

Custom Made Timber Doorsets

**Maintenance,  
Damage  
Prevention and  
Troubleshooting**

**ASD**

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Fire door = complete installed assembly

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# Introduction

The Architectural and Specialist Door Manufacturers Association was founded in 1990 to represent the custom-made door industry. One of its objectives is the promotion of best practice in the manufacture and installation of the industry's products.

This guidance paper is intended to assist in maintaining a trouble free door installation for the lifetime of the building. Another guidance paper dealing with installation of custom-made doors is also available.

For comprehensive guidance on timber fire doors, see ASDMA's 'Best Practice Guide to Timber Fire Doors', which is available from the Association's secretariat at the address given on page 4.

The definition of 'door' adopted by ASDMA reflects the definition given in Approved Document B of the Building Regulations (England and Wales) regarding fire doors:

*A complete installed door assembly comprising doorframe, door leaves, other panels, hardware, seals and any glazing... plus, for fire doors ...that when closed is intended to resist the passage of fire and smoke in accordance with specified performance criteria.*

..... door = complete installed assembly

It is to be expected that the installation of doors will take place in conjunction with an inspection and handover procedure whereby the installation at the point of delivery from the responsible contractor is verified as compliant with any certification and is operating perfectly.

It would also be normal for a subsequent maintenance period to apply during which the responsible contractor will correct defects that arise that are his responsibility. Beyond this, ongoing maintenance of the installation in respect of function and appearance is the responsibility of the owner or user of the premises. A suggested checklist of routine maintenance actions is given in Appendix 1.

## 1 Specialist services

Because door installation and maintenance is a specialised trade, it may be considered advantageous to employ a specialist contractor to carry out a planned routine combining the inspection and corrective action procedure.

## 2 Priority actions

Priority should be given to:

- The continued correct operation of the doors.
- The preservation of operating gap sizes within the range described in test or assessment certification relating to the installed fire doors.
- The preservation or replacement of elements of the door that may be subject to degradation through wear or damage e.g.:
  - Glass.
  - Intumescent, acoustic and smoke seals.
  - Intumescent coatings such as to glazing beads.
  - Applied finishes

### 2.1 Pre-emptive inspection programme

The objective must be to pre-empt malfunction and defects. This can be more completely accomplished in response to a planned programme of inspection and corrective action.

Corrective action is likely to be required more frequently as the building settles down and dries out during the early life of an installation. The small movements that occur in the building fabric at this stage can affect gap sizes. The presence of smoke or acoustic seals can make door operation even more sensitive to small changes in gap size.

### 2.2 Reporting of malfunctions

It is also vital to the quality of the installation that building users report malfunctions immediately and that there is a system that provides for recording these and for prompt corrective action.

## 3 Damage prevention

Much damage to doors is caused by abusive use of the building. This may be unintentional and result from inadequate planning or briefing of personnel on the correct operation of the door system and the prevention of damage caused by equipment and loads being transferred through the building .

Personnel using the building can make an important contribution to maintaining the quality of the door installation and the safety it provides if they are encouraged to use the installation in a caring manner.

Personnel who use equipment that is potentially damage-causing can be trained and encouraged to prevent this.

### 3.1 Protective measures

Planning the operation and protection of doors will play an important part in the avoidance of damage to the door installation. The following measures will reduce the more predictable causes of damage:

Type of damage	Preventative measure
Damage caused by objects being wheeled or dragged through the doorway: <ul style="list-style-type: none"> <li>• Damage to faces and the leading edge of door leaves.</li> <li>• Broken lippings, damaged smoke and intumescent seals.</li> </ul>	The use of a hold open device with doors on frequently trafficked corridors linked in with a fire detection system, if applicable.  Delayed action closers set to allow for the passage of encumbered users and wheeled items.
Damage caused by impact by wheeled equipment: <ul style="list-style-type: none"> <li>• Dislocation of doorframe fixings.</li> <li>• Damage to doorframes, door faces and edges</li> </ul>	Protective rails or guards adjacent to the doorway that will deflect the equipment from contact with the door.  Provision of recessed pockets in corridor walls within which held-open door leaves will be protected from edge damage.  Fit buffers that will soften impact and prevent abrasive action.

## 4 Troubleshooting door malfunction

Malfunctions will arise during and after any maintenance period due to a variety of causes. It is important that these be corrected promptly to minimise damage and avoid any compromising of safety.

### 4.1 Binding

The most common malfunction is a gradual loss of operating gaps that eventually result in a door leaf failing to close correctly. It may be that the leading edge binds on the doorframe or at meeting edges of double leaf doors. Often the bottom edge of a door leaf will bind on the floor.

The causes of and suggested remedies for this can be:

Defect	Possible cause	Remedial options
Swelling of door components due to moisture intake.	Moisture content in the building is too high.	Check moisture content. Reduce humidity in the building or area. Do not adjust doors unless this is still necessary after m/c has reduced to 12%.
Hinges have worked loose allowing door leaf to fall away from hanging jamb.	Doors are being held open by putting items in the hinge rebate, thereby stressing hinges and fixings.  Often inadequate restraint allows the door leaf to be racked causing stress to fixings.  The screw fixings used may be of the incorrect diameter and length for the purpose.  Not all screw holes have been used.	Remove obstructions.  Tighten fixing screws. If necessary increase screw size.  Provide restraint to prevent racking.  Check hinge and screws - replace if defective.
Hinges have worn allowing door leaf to drop.	Hinges are not the correct class for the application.  Hinges are not in accordance with BS EN 1935.	Replace with correct class of hinge.
Doorframe jambs have spread at the bottom allowing the leading edge of the door leaf/leaves to drop.	Often door leaf weight causes compression of packing or stud due to the effect of lateral load at the bottom hinge position.	Check doorframe fixings and re-pack at fixing positions particularly at the bottom until the door leaves hang correctly.  Check that the background is stable, particularly with stud walls, and that it will support the lateral load.

