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BS 8300:2009 - DESIGN OF BUILDINGS AND THEIR APPROACHES TO MEET THE NEEDS OF DISABLED PEOPLE

GAI Guide to Standards

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BS 8300:2009 - DESIGN OF BUILDINGS AND THEIR APPROACHES TO MEET THE NEEDS OF DISABLED PEOPLE

GAI GUIDE TO STANDARDS

The Guild of Architectural Ironmongers have published a series of “GAI Guides to Standards” relating to British or European Standards which are relevant to the architectural ironmongery industry. They highlight background and detail on the relevant product, provide information on the specific standard and explain what harmonisation is, where applicable. This GAI guide relates to to the code of practice for the design of buildings and their approaches to meet the needs of disabled people.

BACKGROUND

DEFINITION

The definition of a disability and disabled person from the Equality Act 2010 is as follows:

(1) Subject to the provisions of Part 2, Chapter 1, Item 6, a person has a disability for the purposes of this Act if he has a physical or mental impairment which has a substantial and long-term adverse effect on his ability to carry out normal day-to-day activities.

(2) In this Act “disabled person” means a person who has a disability.In essence, this means that a pregnant woman or a man with a broken leg would not be considered “disabled” in the terms of the Act because their conditions are temporary. A person with learning difficulties or a visually impaired person (VIP) would qualify as “disabled”, especially if there were no expectation of improvement in their condition. Although those with temporary loss of full physical or mental function aren’t covered by the Act, they still benefit from the Act’s knock-on effect of creating an accessible environment for all citizens.

HISTORY

The Disability Discrimination Act 1995 was introduced in a number of stages starting in December 1996. From October 1999 it required “service providers” to take reasonable steps to change practices, provide auxiliary aids, and remove physical barriers to make their facilities more accessible for users with disabilities.

From October 2004 they have had to “make reasonable adjustments to the physical features of their premises, if it is impossible or difficult for disabled people to access their service” i.e. all existing buildings had to be upgraded where practicable and reasonable. All new buildings and extensions must comply.

In 2010, all civil rights legislation covering discrimination of various kinds (including the DDA, Sex Discrimination Act, Race Discrimination Act, etc.) was amalgamated into the Equality Act (EA).Neither the EA, nor the DDA before it, makes any reference to door hardware, so guidance on what is “reasonable” is detailed in BS 8300.

The BS 8300 Code of Practice gives clear guidance on layouts, sizes, fittings etc for almost all types of buildings except those which are intended for use exclusively by disabled people. It does not make specific recommendations relating to the use of buildings by children. Basically it gives guidance and provides a code of practice as to what IS “reasonable” - it provides some specific information and some general guidance. The publication of BS 8300 in October 2001 thrust the issue of Accessibility for All to the top of the agenda for many specifiers and clients. Unfortunately this original Code of Practice also created many concerns, often identifying issues and problems, without providing solutions or guidance on how to solve them. This was further exacerbated by the amendment of Approved Document M – Access To And Use Of Buildings, in 2004, for England and Wales as this included conflicting guidance, most noticeably concerning opening forces and visual contrast.

HISTORY

BS 8300 was amended in June 2005 in an effort to clarify some of these more critical conflicts of guidance. This was supported by the addition of an FAQ section to the Approved Document M website, which mirrored the guidance relating to LRV's, opening forces, and effective clear widths, found in the amended BS 8300. However, it was felt that a better understanding of the impact this Code of Practice has on users, designers, specifiers and manufacturers, and the availability of new information and data, warranted a complete overhaul of the Code. Consequently, the BS 8300 BSI committee was reconvened early 2006. In February 2009 a fully revised version of the Code of Practice was published, following a comprehensive overview of the content. This document includes heavily modified guidance on ironmongery and doors. Much of it relates to a relaxation in design, allowing a more flexible approach to the specification. There is also more information provided on means of escape, with reference to the new BS 9999.

