



Corridors and internal doors in church buildings: (November 2014)

A Church Growth Trust Briefing Paper

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1 Introduction

This briefing paper is prepared for churches considering replacing, refurbishing or updating existing internal doors and corridors within their church premises. It is specifically written with the needs of disabled persons in mind, including wheelchair users and those with impaired vision, but other subjects, such as fire safety and sound insulation, are also occasionally referred to.

The document is not intended as an exhaustive guide to regulations applicable to new buildings. These are extensive and their application varies from building to building, especially if they contain more than one storey, such that they could not be covered in a simple general briefing paper as this. The guidance given herein is provided so that the opportunity may be taken during redecoration or refurbishment, to update features of an existing property to bring it up to a standard similar to that which would be mandatory in a new church building, where it is practicable and economic to do so. It is not intended to suggest that any of the improvements are mandatory under legislation.

Typical upgrades which could be considered for existing corridors include:

- Improving decoration to give greater colour or tonal contrasts to assist the visually impaired.
- Considering existing floor finishes and improving or replacing where appropriate.
- Checking for hazards and for ease of use by disabled persons.

Typical upgrades to existing internal doors could include:

- Improving colour or tonal contrasts to assist the visually impaired.
- Changing or improving ironmongery.
- If doors are to be replaced, consideration of providing improved glazing or vision panels.
- If doors are to be replaced, consideration of providing an improved fire-rating.

The guidance is restricted to internal doors and corridors and does not cover external entrance doors, entrance lobbies, fire escape doors, internal steps or internal ramps. It does not cover escape lighting or fire detection alarm systems, which will usually also be present in corridor areas.

2 Legislation

The sections of the Building Regulations which affect most aspects of internal doors and corridors are Part B regarding fire safety, Part M regarding disability matters and Part K regarding protection from falling, collision and impact.

Part B includes requirements on the permitted lengths and minimum widths of escape routes. It also covers clear widths of doorways for escape purposes, location and rating of fire doors and their operation together with the control of internal fire spread along internal surfaces, such as corridors, by placing restrictions on the materials which may be used, such as wall linings.

Part M includes requirements regarding ease of use by disabled persons, including widths of doorways and colour/tonal contrasts. Part K includes requirements on the use of safety glazing in areas such as doors or glazed screens, where it could otherwise be easily broken.

Building Regulations will often not apply to repair or refurbishment work of internal doors or corridors. Building Regulations are constantly being updated. Part B regarding means of escape is one of the most complex documents in the set of regulations. It is therefore unlikely that any older

building will fully comply with the current regulations. However, no alterations should be made which would make the building comply to a lesser degree than it does already. For example, a door should not be replaced with a narrower door than the existing without first checking that the resulting door width complies with present legislation. If in doubt, the advice of Building Control or your surveyor/architectural consultant should be sought.

Planning permission will not usually be required for internal alterations, but Listed Building Consent may be required if the property is listed.

3 Layout of doors

Traditionally, most small places of worship will be fitted with doors which open off the corridors or entrance areas into the individual rooms. However, current Building Regulations for new buildings require that doors, where reasonably practical, should be hung to open in the direction of escape and, where the number of persons that might be expected to use the door at the time of a fire, they should always open in the direction of escape. This will usually mean opening out from the room and into the corridor or foyer.

Similarly, doors serving wheelchair-accessible WCs should also open outwards to assist rescue in case of a person falling against the door.

If doors are being replaced, it would be worth considering if they can be re-hung to open outwards in the direction of escape. However, they should not obstruct passage by others along the corridor, or reduce the effective width of the corridor escape route to less than that required under Building Regulations. Otherwise, the corridor could be blocked or unacceptably restricted in width for building users exiting from other parts of the building.

To assist wheelchair users, the leading edge of the door (i.e. the edge where the latch or lock is located) should be at least 300mm away from any adjoining wall or obstruction when approaching the pull side. This is to avoid the footplate of the wheelchair hitting the wall before the user is sufficiently close enough to reach the door handle. This does not apply if the door is power operated as there is no need to reach the handle. When the required 300mm space is provided, ensure it is not obstructed by such items as bins, umbrella stands, plant or flower stands and fire extinguishers, which are all popular items to push into an internal corner, "out of the way".

4 Potential hazards

Keep an eye out for hazards, which could cause injury to persons, especially those with visual impairments:

4.1 Trip hazards

Slight changes in levels or the presence of single steps can often be a trip hazard, especially where there is a junction of two differing types of floor finish. Ideally they should be eliminated altogether but, if this is not possible, they can be highlighted by colour difference or contrasting junction strips.

Perimeters of entrance mat wells can also become a trip hazard over time and should be monitored. Through wear and tear, the entrance mat often becomes compressed and no longer lies flush with the surrounding floor finish. If it does compress, the entrance mat can be replaced. Alternatively, another solution is to take up the entrance mat and fill the base of the mat-well slightly, perhaps with thin plywood, to raise the surface back up flush with the surrounding floor finish.

Be aware that worn or frayed carpets or cracked/broken tiles also present trip hazards. Make regular checks and act accordingly.

