



# **tdsl** fire rated doorsets

maintenance, damage prevention  
and troubleshooting



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.

The definition of 'door' adopted by TDSL 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**

TDSL strongly recommend that fire doors be supplied as complete pre-hung assemblies, factory glazed, prepared to receive or fitted with all recessed and morticed hardware and factory primed or coated.

## **1 Handover**

The installation process will usually conclude with an inspection and handover procedure when the installation at the point of delivery from the responsible contractor is verified as compliant with any certification and is operating perfectly.

A maintenance period normally follows during which the responsible contractor will correct defects that are his responsibility. Beyond this, ongoing maintenance of the installation is the responsibility of the owner or user of the premises. A suggested checklist of routine maintenance actions is given in Appendix 1.

## **2 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.

## **3 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 and hardware*
  - *intumescent, acoustic and smoke seals*
  - *intumescent coatings such as to glazing beads.*
  - *applied finishes*

### **3.1 Pre-emptive Inspection Programme**

The objective must be to pre-empt malfunction and defects helped by a planned programme of inspection.

Corrective action is likely to be required more frequently 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.

### **3.2 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.

## **4 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. Those who use equipment that is potentially damage-causing can be trained and encouraged to prevent this.

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

### **4.1 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   |
|---|--|
| <b>Damage caused by objects being wheeled or dragged through the doorway:</b> <ul style="list-style-type: none"> <li>• <i>Damage to faces and the leading edge of door leaves</i></li> <li>• <i>Broken lippings, damaged smoke and intumescent seals</i></li> </ul> | The use of a hold open device with doors on frequently trafficked corridors linked in with a fire detection system, if applicable<br><br>Delayed action closers set to allow for the passage of encumbered users and wheeled items |
| <b>Damage caused by impact by wheeled equipment:</b> <ul style="list-style-type: none"> <li>• <i>Dislocation of doorframe fixings</i></li> <li>• <i>Damage to doorframes, door faces and edges</i></li> </ul>   | Rails or guards that will deflect the equipment<br><br>Recesses in corridor walls within which held-open door leaves will be protected from edge damage<br><br>Fit buffers to equipment  |

## 5 Troubleshooting Door Malfunction

Malfunctions arise from a variety of causes. It is important that these be corrected promptly to minimise damage and avoid any compromising of safety.

### 5.1 Binding

The most common malfunction is a loss of operating gaps that result in door leaves sticking or 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  |
|--|--|---|
| <b>Swelling of door components due to moisture intake</b>  | Moisture content in the building is too high   | <i>Reduce humidity. Do not adjust doors unless necessary after m/c is stable at 12%</i>   |
| <b>Hinges have worked loose allowing door leaf to fall away from hanging jamb</b>                          | Stressing caused by racking or blocks put in hinge side rebate to hold doors open  | <i>Remove obstructions. Tighten fixing screws. If necessary increase screw size. Replace if defective.</i>  |
|  | Wrong size screws fixings<br><br>Not all screw positions have been used.   | <i>Provide restraint to prevent racking.</i>  |
| <b>Hinges have worn allowing door leaf to drop</b>   | Hinges are not the correct BS EN 1935 class for the application.   | <i>Replace with correct class of hinge.</i>   |
| <b>Doorframe jambs have spread at the bottom allowing the leading edge of the door leaf/leaves to drop</b> | Often door leaf weight causes compression of packing or stud due to the effect of lateral load at the bottom hinge position. | <i>Check that the background is stable and that it will support the lateral load.<br/><br/>Re-pack at fixing positions particularly at the bottom until the door leaves hang correctly. Re-fix doorframe.</i> |
| <b>Doorframe fixings are loose.</b>  | Racking exerting leverage on doorframe fixings.  | <i>Re-pack and correct the hang of the door leaf</i>  |
|  | Overdrilling or breakout of fixing positions.  | <i>Tighten fixing screws and if necessary replace failed plugs or make new fixing positions</i>   |
|  | Impact from wheeled loads.   | <i>Provide restraint to prevent racking<br/><br/>Provide protective rails/guards to deflect wheeled traffic away from the doorframe</i>   |
| <b>Door leaf binding on the floor.</b>   | Floor covering may be over planned thickness.  | <i>Re-fix the door having packed up under the doorframe jambs</i>   |
|  | Possible high spots in screed within the arc of the door leaf.   |   |
| <b>Binding and none of the previous reasons apply.</b>   | It is possible that the edge gap has been set too fine   | <i>Adjust the gap by deepening or moving the hinge recesses in the doorframe or door leaf</i>   |

**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.

### 5.2 Oversize Gaps

Operating gaps may become enlarged and may exceed the range permitted by specifications and the test or assessment certification.