Approved Document M for England only has again been revised in 2015 and has now been split in to two parts; volume 1 for dwellings and volume 2 for buildings other than dwellings.

Quotation:

"My advice to other disabled people would be, concentrate on things your disability doesn't prevent you doing well, and don't regret the things it interferes with. Don't be disabled in spirit as well as physically" –

Professor Stephen Hawking

THE STANDARD BS 8300:2009 DESIGN OF BUILDINGS AND THEIR APPROACHES TO MEET THE NEEDS OF DISABLED PEOPLE - CODE OF PRACTICE

INTRODUCTION

The Introduction to this standard highlights what is meant by an “accessible environment ”

“An accessible environment is one which a disabled person can enter and make use of independently or with help from a partnet or assistant, including being able to escape in the event of fire or other emergency”

The standard covers a wide range of disabilitiies and the use of the built environment by disabled people who can be residents, visitors, spectators, customers, employees, holders of public office, or participants in sports events, performances and conferences.

SCOPE

This Code of Practice gives recommendations for the design of new buildings and their approaches to meet the needs of disabled people. It lists a number of types of building it applies to but states that it does not apply to individual dwellings, residential buildings designed specifically for the needs of severely disabled people, or temporary structures.

It mainly covers access to buildings, although reference is made to egress in event of fire or emergency the main recommendations for means of escape are given in BS 9999.

Although it is aimed specifically at the design of buildings to meet the needs of disabled people, its recommendations are also likely to benefit the population in general, e.g. elderly people, people with children in pushchairs and those carrying heavy luggage.

ACCESS ROUTES TO AND AROUND BUILDINGS- HANDRAIL

Handrail dimensions and spacing. The profile dimension of circular handrails is between 32mm and 45mm, oval profiles are 50mm wide x 38mm.

Handrail fixing. Reference to loading recommendations in BS 6399-1 has been added to the standard, along with more general fixing guidance.

Handrail materials. Handrails should not become excessively cold or hot to the touch. The use of surfaces which have a low thermal conductivity such as timber or nylon sleeved tube are suggested.

Images courtesy of HEWI

ENTERING A BUILDING - THRESHOLD

BS 8300:2009 clarifies the cumulative height of the threshold, including an upstand,as not more than 15mm. An upstand of more than 5mm high should be chamfered or pencil rounded.