4.2 Projecting hazards

Items which project from the wall can present a hazard to persons with visual impairment, especially if they have sharp corners or edges. Fire fighting equipment bolted to the wall, flower stands, bookcases, low tables, umbrella stands, can all present problems in this respect, as can hot objects, such as radiators or heaters.

Where practical, such items should be fitted into recesses. If this is not possible, their location should be chosen carefully or, with the obvious exception of fire fighting equipment, they can be screened.

4.3 Overhead hazards

Similarly, overhead hazards can cause injury to visually impaired persons. Overhanging staircases, high level cupboards, wall mounted loudspeakers and similar equipment all present hazards. Overhead hazards can be more readily eliminated than those projecting from walls by placing barriers, cupboards, bookcases etc below the hazard which prevents persons walking below it.

5 Finishes and surfaces

5.1 Floors

The selection of floor finishes is of considerable importance to all building users, not just disabled persons. Floors of corridors and, in particular, entrance areas, are more likely to become wet in adverse weather than, say, the main worship area and function rooms. Hard surfaces can not only become slippery when wet but, particularly in large areas, can cause sound reverberation presenting problems for those with hearing difficulties.

In the interests of all building users, it is prudent to provide some degree of entrance matting. This will reduce the risk of slipping on hard surface floors and will remove dirt and grime to prevent soiling of soft finishes, such as carpet. Ideally the entrance matting should be laid to be flush with the main flooring to prevent tripping, although some low profile entrance mats with a neoprene chamfered border are also acceptable. Traditional coir matting should be avoided at all costs and this is made clear in the current Building Regulations. Coir matting is usually about 20mm thick, presenting a considerable trip hazard if laid on top of the main floor surface. Even if recessed to be flush, coir matting is difficult for wheelchairs to negotiate and to turn on, as are some of the more deeply ribbed entrance mats.

Glossy floors can cause undesirable reflection, particularly where there is a light source, such as a window, on the opposite side to the approach.

If hard surfaces, such as tile, sheet vinyl or vinyl tiles are used, consideration can be given to using a slip-resistant grade, particularly in areas where they may become wet, such as close to entrance areas or external doors.

Carpets, if used, should ideally be shallow dense pile as deep pile carpets present the same problems to wheelchair users as coir matting and, for entrance areas, are obviously more difficult to keep clean.

Whatever the floor finish, boldly patterned flooring can cause a confusing impression for those with limited vision. Those with striped patterns across the direction of travel can be taken for steps, or make them less obvious if steps are present.

5.2 Walls and ceilings

As for floors, bold or busy patterns can cause a confusing impression and extensive amounts of smooth hard surface can cause reverberation, although the latter can be reduced by other furnishings, such as covered notice boards or panels.

Apart from the matters which affect disabled persons, what may often not be appreciated is that the surfaces of walls and ceilings are controlled by Part B of the Building Regulations with regard to fire spread, including the ability for flames to spread along a surface. Generally, the requirements for individual rooms in churches are not too onerous but the Regulations require that wall and ceiling surfaces in circulation areas in places of worship (i.e. corridors, entrance areas etc) must be Class 0, which is the highest classification to prevent combustion and surface spread of flame.

Detailed guidance on which materials meet the requirement for Class 0 are given in the Regulations but, in summary, acceptable materials are non-combustible materials, brick, stone, block, ceramic tiles, concrete, plaster or plasterboard and some fibre cement tiles. Unacceptable materials include timber panelling, MDF, hardboard, plywood, GRP etc. However, some of the main commercial paint manufacturers do make fire retardant paints, and stains, which can be applied to timber panelling or similar materials to convert them to Class 0, but these are specialist trade products, not generally available from DIY stores.

6 Tonal contrast

Visual contrast can significantly assist those with impaired vision in negotiating the building and in preventing accidents. Visual contrast is defined by Part M Building Regulations as a difference in Light Reflectance Value (LRV) of two surfaces of 30 points and refers to research undertaken and published by Reading University. Many paint manufacturers, including Dulux, produce specific guidance on the matter of colour contrast and they have an on-line calculator which can assist. Professional colour ranges have a unique reference code for each colour on their charts and it is easy to determine from the reference numbers what the difference in LRV is between two colours.

It should be noted that the contrast in tone is more relevant than a contrast in colour as two colours can appear the same tone to persons who cannot easily differentiate between colours.

When dealing with working groups or committees for churches, it is common that the colour selection veers towards neutral colours which will not offend anybody and upon which all parties can reach an agreement. This is not peculiar to churches but also is common in many community projects. Whilst they may not cause offense, popular choices, such as Magnolia with White, unfortunately do not provide a suitable colour or tonal contrast!

Seek to provide a contrast between the doors and the corridor walls, so they can be easily identified. If this is not practical for any reason, consideration can be given to painting the door architraves or surrounds with a visually contrasting colour so the outline of the door can be identified. Door handles should also contrast visually with the background colour of the door.

Tonal contrast between walls and floor of the corridor will also assist the visually impaired. If the corridor incorporates a change in direction, a change in the wall colour at the change in direction can also help, as well as providing some visual interest aesthetically.

In new buildings, Part M of the Building Regulations also requires the leading edge of a door (i.e. the edge where the latch or lock is normally located) to contrast visually with the other surfaces of the door, where the door is not self-closing or where it is likely to be left in the open position. This is to avoid persons with impaired vision walking into the edge of an open door.

