Which Door Control?

Meeting the requirements of the Equality Act & Fire regulations
Introduction

There are two main considerations in specifying door controls:
• Does it meet the requirements of the Equality Act 2010?
• If applied to a fire door - does it satisfy the fire regulations?

This brochure will help you select the correct door control for your application.

Equality Act 2010

The Equality Act places a duty upon service providers to remove the physical barriers that prevent people with disabilities from accessing a service. The Special Education Needs & Disability Act (SEND) details this requirement for schools and educational institutions.

The specific performance of door closers in meeting this requirement is detailed within the Building Regulations: BS8300: 2009 and Approved Document M (ADM) in England and Wales, Section 3 in Scotland and Part R in Northern Ireland. These state that “...a door closer must produce an opening force of below 30N between 0º and 30º degrees and below 22.5N between 30º and 60ºdegrees...”.

Not all door closers available in the market will meet this criteria, dormakaba door closers carry third party test evidence to demonstrate their ability to produce low opening forces and help doors meet the requirements of BS8300 and ADM.

All Door Closers for the BS8300/ADM* Applications must be power adjustable by spring and conform to BSEN1154

Whilst BS8300 and ADM* state maximum opening force requirements in respect of the door closer, the complete doorset must be compliant with this opening force. A Torque Curve shows the opening and closing forces throughout the opening and closing cycle in Nm from initial opening through and beyond 60º of opening. They allow calculation of tolerances the door closer will allow for resistance from other fitted items, such as door seals and hinges, and site conditions. All the dormakaba closers detailed in this guide have been third party tested using pivots as detailed in BS EN 1154 (maximum resistance 0.4Nm).

High quality accompanying ironmongery such as hinges, latches and intumescent seals should be selected in order to keep the resistance added to the door set to a minimum. BS 1935 details the maximum allowable resistance provided by hinges, in Northern Ireland. These state that "...a door closer must produce an opening force of below 30N between 0º and 30º degrees and below 22.5N between 30º and 60º degrees...".

Fire Regulations

BS EN 1154 Controlled Door Closing Devices

This gives the minimum performance levels for door closing devices, in relation to door width and mass. It also classifies closers for general suitability for use on fire doors, safety in use, and corrosion resistance. Closers must complete 500,000 opening and closing cycles without loss of performance or significant wear. The standard requires that closers fitted to fire doors be no less than size EN 3. Adjustable closers must be able to achieve this as a minimum. All dormakaba Door Closers are CE Marked to BS EN1154.

Building Regulations

Approved Document B in England and Wales, (Section 2 in Scotland and Part S in Northern Ireland) requires Third Party Fire Test Certification (such as CERTIFIRE). All dormakaba door closers, locks and panic hardware have been fire tested and approved by CERTIFIRE to ensure that they are fit for purpose.

Door closers and third party fire testing

CERTIFIRE is a third party certification authority originally set up by Warrington Fire Research and BSI.

It specialises in certification for a wide range of passive fire protection products which includes fire doors and their hardware.

To gain CERTIFIRE approval for use on a fire door:
• Items of door hardware must have been included in successful fire door tests
• They must be independently tested against the relevant BS EN or BS, to ensure their durability and safety
• They must be manufactured on quality assured production lines registered under an ISO 9000 regime

These three requirements give confidence to specifiers, regulating authorities and purchasers, that all relevant aspects of the product have been assessed.

Details

CERTIFIRE approval does not give carte blanche for the use of an item of hardware on any fire door. Check the following:
• CF No. Certificate number issued by CERTIFIRE
• ITT120 Suitable for timber fire doors
• IMM240 Suitable for uninsulated metal doors
• IMM240 Suitable for insulated metal doors

The Fire Safety Order (FSO) 2005

With the introduction of the FSO, the Fire Certificate was abolished, leaving the risk assessment and proof of compliance in the hands of the building owner or other reasonable person. Instead of inspecting premises and issuing certificates, the Fire Service now performs spot checks to ensure compliance with the regulations. Failure to comply could result in a fine or imprisonment.

The risk assessment includes checking all fire doors and emergency exit doors to see if they meet the requirements of the new FSO. Please contact dormakaba for assistance in carrying out the risk assessment.
How to select a door closer that complies with BS8300 and ADM*

Is the door you require a Fire Door?

YES

Define the access route

SINGLE ACTION**  Allow for 2 Door Stops: Typically 26mm
DOUBLE ACTION**  Allow for Pivot Point: Typically 57mm

800mm Minimum Clear Opening*
750mm Minimum Clear Opening*

SINGLE ACTION**  Allow for 2 Door Stops: Typically 26mm
DOUBLE ACTION**  Allow for Pivot Point: Typically 57mm

870mm Minimum Door Width
820mm Minimum Door Width

800mm Minimum Clear Opening*
750mm Minimum Clear Opening*

825mm Minimum Clear Opening*
775mm Minimum Clear Opening*

Right angle approach at least 1500mm wide
Right angle approach at least 1200-1499mm wide

NO

NON-FIRE RESISTING DOORS REQUIRED TO SELF-CLOSE

There is no legal requirement for a minimum closing force for door closers on non-fire doors so they can be adjusted below size EN3 to make the opening forces as low as possible.