Images courtesy of Zero Seals

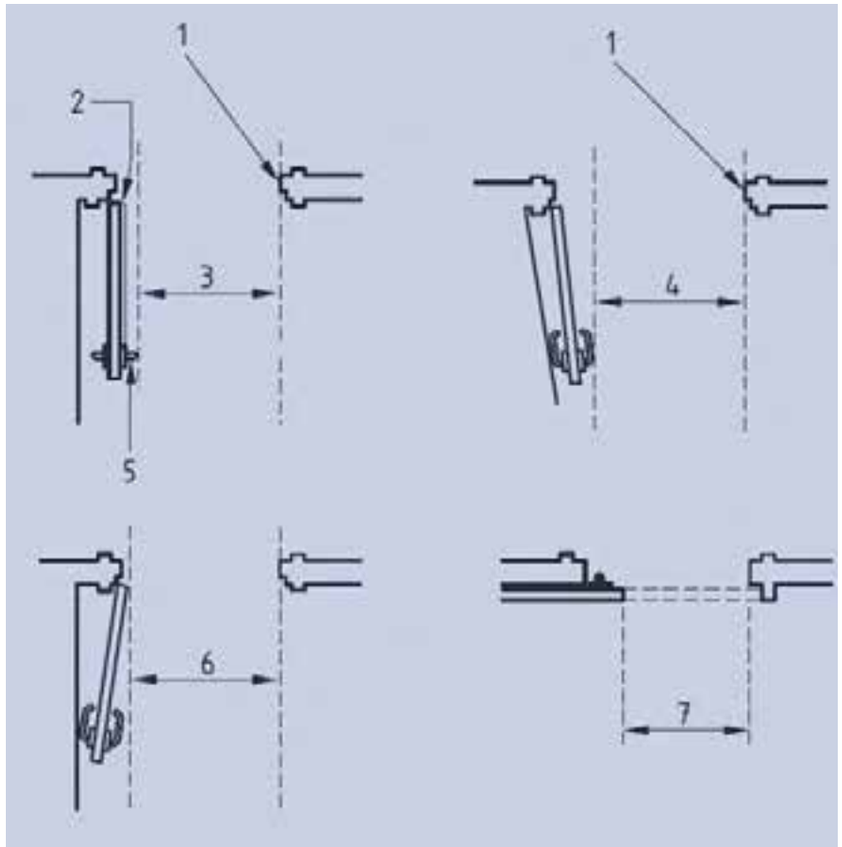
EFFECTIVE CLEAR WIDTH THROUGH A DOORWAY

BS 8300:2009 makes reference to ‘New buildings’ and ‘Existing buildings’, rather than ‘Preferred’ and ‘Minimum’ as used in the original document, and provides guidance on external doors and internal lobby doors. An accompanying note identifies that effective clear widths of 800mm and 825mm are achievable with 926mm wide doors, provided doors open beyond 90°, and the projection of any door furniture does not reduce effective clear width.

TABLE 2 - Effective Clear Widths of doors

Direction of approach of wheelchair	Min. effective clear width of door leaf (mm)	
	New Buildings	Existing Buildings
Straight-on (without 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

Figure 11 demonstrates how the effective clear width can be achieved.



Key

1 Door stop or edge of other door of a double doorset
2 Weather board if provided
3 Effective clear width (door stop to projecting door furniture), with door open at 90°
4 Effective clear width (door stop to projecting door furniture), with door open less than 90°
5 Door furniture
6 Effective clear width (door stop to door leaf), with door open beyond 90°
7 Effective clear width (door stop to door leaf), with sliding door

ENTRANCE DOORS AND LOBBIES

The previous version of the guidance originally identified as being relevant to ‘principle’ entrances doors but has been broadened to encompass ALL entrance doors to a building, even those designed to be held closed when not in use.

SELF-CLOSING SWING DOORS

Where it is not possible for a controlled door closing device to close an entrance door and keep it closed against external forces without exceeding the opening force limits as mentioned in the standard “ For most disabled people to have independent access through single or double swing doors the opening forces when measured at the leading edge of the door should be not more than 30N from 0° (the door in the closed position) to 30° open, and not more than 22.5N from 30° to 60¸ open” Then the following systems should be used:

A power-operated door – either sliding, folding, balanced or swing, which should be one of the following two types:

- A manually activated door controlled by a push pad, coded entry system, card swipe or remote control device
- An automatically activated door controlled by a motion sensor or a hands-free proximity reader

A low energy swing door. These may be used on swing doors with lower levels of pedestrian use as they can work in manual mode or provide powered assistance opening, either in push and go or power-assist modes.

Power-operated revolving doors. These are not considered accessible; therefore a complementary accessible door should be provided immediately adjacent to the revolving door

An entrance lobby or airlock system of inner and outer doors. The guidance recommends the use of double leaf swing doors wherever possible.

PUSH PAD ACTIVATION

AUTOMATIC ACTIVATION

AUTOMATIC REVOLVING DOOR

MANUAL DOOR OPENING AND CLOSING FURNITURE

This section and the associated diagrams have been heavily modified from the previous version. The aim was to remove some of the confusion, and, where possible, to relax the requirements to allow a more flexible approach to the design and use of door opening furniture. The changes relate to lever and pull handle positions, sizes and designs:

- The Code of Practice now specifically deplores the use of knob furniture and small symmetrical turn buttons (thumbturns) in favour of levers.
- The torque force required to operate keys and cylinder turns should not exceed 0.5N.m.
- Suggestion that turnable pad handles may be selected for use with multi-point locking systems.
- The requirement for 400mm high kickplates which was in the previous version has also been removed, as this was considered to be unnecessarily restrictive.
- As a principle, pull handles should not be fitted to the push side of doors. (back to back fixed pull handles)
- Where a lever handle intercepts the viewing panel, any projecting glazing beads should not interfere with the operation of the lever handle or reduce the effective clearance behind it.
- Handle to contrast visually with the face of door. A light reflectance variation (LRV) difference of 15 points is acceptable, as opposed to 30 points in the previous version of the standard.

