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Title

Field of Application for:

Moralt Laminesse FireSound 54mm & 59mm Doorsets

For: 30 or 60 Minutes Fire Resistance

Proprietary Information redacted.

Report No.:

WF409922 Revision B

Issue Date:

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Prepared for:

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The version/revision stated on the front of this Field of Application supersedes all previous versions/revisions and must be used to manufacture doorsets from the stated validity date on this front cover. Previous revisions of the Field of Application cannot be used once an updated Field of Application has been issued under a new revision.

9 Adhesives

The following adhesives must be used in the construction of the doorsets. These may be hand applied or may be applied using an edgebander. With either method it must be ensured that sufficient glue is applied across the entire surface area between the 2No substrates being adhered to guarantee a robust bond. Other manufacturers guidance should be followed, for either installation application used.

Element	Product/Material Type
Door blank core	Manufacturers specification held on file
Door blank facings	
Timber lipping & decorative facings	PVAc, Polyurethane
Hardwood Glazing Aperture Liner	Polyurethane
Hardwood Blocking or 'Inserts'	

10 Hardware

10.1 General

The following section details the permitted scope and constraints for fitting hardware to this door design. The following items of hardware must also bear the UKCA or CE Mark in addition to the requirements outlined in the following sections. The UKCA or CE mark must indicate that the hardware is suitable for fire doors in the classification code and declaration of performance issued by the hardware manufacturer:

- Latches & locks: Test Standard EN 12209
- Single axis hinges: Test Standard EN 1935
- Controlled door closing devices: Test Standard EN 1154
- Electrically powered hold-open devices: Test Standard EN 1155
- Door co-ordinators: Test Standard EN 1158
- Emergency exit hardware: Test Standard EN 179
- Panic exit hardware: Test Standard EN 1125.

Where an item of hardware is not covered by the scope of a relevant harmonised or designated standard, and cannot therefore be UKCA or CE Marked, inclusion of the hardware is only permitted with this doorset design if it meets the specific requirements of the appropriate section within this Field of Application (i.e. supporting test evidence and specification). All items of hardware must be fitted in accordance with requirements of this assessment.

The following sections consider what tested and assessed alternative items of essential and non-essential hardware can be used on the doorset range.

Items of hardware have been considered and approved via the following means:

- The component has been successfully tested to BS 476: Part 22: 1987 or BS EN 1634-1 in a suitably similar type of doorset e.g. timber leaf in timber frame.
- As a result of an assessment of the appropriateness of the item of hardware, based on test evidence not commissioned by Moralt AG.
- As a result of the Certifire approval of the item of hardware

Each section will consider the named item of hardware and detail if there are any limitations associated with:

- Leaf size
- Configuration
- Intumescent seals
- Intumescent protection
- Frame configuration requirements.

No item of hardware should be within 200mm of another item of hardware in the leaf edges unless there is test evidence to demonstrated they can be in closer proximity.

Hardware items should generally be fitted in accordance with the manufacturer's instructions. **However, the parameters and requirements of this assessment always take precedence, including specified protection such as hardware gaskets.** Referenced Certifire approved hardware may be incorporated subject to the design, material and dimensional limitations identified within this assessment report and identified on the relevant Certifire certificate.

10.1.1 Hardwood Blocking or 'Inserts'

Where items of hardware are rebated into the leaf edges, hardwood blocking or inserts of minimum density 640 kg/m^3 must be inserted. Inserts must be 8mm thick and between 22 – 30mm wide to fit between the facings, inserts must be fitted prior to lippings and be adhered in position with PUR adhesive. Blocking must be a minimum of 50mm longer than the hardware (i.e. project 25mm at both ends).

Blocking must be installed behind concealed hinges, concealed closers and lock/latch bodies.

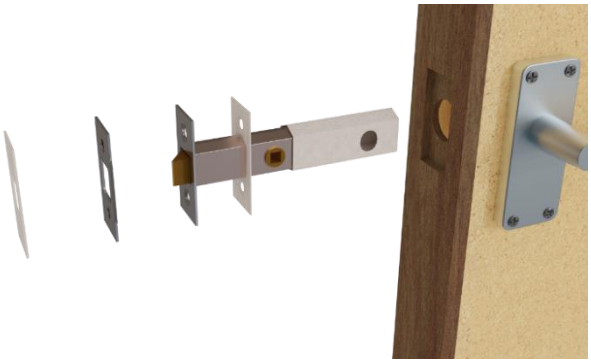
10.2 Intumescent to Hardware

The intumescent materials used to protect hardware that have been tested and assessed for this doorset design are detailed below. Note that any one of the product/manufacturer options listed in the table may be used in the specific application noted. However, only 1No manufacturer should be considered per doorset application.

The door gap perimeter intumescent seal specifications are documented in conjunction with the leaf envelope size limitations in section 4.4. Intumescent specifications apply equally to 30 and 60 minute applications unless otherwise stated.