The causes of and suggested remedies for this can be:

| DEFECT  | POSSIBLE CAUSE   | REMEDIAL OPTIONS  |
|---|--|---|
| <b>When no smoke or acoustic seal is present:</b><br><br>• Gaps in excess of range permitted by certification | Shrinkage of door components, packings and timber grounds, studs or subframes. | <i>Pack out behind hinges. If necessary re-pack and re-fix doorframe<br/><br/>Re-lip (by manufacturer) and replace seals.</i> |
| <b>When smoke or acoustic seal is present:</b><br><br>• Any visible gap                                       | Shrinkage or disturbance caused by impact.                                     | <i>Pack out behind hinges. If necessary re-pack and re-fix doorframe.</i>   |
|   | Seals have worn or have become permanently compressed.                         | <i>Replace seals with new or larger.</i>  |

### 5.3 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  |
|---|---|---|
| <b>Hinge binding resulting in the door leaf tending to spring open.</b>             | Hinges have not been sufficiently recessed.   | <i>Modify fitting of hinges.<br/><br/>Adjust position of doorstops.</i>   |
|   | The door stop is too tight on the closing face of the door leaf at the hinged edge. | <i>Reset hinge positions when doorframe has an integral doorstop.</i>   |
| <b>Door leaves twisted, bowed or cupped.</b>  | Twist caused by holding device that is not level with the closing force.            | <i>Remove the cause: the door leaf may return to a flat condition. If not, replacement may be necessary.</i>                            |
|   | Hygrothermal differences on faces.  | <i>Reduce the effect by moving hinge positions slightly.</i>  |
| <b>Door leaves failing to latch.</b>  | Closer failing to overcome resistance of latch or seals.                            | <i>Adjust closer speed. If necessary fit larger size closer.<br/><br/>Change seals.</i>   |
|   | Latch bolt and keep plate may have become misaligned.                               | <i>Reposition keep plate.</i>   |
|   | Door bolts may not be engaged.  | <i>Ensure that users engage bolts at top and bottom of door leaf.</i>   |
|   | Misalignment of door bolts and sockets.   | <i>Realign bolts with sockets by adjustment to the doorframe fixing.</i>  |
| <b>Binding of smoke or acoustic seals when none of the previous problems apply.</b> | It is possible that the leading edge gap has been set too fine.                     | <i>When applicable, modify retaining grooves to suit. The seals, if in good condition, can be refitted.<br/><br/>Fit smaller seals.</i> |
|   | Seals may be broken or disrupted by wear or due to incorrect fitting.               | <i>If damaged, seals should be replaced with attention to correct fitting and cause of disruption.</i>                                  |

## Appendix 1

### Maintenance Check List for Doors

|                   |  |                                 |   |
|-------------------|--|---------------------------------|---|
| <b>Premises:</b>  |  | <b>Glazing:</b>                 | Glass damage  |
|                   |  |                                 | Retaining system in good condition                            |
|                   |  |                                 | Retaining system correctly fixed                              |
| <b>Door:</b>      | Door Number                                    |                                 | Any change since last inspection (e.g. broken glass replaced) |
|                   | Location                                       |                                 |   |
|                   | Door Manufacturer                              |                                 |   |
|                   | Certification Ref.                             |                                 |   |
|                   | Date Installed                                 |                                 |   |
|                   | Hardware Manufacturer                          | <b>Hinges:</b>                  | Correctly fixed   |
|                   | Hinges   |                                 | Working correctly   |
|                   | Closer   |                                 | Needing lubrication   |
|                   | Lock/latch                                     | <b>Closers &amp; Selectors:</b> | Correctly fixed   |
|                   | Bolts  |                                 | Working correctly   |
| <b>Door Leaf:</b> | Is it warped                                   |                                 | Double doors closing in correct order (where applicable)      |
|                   | Is it split/cracked                            |                                 |   |
|                   | Other damage evident                           |                                 |   |
|                   | Edges/lippings OK                              |                                 | Needing lubrication   |
|                   | Meeting edge gap on double doorset             |                                 | Overrides any latch mechanism/smoke seals                     |
|                   | Maintained closed                              | <b>Locks &amp; Latches:</b>     | Correctly fixed   |
|                   | Closer effective                               |                                 | Working correctly   |
|                   | Modifications added since last inspection      |                                 | Needing lubrication   |
| <b>Doorframe:</b> | Signs of damage                                | <b>Hold Open Devices:</b>       | Fixed in correct position                                     |
|                   | Well fixed/sealed to surrounding structure     |                                 | Releases correctly  |
|                   | Max. leaf/doorframe gap                        | <b>Bolts:</b>                   | Aligned with socket   |
|                   | Max. leaf/threshold gap                        |                                 | Well fixed  |
|                   | Max. leaf/doorstop gap                         |                                 | Working correctly   |
| <b>Seals:</b>     | Are edge seals complete                        |                                 | Damage around bolts   |
|                   | Any damaged seals                              | <b>Signs:</b>                   | Correct fire signage on both sides of door                    |
|                   | Protection where necessary at hardware         |                                 |   |
|                   | Are smoke seals fitted                         | <b>Additional Hardware:</b>     | Added since last inspection (e.g. letterplates, bolts)        |
|                   | If yes, are they in good condition & effective |                                 |   |

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