However the closer should be able to successfully close the door and must not exceed the opening force limits set out in BS8300/ADM*

Can the door be kept open when not in use?

Would you prefer manual or automatic operation of the door?

NO

MANUAL

What type of door closer do you require?

 Concealed door closers
Cam action door closers with slide channels
Rack & pinion door closers with scissor arms
Floor spring door closers

See tables on page 6
See tables on page 7
See tables on page 7

YES

Decide which type of door closer you require and select either HOLD OPEN or FREE SWING

Concealed door closers
Cam action door closers with slide channels
Rack & pinion door closers with scissor arms
Floor spring door closers

HOLD OPEN** RTS 80 EMB
HOLD OPEN** TS 93 EMF
TS 92 EMF
TS 91 EMF

FREE SWING RTS 80 FLB
FREE SWING TS 99 FL**
FREE SWING TS 73 EMF
FREE SWING BTS 80 FLB

HOLD OPEN** RTS 80 EMB
HOLD OPEN** TS 73 EMF

HOLD OPEN** TS 73 EMB
FREE SWING TS 73 EMB
FREE SWING BTS 80 FLB

* Alternatively use EM magnets with any dormakaba product within the chosen door type
**Not cam action

*Section 3 in Scotland, Part R in Northern Ireland

†See page 7 for minimum effective clear width requirements

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*NEW Build (See tables on page 6)
*Existing (See tables on page 7)

800mm Minimum Clear Opening*  750mm Minimum Clear Opening*
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870mm Minimum Door Width  820mm Minimum Door Width
825mm Minimum Clear Opening*  775mm Minimum Clear Opening*
895mm Minimum Door Width  845mm Minimum Door Width

Could be a New Build

Straight on approach
New Build
Existing

Right angle approach at least 1500mm wide
New Build
Existing

Right angle approach at least 1200-1499mm wide
New Build
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Could be a New Build

Whether the door you require is a Fire Door?

NO

870mm Minimum Clear Opening*  820mm Minimum Door Width
825mm Minimum Clear Opening*  845mm Minimum Door Width

NO

5

**N.B. Remember to allow for a door handle if required: Typically 75mm

SINGLE ACTION**  Allow for 2 Door Stops: Typically 26mm
DOUBLE ACTION**  Allow for Pivot Point: Typically 57mm

870mm Minimum Door Width
820mm Minimum Door Width

825mm Minimum Clear Opening*  775mm Minimum Clear Opening*
895mm Minimum Door Width  845mm Minimum Door Width

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Would you prefer manual or automatic operation of the door?

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However the closer should be able to successfully close the door and must not exceed the opening force limits set out in BS8300/ADM*

Can the door be kept open when not in use?

Would you prefer manual or automatic operation of the door?

AUTOMATIC

ED 200 Automatic swing door

ED 100 / ED 250 Low energy and automatic swing door operators

Concealed door closers
Cam action door closers with slide channels
Rack & pinion door closers with scissor arms
Floor spring door closers

See tables on page 6
See tables on page 7
See tables on page 7

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HOLD OPEN** TS 93 EMF
TS 92 EMF
TS 91 EMF

FREE SWING RTS 80 FLB
FREE SWING TS 99 FL**
FREE SWING TS 73 EMF
FREE SWING BTS 80 FLB

HOLD OPEN** RTS 80 EMB
HOLD OPEN** TS 73 EMF

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New Build
Existing

Right angle approach at least 1500mm wide
New Build
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Right angle approach at least 1200-1499mm wide
New Build
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Could be a New Build

Whether the door you require is a Fire Door?

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Would you prefer manual or automatic operation of the door?

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*NEW Build (See tables on page 6)
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Door Closers for Fire Doors

Door closers on fire doors must be set at a minimum power size of EN3. Under BS EN 1154, size EN3 closers are recommended for use on doors up to 950mm wide. For more information on door closer power settings on other door sizes see page 8. All dormakaba door closers have been third party tested using pivots as detailed in BS EN 1154 (maximum 0.4N/m).

