

## FORZA DOORS

### FD30 & FD60 Hardware Installation

#### 1. Hinges

A variety of hinges have been successfully tested with the door leaves assessed. Hinges may be used, subject to compliance with the specifications below:

- Hinge type:** Fixed pin, washered butt, ball bearing butt, lift-off type or journal supported hinges may be used.
- Number of hinges:** 3no (1½ pairs) per leaf on leaves up to 2400mm high  
4no (2 pairs) per leaf on leaves greater than 2400mm high
- Positions:** The top hinge must be positioned 120-180mm down from the head of the leaf to the top of the hinge and the bottom hinge positioned 200-250mm up from the foot of the leaf to the bottom of the hinge. The middle hinge(s) must be either equispaced between the top and bottom hinge, or 200-250mm below the top hinge.
- Fixings:** Steel screws, as recommended by the hinge manufacturers, but in no case smaller than No 8 (3.8mm diameter) by 32mm long, and having thread for the full length. Position of screws (in relation to the door face) in blades of alternative hinge types shall be similar to hinges tested with the proposed door type.
- Hinge blade sizes:** 2.5-3.5mm thick by 89-110mm high by 30-36mm width (these dimensions refer to the blade size, i.e. the part of the hinges that are recessed into the edge of the leaves/frame)
- Hinge materials:** Brass, Phosphor Bronze, Steel or Stainless Steel. (Aluminium, Nylon or 'Mazac' are not permitted.) No combustible or thermally softening materials to be included.
- Additional protection:** FD30 Not required. FD60 Blades to be bedded on a 1mm thick low pressure forming intumescent material and a minimum 10mm width of intumescent seal shall be continuous alongside the hinge blades.

Non-cranked butts and spring hinges (single or double action) are not suitable for use on doors approved within the scope of the Forza generic assessment, although they may be suitable on the basis of an individual and specific fire engineering evaluation.

Four concealed or invisible hinges have been assessed for inclusion within Forza door leaves:

SOSS Invisible Hinge Type 218 (Mazak or Stainless Steel)

SOSS Invisible Hinge Type 418 (Mazak or Stainless Steel)  
Tectus Concealed Hinge Type TE525 3d (Stainless Steel)  
Tectus Concealed Hinge Type TE540 3d (Aluminium & Zinc Alloy)

These hinges may be included in door sets subject to compliance with the specification below:

Prior to fixing of the concealed or invisible hinge, the 'cold state' performance of the screws that fix the hinges in to the core and frame must be evaluated; particularly since the screws are so near to the edge of the recess for the main body of the hinge.

It must be ensured that the correct number of hinges is fitted, to ensure that the door leaf is supported for the full fire resistance period.

The slots for the hinges in the door leaf and frame must be cut tightly, such that there are no gaps around the hinge components / intumescent material when the hinges are installed. Hinge position to be set 200mm from top of door, 200mm from bottom and third hinge set nominally 300mm below top hinge. All hinge portions must be fitted with intumescent gasket kits supplied by the hinge manufacturer (as per test evidence for the hinge type).

## 2. Mortice Latches/Locks

A variety of locks/latches have been successfully tested with the door leaves assessed. Mortice latches/locks may be used, subject to compliance with the specifications below:

Latch/lock types: Mortice latches, tubular mortice latches, sashlocks, deadlocks

Positioning: Centred at 1000mm ( $\pm 200$ mm), above the bottom of the door leaf

Maximum dimensions: Forend plate: 235mm long x 20mm wide or 200mm long x 25mm wide  
Latch body: 20mm thick x 165mm high x 100mm wide  
Strikeplate: 235mm long x 20mm wide or 200 mm long x 25mm wide

Materials: Latches must have no essential part of their structure made from polymeric or other low melting point ( $< 800^{\circ}\text{C}$ ) materials and should not contain any flammable materials.

Additional protection: Any forends/keeps longer than 130mm or where they are fitted at the meeting stiles of double doorsets shall be bedded on 1mm thick low-pressure forming intumescent material at least 1mm thick, unless at least 5mm of perimeter intumescent strip rims continuously past the keep.

Over-morticing is to be avoided; mortices should be as tight as possible to the latch. If gaps around the case exceed 2mm, then these must be made good with intumescent mastic or sheet material. Holes for spindles or cylinders should be kept as small as is compatible with the operation of the hardware.

