Centre for Excellence in Universal Design

Entering and Moving Around 02

UD Home Guidance

UD Home Plus Guidance

Houses

Apartments

Attention to detail, taking into consideration the different sizes and capabilities of people over their lifecycle, can make Universal Design Homes easy and safe to enter and move around for everyone. Good design decisions can allow the home to adapt to changing requirements over time.

2.1 Entering the Home

04

Photo Design Features

- An inset door provides protection for anyone waiting outside.
- Two adjacent inset doors ensure that visibility is good from the street.
- The gate contrasts with the other boundary treatment to make it easy to identify where the entrance is.
- A glazed panel beside the door gives daylight to the hallway and views in and out.
- The letter box is at an accessible height.
- The planting on top of the bin store provides interest along the street, and an opportunity for someone who can't bend easily to tend plants.
- Good contrast provided between the brickwork and the door.

Photo Design Tip

- The covered area by the front door could be increased with a small projecting canopy.
- Differently coloured front doors can make it easier for everyone to recognise individual homes.

02

A level threshold with no more than a 10mm upstand and level drainage strip is installed here. There is good colour contrast between external, threshold and internal floor surfaces. The front door is made up of a 'cat and kitten' door that can allow wider opening widths.

Photo Design Tip

A recessed mat inside the entrance should be fitted.

Thresholds for houses

Design Considerations and Awareness

All entrances should be logically located, clearly visible, readily identifiable, easy to access, with some form of weather protection.

For individual houses there should be at least one level entrance from the street into the dwelling so that the household members, their family and visitors, can enter and leave the home easily. This should be the main entrance door that is used most regularly by everyone. Ideally all doors will have a level threshold.

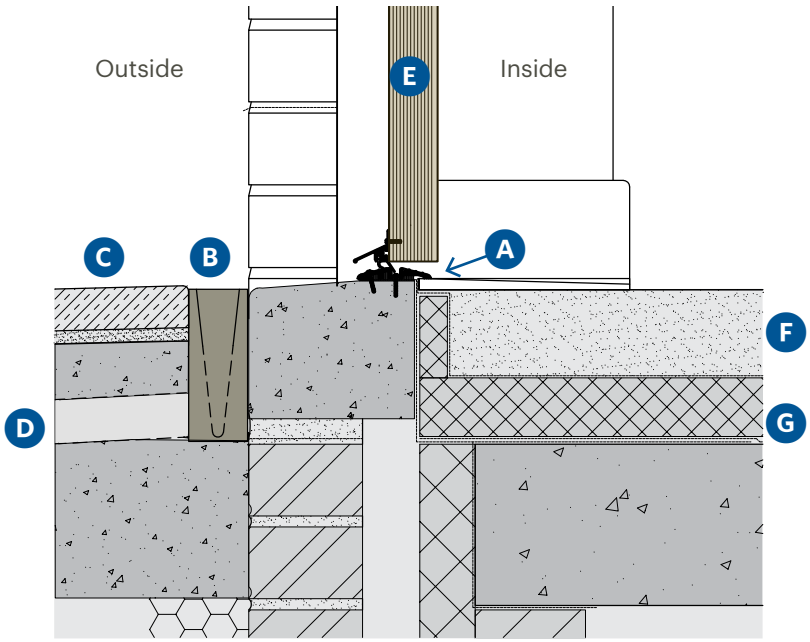
For apartment buildings and communal entrances there should be a level entrance from the street and rear garden, and at all other entry points into the apartment building.

Shelter at the door is required to provide protection from inclement weather while a person is unlocking the door, or waiting for the door to be opened for them. This can be achieved through setting the door back from the face of the building. However, for security the set-back should be no greater than 700mm to avoid screening a potential intruder. For security, provide a wider opening which ensures that the front door and perhaps an adjacent window can be seen and monitored easily from the street. As 700mm does not provide sufficient shelter from weather, consider adding a canopy to the inset doorway, so that it projects far enough to provide the minimum required total depth of shelter of 900mm.

From the street, it is essential that a visitor can easily see the door number or name. Where there are many houses or apartment buildings of similar design it is important to make it easy for everyone to locate a particular entrance, for example by using distinctive design features such as door colours, boundary treatments, planting, porch canopy details etc. An enclosed porch can be a useful transition space, draught excluder and storage for outdoor clothes, shoes and buggies.

The design and detail of the threshold should prevent extreme rain or seasonal floodwater coming into the home while still allowing easy wheeled access. It will often be important to combine the threshold with an integral level drainage strip or a separate drainage and gulley system to avoid flooding.

Technical Drawings:
Section through an entrance door threshold.