7 Lighting

Good lighting, whether it be natural or artificial, is essential for all users of the building for visibility and safety. Good light levels are essential, particularly in areas of potential hazards, such as at steps or changes in level.

Faulty or flickering lights should be repaired or replaced as soon as possible, as they can cause problems to those with epilepsy.

Older or cheaper fluorescent lights can often cause a hum or interference with induction loop hearing aid systems fitted to assist those with hearing difficulties. The lights may well have been fitted long before the concept of induction loops was common. If this is the case, and interference occurs, consideration should be given to replacing the fittings as they can cause discomfort to those with hearing difficulties and cause them not to be able to hear church services satisfactorily. This can even occur when the offending light fittings are in an adjoining room. When replacing fluorescent light fittings, high frequency units should be installed, which are less likely to cause interference. If in doubt, this should be discussed with the lighting supplier, or manufacturer, in advance as modern technology is constantly changing with regard to light fittings.

Avoid placing lights in locations where it could cause glare (e.g. behind reception desks facing the public). Good positioning of lighting and use of “wall washers” can help accentuate interior colour, changes in direction etc, but poor positioning can cause shadows or misleading effects. The use of wall-mounted up-lighters will usually give an even, comfortable and glare free illumination, but their suitability will depend upon the ceiling being sufficiently high enough above the light fitting for the light to bounce off correctly. Wall-mounted uplighters and similar wall mounted light fittings can cause hazards if not mounted sufficiently high enough to be above head height.

The positioning of natural lighting can also cause problems with glare, especially if located at the end of a corridor and facing down the corridor. Any greeting position should avoid being located with a window behind. This presents an issue of backlighting behind the greeter which is difficult for those

with visual impairments to cope with and also presents problems for those with hearing difficulties, who may be trying to lip read.

8 Notice boards, leaflet holders and reception desks

Notice boards are often, but not always, located in the corridors or reception areas of churches and the needs of disabled persons, particularly wheelchair users, need to be taken into consideration.

Notices should be located at a height and a position which can be viewed from a wheelchair, which is often overlooked. Try to locate notice boards where they can be accessed by those who need close vision. Positioning items above tables or behind reception desks is not ideal as this prevents close approach for wheelchair users.

Similarly leaflet holders, should be mounted at a height where material can be reached and removed by wheelchair users.

Large areas of notice board in circulation areas can also present a fire hazard with regard to surface spread of flame (see Section 5.2). Notice boards with fabric coverings made with fire-retardant materials are available.

Consideration needs to be given to lighting for notice boards and ensuring that the viewer's body is not placing the notice board in shadow. Ceiling-mounted wall washers directed at the wall surface can provide a good lighting solution to notice boards, pictures, commemorative plaques etc, without causing glare or shadow.

Not all church premises will have the facilities of a reception desk but, if one is provided, it should include a section which is at lower level for wheelchair users, in addition to a section suitable for use from standing height. The wheelchair section should have sufficient knee room below to enable users to approach the desk. It should be no greater than 760mm high to the surface, with a recess of 700mm deep by 1500mm wide below. The knee recess often becomes a storage place for deliveries, positioning of waste baskets, etc and should therefore be monitored regularly, in order to be kept clear.

For new buildings, Part M of the Building Regulations also requires that reception desks, whether standing height or wheelchair height, are to be fitted with a hearing enhancement system, such as an induction loop. For churches, this would be in addition to any induction loop used in the main worship area, as the visitor will be wishing to hold a conversation with the person behind the desk, rather than listening to activities in the worship area or of other rooms. These systems are relatively inexpensive and easy to fit, so churches with existing reception desks may wish to voluntarily fit one. Ready made kits are available on the market from companies such as C-TEC, from around £150 at 2014 prices. See contact details at the end of this paper.

9 Signage

Good signage should help all persons navigate the building, especially visitors, or those who do not regularly frequent the building, and help them feel more at ease.

Avoid using written words where possible and use pictograms, i.e. pictures or symbols. This will assist people who cannot read and those who may not read, or speak, the language in which the sign is written. This is particularly relevant where a church may have regular foreign visitors, or is in an area with a high ethnic population.

If the use of written words is necessary, perhaps typically in longer notices, rather than directional signs, use upper and lower case lettering, not all block capitals. Block capitals may present problems for those with learning difficulties and small children. Also, it is more difficult to recognise shape of the letters for those with impaired vision. A good tonal contrast between the lettering and the background is also essential.

An optional extra is to use Braille legend as an addition to selected signs, which would benefit those with impaired vision. This may not be considered necessary to all signage, and possibly just to selected signs, such as toilets. There are specialist companies who can provide a range of ready-made Braille signs, or who can make signs to order. Also, consider signs which indicate that guide dogs, or dogs who provide other forms of assistance, are welcome.

Most visitors will usually be unfamiliar with the building layout and one of their main concerns is often how to locate the toilet facilities. Disabled persons can often need to access facilities quickly at short notice.

If the facilities are not readily visible from the reception area, or are located in another part of the building, ensure that their location or direction is clearly signed from a position in the reception area. Remember also, that signage for wheelchair users should be located at a reduced eye level, approximately 1400 to 1500mm above floor level.