Where glazing apertures are also incorporated, and are positioned such that locks/latches are included in the margin between the aperture and door edge, care must be taken to ensure that the effective door 'stile' is not weakened by the mortice. It is a condition of this assessment that, except where tubular latches are employed, the margin must be at least 75mm wider than the lock/latch mortice. If the mortice latch/lock is fitted in line with a 'rail' between two apertures, no part of the lock mortice shall be closer than 50mm to the edge of any aperture.

## 3. Door Closers

Where required by regulatory guidance or specific fire strategy each hinged door leaf must be fitted with an overhead surface mounted self-closing device unless it is normally kept locked shut and labelled as such with an appropriate sign which complies with BS5499: Part 1:1990.

It is essential that all closers fulfil the requirements of BS EN 1154: 1997 and are of the correct power rating for the width and weight of the doorsets (minimum power size 3). They must be fitted according to the manufacturer's instructions and be adjusted so that they are capable of fully closing the door leaf, against any friction imposed by the latch (and smoke seals fitted) from any position of opening.

A variety of closers may be used, subject to compliance with the specifications below:

### **FACE FIXED**

Faced fixed overhead door closers (and accessories such as soffit brackets) that have been tested, assessed or otherwise approved for use on unlatched FD30 & FD60 cellulosic door leaves in timber frames may be used. Any accessory that is located within the door reveal must have appropriate test or assessment evidence.

In addition, where areas of uninsulated glazing are adjacent to the closer, the selected closer type must have been tested on the unexposed face of an uninsulated steel door, or a fully glazed door fitted with uninsulating glass, to demonstrate that the closer does not emit flammable fluids onto the glass face that would otherwise cause integrity failure before the required period of fire resistance.

### **CONCEALED**

Two makes of concealed overhead closers are suitable for inclusion in Forza door leaves as tested and assessed. This is a 'slide arm' type closer with the closer morticed into the head of the leaf and a single arm and roller acting in a slide channel morticed into the frame head.

The closer is installed in a relatively deep mortice in the door head with the slide channel in a mortice in the frame head. The two makes are:

- Dorma ITS96 (size 2-4 model)
- Geze Boxer (size 3-6 model)

These closers have been tested by their manufacturers and subject to the limitations below may be used:

- Minimum stop depth of 18mm on frame head.
- Inclusion of intumescent gasket kit as tested and supplied by manufacturer.
- Top edge of door must include a minimum 20mm lipping or be of lamcor construction.
- A minimum of 10mm width of intumescent must be residual alongside the arm recess in the head of the frame or an additional 10 x 2mm strip of graphite intumescent strip must be included in the slide arm channel in the head of the frame.
- The body of the concealed closer is not to be fitted in the frame head.

Other makes of concealed closers may be suitable for use in leaves approved within the scope of the Forza generic assessment but on the basis of an individual and specific fire engineering evaluation.

#### **4. Bolts**

Bolts are not necessary for Forza FD30 or FD60 Double doors. However the extra restraint provided by flush bolts, in association with latches, does, however, have a beneficial effect on leaf size envelopes.

Unless Specific fire test evidence is available, all bolts shall be steel. The following limitations and protection apply:

- Maximum size of flush bolt is 250mm long x 20mm wide and 19mm deep
- The head of the leaf and/or frame should contain a minimum (5mm FD30, 10mm FD60) width of intumescent material local to the bolt/keep plate
- The body of the bolt should be bedded on non-pressure forming intumescent material at least 1mm thick
- Edge fixed bolts shall be positioned centrally in the leaf thickness
- There should be a minimum of (5mm FD30, 10mm FD60) width of intumescent strip in the door edge, past the body of the bolt
- Flush bolts are not approved on doors with rebated overpanels, since this will clash with the rebate alignment. Surface mounted bolts may be used (see below)
- Face fixed flush bolts shall be fixed so that there is a minimum of 50mm between the bolt and the door edge
- Surface mounted barrel bolts shall not exceed 400mm in length, but there is no limitation on their width. Screws for fixing bolts must be at least 25mm long, and have thread for the full screw length. (FD60 They shall be fixed so that there is a minimum of 50mm between the bolt and the door edge).