A **Proprietary threshold with maximum height of 10mm.**

B **Step drain.**

C **Paving at maximum 1:60 gradient.**

D **40mm diameter waste pipe outlet.**

E **Entrance door.**

F **Concrete floor.**

G **Insulation.**

UD Home UD and UD Home ⊕ Guidance

- UD Position the entrance to a home or apartment building in a logical location that is readily identified from the road or pavement.
- UD Avoid setting the entrance door back deeper than 700mm from the face of the building.
- UD Provide lighting to illuminate the door, the home number and location of the entry system separate to a P.I.R. light or general external light.
- UD Ensure that the external light is controlled from inside the home or apartment building, or sensor-activated.
- UD Provide a compressible level threshold which reduces to a maximum upstand of 10mm, or a level threshold of 5–10mm with chamfered, ramped or pencil-rounded edges, to all entrance doors.
- UD Consider recessing the porch area into the building to provide improved weather protection at the door.
- UD Check the local flood and water table levels beforehand and design the layout, drainage and gullies to address the potential for flooding.
- UD Provide a slope of maximum 1 in 60 to direct water away from the door, and incorporate a flush drainage channel at the threshold wherever necessary.

For individual houses:

- UD Provide level thresholds at all entrance doors.
- UD Provide a canopy of minimum dimensions 900mm deep with a 300mm overhang either side of the door at a height of maximum 2300mm.
- ⊕ Provide a canopy of minimum dimensions 1200mm deep by 1500mm width at a height of maximum 2300mm.
- ⊕ Provide a charging place(s) for an electric wheelchair in a well-ventilated porch area or entrance hall.
- ⊕ Provide enclosed storage space for outdoor clothes and equipment in the porch area or entrance hall.
- ⊕ Provide an internal or additional porch area of minimum dimension 1800 x 1800mm.

For apartment buildings:

- UD Provide level thresholds at all entrance doors.
- UD Entrances at the side of the building are to be avoided unless the route is very clearly visible from the front.
- UD Provide a canopy of minimum 1500mm deep for the full width of the entrance, and a maximum height of 2800mm. Higher canopies will need to be deeper to provide the same level of protection.
- ⊕ Install an opening device such as a push-pad door operator.

UD Home ⊕⊕ Guidance

A larger external landing of at least 2400 × 2400mm at the entrance to the home can be an advantage for a number of people waiting at the door, or for deliveries.

A glazed panel beside the door gives daylight to the hallway and views in and out. The door furniture is at an accessible height, the number is clear, and a light is provided. There is good contrast between the brickwork and the door.

Photo Design Tip

- The canopy provides some protection to users, but could be larger.
- Colour contrast between the steel plate and the post box would make it easier for everyone to use the post box.

Entrance Doors for Houses

Design Considerations and Awareness

The front door marks the threshold of the home, and therefore needs to be easily identified from the street, and look welcoming. It needs to be wide enough for a range of activities, like pushing a double buggy or walking frame, carrying suitcases or shopping, without damaging the door or frame. A clear space on both sides of the door will make opening the door easier for someone in a wheelchair or using walking aids.

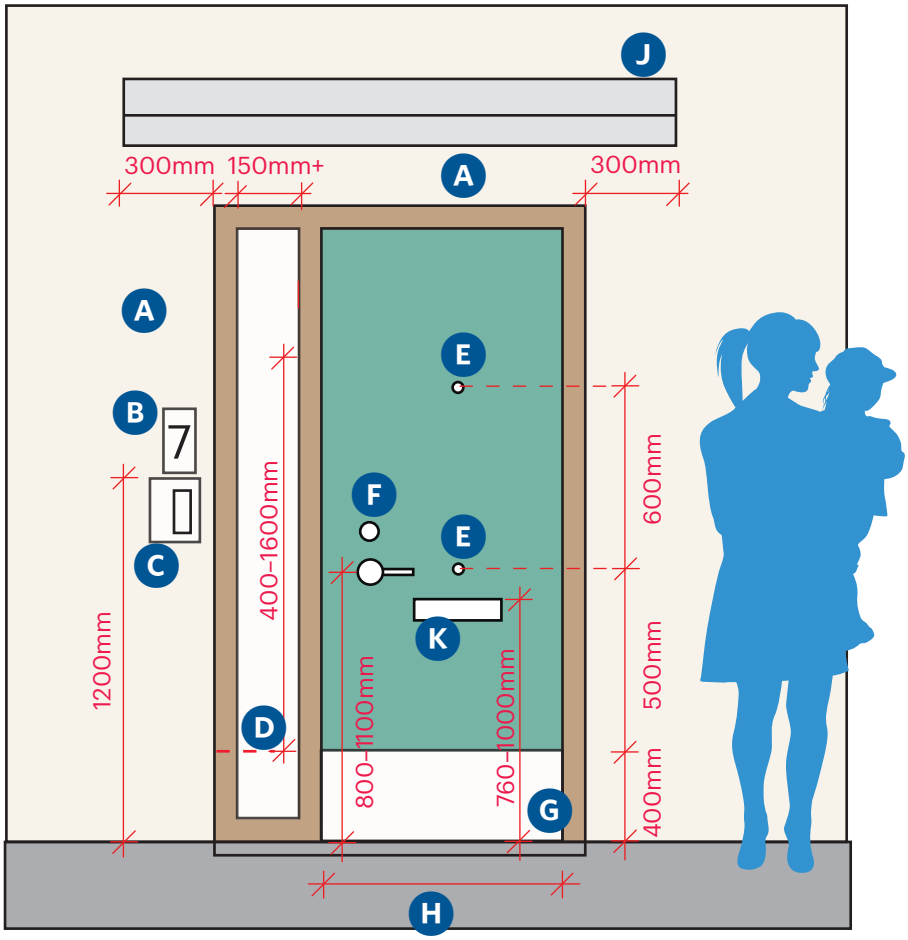
The lock, letterbox, doorbell and any intercom system should be installed at an accessible height so everyone can use them. Provision should be made for secure entry systems that provide audio and/or visual communication, or remote opening, to help everyone manage the home more easily.