Item	Location	Product/Manufacturer
Hinges	Under all hinge blades	1. 1mm Interdens – Dufaylite Developments Ltd. 2. 1mm MAP paper – Lorient Polyproducts Ltd. 3. 1mm Pyrostrip 300 – Mann McGowan Ltd. 4. 1mm Therm-A-Strip – Intumescent Seals Ltd. 5. 1mm ST60 Graphite gasket material - Sealed Tight Solutions Ltd
Lock/latches	Under forend & keep and encasing/protecting latch body for all configurations	
Concealed overhead closers	Encasing the entire body of the concealed closer and slide arm including the back surface of the face plate	See section 10.7.2
Concealed Hinges	Lining rebates in leaf and frame for hinge bodies	1mm thick gasket set - Mann McGowan Kit ref: MMG567
Cableways and cable loop	See section 10.9.11 for details	
Flush bolts	Encasing the entire body of the flush bolt including the back surface of the face plate	1. 2mm Interdens – Dufaylite Developments Ltd. 2. 2mm MAP paper – Lorient Polyproducts Ltd. 3. 2mm Pyrostrip 300 – Mann McGowan Ltd. 4. 2mm Therm-A-Strip – Intumescent Seals Ltd. 5. 2mm ST60 Graphite gasket material - Sealed Tight Solutions Ltd
Dropseals	Fitted to the top face of the drop seal	

Example of hinge protection detail



Example of lock & latch protection detail

Gaskets must be fitted where required by supporting evidence, for example, test evidence or Certifire certificates. If gaskets are not required by the supporting evidence but are within this Field of Application, the requirements of this Field of Application take precedence.

Where it is stated that intumescent is not required for a particular element of hardware, it is permitted to use up to 2mm thick MAP, Interdens or graphite-based gasket tested for the particular application [as appropriate for the hardware]. It is the opinion of Warringtonfire that the additional protection will not detract from the fire resistance performance under test conditions.

Within the following hardware sections references are given to Mann McGowan and/or Moralt intumescent packs for specific hardware items which may be used in preference to the details above.

10.3 Essential Hardware

The following table details the essential hardware for the various doorset configurations that are referenced in this assessment.

Configuration	Hardware
LSASD	• Latch • Handle • Hinges • Self-closing device (closer)
ULSASD	• Hinges • Self-closing device (closer)
LSASD+OP	• Latch • Handle • Hinges • Self-closing device (closer)
ULSASD+OP	• Hinges • Self-closing device (closer)
LSADD	• Latch • Handle • Hinges • Self-closing device (closer) • Flush bolt
ULSADD	• Hinges • Self-closing device (closer)
LSADD+OP	• Latch • Handle • Hinges • Self-closing device (closer) • Flush bolt
ULSADD+OP	• Hinges • Self-closing device (closer)

Notes:

1. See section 10.9.4 for details of door selectors, required where astragals are specified.

10.4 Latches & Locks

Unless explicitly detailed within the sections below only 1No. lock or latch shall be applied within any individual doorset. When fitted the lock or latch body shall be installed within the vertical edge of the door leaf in all cases, at a height as detailed within the relevant section below. Refer to specific notes contained within each section for further considerations on lock or latch type.

10.4.1 Single Point Engagement

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: LSASD, LSASD+OP, LSADD, LSADD+OP

The table below details the tested latches and locks that are approved.

Element	Manufacturer & Product Reference
Locks & latches	4. Ingersoll Rand mortice latch 5. Arrone 3 lever mortice latch 6. Glutz mortice deadlock Ref:1052.7 7. Glutz mortice deadlock Ref:4525 8. Glutz mortice deadlock Ref:4621, 7/60 9. Assa Abloy EL520 mortice latch 10. Assa Abloy 'Vingcard Essence' Entry System Locksets (see section 10.4.1.3 below): 1. Assa Abloy 'Vingcard Signature MPA 4G RFID' 2. Salto LE7 lockset with electric escutcheon 3. Salto LE7 lockset and strike plate 4. Salto LE8 5. Advance Trillium RFID 6. Assa Abloy Inoxi handleset operating a EL520 mortice latch and EL520 keep. 7. Häfele Dialock handleset 8. DormaKaba RT Plus handleset

Alternatively, components with the following specification are also deemed acceptable.

Single and double leaf doorsets

Element	Specification
Maximum forend and strike plate dimensions	235mm high x 25mm wide x 4mm thick
Maximum body dimensions	165mm high x 100mm wide x 18mm thick
Intumescent protection	see section 10.2
Materials	All parts essential to the locking/latching action (including the latch bolt, forend and strike) to be steel, stainless steel or brass with a melting point ≥ 800^0 C

Notes:

1. In all instances the location of the handle must be between 850 – 1200mm from the threshold.

10.4.1.2 Abloy Oy Mortice Latches

At the specific request of Moralt AG, the following range of Abloy Oy latches have been assessed based on test WF364240.