Defect	Possible cause	Remedial options
Doorframe fixings are loose.	Racking of the door leaf can result in a rotating force that has a levering effect on doorframe fixings.  Overdrilling or breakout of fixing positions.  Impact by wheeled loads.	Provide restraint to prevent any racking of the door leaf.  Tighten fixing screws.  If necessary replace failed plugs or make new fixing positions.  Check all packings and the hang of the door leaf.  Provide protective rails/guards to deflect wheeled traffic away from the doorframe.
Door leaf binding on floor covering.	Floor covering fitted after the door installation may be over planned thickness.  Possible high spots in screed within the arc of the door leaf.	While it is often possible to ease the bottom edge of the door leaf without damage to intumescent and smoke sealing systems it is preferable if possible to refix the door having packed up under the doorframe jambs.
Binding on closing edge and none of the previous reasons apply.	It is possible that the leading edge gap has been set too fine.	Adjust the gap by deepening the hinge recess/es in the doorframe or door leaf.

**Note:** The edges of door leaves should not be planed or otherwise modified unless it is impossible to correct the fault by other means. If door leaves are adjusted, any intumescent and smoke seal that is damaged will have to be reinstated.

### 4.2 Oversize gaps

A problem can arise in connection with operating gaps that become enlarged. In such cases door leaves will normally close correctly but the gap size may exceed the range permitted by reference to specifications and to the test or assessment certification.

The causes of and suggested remedies for this can be:

Defect	Possible cause	Remedial options
When no smoke or acoustic seal is present:	Most likely to be shrinkage of door components, doorframe packings and any timber elements in the prepared opening such as grounds, timber studs or subframes.	Pack out behind hinges.  Repack and refix doorframe.
Gaps in excess of range permitted by certification.		In consultation with door leaf manufacturer, increase lipping thickness and replace seals.
When smoke or acoustic seal is present:	Minor disturbance caused by impact or shrinkage can create a visible gap.	Pack out behind hinges.  Repack and refix doorframe.
Any visible gap.	Seals have worn or become permanently compressed.	Replace seals with new or larger.

### 4.3 Failure to close

In addition to closing failure caused by loss of operating gaps, other defects can develop or become apparent:

Defect	Possible cause	Remedial options
Hinge binding resulting in the door leaf tending to spring open.	Either the hinges have not been sufficiently recessed, or the door stop is too tight on the closing face of the door leaf at the hinged edge.	Modify fitting of hinges. Adjust position of doorstops. Reset hinge positions when doorframe has an integral doorstop.
Door leaves twisted, bowed or cupped.	Doors may develop twist after installation if used with hold open devices when the holding device is not level with the closing force.  Distortion can be caused by hygrothermal differences on faces.	Remove the cause; the door leaf may return to a flat condition.  It is possible to reduce the effect by moving hinge positions slightly.  Replacement may be necessary.
Door leaves failing to latch.	Closer failing to overcome resistance of latch or seals.  Latch bolt and keep plate may have become misaligned.  Door bolts may not be engaged.  Possibility of misalignment of door bolts and sockets.	Closer may be incorrectly specified. Adjust closer speed. Change seals.  Reposition keep plate.  Ensure that users engage bolts at top and bottom of door leaf.  Realign bolts with sockets. If possible do this by adjustment to the doorframe fixing.
Binding of smoke or acoustic seals when none of the previous problems apply.	It is possible that the leading edge gap has been set too fine.  Seals may be broken or disrupted by wear or due to incorrect fitting.	When applicable, modify retaining grooves to suit. The seals, if in good condition, can be refitted. Fit smaller seals.  If damaged, seals should be replaced with attention to correct fitting and cause of disruption.

## Appendix I

### MAINTENANCE CHECK LIST FOR DOORS

Premises.....

Door Door No. Location: Door Manufacturer Certification ref. Date installed Hardware manufacturer Hinges Closer Lock/latch Bolts Door leaf Is it warped Is it split/cracked Other damage evident Edges/lippings OK Meeting edge gap on double doorset Maintained closed Closer effective Modifications added since last inspection Doorframe Signs of damage Well fixed/sealed to surrounding structure Max. leaf/doorframe gap Max. leaf/threshold gap Max. leaf/doorstop gap. Seals Are edge seals complete Any damaged seals Protection where necessary at hardware Are smoke seals fitted If yes, are they in good condition and effective

Glazing

Glass damage Retaining system in good condition Retaining system

correctly fixed Any change since last inspection (e.g. broken glass replaced) Hardware

Hinges

Correctly fixed Working correctly Needing lubrication Closers and selectors Correctly fixed Working correctly Double doors closing in correct order (where applicable) Needing lubrication Overrides any latch mechanism/smoke seals Locks/latches Correctly fixed Working correctly Needing lubrication Hold open devices Fixed in correct position Releases correctly Bolts Aligned with socket Well fixed Working correctly Damage around bolts Signs: Correct fire signage on both sides of door Additional hardware Added since last inspection (e.g. letterplates, bolts)

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