UD Home (UD) and UD (+) Guidance

- (UD) Ensure that the entrance door contrasts visually with the adjacent walls or screens.
- (UD) Provide an entrance door with a clear width of between 800mm and 850mm.
- (+) Provide an entrance door with a clear width of between 850mm and 900mm.
- (UD) Provide a vision panel to create a clear view through the door, or adjacent to the door, for people at all eye levels.
- (UD) The vision panel should provide a zone of visibility between 400mm and 1600mm above floor level that is at least 150mm wide and positioned no more than 200mm from the leading edge of the door.
- (UD) Consider frosted or one-way glass instead as clear glass may make residents feel vulnerable.
- (UD) Provide a 300mm clear space on the leading edge side of the door externally and internally.
- (UD) Provide robust and well-designed ironmongery that contrasts in tone or colour with the background surface:
  - Provide a large door number that contrasts in colour or tone with the background. Provide pull and lever handles rather than knobs.
  - Position lever handles between 800mm and 1100mm above floor level, preferably at 900mm.
  - Ensure the lever handle returns back towards the door to avoid catching clothes.
  - Install a spy hole or door viewer at two heights to suit people of all heights, seated or standing, at 900mm and 1500mm with a 132–200° viewing angle.
  - Provide a multi-locking system for security that is easy to operate.
  - Position letter boxes between 750mm and 1100mm above floor level.
  - Ensure letter plates have a gentle closing action, are draught-proof, and designed to prevent arm access through the door.
  - Consider the need for 200–400mm kickplates to protect the bottom of the door.

Technical Sketch:

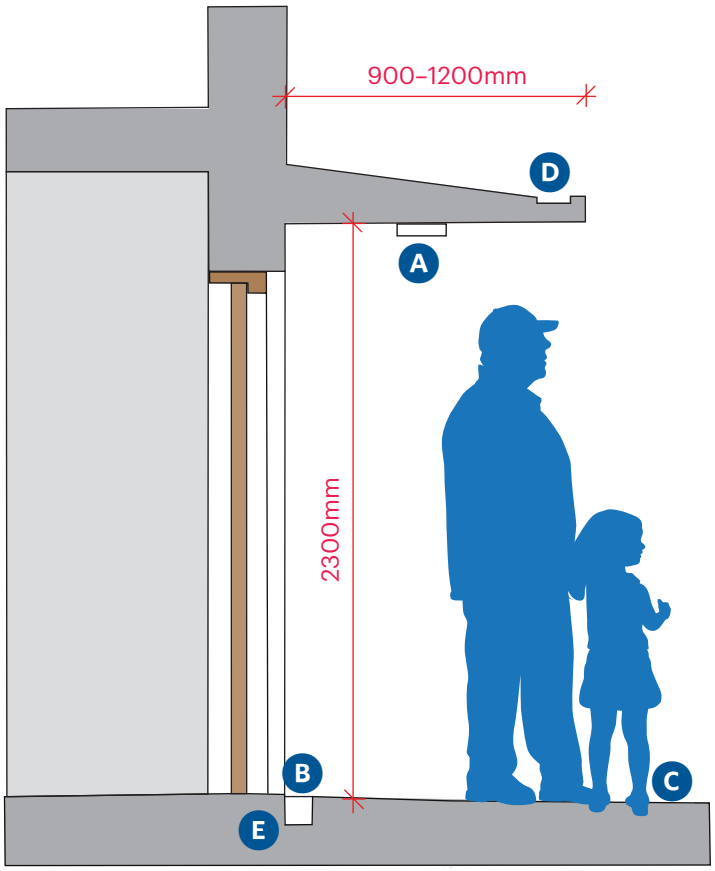
Elevation dimensions for front entrance doors for houses.