Figure 17 in the original BS 8300 described the principles for door furniture. Although the intention was for guidance and demonstration purposes only, in reality many specifiers and manufacturers alike have been unwilling to stray beyond the dimensions and shapes actually shown. This has resulted in a large amount of “return to door” furniture as below being specified.

RETURN TO DOOR FURNITURE

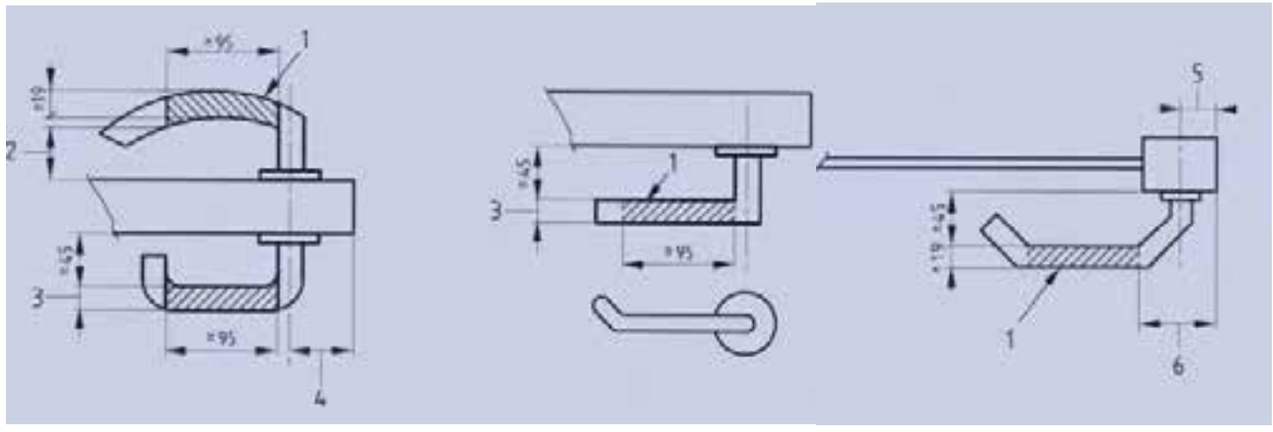


Figure 15 in BS8300 shows examples of lever furniture showing dimensions and illustrates how the guidance dimensions can be applied to other styles of lever furniture as above

FIXING HEIGHTS FOR LEVER FURNITURE

The fixing height for lever furniture is now 800-1050mm, with 900mm being the preferred position. This change addresses some of the conflicts in the earlier document, and accommodates the handle positions identified in HTM 59.

Figure 14 – Location of door opening and closing furniture identifies the key dimensions and positions.

PULL HANDLE DIMENSIONS

As a consequence of the previous version pull handles have invariably been 400mm high, round bar design. BS8300:2009 moved away from fixed positions for the vertical pull handles, giving only minimum heights for the top fixing of 1300mm, and maximum height of 1000mm and minimum height of 700mm for the bottom fixing, effectively allowing a minimum 300mm pull handle. The diameter (or cross-section) of a pull handle remains at 19mm- 35mm. Although a conventional “D” shape is shown, other shapes of pull handle are acceptable, as long as they meet the dimensional criteria.