10 Internal door styles

If internal doors are to be replaced, there is no necessity for the doors to be replaced with exactly the same style. Subject to applicable regulations, opportunity can be taken to change the style and appearance to a more attractive or modern style. Other benefits can be: to improve colour/tonal contrast, to improve fire resistance (see Section 11), or to incorporate glazing or vision panels (see Section 14). If doorways are particularly narrow, opportunity could be taken to improve the clear width of the doors (see Section 12), although this will usually involve more structural work.

The majority of doors in older, smaller, places of worship will be standard “off the shelf” sizes. So, it is usually, relatively easy to replace with a door of the same size, as there are both imperial and metric standard sizes.

The most popular, standard styles used in small places of worship are listed below, but this is not an exhaustive list of styles available:

FLUSH PAINTED DOORS

These are usually manufactured with a plain flush finish of hardwood or plywood, ready for painting. They may be a little featureless or utilitarian, but practical and easy to repair in case of damage. The option for paint finish enables good tonal or colour contrasts to be achieved easily and gives flexibility for altering colours when re-decorating in future years.

VENEERED FLUSH DOORS

Similar to flush painted doors but finished in a timber veneer, giving a higher quality appearance. Some makes are pre-finished with a lacquer, whilst others will require finishing

with a timber stain, varnish or similar. The cost of the door depends upon the chosen veneer, with some timber veneers being more costly than others depending upon the scarcity of the wood. Despite popular opinion, pre-finished veneered doors are often no more expensive than painted flush doors, as the cost of paint and labour for two or three coats has to be added to the painted variety. Veneered doors are, however, not easily repaired when damaged or scratched, compared to their painted counterparts. The risk of damage will be proportional to the type of activities, or the nature of groups using the building and the supervision or leadership.

PANELLED DOORS

These are available in both paint grade and veneered grade. They can be formed from either traditional timber panels or, more cost effectively, from hardboard or MDF panels moulded to give the impression of the more traditional genuine panel construction. They may be considered to be more attractive than flush doors, particularly if a more traditional appearance is required. However, where doors are planned to incorporate vision panels (see Section 14) it can be difficult to insert appropriate panels, which meet the required dimensions in this type of door.

FRAMED AND GLAZED DOORS

This is the kind of door which, typically is formed from a solid timber framing at the perimeter with the upper or lower sections, or possibly both, glazed to give a half-glazed or fully-glazed internal door. Again, they can be paint finished or, at extra expense, be formed from attractive hardwood for staining or varnishing.

11 Fire doors

Before replacing any internal doors, checks should be made to ascertain if they are already graded as fire resisting doors. Any doors in a place of worship which are already fire resisting grade are most likely to have a 30 minute fire rating, (rated as FD30) but this is not an absolute rule as, on rare occasions a 60 minute fire rating could be required (rated as FD60). Check around the edge of doors for any manufacturer's labels or stamps (usually fitted to the top edge of the door). Alternatively, some manufacturers use a circular plug or dowel (usually set into the edge of the door). The colours of the plug identify the fire rating. Information on colour coding is available from the British Woodworking Federation (BWF).

Whereas, many older places of worship are not fitted with any fire resisting doors, they would now be required to do so if it were a new building. Most doors between rooms, or cupboards/stores opening off a room, an escape route, or corridor would now be required to be fire doors in new buildings. If replacing such doors it is worth considering voluntarily replacing with fire doors to improve fire safety. As an added benefit, fire resisting doors are generally of a more robust construction, can reduce accidental damage, and are of denser construction, which reduces sound transmission.

Readers should be aware that this paper is principally written with disability access issues in mind and is not intended to be a guide with regard to the fitting or installation of fire doors, which is a complex issue. If fire doors are to be replaced or installed, particular attention will be required with regard to ironmongery type and materials, fitting tolerances, smoke seals, intumescent fire seals and door closers, which are not covered by this document.

In modern situations, many fire doors are fitted with smoke seals, built into either the frame or the door. These usually take the form of a rubber/neoprene-like blade or a brush type blade, which

restricts smoke passage between the door leaf and the frame. From a disabled access perspective these can have differing effects upon the force required to open the door, with the rubber/neoprene-type blades often requiring more effort to open than the brush types.

12 Minimum clear widths of doors

Part M of the current Building Regulations sets out the requirements regarding the minimum effective clear width of door openings. There is no requirement under Building Regulations for the clear width to be increased where it is currently below standard and no other building works are proposed. However, if alterations are to be undertaken, it would be desirable to improve the clear width, where practical to do so, particularly if the existing clear width falls far short of the present required standard.

The effective clear width is not just the width of the swinging door leaf, but has to take into account the reduction in the opening width by door stops fixed to, or forming part of, the frame on the latch side and the reduction by the thickness of the door leaf when in the open position. If the door can only open to 90 degrees, then the clear width is further reduced by the projection of the door handle. However, if the door can open past 90 degrees then this becomes less relevant. This is an important matter to note when positioning door stops: position them to allow the door to open beyond 90 degrees if possible as this increases the effective clear width by eliminating the projection of the door handle.

