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July 2011

# DORMA Which Door Control?

Meeting the  
requirements  
of the DDA  
& Fire  
regulations



**REVISED**  
in line with the  
new edition of  
BS8300:2009

There are two main considerations in specifying door controls:

- Does it meet the requirements of the DDA?
- And 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.



## Disability Discrimination Act



Part 3 of the Disability Discrimination Act introduced 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 (SENDA) 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 0° and 30° degrees and below 22.5N between 30° and 60° degrees...”.*

Not all door closers available in the market can meet the criteria, DORMA door closers carry third party test evidence to demonstrate their ability to produce low opening forces and help doorsets meet the requirements of BS8300 and ADM\*.

## Door closer opening forces and third party certification

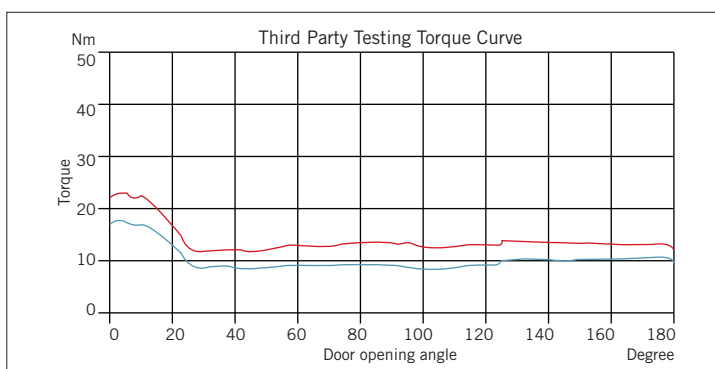
Whilst BS8300 and ADM\* state maximum opening force requirements in respect of the door closer, the complete doorset must be compliant with this opening force. A Torque Curve shows the opening and closing forces throughout the opening and closing cycle in Nm from initial opening through and beyond 60° 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 DORMA closers detailed in this guide have been third party tested using pivots as detailed in BS EN 1154 (maximum resistance 0.4Nm).

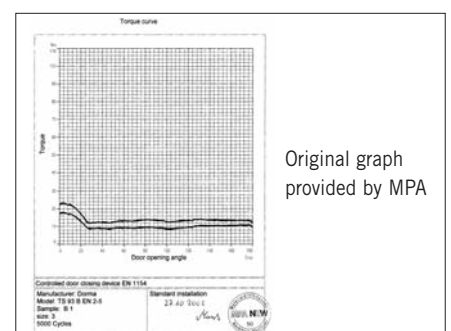
High quality accompanying ironmongery such as hinges, latches and intumescent seals should be selected in order to keep the resistance added to the door set to a minimum. BS EN 1935 details the maximum allowable resistance provided by hinges, however no such standard currently exists for door seals. Contact manufacturers directly for information on the resistance of their ironmongery.

This torque graph shows the results from an independent test for the DORMA TS93 cam action closer, demonstrating how the opening force at 0° to 30° degrees of the door opening angle starts at less than 30N and rapidly falls away to less than 22.5N for the remainder of the opening cycle.

This measurement was taken at power setting EN 3, the minimum requirement for fire doors as detailed in BS EN 1154. For non-fire resisting doors the closer can be set to a lower power setting and therefore the opening forces will be even lower.



\*Section 3 in Scotland, Part R in Northern Ireland



## 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 DORMA 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 DORMA 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:

<b>CF No.</b>	Certificate number issued by CERTIFIRE
<b>ITT120</b>	Suitable for timber fire doors
<b>MM240</b>	Suitable for uninsulated metal doors
<b>IMM240</b>	Suitable for insulated metal doors

The number indicates that some items may be suitable for doors up to 120 mins fire resistance, whereas others may be suitable for up to 240 mins.

### Check Certificates

DORMA is always willing to supply copies of certificates relating to their products. Certificates give details of any extra intumescent protection required in the locality of some mortised items. DORMA supplies such extra protection as ready cut gasket packs for those products which require them.

### BS EN 1155 Electrically powered hold open devices for swing doors

Covers both electro-magnetic devices incorporated into door closers, and hold open magnets. To comply, the devices must be capable of both manual and electric release. Any door closing element must comply with BS EN 1154 - controlled door closing devices.