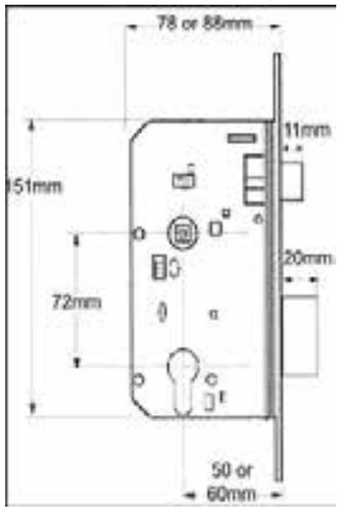
Figure 14 (continued) – Location of door opening and closing furniture identifies the key dimensions and positions.

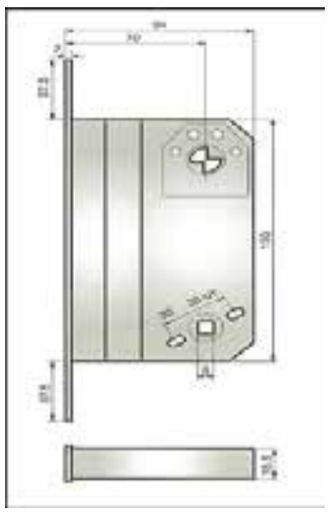
CONTROLLED CLOSING DEVICES

BS 8300 quotes a maximum figure of 30N opening force when measured at 0° (closed) and 22.5N when measured between 30° and 60° open. It is stated that it is preferable that backchecks should not operate before about 80° open and that the maximum closing force should occur between 0° and 15° of final closing. Advice also notes that it can be difficult to measure the force at the door edge and that it can be measured in line with the handles, up to 65mm from the door edge. The figures can be increased by up to 2N in this situation. It is recommended that plunger type force gauges should be used but that they may only have an accuracy to within 2 or 3N.

LOCK AND LATCHES

Locks and latches should conform to BS EN 12209, cylinders if required should conform to BS EN 1303. Locks for providing security should conform to BS 3621, BS 8621 and BS 10621 as appropriate.
Where an upright mortice lock is used the cylinder should be above the handle where it is more visible and accessible or, if below the handle the minimum distance between the handle and the keyway should be 72mm.





Detail showing indicative types of lockcase which are deemed to satisfy the requirements of BS 8300

PANIC AND EMERGENCY EXIT HARDWARE

Panic exit devices to BS EN 1125:2008 have been referenced, requiring a maximum operating force of 220N.
Emergency exit devices to BS EN 179:2008 have been referenced, requiring a maximum operating force of 70N for lever handles and 150N for push pad.

DOOR BOLTS

Door bolts should conform to the requirements of BS EN 12051. Where doors are required to be used for security purposes one of the following door bolts should be used: knob-slide flush bolts or surface bolts with a free moving slide action; rack and pinion mortice bolts with fixed knobs; surface-mounted espagnolette bolt, lever action flush bolts. Sunk slide bolts should be avoided.

DOOR ENTRY SYSTEMS

When located on the adjacent wall, the position of the activation unit should be positioned within 200mm of the door frame, at a height of 900mm to 1050mm from FFL.

ENTRY PHONES

Recommendations have been added requiring a means of indicating the call is acknowledged and the lock released, both audibly and visibly.

DIGITAL LOCKS

Recommendations Digital locks, preferably operated by levers, should be between 900 and 1050mm from FFL.

HORIZONTAL CIRCULATION

Doors leading into corridors

The recommendation for a horizontal pull handle or other operating furniture on the internal face of outward opening doors is in this section.
The use of reduced-swing (sliding-folding) doors has been identified as being beneficial in reducing the extent the door swings into the room, thus facilitating manoeuvring in and out. Where doors are held open, the leading edge of the door must contrast visually with the face of the door. Two examples of how this could be achieved are given:

- A contrasting intumescent seal of a minimum 15mm wide fitted in the edge of the door
- A self-adhesive contrasting strip at least 1 m long, starting at least 500mm from FFL, covering at least 60% of the door edge thickness.

The requirement that the architrave (or door frame if no architrave is present), should contrast with the wall surface is also identified here.