Adjustable Door Closers

Cam Action Door Closers

**Product TS93 Size EN2-5**

Typical Door Sizes (mm)

- 826 850 875 900 926

Minimum achievable door width at EN3 = 767mm

DoP Certificate No. 0052

**Product TS92 Size EN1-4**

Typical Door Sizes (mm)

- 826 850 875 900 926

Minimum achievable door width at EN3 = 733mm

DoP Certificate No. 0016

**Product TS97 Size EN2-6**

Typical Door Sizes (mm)

- 826 850 875 900 926

Minimum achievable door width at EN3 = 783mm

DoP Certificate No. 0036

Concealed Door Closers

**Product TS96 Size EN2-4**

Typical Door Sizes (mm)

- 826 850 875 900 926

Minimum achievable door width at EN3 = 733mm

DoP Certificate No. 0051

**Product TS96 Size EN3-6**

Typical Door Sizes (mm)

- 826 850 875 900 926

Minimum achievable door width at EN3 = 867mm

DoP Certificate No. 0052

Transom Closers

**Product RTS87 Size EN1-4**

Minimum achievable door width at EN3 = 800mm

DoP Certificate No. 0033

**Product TS83 Size EN2-5**

Minimum achievable door width at EN3 = 833mm

DoP Certificate No. 0006

Rack & Pinion Door Closers

**Product TS73V Size EN2-4**

Minimum achievable door width at EN3 = 792mm

DoP Certificate No. 0004

**Product TS72V/TS72VBC Size EN2-4**

Minimum achievable door width at EN3 = 833mm

DoP Certificate No. 0010

Floor Spring

**Product BTS75V Size EN1-4**

Minimum achievable door width at EN3 = 767mm

DoP Certificate No. 0034
Door Closer Power Settings

Under BS EN1154 door closer power sizes are recommended as follows in respect of door width. However any fire door must be fitted with a closer size EN3 minimum, irrespective of width.

<table>
<thead>
<tr>
<th>BS EN1154</th>
<th>Door Sizes mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN1</td>
<td>750 &amp; below</td>
</tr>
<tr>
<td>EN2</td>
<td>750-850</td>
</tr>
<tr>
<td>EN3</td>
<td>850-950</td>
</tr>
<tr>
<td>EN4</td>
<td>950-1100</td>
</tr>
<tr>
<td>EN5</td>
<td>1100-1250</td>
</tr>
<tr>
<td>EN6</td>
<td>1250-1400</td>
</tr>
</tbody>
</table>

For further information on the regulations regarding fire doors please see page 3.

BS8300/ADM*
Effective Clear Widths Through Doorways

Note: The effective clear width is the width of the opening measured at right angles to the wall in which the door width is situated from the outside of the door stop on the door closing side to any obstruction on the hinge side, whether this be projecting door opening furniture, a weather board, the door or the door stop.

Please note that for the purposes of this brochure an 826mm door width has been used as the starting point in order to achieve BS8300/ADM* compliant clear openings, however some dormakaba closers can achieve the required opening forces on smaller door widths as detailed above. For more information contact us.

Under Approved Document M, doors will satisfy the requirements if they have the following minimum clear openings:

**Minimum effective clear widths of doors**

<table>
<thead>
<tr>
<th>Direction and width of approach</th>
<th>New Buildings (mm)</th>
<th>Existing Buildings (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight-on (without a turn or oblique approach)</td>
<td>800</td>
<td>750</td>
</tr>
<tr>
<td>At right angles from an access route at least 1500mm wide</td>
<td>800</td>
<td>750</td>
</tr>
<tr>
<td>At right angles from an access route at least 1200mm wide</td>
<td>825</td>
<td>775</td>
</tr>
<tr>
<td>At right angles from an access route at least 900mm wide</td>
<td>N/A</td>
<td>800</td>
</tr>
<tr>
<td>External doors and internal lobby doors at the entrance of buildings used by the general public</td>
<td>1000</td>
<td>775</td>
</tr>
</tbody>
</table>

*Section 3 in Scotland, Part R in Northern Ireland

External Doors

ADM* states that “a non-powered manually operated entrance door, fitted with a self-closing device capable of closing the door against wind forces and the resistance of draught seals, is unlikely to be openable by many people, particularly those who are wheelchair users or who have limited strength”.

Indeed ADM* goes on to state “a powered door opening and closing system, either manually controlled or automatically operated by sensors, is the most satisfactory solution for most people. An automatic sliding door arrangement is particularly beneficial … and its use can make it possible to reduce the length of any entrance lobby”.

Provided one of the entrance doors is fully accessible and automatically operated, then the remaining doors can utilise manual door closers set at a suitable spring strength to ensure closure of the door.

dormakaba can provide both manual and automatic solutions for external doors.

Automatic Doors

dormakaba offers a full supply and installation package for automatic doors. All installations are completed to the highest safety standards as recommended under EN 16005. For further information on the specification of automatic doors please ask for our Automatics Brochure or to see one of our Project Consultants.