- **A** Lighting position option: internal or sensor activated.
- **B** Well-lit and clear home number.
- **C** Well-lit home entry system no higher than 1200mm above floor level.
- **D** Vision panel from 400–1600mm as a minimum.
- **E** Door viewers at 900mm and 1500mm above floor level.
- **F** Door lock positioned above the door handle.
- **G** Kick plate 400mm high to protect base of door.
- **H** Clear opening width of between 800 and 900mm.
- **J** Canopy overhangs door and vision panels by 300mm on each side.
- **K** Letterboxes at a height between 760 and 1100mm above floor level.

Technical Sketch:

Section dimensions for front entrance doors.



- **A** Lighting position option: internal or sensor activated by sensor or internal switch.
- **B** Proprietary threshold with maximum height of 10mm.
- **C** Paving at maximum 1:60 gradient.
- **D** Canopy to provide weather protection.
- **E** Flush drainage strip.

- UD Install a letter cage fixed to the back of the door in order to make deliveries more accessible to all.
- UD Offset the front door from the adjacent wall to ensure it doesn't get marked or damaged by the letter cage.
- UD Position the door bell and home entry system/intercom no higher than 1200mm above external ground level.
- UD Provide visual and audio intercom.
- UD Provide an electrical spur to facilitate future fitting of remote control door opening devices. Magnetic locking is most suitable for remote opening systems.
- UD Provide a door bell that is lit internally or spot lit from outside, so that it is easily visible to callers.
- ⊕ Provide a bench or shelf externally for resting packages.
- ⊕ Provide a separate pull-handle on the door in order to pull it shut when leaving the home.
- ⊕ Provide a keyhole which is backlit for ease of access.
- ⊕ Provide remote entrance door opening facility to be controlled from the living room, kitchen and main bedroom.

UD Home ⊕⊕ Guidance

The entrance door can be increased in size to a clear width of at least 900mm to provide additional space for ease of access. However, bear in mind that larger doors can be significantly heavier, so assisted opening may be required.

Picking up deliveries of groceries or parcels can be difficult, so provide a cupboard within the wall that is accessible and locked separately from both sides. Ideally, this would be located near the front door.

04

The inset door provides some protection from inclement weather and the block number is clearly visible, contrasting well with the background. Note use of vision panels, accessible location of control panel, a long and easy to use pull handle, and kick plates at the bottom of the door to protect it from damage.

Entrance Doors to Apartment Buildings

Design Considerations and Awareness

The front door to an apartment building marks a communal entrance, one which will be used by many people throughout each day. It needs to be wide enough for a range of activities, like pushing a double buggy, carrying suitcases or shopping, without damaging the door or frame. Providing clear space at the opening (or leading) edge of the door will make opening the door easier for everyone. Continuing the additional space for some distance into the entrance lobby area will be of greater benefit when a number of people are trying to go in and out at the same time, or managing large items like furniture.

It is helpful if there is some glazing at the entrance, either in the door itself or in panels beside the door. This enables people to see whether another person is approaching the door on the other side and also to gauge the size and type of space they are about to enter.

UD Home UD and UD Home + Guidance

- UD Ensure that the entrance door contrasts visually with the adjacent walls or screens. For glazed doors ensure the edges and frame are clearly visible and contrasting.
- UD Provide a clear space 300mm on both the inside and outside of an entrance door, on the leading edge side.
- UD Provide 300mm clear space on the leading edge side of the door inside the entrance area for a depth in plan of at least 1500mm.
- UD Install entrance doors that are at least 2400mm high to suit people of different heights.
- UD Provide an entrance door with a minimum clear width of 900mm.
- UD With double doors, ensure that the primary door leaf of each pair of doors provides a minimum clear width of 1000mm.
- UD Provide energy efficient automatic swing operation for large, heavy doors.
- UD Ensure that all hinged entrance doors are capable of opening more than 90 degrees.
- UD Provide vision panels in all entrance doors and entrance lobby doors.
- UD Ensure that clear glazing in the vision panels extends between 400mm and 1600mm above floor level, is at least 150mm wide, and is positioned no more than 200mm from the leading edge of the door.
- UD Ensure that fully or mostly glazed doors are easily distinguishable from their background by making the edges and frame clearly visible and contrasting.
- UD Provide markings/manifestations in glazed panels between 850mm and 1000mm, and between 1400mm and 1600mm above floor level.
- UD Ensure that safety glass is used in doors and panels, to make it less likely to break, or less likely to pose a threat when broken.
- UD Install kickplates to protect the door from damage. Ensure kickplates extend for the full width of the door and to a height of 400mm above floor level.
- UD Provide power cable spur and actuator for future adaptation to power assisted door.