Image courtesy of Lorient

Doors across corridors

Self-closing and pivoted doors on escape routes should conform to the recommendations of BS 9999.

Doors fitted with controlled door closing devices

The guidance on opening forces and controlled closing devices remains unchanged from the previous version of BS8300.

VERTICAL CIRCULATION

BS 8300 states that buildings should conform to recommendations given in 5.10.4 and, where relevant, 5.10.5. This relates to handrail fixings and materials as previously descibed.

Image courtesy of HEWI

SURFACES AND COMMUNICATION AIDS

Visual contrast

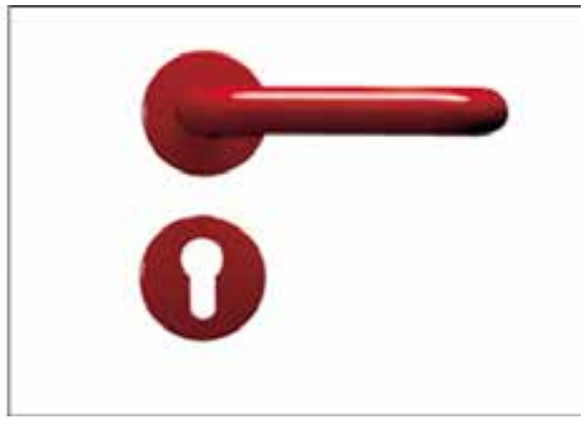
Specific guidance is given on visual contrast, suggesting a difference in LRV of 70 points between letters, symbols or pictograms and the signboard, and between the signboard and the background, to ensure good visual contrast.

ANNEX B

Using light reflective values (LRV's) to assess visual contrast

This is an area of considerable change, resulting in amendments to the guidance in BS 8300 and the creation of a new standard, BS 8493: 2008 – Light reflectance value (LRV) – Method of test.
The main change in the guidance relates to the LRV points difference between door opening furniture and the face of the door.

On the basis that the door opening furniture is a 3-D form (giving light and shade), generally has a shiny finish, and is limited in its possible location, a relaxation from the previous version to 15 points difference has been agreed. Elsewhere the contrast remains generally 30 points. In reality, this is not as straightforward as it seems as BS 8493 requires a flat measurement area of at least 7mm diameter. Therefore, technically, this test method cannot be used to establish the LRV of curved surfaces such as lever handles. However, clients are still likely to require an estimate of the LRV of a handle. Consequently figures taken from a flat sample of similar material may be beneficial, along with an understanding that the manufacturing method and finish are likely to be different, which could affect the result. The test standard does require measurements to be taken from multiple samples; the quantity and size of the sample depending on the degree of variation in pattern/colour and the extent of the surface texture. Early measurements taken by manufacturers suggest that this 15 point requirement does still restrict the use of some metal furniture with selected veneers, but should make the selection process of door finish and handle material a little easier.



Examples of high visual contrast

HEWI- Standard Colours			LRV	RAL Design Colour	RAL Colour	NCS Colour Classification
13 buttercup yellow, 2,3			61	RAL 085 80 80	RAL 1023	S 1070-Y10R
24 Orange **		New 2011	29			S 2070-G70Y
30 burgundy, 1			6	RAL 020 20 20	RAL 3007	S 7020-R10B
33 ruby red			9	RAL 030 30 45	RAL 3003	S 3560-R
50 steelblue			6	RAL 260 20 15	RAL 5011	S 7020-R80B
53 ultramarine blue, 2,3			9	-	RAL 5002	S 4550-R80B
73 meadow green ## ,1			13	RAL 150 40 50	RAL 6029	S 4550-G10Y
74 Apple Green **		New 2011	36			S 2070-Y40R
80 coffee brown			6	RAL 060 20 05	RAL 8022	S 8502-R
90 jet black			5	-	RAL 9005	S 9000-N
92 anthracite grey			9	RAL 240 30 05	RAL 7016	S 8005-R80B
95 stone grey			37	RAL 140 60 05	-	S 3502-G
97 light grey			58	RAL 000 80 00	RAL 7035	S 2000-N
98 Signal White **		New 2011	86		RAL 9003	
99 pure white			83	RAL 100 90 05	RAL 9010	S 0502-G50Y