Under Part M, minimum clear widths for internal doors in places of worship are as follows:

Where the approach to the door opening is straight on
(i.e not requiring a change in direction to pass through the doorway):

New buildings: 800mm Existing buildings: 750mm

Where the approach to the door opening is at a right angle
and the corridor is at least 1500mm wide:

New buildings: 800mm Existing buildings: 750mm

NOTE: A standard imperial size door of 762mm width (2'6") fails to meet the above requirements when the door stops and door thickness are taken into account. A standard imperial door of 838mm (2'9") usually will meet the requirement for existing buildings, but probably not meet the requirements for new buildings)

Where the approach to the door opening is at a right angle
and the corridor is at least 1200mm wide:

New buildings: 825mm Existing buildings: 775mm

NOTE: A standard imperial door of 738mm (2'9") MAY possibly just about meet the requirements for an existing building, depending on the door thickness and size of door stops, but would not meet the requirements for a new building.

If possible, it is desirable to aim for the effective clear width required for new buildings, rather than the reduced standard required for existing buildings.

13 Double doors

Traditionally, pairs of internal double doors have been made with each leaf of equal width, but double doors are almost impossible for wheelchair users to open and pass through unassisted, particularly if door closers are fitted (e.g. intended as fire doors). The ideal solution would be for each door leaf to be made so that its clear effective opening width is suitable for the passage of a wheelchair, as identified in the previous section but, in many instances, this would require an increase in the overall structural width of a double doorway opening.

Where an increase in the existing structural double doorway opening is not possible or cost prohibitive, a more economic solution is to consider installing a pair of unequal width doors, providing a main leaf which is sufficiently wide enough to allow unassisted operation and passage by a wheelchair user, supplemented by a smaller width door leaf, only opened as and when required e.g. weddings, funerals, major events, or for escape purposes. If working within an existing door opening, this will usually require doors to be manufactured to a purpose-made width, rather than off the shelf width doors.

14 Vision panels and glazing

Under present Part M Building Regulations for new churches, vision panels or glazing is required to most circulation/corridor doors and to doors serving the majority of rooms off the corridors. With the exception of store rooms and possibly some minor rooms, the vision panel requirement applies to doors or side panels greater than 450mm in width, where the door could be approached from either direction. Persons with impaired sight, or with mobility problems, are unlikely to be able to respond rapidly if a door suddenly opens towards them. The provision of vision panels or glazing enables building users to have advance warning of persons approaching the door from the opposite side, enabling them to take appropriate action to avoid the door suddenly opening towards them.

If it is not desirable or appropriate, for limited privacy or distraction reasons, for the door to be fully glazed, (e.g. teaching or counselling rooms) then limited vision panels may be appropriate. These usually take the form of vertical glazing slits approx 150mm wide which should be fitted in the door towards the leading edge (i.e. handle side). Part M gives the requirements for the minimum dimensions required and these are given in the appendix. It is important to note that the vision panels must extend sufficiently low enough to be of assistance to those in wheelchairs, so half glazed doors, with only the upper half glazed, do not meet these requirements.

If it is considered that vision panels are not practical for reasons of security or privacy, the case may be made for omitting the vision panels, but this should be discussed and agreed with Building Control in advance and presented in any Access Strategy document.

Any glazing in doors, or adjoining glazed panels, will need to meet the requirements of Part K Building Regulations with regard to safety in breaking or impact. This generally means the glazing is to be either toughened so it only breaks into small pieces or laminated, so it retains its position.

The use of obscure glazing in vision panels, rather than clear glazing, is a matter of some dispute. In church premises some users consider that clear glazing between corridors and counselling rooms may lead to distraction or a loss of privacy, but others consider that obscure glazing does not give sufficient warning or vision to ascertain if other users are approaching the door from the other side. The risks will clearly depend upon the level of the use concerned. Obscure glazing can come in different levels

of obscurity and thus, some limited obscurity may be deemed acceptable. Obviously some form of vision panel, even if heavily obscured, is better than no vision panel. In this respect, advance discussion with building control is recommended.

For fire resisting doors, any installation of glazing also needs to be fire-rated to provide fire protection appropriate to the fire door rating, typically 30 minutes. Many people are still of the understanding that any glazing in fire-rated doors has to be wire-glazed, which gives an industrial or utilitarian appearance, but this is not the case with modern products. Pilkington Glass and other manufacturers now produce glass which appears as normal clear glass but is also fire-rated, provided that it is used in the sizes specified and mounted correctly. In many situations, and for typical 150mm wide vision panels, Pilkington Pyrodur glass is appropriate, which provides not only a clear glazed 30 minute fire resistant glass but is also laminated to provide safety in breaking. The mounting and sealing of glazing in fire doors needs to meet specific requirements and requires certification. Simply taking a standard fire door and inserting glass, even if the glass is fire-rated, is not acceptable.

15 Door furniture

15.1 Lever handles

The grasp of lever handles is a particular problem to persons with limited dexterity. Smooth handles with a straight edge can cause the hand to slip off the handle easily without operating the opening mechanism. For this reason, Part M of Building Regulations requires that door furniture can be operated by a person with a closed fist. Ideally, door levers should include a return on the end of the door lever to ensure that the hand does not slip off the end of the lever.

Lever handles should be mounted at approx 1000mm above floor level.