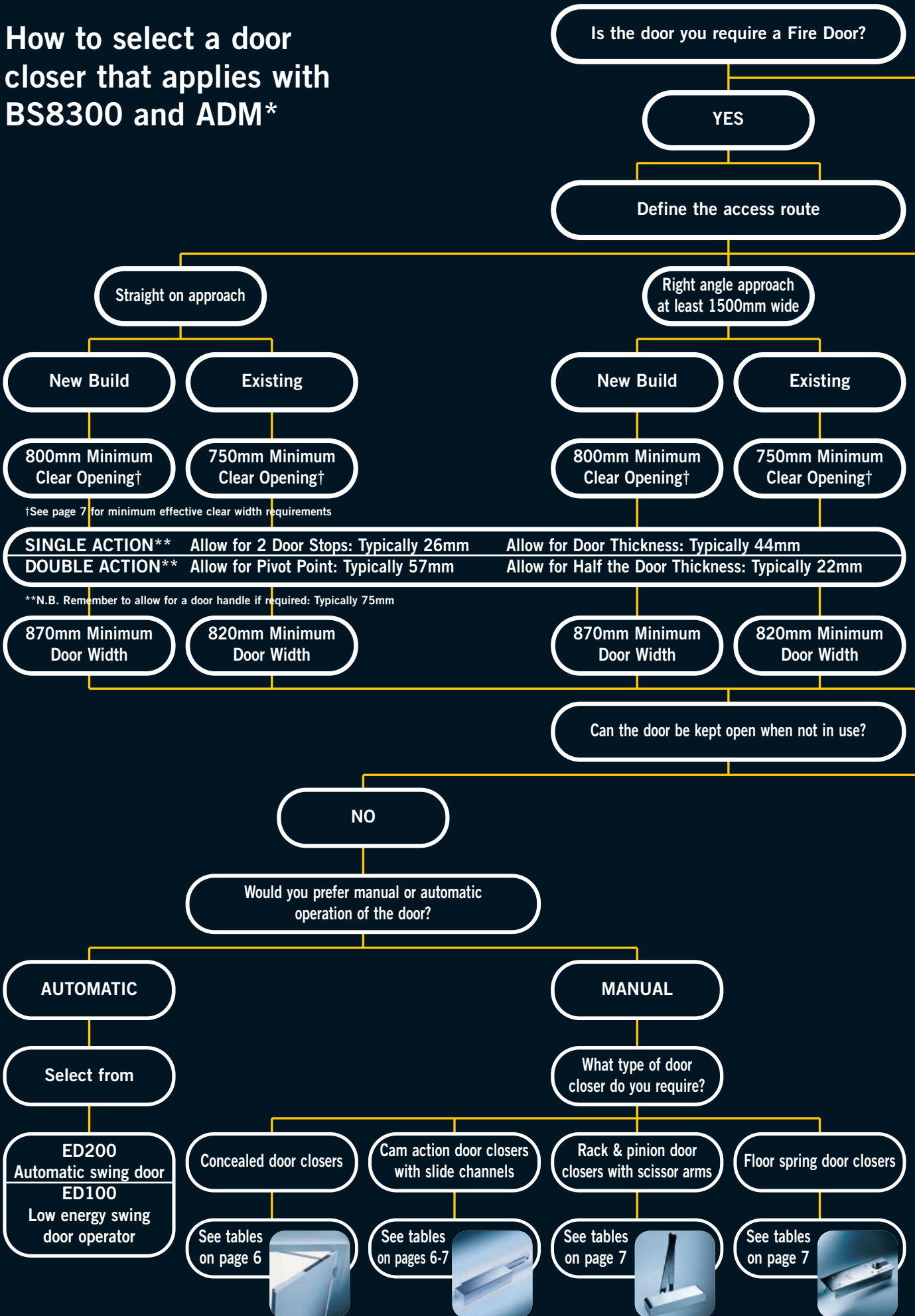
## The Regulatory Reform (Fire Safety) Order 2005

With the introduction of the RR(FS)O, 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 (or both) and would invalidate any building insurance.

The risk assessment includes checking all fire doors and emergency exit doors to see if they meet the requirements of the new RR(FS)O. Further details are available at [www.communities.gov.uk/fire](http://www.communities.gov.uk/fire). Please contact DORMA as we can assist you in carrying out the risk assessment.