The tested EL520/100 represents the most onerous lockcase design, having the largest lockcase dimensions and backset of the range below. The EL520 also incorporates electromechanical components and was tested in WF364240 complete with the associated cable loop and cableway installed which represents a more onerous condition in fire resistance terns compared to mechanical lock variants.

The tested EA329 strike plate represents the largest strike plate design including the largest apertures for bolts.

Based on the above and provided that the lock and forend dimensions are not increase over those tested, it is reasonable to assume the following range of Abloy Oy latches and strike plates may be incorporated in the FireSound 54mm and 59mm designs for both 30 and 60 minutes integrity performance.

The intumescent protection detailed in section 10.2 must be installed protecting all locksets.

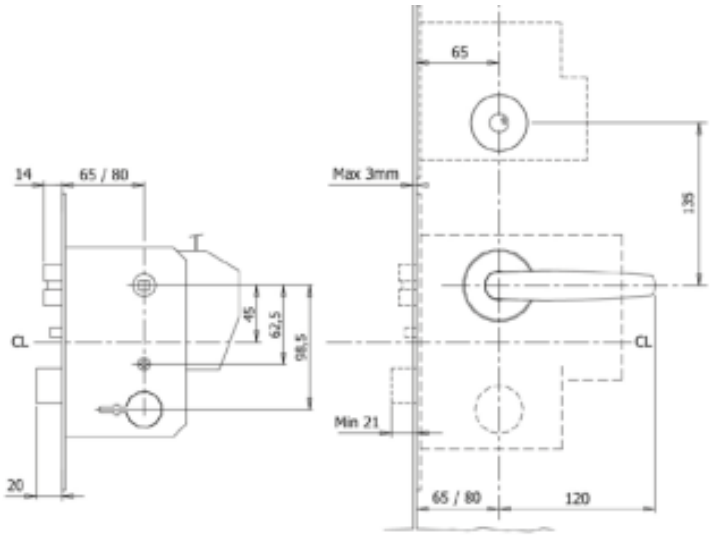
Motor Locks	Solenoid Locks	Mechanical Locks	Strike Plates	
EL520	EL560	EL160	EA321	EA327
EL532	EL561	EL162	EA322	EA328
EL522	EL562	EL163	EA323	EA329
EL524	EL563	EL165	EA324	EA330
EL534	EL564	EL360	EA325	EA331
EL535	EL565	EL362	EA326	EA332

10.4.1.3 Entry System Locksets

A number of different entry system locksets have been proven to not be a cause of premature failure in the tests cited in section 3. Provided the card reader or digilock element is surface mounted to the leaf face requiring no additional holes through the leaf thickness, the installation of these elements would not be expected to be a cause of premature integrity failure. The entry system hardware must conceal the latch spindle protecting the through holes from attack by fire in the way a lever handle on its rose would.

Assa Abloy 'Vingcard'

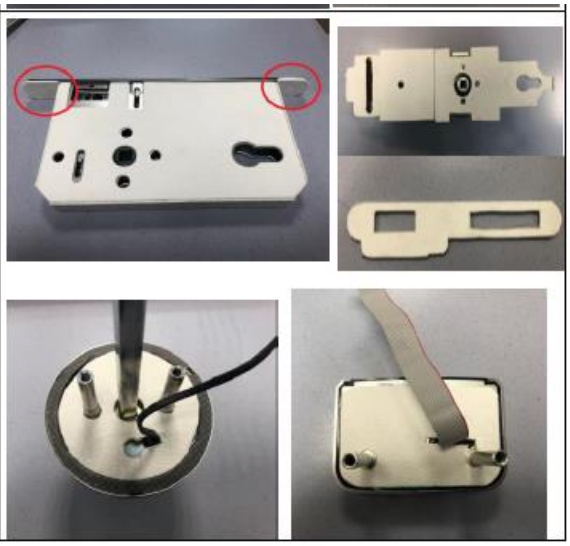
The Assa Abloy 'Vingcard Signature MPA 4G RFID' with Assa Abloy steel handles ref: 2035 was successfully tested in DMT-50-1010, installed within the rebates shown below, the lower lockcase is of essentially the same dimensions as those given in the table above, further justifying the use of alternative 'Euro' size locksets. Where the Assa Abloy 'Vingcard Signature MPA 4G RFID' is used the Mann McGown MMG630 intumescent pack must be used protecting all sides of the required mortices and behind the forend and keep.



Onity Advance Trillium

Based on the results of Tecnalia test 088745-002-1-a, cited in section 3 the Onity card reader and handle ref: Advance Trillium RFID may be installed, subject to the following intumescent protection being installed.