Door handles

- UD Provide pull and lever handles rather than knobs.
- UD Position lever handles between 800mm and 1100mm above floor level, preferably at 900mm.

- UD Ensure the lever handle returns back towards the door to avoid catching clothes.
- UD Provide pull handles that are at least 400mm long and positioned vertically with the lower end 1000mm above floor level.
- UD Consider that while full-height tubular pull handles provide the maximum possible range of heights for opening, they also reduce the clear width of the door.
- UD Provide handles that are warm to the touch, using a material like timber or plastic-coated steel.
- UD Provide finger plates of at least 350mm in height, located with the bottom edge 1000mm above floor level. Select finger plates with a matt finish, to avoid glare.
- UD Position door locks above the handle or at least 72mm below so that the keyhole can be distinguished and accessed easily.
- UD Where there is no closing device, provide the door with a horizontal rail for pulling the door closed, located at a height of 1000mm.
- ⊕ Provide keys that are capable of being fitted with a bow/butterfly adaptor to make them larger and easier to grip.
- ⊕ Provide a greater space on the pull-side of swing-doors to enable a person to pull the door open and to manoeuvre clear of the door swing.
- ⊕ Provide an entrance door with a minimum clear width of 1000mm.

UD Home ⊕⊕ Guidance

Providing an entrance door of at least 1000mm clear width and a clear space of 600mm on the leading edge side of the door, front and back, will make access much easier for everyone.

A greater diversity of users will be accommodated if power assisted doors that are fully automatic or have a manually-activated control device are provided. However, these may only be suitable for apartment buildings which have a concierge system or access control further inside the building.

Door closing devices will be required for fire doors, many entrance and lobby doors, and security doors. These can render the door extremely heavy or difficult to open. Therefore the design should consider options to reduce or overcome door forces, such as door-holding and swing-free devices, which make it much easier for everyone to move around freely and safely.

Intercom is located on the same side as the door handle with lock above.

Photo Design Tip

A visual intercom with a two-way camera should be fitted.

Access Control for Apartment Buildings

Design Considerations and Awareness

It should be clear to anyone approaching an apartment building for the first time how they can easily gain entry. The lighting around the entrance should ensure that visitors can see where the entry system is located, and the system itself should be accessible, clear and simple to use.

An intercom facility is preferred for visitors, and a fob entry or card swipe system for occupants, as these are easiest for most people to manage. An intercom system with video link will be the most appropriate as it provides safety and security for residents with hearing difficulties, allowing them to identify their caller before they let them into the building.

The intercom should be clearly located on the handle side of the door, in a contrasting tone or colour to the background, and at a height appropriate for all users whether seated or standing. The intercom buttons should be large enough for various levels of dexterity for ease of use. The intercom buttons need to be lit, either from within or externally, and there should be a light and a sound signal made when a button is pressed, to reassure people that the intercom is working.

UD Home UD and UD Home ⊕ Guidance

- UD Provide a visual and audio intercom from the outset.
- UD Position the intercom on the handle side of the door, and close to the entrance door.
- UD Ensure that the intercom is in a contrasting tone or colour to the background.
- UD Ensure intercom controls are positioned no higher than 1200mm above external ground level, with intercom buttons between 1000mm and 1200mm.
- UD Install only door bells and call buttons that are large and give a visual or aural indication of their operation.
- UD Ensure intercom buttons contrast visibly with the mounting plate, and each button has an embossed symbol, number or letter, all arranged in a logical order.
- UD Ensure the microphone is capable of picking up speech from people of all heights.
- UD Position the video camera so that the face of the caller is caught clearly on camera for the benefit of the occupant.
- UD Provide a fob entry or card swipe system for residents.

06

Mailbox numbers are clearly displayed.

Photo Design Tip

Colour contrast with the wall should be stronger. Also note the location of Mailboxes with regard to sharp edges and children or people of shorter stature.

Hallways and Lobbies for Apartment Buildings

Design Considerations and Awareness

Inside the entrance door to the apartment building there will be a hallway leading to stairs and/or lifts, or a lobby with an additional door beyond for security or fire escape separation.