15.2 Pull handles

It will be desirable that some doors, such as those in circulation and entrance areas, are fitted with pull handles with no catch, rather than lever handles which operate a catch. Pull handles are usually backed by a push plate. The provision of back to back pull handles can lead to confusion as to whether the door is to be pushed or pulled, without the provision of additional signage.

In a pair of doors the pull handle is ideally fitted to one door leaf only, rather than both. This easily identifies in advance which side is to be pulled first. The pull handle itself should be located at such a height to extend downwards to be suitable for use by those in wheelchairs.

On pairs of doors, the pull handle should be located sufficiently far enough away from the edge of the door so that hands and knuckles do not catch the edge of the adjoining door. As for lever handles, pull handles should also extend down, at least, to enable grasp at 1000mm above floor level for wheelchair users and children.

15.3 Kick plates

Kick plates reduce surface damage to doors but are not mandatory by regulation. They simply protect the surface of doors from damage and reduce subsequent maintenance. They are available in a variety of finishes from plastic to aluminium, brass, stainless steel etc, usually to match the

prevailing ironmongery on the remainder of the door. The most significant damage to the base of doors is usually on the push side. So, if budgets are limited, fit them to the push side only. If budgets are really limited and do not extend to fitting any kick plates at all, they can be left until damage occurs and then fitted to conceal damage.

Traditional normal kick plates are approximately 150mm deep for most doors, but where fitted to doors which will be used frequently by wheelchair users, a kick plate of 400mm deep is advisable. This is to accommodate the potential damage area arising from footplates on wheelchairs. The location of any vision panels in the door can be relevant to the depth of the kick plate. If the vision panel extends too low it can affect the installation of a 400mm kick plate.

16 Door closers

The most common reasons for fitting door closers is either because of a legal requirement, such as for fire resisting doors, or for convenience (e.g. external doors or toilet accommodation). Most people will be familiar with hydraulic overhead door closers fitted to doors where it is normally necessary for the door to be kept in the closed position. However, they may not be familiar with some of the optional extras or variations which are available at a small additional price.

16.1 Types of door closer

The most common types of door closer are summarised as follows:

CHAIN TYPE CLOSERS

These are usually fitted between the hinged side of the door and the frame. They generally provide for little adjustment and cheaper models can be fierce in their operation. As a result, the chain is often severed by the building user to prevent their activation. They may be economic, have less visual intrusion and serve their required purpose but are not necessarily the best-suited alternative for public buildings. Many fire officers or building control authorities will not accept them as satisfactory for installation on fire doors in public buildings as they can fail to deliver the final pressure in the late closing stages of the door to overcome the extra resistance of smoke seals, leading to the door not being fully closed or fire-proof.

BASIC OVERHEAD HYDRAULIC CLOSERS

These close the door by hydraulic pressure in the unit, the pressure being adjustable to suit the size and weight of the door. They are available in different pressures, depending upon the weight/width of the door to be closed so it is important to ensure with the supplier, or manufacturer, the details of the door which the closer is required function with. There are different configurations for mounting, depending upon the desired location of the closers (e.g. on the pull side or the push side of the door). Other than being able to adjust the pressure required to close the door, they have little other adjustment.

LATCHING ACTION

Many of the overhead door closers on the market above the basic models will, at least, include a latching action. This enables a different pressure to be set for the main swing of the door to within about 75mm of the closed position, with a different adjustable pressure for the last stage of the closure. (Most fire doors will require an extra pressure of closure for the last stage in order to overcome latch resistance or resistance from smoke seals etc). This action allows for a

slow closure on the main swing with a sharper closing pressure on the final part. This avoids sudden unanticipated closure of the door.

DELAYED CLOSURE

Some models can include a delayed closure as an optional extra. This enables the door to be swung out to 90 degrees or beyond, where it will remain for an adjustable amount of time before commencing the closure procedure. This is a distinct advantage to wheelchair users and those using Zimmer frames, as it allows time for them to pass through the door without having to combat the closing pressure of the door. It is also beneficial for all users where goods, chairs, furniture, sound equipment, etc may need to be moved through the doorway during a set-up procedure for events. It also reduces the possibility of the door being wedged open to facilitate movement of such goods, with the distinct possibility that the wedge is not removed after use, rendering operation as a fire door redundant. The delayed closure option is usually available for a small additional cost.

MAGNETIC DOOR HOLDERS

This option is often employed in larger public buildings and may not be necessary, economical or practical for small places of worship. The doors are fitted with standard hydraulic door closers, but are prevented from closing the doors by being held open by strong electro-magnets in the location of traditional floor stops. They can only be installed where a fire detection system is in operation. The power to the electro magnets which hold the doors in the “open” position, is cut in the case of the alarm system being activated and the doors thus close.

FREE SWING DOOR CLOSERS

These closers are ideal for smaller buildings where it may often be desirable for doors to be left open or where the automatic closing action can be an inconvenience. They rely upon a low voltage supply being connected to the closer. The door is fitted with a hydraulic closer, but no pressure is activated whilst the electrical supply is maintained. This enables the door to be “free-swing” as if no closer were fitted, thus acting in a similar manner to a standard door in a house, which may be closed, left open or left partially open. When the power supply is cut, pressure is applied to the door closer and it acts in the same manner as a normal overhead hydraulic door closer until power is resumed. The power is cut by a relay activated by an alarm system. If the building is already fitted with a fire alarm and detection system, this is usually a matter of connecting a relay to the alarm sounder circuit so that, when the alarm is activated, power is cut to the door closers. If no alarm and detection system exists, it is possible to install local fire detectors connected to a relay and transformer to perform the same function. Free swing door closers are of particular benefit to disabled and elderly persons and to children, as the need to deal with the pressure of a door closer is removed.