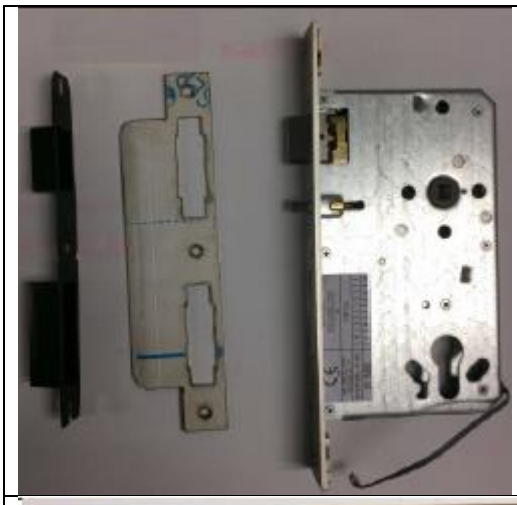
1mm thick 'Interdens 15' must be installed as tested referred to as 'option 2' - encasing the lockcase, under forend & keep, inside card reader mounting plate, handle rosette and under RFID reader mounting plate.

Option 2:	Protection: "Interdens 15" 1 mm thick in mortise, faceplate, strike, inside mounting plate, rosette and RFID reader. Location of the latch: 1675 mm from the bottom of the door. Latch disengaged.	

Salto locksets ref LE7 and LE8

Based on the results of tests WF383782 and WF383783, cited in section 3 the Salto LE7 and LE8 locksets may be installed, subject to the following intumescent protection being installed.

The Mann McGown MMG651 & MMG652 intumescent packs (Moralt references M-MVPM_DB_T-020-08 & M-MVPM_DB_T-020-05) comprised of 1mm thick Interdens 15 must be installed as tested - encasing all faces of lockcase and under the forend & keep.

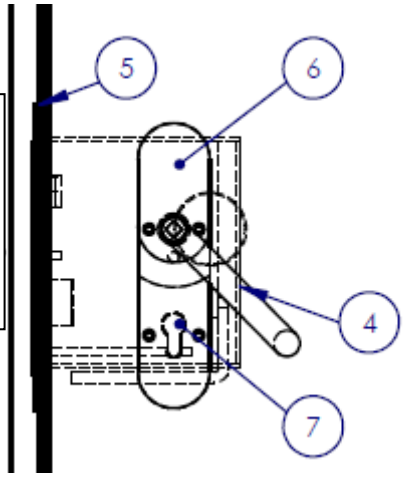
	LE7 Lock case and keep showing tested keep box
	E96P0U001M48K Handleset and electronic escutcheon
	E9150RUIMB49 Handleset and electronic escutcheon

Assa Abloy Inoxi handleset and EL520 mortice latch

Based on the results of DMT-DO-50-1148, cited in section 3, the Inoxi handleset (ref: 3-19/242/115 PZBL DIN Exit) operating an EL520 mortice latch and EL520 keep may be installed, subject to the following intumescent protection being installed.

- Lockcase must be protected with the tested intumescent pack ref: ITL-Abloy-EL560-100 – 2mm thick gaskets.

Key:
4 – EL520 latch
5 – Keep
6 - Inoxi Handle
7 - Cylinder



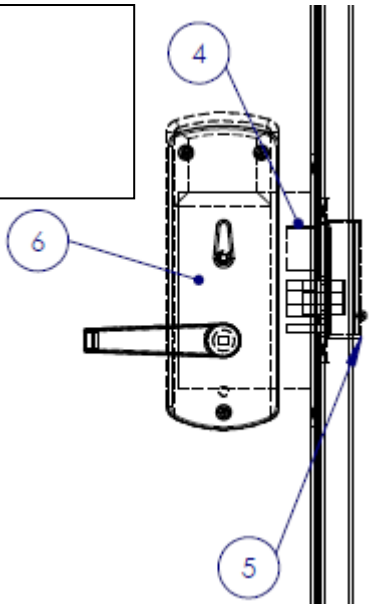
Hafele Dialock DT600/DT700/DT710 Handles

These products may be used as lever handles to operate rebated locks/latches. These surface mounted products, and their accessories may not replace any part of the latch(es) as assessed in section 10.4.1 and must be installed with the Mann McGowan MMG633 (Moralt reference M-MVPM_DB_T-011-06), MMG655 (Moralt reference M-MVPM_DB_T-011-04.1) & MMG656 (Moralt reference M-MVPM_DB_T-011-04.2) intumescent packs.

DormaKaba RT Plus handleset

Specimen 7 within test DMT-DO-50-1148 incorporated a DormaKaba RT Plus handleset with protective steel plate (ref: PS7901012ER30-626) operating a rebated mortice latch protected with the Mann McGown MMG631 intumescent pack. This surface product may be used as lever handles to operate rebated locks/latches. This product and accessories may not replace any part of the latch(es) as assessed in section 10.4.1.

Key:
4 – Latch Body
5 – Keep
6 - RT Plus Handleset



10.4.2 Cylinders

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1 and 2 (and 3 for 30 minute applications)

Configurations: LSASD, LSASD+OP, LSADD, LSADD+OP

The table below details the tested cylinders that are approved.