# How to select a door closer that applies with BS8300 and ADM\*



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\*

\*Section 3 in Scotland, Part R in Northern Ireland

Right angle approach at  
least 1200-1499mm wide

New Build Existing

825mm Minimum  
Clear Opening†

775mm Minimum  
Clear Opening†

<b>SINGLE ACTION**</b>	Allow for 2 Door Stops: Typically 26mm	Allow for Door Thickness: Typically 44mm
<b>DOUBLE ACTION**</b>	Allow for Pivot Point: Typically 57mm	Allow for Half the Door Thickness: Typically 22mm

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

895mm Minimum  
Door Width

845mm Minimum  
Door Width

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††**  
ITS96 EMF

**HOLD OPEN††**  
TS93 EMF  
TS92 EMF  
TS91 EMF

**HOLD OPEN††**  
TS73 EMF

**HOLD OPEN††**  
BTS80 EMB

**FREE SWING**  
TS99 FL \*\*\*

\*\*\*Not cam action

**FREE SWING**  
TS73 EMF

**FREE SWING**  
BTS80 FLB

††Alternatively use EM magnets  
with any DORMA product within  
the chosen door type

## Door Closers for Fire Doors

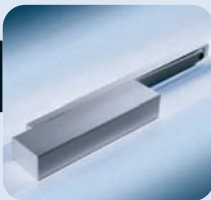
Door closers on fire doors must be set at a minimum power size of EN3. Under BS EN 1154, size EN3 closers are recommended for use on doors up to 950mm wide. For more information on door closer power settings on other door sizes see page 8. All DORMA door closer have been third party tested using pivots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

KEY	
	Opening force
	Closing force
	Compliance with opening force requirements
	Non-compliant
	Complies at this size

### Adjustable Door Closers

#### CAM ACTION DOOR CLOSERS

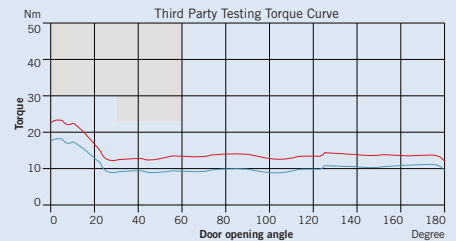
New improved performance



Product TS93 Size EN2-5

Typical Door Sizes (mm)  
826 850 875 900 926

Minimum achievable door width at EN3 = 767mm



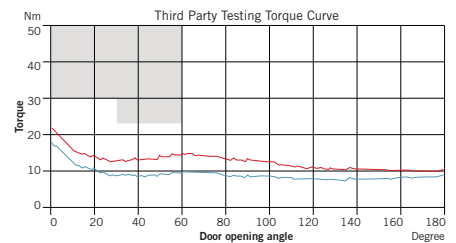
New improved performance



Product TS92 Size EN2-4

Typical Door Sizes (mm)  
826 850 875 900 926

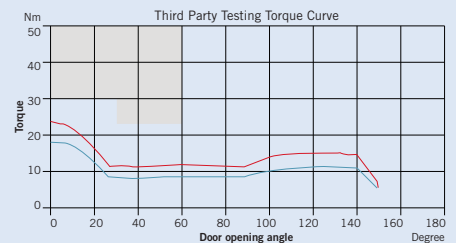
Minimum achievable door width at EN3 = 733mm



Product TS97 Size EN2-4

Typical Door Sizes (mm)  
826 850 875 900 926

Minimum achievable door width at EN3 = 783mm



## CONCEALED DOOR CLOSERS

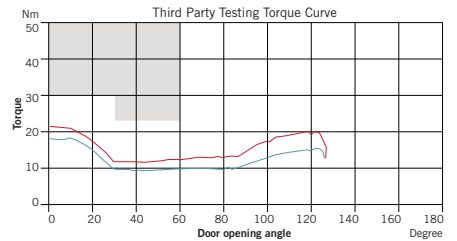
New improved performance



Product ITS96 Size EN2-4

Typical Door Sizes (mm)  
826 850 875 900 926

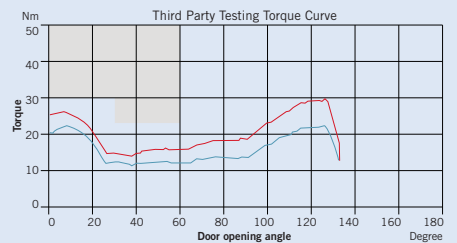
Minimum achievable door width at EN3 = 733mm



