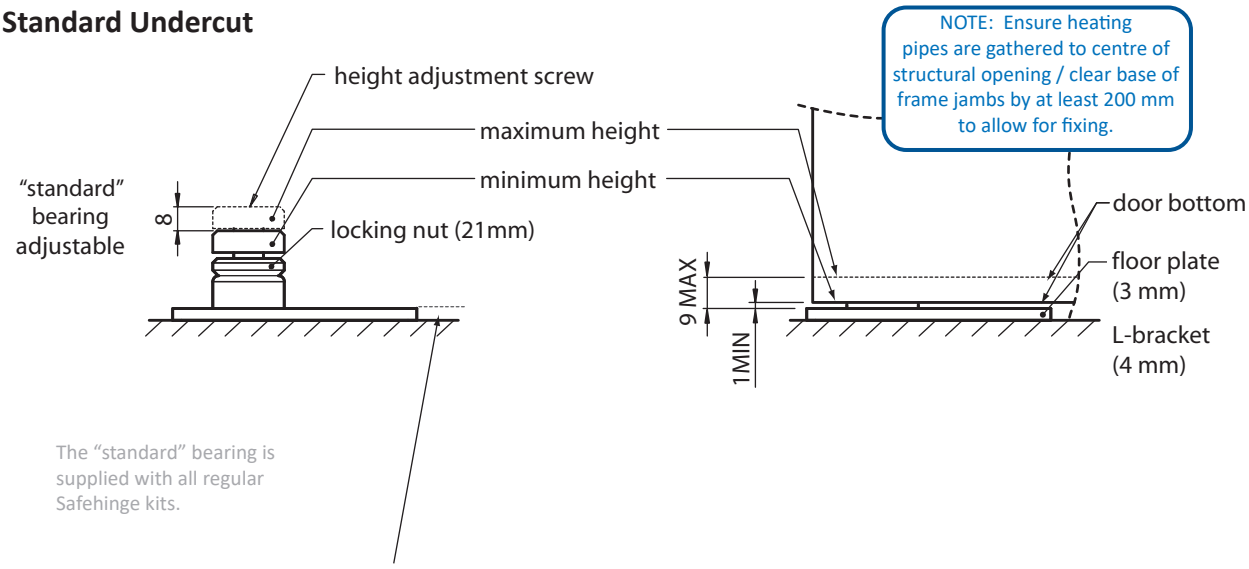
Floor Plate



Undercuts & Floor Pivot Adjustment

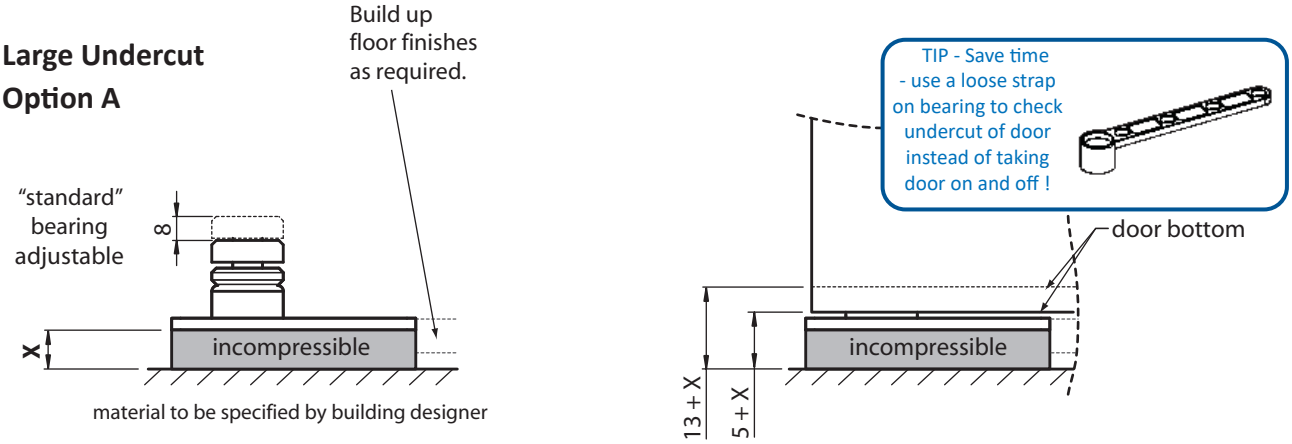
The flooring configurations shown in the following section should be regarded as illustrative only. The exact design and configuration of flooring is not the responsibility of Safehinge Ltd.