Element	Manufacturer & Product Reference
Cylinders	• Assa Abloy CY326U HCr

Alternatively, components with the following specification are also deemed acceptable.

- Where required for use, the cylinder must be constructed of either brass or steel with a melting point in excess of 800^0C.
- The cylinder must be compatible with the lock/latch.
- Cylinder dimensions may be up to 33mm high x 17mm wide at the maximum dimension and may be of euro profile or oval.
- Single and double cylinders, along with cylinder & turn are permitted.
- Door preparation for single cylinders shall penetrate only half the door thickness.
- Intumescent protection and tightness of fitting:
    - If the lock body is not protected with an intumescent material, the maximum clearance between leaf and cylinder is 1mm to each edge.
    - If the lock body is protected with an intumescent material, maximum clearance between leaf and cylinder is 3mm to each edge.
    - 1mm thick MAP or non-pressure forming graphite intumescent around the cylinder is optionally permitted.

10.5 Handles

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: all permitted in section 4.4.2

The table below details the tested handles that are approved.

Element	Manufacturer & Product Reference
Handles	• Aluminium lever type handles • Steel lever type handles

Alternative handles are permitted providing they meet the specification given below:

- Steel, stainless steel, brass, aluminium or bronze are permitted.
- Surface fixings or through fixings are permitted. If through fixed there must be no more than 0.5mm clearance between the hole and the fixing.

- The hole through the leaf to facilitate the spindle must be no greater than 20mm diameter.

The design may be either lever on rose or lever on back plate up to the following maximum sizes:

- Lever on rose with a rose diameter up to 54mm.
- Lever on back plate with a back plate size up to 243mm high x 56mm wide
- Lever handle length 250mm

The handle must be compatible with the lock/latch, such that the closing action of the doorset is not impeded.

Alternative escutcheons are permitted providing they meet the specification given below:

- Steel, stainless steel, brass, aluminium or bronze are permitted.
- Surface fixings or through fixings are permitted. If through fixed there must be no more than 0.5mm clearance between the hole and the fixing.
- The escutcheon may be up to Ø52mm overall and up to 8mm thick.

10.6 Hinges

10.6.1 Butt hinges

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: LSASD, ULSASD, LSASD+OP, LSADD, ULSADD, LSADD+OP

The table below details the tested butt hinges that are approved.

Element	Manufacturer & Product Reference
Hinges	• Royde & Tucker H207 concealed steel butt hinges • Royde & Tucker H101 lift-off type hinges • TDSL bearing butt type hinges

Alternatively, components with the following specification are also deemed acceptable.

Element	Specification
Blade height:	90 - 120mm
Blade width (excluding knuckle):	30 - 35mm
Blade thickness	2.5 - 4mm
Fixings:	Minimum of 4 No. 30mm long No. 8 or No.10 steel wood screws per blade
Materials:	Steel or stainless steel

In all instances, the hinges must have the following specification.

Element		Specification	
Hinge positions:	If 3 hinges are required:	Top	100 –180mm from the head to top of hinge
		2nd	Minimum 200mm from top hinge or centrally fitted between top and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
	If 4 hinges are required:	Top	100-180mm from the head to top of hinge
		2nd & 3rd	Equispaced between top and bottom or 2nd hinge 200mm from top hinge and 3rd hinge equally spaced between 2nd and bottom hinge
		Bottom	150 - 250mm from the foot of leaf to bottom of hinge
Intumescent protection:		See section 10.2	

Note:

Leaves less than 2400mm (h) must be hung on a minimum of 3 hinges. Leaves ≥2400mm (h) must be hung on 4 hinges.

10.6.2 Concealed Hinges

Concealed hinges have been successfully tested in the LAMINESSE FireSound 54mm door design for 60 minute applications in test WF382394.

10.6.2.1 Simonswerk Tectus Concealed Hinges

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1 only

Configurations: LSASD, ULSASD, LSADD & ULSADD

The table below details the tested concealed hinges that are approved.

Element	Manufacturer & Product Reference
Hinges	• Simonswerk Tectus TE5273.SSE Concealed Hinges

The single action hinges must be fitted with the tested 1mm thick BASF exterdens Graphite ‘TE 527 - 3D’ intumescent pack.

The hinges must be fixed in accordance with manufacturer’s instructions including using the supplied hinge fixings and instructions for morticing and taking into account the necessary details for fire resistance as stated above.

The mortice for concealed hinges must be no closer than 50mm to any aperture or other mortice or recessed area within the door leaf.

The hinges must be used in conjunction with a twin strip perimeter intumescent arrangement where one of the seals remains continuous past the hinge blade in the frame reveal or leaf edge.

The door frame must be hardwood (frame type1) of minimum thickness 38mm and minimum density 640kg/m^3.