Product ITS96 Size EN3-6

Typical Door Sizes (mm)  
826 850 875 900 926

Minimum achievable door width at EN3 = 867mm



## RACK & PINION DOOR CLOSERS

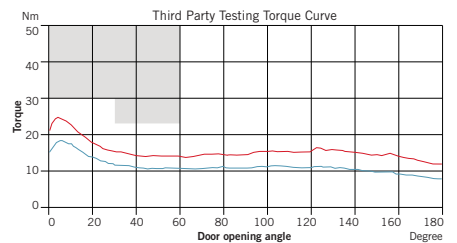
New improved performance



Product TS83 Size EN2-5

Typical Door Sizes (mm)  
826 850 875 900 926

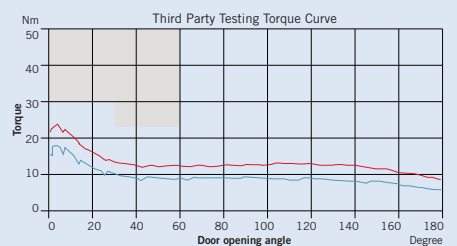
Minimum achievable door width at EN3 = 833mm



Product TS73V Size EN2-4

Typical Door Sizes (mm)  
826 850 875 900 926

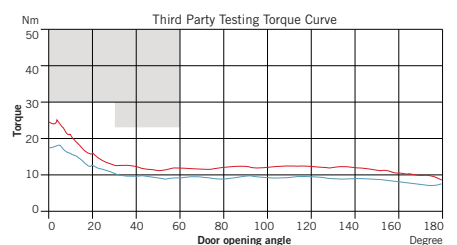
Minimum achievable door width at EN3 = 792mm



Product TS72V BC Size EN2-4

Typical Door Sizes (mm)  
826 850 875 900 926

Minimum achievable door width at EN3 = 833mm



New improved performance

## Door Closers for Fire Doors Continued

All DORMA door closers have been 3rd party tested using pivots as detailed in BS EN1154 (maximum resistance 0.4Nm)

### Fixed Power Door Closers

#### FLOOR SPRING

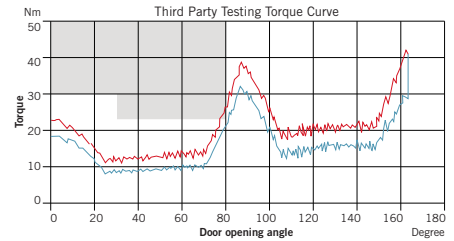
New improved performance



Product BTS75V Size EN1-4

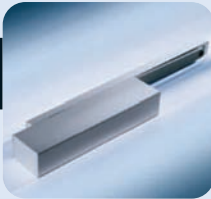
Typical Door Sizes (mm)  
826 850 875 900 926

Minimum achievable door width at EN3 = 767mm



#### CAM ACTION DOOR CLOSERS

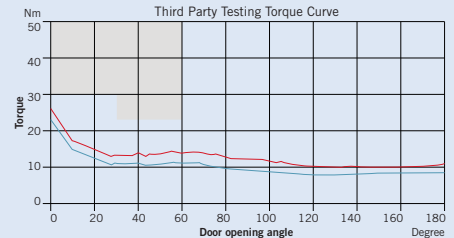
New improved performance



Product TS91 Size EN3

Typical Door Sizes (mm)  
826 850 875 900 926

Minimum achievable door width at EN3 = 867mm



## 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.

BS EN1154	Door Sizes mm
EN1	750 & below
EN2	750-850
EN3	850-950
EN4	950-1100
EN5	1100-1250
EN6	1250-1400

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 DORMA closers can achieve the required opening forces on smaller door widths as detailed above. For more information contact DORMA.

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

### Minimum effective clear widths of doors

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

## 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.

**DORMA can provide both manual and automatic solutions for external doors.**



## Automatic Doors

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



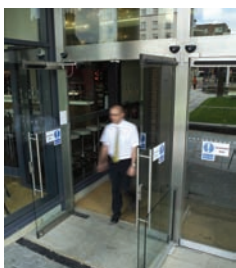
### SLIDING DOORS:

- DORMA ES range / BST curved doors
- Preferred solution as recommended by ADM



### FOLDING DOORS:

- DORMA FFT
- Ideal where space is restricted



### SWING DOORS:

- DORMA ED200 / ED200i in-head unit
- Ideal for retro-fit or new build



### SPACE SAVING DOORS:

- DORMA RST
- Unique swivelling action means the sweep of the door is only a few centimetres outside the door line



### LOW ENERGY SWING DOORS:

- DORMA ED100
- Ideal for retro-fit or new build
- Activated by push pad or remote control



### REVOLVING DOORS:

- DORMA KTV or KTC
- Can act as an airlock keeping out draughts, noise and dirt
- Manual, positional, servo-assist or fully automatic operation

DORMA offers a full supply and installation package for automatic doors. All installations are completed to the highest safety standards as recommended under BS7036. For further information on the specification of automatic doors please ask for our Automatics Specification Guide or to see one of our Automatics sales consultants.