The entrance area should be large enough to allow everyone likely to be going through the area at peak times to do so easily and comfortably, and a lobby should only be provided where absolutely essential. All the doors and routes need to be accessible, logical, understandable and useable by everyone.

A matwell is essential, to prevent mud and dirt being spread throughout the building. The mat should be flush with the adjacent floor surface. Mat materials need to remove dirt, rainwater and snow from the soles of shoes, and the wheels of buggies, trollies and wheelchairs. Compressible and ridged surfaces and deep pile are not easy to cross with a walking aid or wheeled vehicle, and so should be avoided.

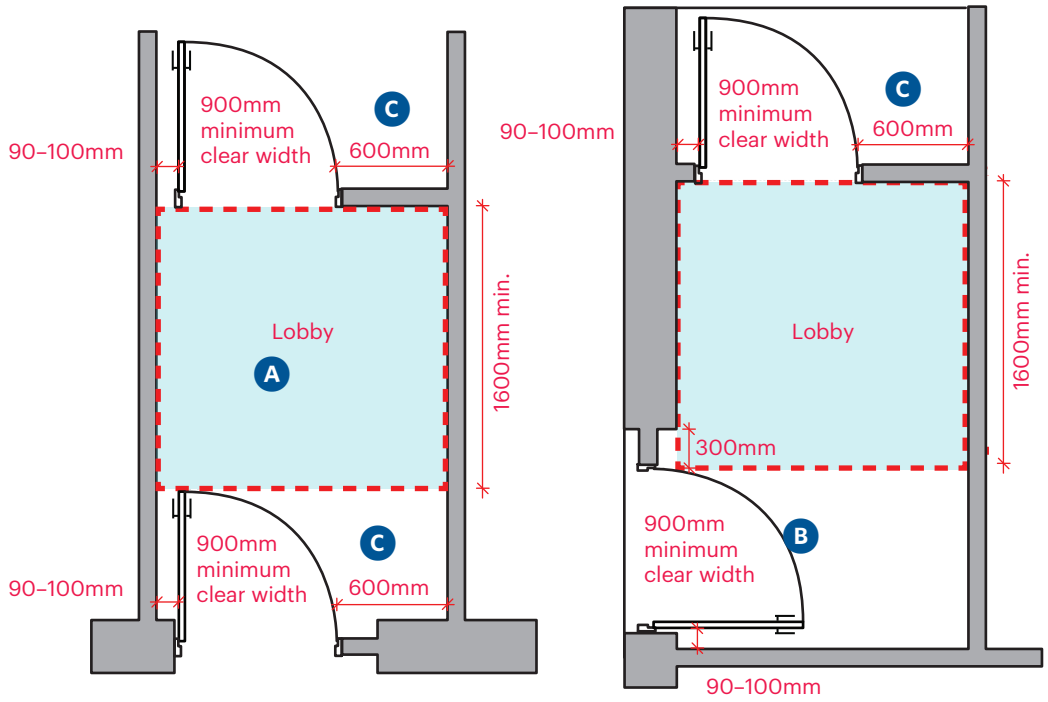
The entrance area may need to contain secure letter boxes for all apartments. These need to be accessible and easily located for everyone.

UD Home and UD Home + Guidance

- Only provide an entrance lobby where essential.
- If a lobby is required, provide a minimum 1600mm clear zone between door swings.
- Provide guarding for doors when they are in the open position to prevent people walking into the edge of the open door. Consider providing a recess in the wall for doors to open into.
- Install recessed mats flush with the adjacent floor surface.
- Avoid ridged or compressible mats and provide mats that trap dirt efficiently.
- Ensure glazed screens or doors in entrance lobbies are constructed of safety glass, and provide clear views into and out of the building.
- Provide markings/manifestations in glazed panels between 850mm and 1000mm and between 1400mm and 1600mm above floor level.
- Where possible provide letterboxes in the individual home front door.
- Where banks of letterboxes are to be provided ensure that:
  - Half of the letterboxes are at a maximum operating height of 1100mm.
  - Letterboxes are deep enough for long envelopes and designed to prevent theft.
  - Letterboxes/mailboxes should be built into the wall to avoid sharp edges for children or people of shorter stature.
  - There is a good level of lighting to the letterbox area of 100 lux minimum.
  - Letterboxes are easy to identify from surrounding surfaces, with large contrast numbers.
  - Letterboxes are easy to use.
- Provide entrance area and lobby lighting that is designed to ease the transition between external and internal spaces and adequate for safe circulation.
- Ensure that lighting does not cast shadows and steps in common stairwells including the beginning and end of the stair should be lit to 150 lux minimum.
- Time-delay switches for lighting, if provided, will need to accommodate the needs of all users in terms of the length of time delay, method of operation, location and height of installation.