Tectus concealed hinges are to be positioned as follows. It is not permitted to fit any more hinges than that stated in the table below, as appropriate for the required leaf height.

Element		Specification	
Hinge positions:	3 Hinges: Leaf height: 1201-2400mm	Top	150 – 200mm from head of leaf to top of hinge
		2nd	Min - 200mm from top hinge Max - centrally between top and bottom hinge
		Bottom	150 – 300mm from foot of leaf to bottom of hinge
	4 Hinges Leaf height: >2401mm	Top	150 – 200mm from head of leaf to top of hinge
		2nd	Min - 200mm from top hinge Max - centrally between top and 3rd hinge
		3rd	Min – 200mm from bottom hinge Max – centrally between 2nd and bottom hinge
		Bottom	150 – 300mm from foot of leaf to bottom of hinge
Intumescent protection:		The tested 1mm thick BASF exterdens Graphite 'TE 527 - 3D' intumescent pack	

10.6.2.2 Bartels Pivota Concealed Hinges

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1 only

Configurations: LSASD, ULSASD, LSADD & ULSADD

The table below details the tested concealed hinges that are approved.

Element	Manufacturer & Product Reference
Hinges	• Bartels GmbH - Pivota DXS 100 3-D design

The single action hinges must be fitted with the tested Mann McGowan kit ref: MMG567.

The hinges must be fixed in accordance with manufacturer's instructions including using the supplied hinge fixings and instructions for morticing and taking into account the necessary details for fire resistance as stated above.

The mortice for concealed hinges must be no closer than 50mm to any aperture or other mortice or recessed area within the door leaf.

The hinges must be used in conjunction with a twin strip perimeter intumescent arrangement where one of the seals remains continuous past the hinge blade in the frame reveal or leaf edge.

The door frame must be hardwood (frame type1) of minimum thickness 38mm and minimum density 640kg/m^3.

Pivota concealed hinges are to be positioned as follows. It is not permitted to fit any more hinges than that stated in the table below, as appropriate for the required leaf height.

Element		Specification	
Hinge positions:	2 Hinges: Leaf height: ≤2440mm	Top	180 – 210mm from head of leaf to top of hinge
		Bottom	140 – 180mm from foot of leaf to bottom of hinge
	3 Hinges Leaf height: >2440mm	Top	180 – 210mm from head of leaf to top of hinge
		2nd	Max - centrally between top and bottom hinge
		Bottom	180 – 210mm from foot of leaf to bottom of hinge
Intumescent protection:		The tested Mann McGowan kit ref: MMG567	

10.7 Doorset Self Closing

Doorset automatic self-closing can be provided by:

- Overhead face fixed closers
- Concealed overhead closers.

Automatic doorset self-closing devices such as transom mounted, and offset pivots used with floor springs and jamb mounted concealed closers are not considered acceptable for use with the FireSound 54mm or 59mm doorset range.

10.7.1 Overhead Face Fixed Closer

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All in section 4.4.2

The table below details the tested overhead face-fixed closers that are approved.

Element	Manufacturer & Product Reference
Overhead face-fixed closers	• Dorma TS83V overhead-type • Rutland TS3204 overhead-type • Dorma TS71 overhead-type • Arrone AR1500

Alternatively, components with the following specification are also deemed acceptable.

- Certifire approved overhead face-fixed closers for 60-minute fire resistance applications on timber doors of a minimum 54mm thickness and timber frames.

Note:

It must be ensured that the closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal.

10.7.2 Concealed Overhead Self Closing Device

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: LSASD, ULSASD, LSADD & ULSADD

The table below details the tested concealed overhead closers that are approved.

Element	Manufacturer & Product Reference	Closer Body Dimensions	Closer Slide Arm Dimensions
Concealed overhead closer	• Geze GmbH – Boxer EN2-4 • DormaKaba ITS96 • Rutland ITS11204	240(l) x 32(w) x 45(h)	440(l) x 22(w) x 12(h)

Note:

1. It must be ensured that the concealed overhead closer is of sufficient strength and power to ensure the door leaf/leaves fully engage into the frame reveal.
2. Where concealed closers are installed, the door frame stop at the head must be a minimum of 15mm high.
3. Intumescent protection shall be as tested using the relevant intumescent protection given below:
   - Boxer EN2-4 - MMG629 Pack
   - ITS96:
     a) MMG107 for body
     b) MMG109 for slide arm
     c) MMG579 Forend Top Cover
   - Rutland ITS11204 - Rutland set ref: IP.114 2mm intumescent kit for ITS11204.
4. The dimensions of the concealed overhead door closer must not exceed the dimensions given within the table above.

10.8 Bolts

10.8.1 Flush Bolts

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: LSADD, ULSADD& LSADD+OP

The table below details the tested flush bolts that are approved.