Standard Undercut



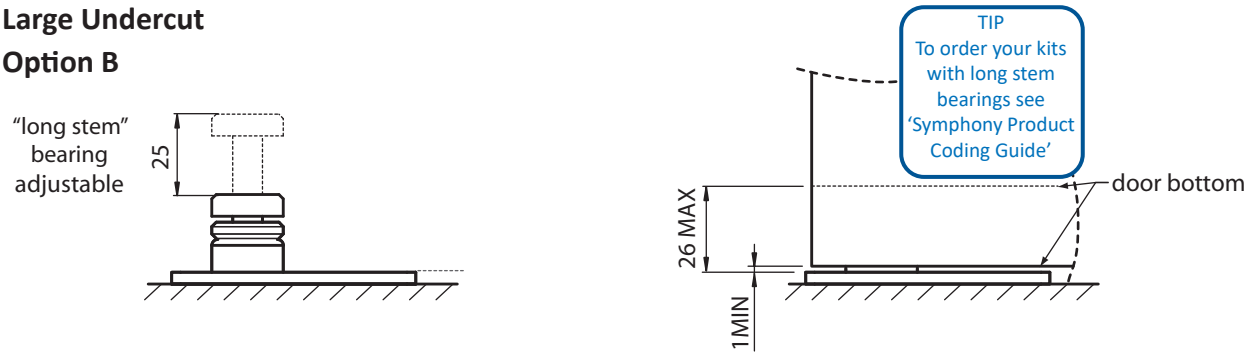
The "standard" bearing is supplied with all regular Safehinge kits.

Large Undercut Option A

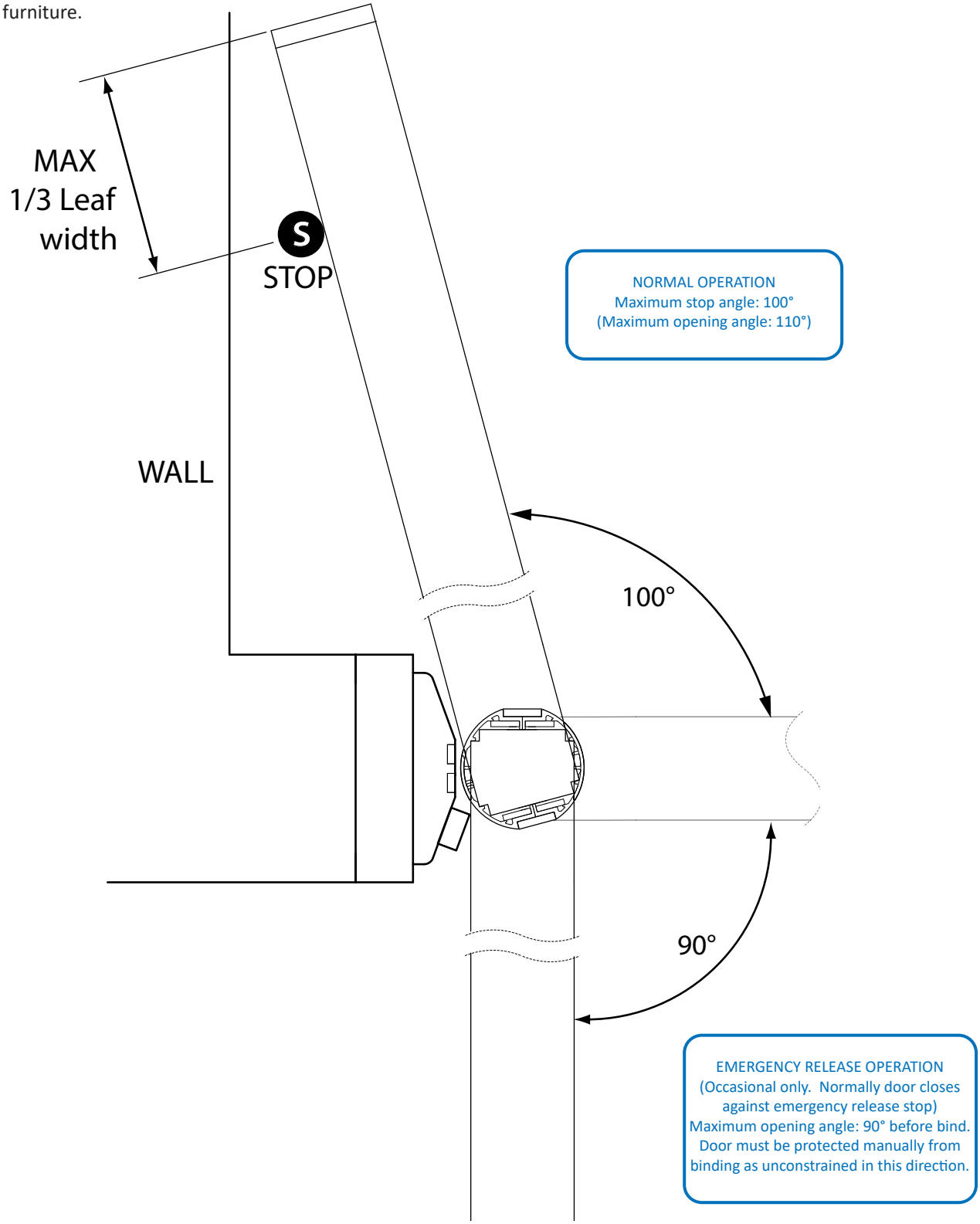


The "standard" bearing is supplied with all regular Safehinge kits.

Large Undercut Option B



Opening Angle Limits

All pivot doors have a maximum opening angle beyond which they will “bind” on the door frame. Binding exerts extreme forces on the door, frame and ironmongery and may lead to damage/failure. Sureclose with back check will typically result in a more controlled door however it is strongly recommended that measures are taken to prevent binding from occurring. A typical emergency release bedroom door is shown below.

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. Eg. Bulkhead or fixed furniture.