## 5. Floor Springs and Accessories

Floor springs and accessories (straps and top pivots) are necessary for double action assemblies. Floor springs and accessories may be used, subject to having appropriate fire test or assessment evidence for use on timber door assemblies of similar construction to that proposed, and the following limitations:

- Incorporation of any intumescent gasketry used in the test
- Continuation of at least (10mm FD30, 20mm FD60 (total width)) of the intumescent edge seals in leaf or frame head (as applicable); either (5mm FD30, 10mm FD60) along both sides of the top strap/pivot for double acting straps, or (10mm FD30, 20mm FD60) on one side for single acting straps
- Minimum 1mm thick intumescent sheet must line the mortise of the top strap and pivot in both the door leaf and frame head (or as supplied by the floor spring manufacturer)
- No removal of the timber or intumescent strip at the leaf stile (except for a 6-8mm diameter access hole for the top strap adjustment screw)

## 6. Non-Essential Hardware Items

### 6.1. Letter Plates

These must be tested, assessed or otherwise approved for use in 44mm thick (54mm) (or less) cellulosic FD30 (FD60) doors. They must be fitted in accordance with the manufacturer's instructions, including all intumescent liners and flaps. Plates must not be less than 100mm away from the leaf edge, or any other aperture.

(The installation of such items in a door leaf may compromise its performance as a smoke control doorset.)

### 6.2. Push Plate, Kick Plates, etc.

Plastic, PVC or metal plates may be surface-mounted to the doorsets, but if more than 800mm in length by nominally 200mm wide, they must be attached in a way that would prevent them distorting the door leaf, e.g. glued with thermally softening adhesive or screwed with short aluminium screws and fitted in such a way so they will not be prevented from falling away by being trapped under door stops, glazing beads or handle escutcheons etc.

### **6.3. Pull Handles**

These may be fixed to the doorsets, provided that the fixing points are no greater than 1065mm apart. Pull handles that are fixed through the leaf should use clearance holes as close fitting as possible to the bolt.

### **6.4. Intumescent Air Transfer Grilles**

These must be tested, assessed or otherwise approved for use with 44mm thick (54mm) (or less) cellulosic FD30 (FD60) doors. They must be fitted fully in accordance with the manufacturer's instructions, including all intumescent liners and cloaking grilles/beads. They must be no larger than that for which test or assessment evidence exists. See vision panel size limits for restrictions on maximum size and placement of any apertures which must also be included in the total area permitted for apertures given.

(The installation of such items in a door leaf may compromise its performance as a smoke control doorset)

### **6.5. Security Viewers**

These may be fixed into the proposed doors, subject to the following limitations, unless specific fire test evidence exists to the contrary:

- Viewers must not exceed 15mm diameter, and be made from brass or steel
- Holes bored through the door must be no greater than 1mm larger than the bore of the viewer and must be lined with a non-pressure forming intumescent mastic/sheet
- The viewer must include an effective shutter/cover plate

### **6.6. Cable Ways for electro-magnetic closing / latching mechanisms**

Cable ways to provide for a route for the connection of electric locks/strikes with command units are permitted for use with Forza FCS cores subject to the following:

- Door leaf dimensions must not exceed 2100mm x 900mm
- The particular device must be supported by fire evidence to demonstrate suitability for use in timber based doors to the required fire performance
- The device must be fitted precisely in accordance with the manufacturer's test / assessment data, including intumescent seals, fixings etc. as required for the relevant fire performance
- The cable-ways must be located to provide for a minimum margin of 90mm from any aperture in the door leaf

The cable-way may be concealed in one of the following methods:

**A:** An 10mm (max) diameter hole drilled centrally in the door thickness and horizontally across the width of the door at a height of not more than 1500mm above finished floor level and lined with a 2mm thick intumescent gasket.

**B:** An 8 x 8 mm groove positioned centrally in the door thickness to be applied to the door core before the application of lippings. The groove to be positioned to a maximum height of 15mm above finished floor level passing around the bottom of the leaf and returning to the lock/strike position at the closing stile of the door.

### **6.7. Door Selectors**

These are used on double leaf doorsets with rebated meeting stiles, to ensure that the leaves close in sequence. Face fixed items are preferred. Door selectors must not be recessed into the leaf or frame to the extent that they interrupt any intumescent strips. Recesses cut to accommodate these items must be as small/accurately cut as possible.

### **6.8 Panic Hardware**

Panic hardware may be used with Forza door cores provided that the installation does not require the removal of any core material from the door leaf or removal of any timber from the door frame. The panic hardware must not in any way interfere with the self-closing action of the fire door.

### **6.9 Automatic Threshold Seals**

Fully morticed automatic drop threshold seals may be fitted to Forza door leaves provided that the body of the automatic drop seal does not exceed 35mm high x 15mm wide (excluding fixing flanges). The body of the automatic drop seal must be in aluminium or steel and the device is to be morticed central to the thickness of the door core. Surface mounted automatic drop seals may be used as an alternative providing the fitting does not require the removal of any door core.