Element	Manufacturer & Product Reference
Flush Bolts	• Ironmongery Direct stainless steel shoot bolts Ref. 6399674 • Zoo Hardware Ref: ZA S03RSS

Flush bolts may be incorporated centrally into the top and bottom of one meeting edge, providing the following maximum dimensions are not exceeded and the components are fitted opposite the edge fitted with intumescent strips:

- 250mm long x 20mm deep x 20mm wide
- Where Yeoman Shield/Lorient Polyproducts Ltd. PVC door edge protectors are installed, flush bolts are limited to 250mm long x 20mm deep x 20mm wide as tested in LOR1524.
- Where CS Edge Protectors/Acrovyn Wrap are installed, flush bolts are limited to ≤210mm long x 20mm deep x 20mm wide as tested in IF11010B.

Flush bolts must be steel, and the mortice must be as tight to the mechanism as is compatible with its operation. All edges of the mortice of the keep and body must be protected with intumescent gaskets as specified in section 10.2. Alternatively, the hardware manufacturers tested gaskets may be used.

10.8.2 Surface Mounted Face Fixed Bolts

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: all in section 4.4.2

Surface mounted face fixed bolts constructed from steel, stainless steel, aluminium or bronze may be fitted to the top and bottom of one leaf within a double doorset design, providing the following maximum dimensions given below are not exceeded and the components are fitted at least 50mm from the meeting edge:

- 300mm long x 20mm wide (footprint).

Intumescent protection is not required.

10.9 Non-Essential Hardware

Only the following items of non-essential hardware are permitted in addition to the prescribed essential hardware as detailed within section 10.3.

10.9.1 Pull Handles

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All in section 4.4.2

Steel, stainless steel or bronze handles may be surface-fixed or bolted through the door leaf, providing the length is limited to 1200mm between the fixing points. If through fixed, there must be no more than 1mm clearance between the hole and stud.

The above scope of application is provided as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

10.9.2 Push Plates & Kick Plates

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All in section 4.4.2

Components with the following specification are deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specification:

- Polymeric or metal face-fixed hardware such as push plates and kick plates up to 2mm thick may be surface fitted to the doorset. These items of hardware are permitted up to a maximum of 20% of the door leaf area if mechanically fixed and a maximum of 30% if bonded with a contact or other thermally softening adhesive.
- Plates must not return around the door edges.
- In all cases plates meeting the above specification shall not be applied under glazing beads or door stops.

10.9.3 Security Viewers

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All in section 4.4.2

Up to 2no. viewers are permitted within a single door leaf, viewers are to be positioned no closer than 100mm to door edges, glazed apertures or any other hardware component.

Components with the following specification are deemed acceptable.

- Door security viewers with brass or steel bodies of a diameter less than or equal to 15mm may be used provided that the through-hole is bored tight to the case of the viewer (maximum tolerance +1 mm). Lenses must be glass and the item must be protected with a tested acrylic intumescent mastic and / or a 0.5 – 1.0mm thick graphite based intumescent wrap.

10.9.4 Door Selectors

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All double leaf door configurations

These may be freely applied, provided that they are not invasive in the leaf edges or door frames, and they do not interfere with the self-closing action of the door leaf. Products that are invasive will require fire resistance test/assessment evidence to support their use.

10.9.5 Environmental Seals

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All in section 4.4.2

A number of different environmental seals have been successfully tested as part of the FireSound doorset designs. For example, the Mann McGowan ACS1 weather seal was successfully tested in report DMT-DO-50-1010.

On this basis, silicon-based flame-retardant acoustic, weather and dust seals (for example those referenced above or Lorient IS1212, IS1511, IS7025, IS7060, Deventer DS155a or Sealed Tight Solutions Ltd. ST1009) may be fitted to this doorset design without compromising the performance, providing their fitting does not interfere with the activation of the intumescent seals or hinder the self-closing function of the leaves.

Where required, the seals may be fitted either rebated into the timber door stop or rebated into the leaf face.

10.9.6 Threshold Drop Seals

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All in section 4.4.2

A Mann McGowan DD-1703ACU drop seal was successfully tested in report DMT-DO-50-1010 and an Elton B.V. 'Ellenmatic Soundproof' drop seal was successfully tested in DMT-DO-50-994 and are acceptable for use in all door designs.

Note: if a rebated drop seal is fitted to the doorset then flush bolts may not be fitted to the bottom of the doorset.

Alternatively, components with the following specification are also deemed acceptable, recessed into the bottom of leaves.

Product	Manufacturer
LAS8007/0935A00	Lorient Polyproducts Ltd.
IS8010si	Lorient Polyproducts Ltd.
RP8Si	Raven Products Ltd.
NOR810, NOR810S, NOR810dB+	Norsound Ltd.
SLS-DRP-100	Halspan Ltd.
ST422, ST422FF, ST422GT	Sealed Tight Solutions Ltd
Schall-Ex L-15 range	Athmer
HS, RH and US	Planet
Pressure 1700	Comaglio

The drop down seal must be installed with the intumescent protection specified in section 10.2.