16.2 Pressure required to open doors

A more recent introduction into Building Regulations is a restriction on what effort is required to open doors. The effort can be quite significant with heavy or wide doors, particularly when fitted with doors closers. This could present problems to any person lacking in upper arm strength.

Under Part M Building Regulations, the maximum force that should be required to open the door from closed position to 30 degrees open should be 30 Newtons, and not more than 22.5 Newtons for the range between 30 degrees open to 60 degrees open. This requirement is actually only cited as being applicable to entrance doors. If it is not possible to open the door without exerting these pressures, then automatic openers, or a power-assisted type, will need to be fitted.

No reference is made to maximum pressures required to open internal doors, but it should be considered. In addition to the size and weight of the door leaf and the resistance offered by perimeter seals, the amount of effort required to open doors will depend greatly upon the type and quality of door closer fitted. Hydraulic closers which have a cam action and slide rail, generally make the door easier and smoother to open than closers with a rack and pinion mechanism and scissor arms. Free swing closers obviously eliminate any resistance to opening, except for the weight of the door itself.

17 Finger trapping

Trapping of fingers is a hazard for all doors, but particularly so for those fitted with closing devices. Risk of finger trapping increases sharply where there are children or disabled persons present, who may be unaware of impending danger, or for those with limited mobility who may not be able to respond to the danger quickly.

Finger trapping can rarely be eliminated completely on fire doors where, by necessity, the door leaf and the frame fit together tightly. The more severe injuries are likely to be suffered at the hinge side of the door where a “guillotine” movement occurs. Here it is possible to fit anti-finger traps to prevent fingers entering the gap between door and frame at the hinge side, when open.

The most common forms are either a plastic concertina-type strip, fitted the entire height of the door, fastened on one side to the door leaf and, on the other side, the door frame. Thus effectively screens and bridges the gap, whilst still permitting flexibility for the door to operate. The other popular form comprises a spring-loaded coil fitted to one surface with a flexible coiled blind, the end of the blind being fitted to the other surface. The blind unrolls or re-rolls to stretch across the gap as necessary.

These devices can be fitted when the door is first installed, but can also be retro-fitted to existing doors. Even if not fitted throughout the building, it is worth considering fitting, at least, to the doors more frequently used by children or disabled persons, such as children’s play rooms, crèche, etc.

18 Sound reducing doors

Sound transmission between rooms being used simultaneously in a place of worship, such as between a worship area and a children’s crèche or Sunday School room, can be distracting to users of either room. If sound transmission presents a problem the installation of a sound resisting door can be considered.

Specialist sound-resistant doors, also known as acoustic doors, are usually manufactured and sold as a complete door-set, i.e. the door frame, hinges and ironmongery, are all pre-assembled as a complete unit. Typically the door leaf and frame may have several rebates, fitted with acoustic seals, rather than the customary one rebate for fire doors, to assist in reducing sound transmission around the perimeters of the door. They also have a high-density or heavy core to the door, again to reduce sound transmission, or the core of the door may incorporate other heavyweight materials, such as a steel plate.

Because of the multiple rebates between door and frame, the hinge arrangement can lead to a greater potential for finger trapping, unless finger-trap guards are fitted.

Manufacturers will often quote sound reduction in decibels (dB). The higher the decibel reduction, the more effective is the sound-reduction of the door. The performance of some doors can be so effective that they can give a better sound reduction than a 103mm brick wall, so that the wall becomes the weak point in terms of sound transmission, rather than the door.

Usually the doors do not contain any glazing or vision panels but, by the very nature of their construction will often meet the requirements of a fire resisting door, but this should be checked.

19 Additional information and further reading

The following documents include information on all matters of accessibility regarding buildings:

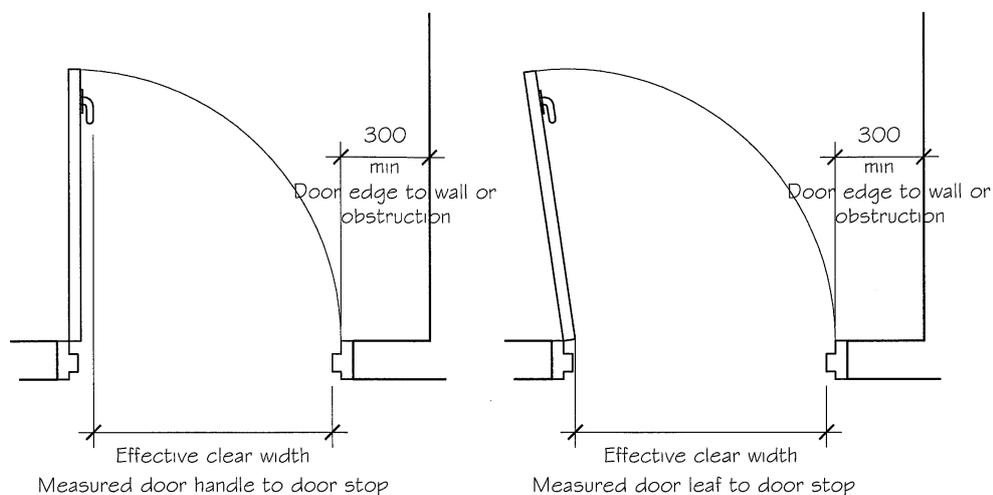
- The Building Regulations: Approved Document M “Access to and use of Buildings” Available from the Building Regulations section of the government’s planning portal website as a free pdf download www.planningportal.gov.uk/buildingregulations or hard copy available to purchase from stockists of technical construction publications including RIBA Bookshop, telephone 0191 244 5557, www.ribabookshops.com , price £15.00.
- “Designing for Accessibility” published by the Centre for Accessible Environments, Telephone 020 7822 8232, www.cae.org.uk , price £30.00