LRV Table

Images courtesy of HEWI

RELATED STANDARDS AND DOCUMENTS

The reader should also refer to

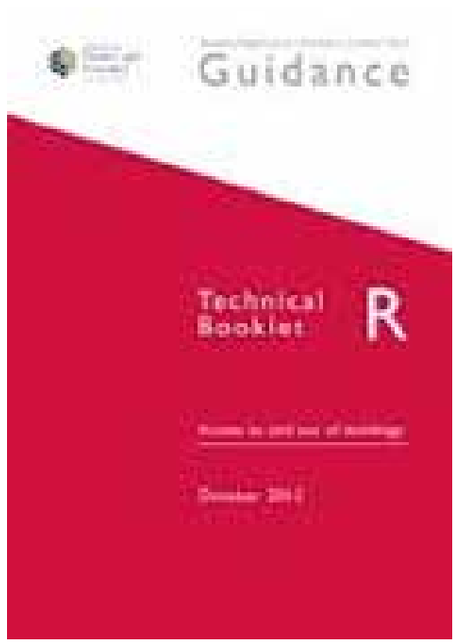
The Equality Act 2010,

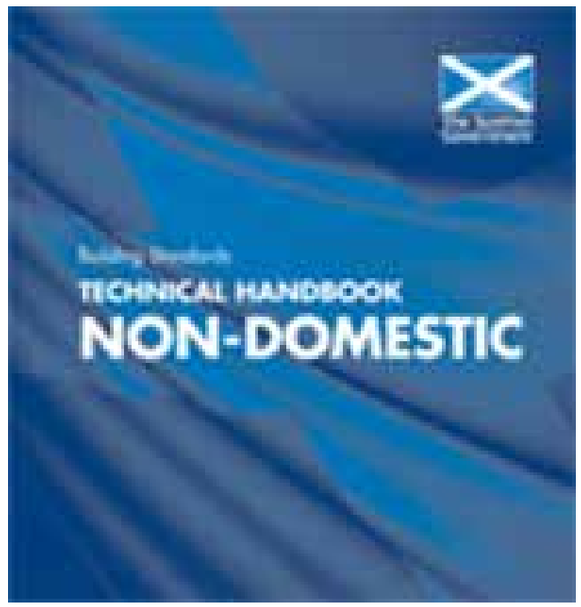
Approved Document M 2015 (England)

Technical Handbook Non-Domestic Safety 2015 (Scotland)

Technical Booklet R (Northern Ireland),

Technical Guidance Document M (Republic of Ireland)





CODE OF PRACTICE: HARDWARE FOR FIRE AND ESCAPE DOORS

Further information on the correct selection of items of ironmongery for use on all fire resisting and escape route doors can be found in the “Code of Practice: Hardware for fire and escape doors” this is available on the GAI website www.gai.org.uk or www.firecode.org.uk.

ABOUT THE GAI

The Guild of Architectural Ironmongers (GAI) is the only trade body in the UK that represents the interests of the whole architectural ironmongery industry - architectural ironmongers, wholesalers and manufacturers. Its reputation is built on three key areas: education, technical support and community. Its qualifications, education and CPD programmes are widely respected in the UK and overseas, including the GCC and Hong Kong. Its technical information service is the only specialist service of its kind, providing GAI members with comprehensive advice on issues relating to the legislation, regulations and standards governing the use of architectural ironmongery and related hardware

CONTACT DETAILS

This “Guide to Standard” comes courtesy of the GAI Technical Information Service and has been adapted from GAI Technical Update 7 by the GAI Technical Manager, Douglas Masterson who can be contacted for further clarification on 00 44 7469 141657.

BIBLIOGRAPHY

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The Equality Act (2010)
Brainyquote.com
BS8300:2009
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