\*Section 3 in Scotland, Part R in Northern Ireland

## Frequently Asked Questions

**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 are not recommended. However, very high efficiency fixed power closers such as the TS90 and TS91 Cam Action Closers will comply with the required opening forces on certain door widths and can therefore be used.

A variable power closer 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 DORMA 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 DORMA high efficient door closers are capable of coping with doors at these smaller sizes.

The view taken by the ODPM when issuing the guidance on door widths has been based on an average door closer efficiency of between 60-65% which requires wider doors to meet the 30N opening force.

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



DORMA offer the following electrically powered hold open door closers: ITS96 EMF, TS93 EMF, TS92 EMF, TS91 EMF and TS73 EMF. We also offer the BTS80 EMB floor spring.

Alternatively any DORMA door closer can be used in conjunction with independent hold open magnets (EM).

When using electrically powered hold open devices the door closing device is not required to comply with the opening force of less than 30N (when the electrical supply has been cut through activation of the alarm or power failure). However certain buildings may benefit from having electromagnetic devices that, when the power is removed, they still comply with the 30N maximum opening force. Here the use of Cam Action EMF Door Closers, or Cam Action Door Closers used with EM magnets will provide opening forces of 30N or less when fitted at size EN3 on door widths as detailed earlier.

**4. BS8300 refers to "swing free" controlled door closing devices.  
Which suitable products are available from DORMA?**

"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. DORMA offer: TS73 EMF Free Swing option, TS99 FL 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?**

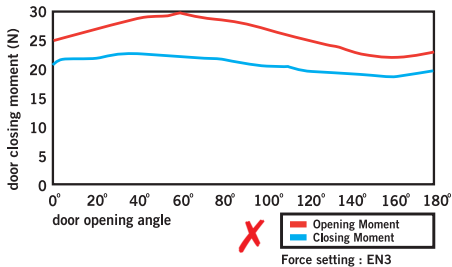
As there is no legal requirement for a minimum closing force on non-fire doors the door closer can be adjusted below size EN3 (18Nm, as required for fire doors). However the door closer should always be adjusted to successfully close the door. If this increases the force to exceed BS8300/ADM\* requirements,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

\*Section 3 in Scotland, Part R in Northern Ireland

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

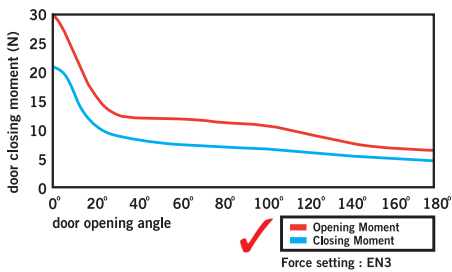
**Conventional rack and pinion closer with slide channel**

If a rack and pinion type closer is used in conjunction with a slide arm and channel, any user will experience an increase in opening resistance throughout the opening cycle and thus be denied ease of access.



**Cam action closer with slide channel**

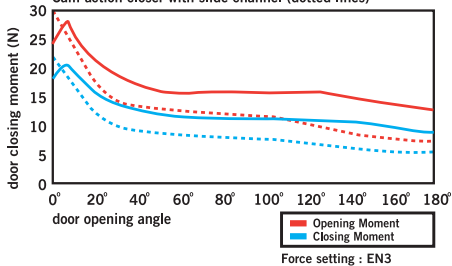
DORMA's unique cam action closer combined with a slide arm and channel do not experience an increase in the opening resistance but a rapid fall in opening resistance on operation of the door.



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?**

Conventional rack & pinion closer with scissor arm (solid lines)  
Cam action closer with slide channel (dotted lines)



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 DORMA 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. DORMA Service division offer a full maintenance package for manual, automatic and industrial doors. Please contact us for further details on 01462 477602.



**Door Controls**



**Automatic Doors**



**Glass**



**Movable Walls**



**Service**

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