Other useful information and contacts:

- “The Dulux Trade Colour and Contrast Design Guide” by ICI paints. www.icipaints.co.uk
- C-Tec Ltd, manufacturers/suppliers of hearing enhancement kits for reception desks. Telephone 01942 322744 www.c-tec.co.uk

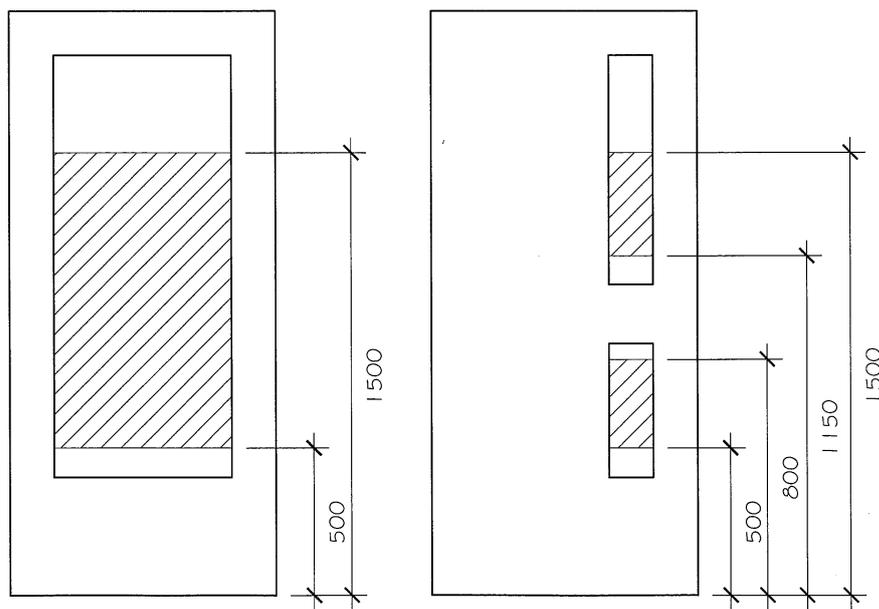
Figure 1

Internal door and vision panel dimensions



Effective clear width.
Door open to 90 degrees

Effective clear width.
Door open past 90 degrees



Minimum zone of visibility
shown hatched.

A break in the visibility zone between 800 and 1150mm is permitted if necessary to accommodate a centre rail

Droeway
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Photographic Illustrations

Entrance area with matching veneered flush doors. The left door is the disabled WC, the right door serves the minister's office and incorporates a vision panel.

Doors contrast with the wall background. Wall contrasts with the floor.

Wall washers illuminate notice boards from ceiling level



The same property illustrating a pair of unequal, flush, veneered doors serving the main worship area. The larger leaf allows passage of a wheelchair without opening both doors.

The doors open out into the corridor in the direction of escape and incorporate vision panels.

In this instance, the doors are fitted with free-swing door closers connected to an electrical circuit which means that the doors are not normally under the pressure of the overhead closer unless the fire alarm is activated.

A similar corridor arrangement, but using painted flush doors, which provide good contrast with the walls.

The floor finish provides good contrast with the walls.

As above, the double doors are on free-swing closers, enabling them to be left in an open position if desired.





A fire-rated veneered panelled door incorporating glazing to the upper half gives a more traditional appearance to this Victorian building, whilst incorporating a kick plate for practical protection. The slide action door closer offers low-pressure resistance when carrying items into the kitchen.

This particular glazing arrangement does not meet the minimum requirements for vision panels as it does not extend low enough for wheelchair users but was, in this case, acceptable to Building Control as it serves the kitchen area to which the public do not have access and was a distinct improvement on the previous door arrangement, which contained no glazing at all.

The colour contrast of the door and the break in the dado rail emphasise the door position for visually impaired persons.



This section of entrance foyer to a re-built chapel incorporates a feature wall in a contrasting tone. This acts to highlight the end of the entrance area, where a change in direction occurs and it is necessary to either turn left into the main chapel, or right into the remainder of the building for toilet facilities and function rooms.

The doors are flush veneered. The left door serves a simple kitchenette with vision panel and fitted with a free-swing door closer. The right door serves the wheelchair-accessible WC.

Adjustable spotlights in the ceiling help to highlight the tonal contrast.