10.9.7 Knockers, Numerals & Signage

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All in section 4.4.2

Components with the following specification are deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted away from the edge of the door leaf, therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and therefore cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specifications:

Knockers:

- Steel, stainless steel, aluminium or bronze knockers, may be surface fixed or bolted through the door leaf, providing they are fitted no closer than 75mm from the leaf edge, other elements of building hardware or to any glazing and are no greater than 200mm high x 120mm wide. If through fixed, there must be no more than 1mm clearance between the hole and stud. It is only permitted to fit 1No. knocker to any one doorset.

Numerals & Signage:

- Steel, stainless steel, aluminium or bronze numerals or signage may be surface fixed to the door leaf, providing they are fitted no closer than 35mm from the leaf edge, other elements of building hardware or to any glazing. The dimension of each numeral or sign must be no greater than 200mm high x 100mm wide x 4mm thick. Up to 5No. numerals or signs may be applied to a doorset, numerals and signs may be applied adjacent to each other providing the 35mm from other elements as detailed above is maintained.

10.9.8 Security Chains

Components with the following specification are deemed acceptable as in the opinion of Warringtonfire they will not significantly affect the fire resistance performance of the doorset being considered. This is on the basis of the items being surface mounted with fixings positioned away from the edge of the door leaf and therefore unlikely to influence the junction between door leaf and frame. Furthermore, they are generally of lightweight construction, meaning that they are unlikely to destabilise the doorset and cause adverse deflection under test conditions. Lastly, the surface mounted arrangement of the features means no material is removed in terms of the overall thickness of the door leaf beyond the footprint of the item, therefore burn through of the leaf would not be expected.

Approved specification:

- Metallic security chains may be surface fixed to the face of the door leaf and frame, providing they are fitted such that they do not interfere with the junction between the leaf edge and the frame, and no material is removed in order to facilitate the fitting of the security chain. Screws to affix the security chain shall be no greater than 25mm long.

10.9.9 Fire Door Identification Plates

Plastic or metal fire door identification plates may be glued or screwed to the face of the door leaves providing they are fitted no closer than 35mm from the leaf edge, other elements of building hardware or to any glazing. The dimension of any applied plate must be no greater than 100mm high x 100mm wide x 3mm thick.

These may be required to identify the following:

a) To be kept closed when not in use (Fire Door Keep Shut)

b) To be kept locked shut when not in use (Fire Door Keep Locked Shut)

c) Held open by an automatic release mechanism or free swing device (Automatic Fire Door Keep Clear).

When applied to a door leaf the plate shall be surface mounted to the face without removing material from the leaf.

10.9.10 Panic Hardware

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1, 2 (and 3 for 30 minute applications)

Configurations: All in section 4.4.2

Panic hardware may be fitted, providing the installation does not require the removal of any timber from the leaf, stop or frame reveal and it does not interfere with the self-closing action of the door leaf.

The fitting of panic hardware is not considered to change the latching arrangement of the doorset and therefore the permitted leaf size shall be established using unlatched doorset configurations as detailed within the relevant data sheet in section 4.4.

10.9.11 Cableway

10.9.11.1 Cable Loop

These items are suitable in the following applications only:

Leaf options: 1 & 2

Frame options: 1 Only

Configurations: LSASD, ULSASD

The table below details the tested cable loop that is approved.

Element	Manufacturer & Product Reference	Body Dimensions
Cable Loop	• Abloy EA280	324mm (h) x 24mm (w) x 17(d) with a Ø12 spring assembly

The top of the loop should be below 1200mm from the threshold and no closer than 200mm from another item of hardware in the leaf edges (e.g. hinges).

The body of the cable loop is to be located centrally in the door frame.

For 60 minute applications, 2mm thick Interdens must be fitted to all faces of the rebates required for installation.

10.9.11.2 Cableways

Cableways were also successfully tested in DMT-D0-50-1010, cableways are to be used to route cables around the door leaf to operate electronic hardware. The cableway will be routed from a cable loop fitted at the jambs of a doorset to the relevant item of hardware (e.g. a lockset or electronic strike).

The cableway must be installed as detailed below.

- Groove the edge of the door core with a 10mm wide channel located centrally, to a depth of 12mm prior to installation of lippings. This groove should run from the lock/keep location in the closing/meeting stile, down the stile, along the bottom of the door then back up the hanging stile to the cable loop location. The groove may be machined above the location for a dropseal if one is to be fitted, as tested.
- Install the cable, protected with Mann McGowan Pyrostrip 500FSA-10x 2mm, into the groove.
- Infill the groove with hardwood, bonded in place with PU adhesive.
- The bottom of the groove must be no closer than 100mm from glazed apertures.
- The door core can then be lipped and calibrated in the usual manner.

11 Installation

11.1 General

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

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