Technical Sketch:

Dimensions For Lobbies In Communal Circulation Areas for apartments.



A A lobby should have at least a 1600mm clear zone between door swings.

B If the door does not open more than 90° then the clear width should be achieved with a wider door.

C Maintain a leading edge of 600mm to lobby doors to allow space for people to pass at the door.

Views out to local landmarks can help orientation.

Corridors in Apartment Buildings

Design Considerations and Awareness

A well-designed horizontal circulation layout with a logical, clear circulation route will benefit everybody. The width of the corridor should be appropriate to the size of the apartment block, and the numbers of people who are likely to be moving around at any time, allowing people with a buggy or wheelchair, walking aids, travelling bags or furniture, to move around and pass easily.

Where possible, corridors should be naturally lit and ventilated for energy efficiency and comfort. Many people benefit from being able to orientate themselves within a building by looking out of the window, checking and confirming their location and the time of day or night.

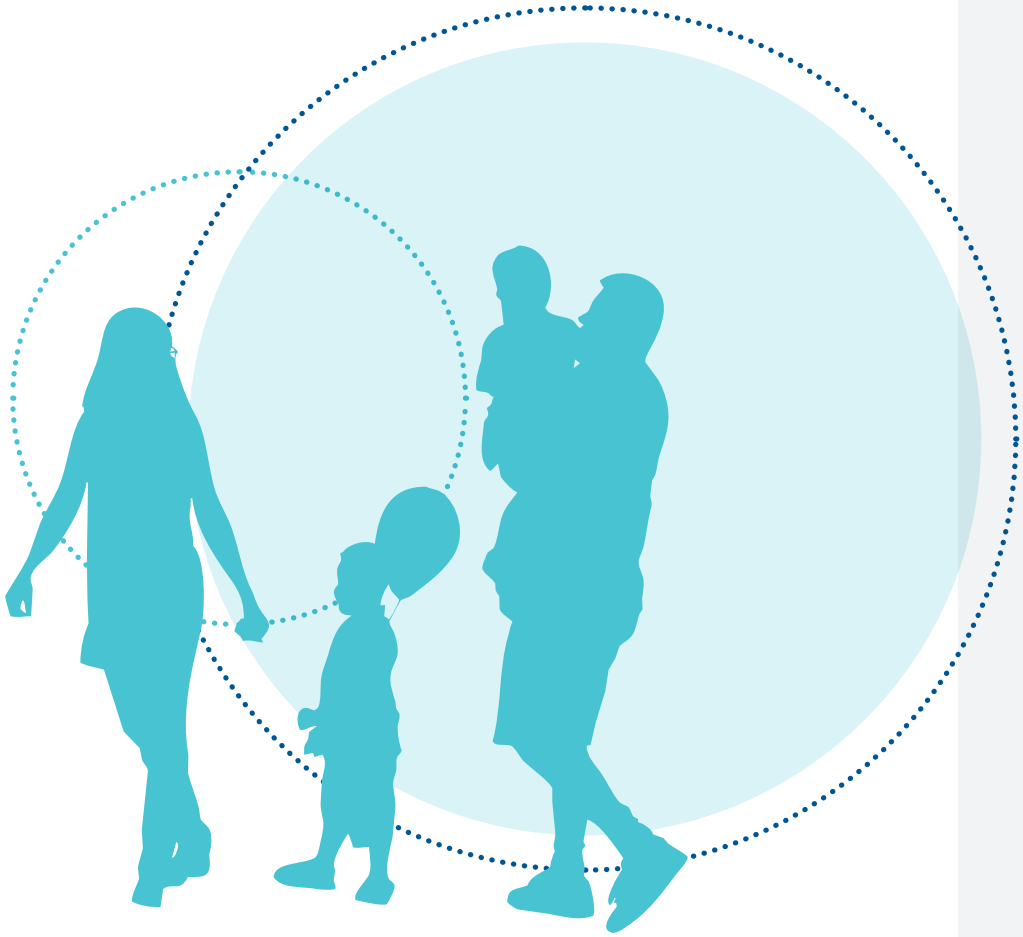
UD Home (UD) and UD Home (+) Guidance

- (UD) Provide communal corridors of width between 1500mm and 1800mm. Passing places should be provided where the width is less than 1800mm.
- (+) Provide communal corridors of width between 1800mm and 2400mm.
- (UD) Avoid changes of level within a storey.
- (UD) Ensure corridors are well-lit and ventilated for comfort by providing natural daylight and openable windows.