When selecting an automatic door there are five main types to choose from:

**Sliding Doors**
- ES 200 range
- BST curved doors
- Preferred solution as recommended by ADM

**Folding Doors**
- FFT Flex Green
- Ideal where space is restricted

**Swing Doors**
- ED 100/250 A
- Ideal for retro-fit or new build

**Revolving Doors**
- Can act as an airlock keeping out draughts, noise and dirt
- Manual, positional, servo-assist or fully automatic operation
- If a revolving door is used, an ADM compliant entrance door should be provided immediately adjacent and signed to show that it is accessible

**Low Energy Swing Doors**
- ED 100/250 LE
- Ideal for retro-fit or new build
- Activated by push pad or remote control

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1. In BS8300 it states that the door closer should be of a variable power type. Can a fixed size door closer be used on fire doors?

In general a fixed powered closer with a typical efficiency of 60-65% (BS EN1154 requires a minimum of 55% at EN3) would be unlikely to comply with the 30N opening force. Similarly, door closers with power adjustable only by template (selectable power) are not recommended. However, very high efficiency fixed power closers such as the TS91 Cam Action Closer can comply with the required opening forces on certain door widths. A variable power closer however is a more flexible solution as it allows for on-site adjustment to site conditions and can be adjusted to ensure minimal opening force.

2. BS8300 states that “in general” fire doors should be of a width greater than 900mm. Why have dormakaba offered solutions at lower widths?

We have based the solutions on the minimum requirements of BS8300/ADM*, starting with a typical 826mm wide door and have then gone up in approximately 25mm increments.

A number of dormakaba high efficient door closers are capable of coping with doors at these and smaller sizes.

3. BS8300 refers to electrically powered hold open devices. Which suitable products are available from dormakaba?

dormakaba offer the following electrically powered hold open door closers: TS96 EMF, TS93 EMF, TS92 EMF, TS91 EMF and TS73 EMF. We also offer the BTS80 EMB floor spring (see above photo) and the RTS 80 EMB hold open double action transom closer.

4. BS8300 refers to “swing free” controlled door closing devices. Which suitable products are available from dormakaba?

“Swing free” door closers operate without the resistance of a door closer; the closer is only activated in the event of a fire or power failure making them most suitable for door access to individual rooms rather than part of a circulation route. dormakaba offer: TS99 FL and TS73 EMF Free Swing option, RTS80 FLB and BTS80 FLB floor spring.

5. BS8300 talks about lower power sizes for non-fire resisting doors in comparison to fire doors using a door closer. What if a higher power size is required?

As there is no legal requirement for a minimum closing force on non-fire doors the door closer can be adjusted below size EN3 (18Nm, as required for fire doors). However the door closer should always be adjusted to successfully close the door. If this increases the force to exceed BS8300/ADM* requirements, for example to overcome heavy duty seals on an acoustic door, dormakaba can supply a supplement to an access statement detailing the measures taken to ensure opening forces have been kept to a minimum.

6. BS8300 mentions avoiding door closers where the maximum closing force is not between 0-15 degrees. What type of closers exhibit these properties?

If a rack and pinion type closer is used in conjunction with a slide arm and channel do not experience an increase in the opening resistance throughout the opening cycle and thus be denied ease of access.

dormakaba’s unique Cam Action closer combined with a slide arm and channel do not experience an increase in the opening resistance on operation of the door.

As opening and closing forces are directly proportional, Cam Action closers exert their maximum closing force between 0-15 degrees of final closure as required in the guidance to ensure the correct latching action.

7. Why should Cam Action closers be preferred over standard rack and pinion closers?

Cam Action closers provide greater benefit to any user when operating a door fitted with a closing device. BS8300 and ADM* requires the opening resistance to drop to 22.5N by 30 degrees, and although Rack and Pinion mechanisms with scissor arms can achieve this, a Cam Action mechanism achieves it far easier and much more quickly, resulting in easier access for all.

8. Can full opening of the door be achieved when using the backcheck facility?

BS8300 details minimal resistance on a door when opened slowly. However this is only possible when using door closers with ‘thinking backcheck’. With ‘thinking backcheck’ as opposed to ‘fixed or standard backcheck’, the backcheck facility only engages fully when the door is opened with great force or speed, if the door is opened slowly then the backcheck will not engage. All dormakaba overhead door closers with backcheck facility have ‘thinking backcheck’.

9. How important is regular maintenance?

BS8300 notes that without regular maintenance of all door fittings, the resistances to opening and closing can increase to an extent that the ability of disabled people to pass through the door can be affected therefore building owners and users must check doors regularly to ensure they meet the opening force requirements.

Independent studies by PSA Research showed that where doors and ironmongery represent as little as 1% of a building’s cost, they can account for 80% of the total maintenance bill in use. dormakaba Service division offer a full maintenance package for manual, automatic and industrial doors. Please contact us for further details on 0800 212 380.