- Provide acoustic damping of corridors to avoid excessive noise.
- Reduce the number of intermediate doors where possible.
- Minimise the number of fire doors required by Fire Regulations at the early design stages as these doors can be difficult to open for all users.
- Provide all intermediate doors with glazing to aid orientation.
- Distinguish corridors from one other at different levels or areas by colour, lighting or other means.
- Display the floor level in large clear numerals opposite lift doors.

UD Home ⊕⊕ Guidance

Provide communal corridors of at least 2400mm in width to enable a wheelchair-user or carer with a stroller to turn round easily and pass other people.



Stairs with minimal projection and contrast strips across the full width.

Communal Stairs in Apartment Buildings

Design Considerations and Awareness

The design of the communal stair needs to facilitate comfortable and unimpeded movement between floors, regardless of whether lifts are installed. This means that the stair should be designed with a shallow pitch, with an easy rise (vertical part of the step) and an easy going (horizontal part of step), to avoid accidents and make the stair easy to use for people. Unequal flights of stairs can be confusing to people with visual and cognitive difficulties, so all flights should be designed to be equal.

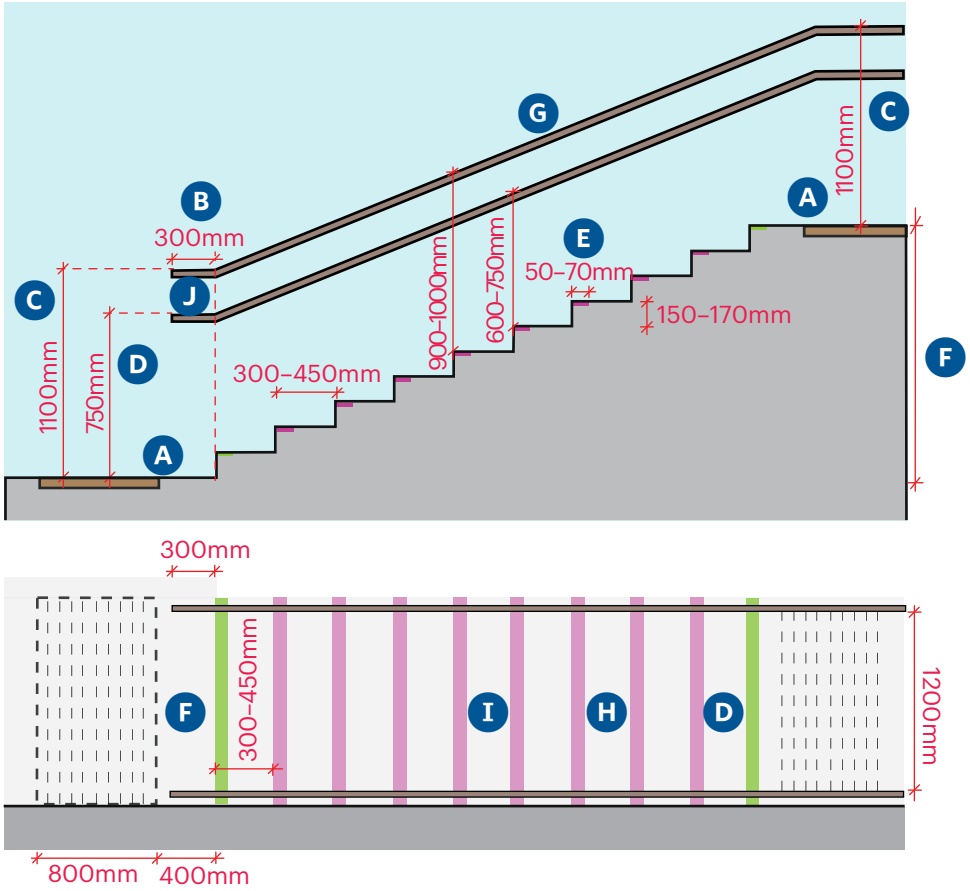
It is important that the step nosing is straight, rather than profiled, in order not to confuse people with visual difficulties who climb stairs by sliding their feet up the surface of each step.

Communal stairs for apartment buildings should not be located in the direct line of travel in order to avoid someone inadvertently stepping onto the stair. Ideally the stair should be positioned at an angle to the direction of travel to require a conscious change of direction by users.

Well designed handrails can make stairs much easier to use for everyone. For example, people with hearing difficulties often have issues with balance, and so a handrail on both sides of the stair can be beneficial. An additional lower handrail would benefit children and people of smaller stature using the stairs.

Technical Sketch:

Dimensions for communal stairs in apartment buildings.



- **A** Optional corduroy tactile surface indicator at the top and bottom of stairs with maximum 300mm high ridges.
- **B** Handrail overruns 300mm beyond the first and last step.
- **C** Upper handrail at 1100mm above landing and 900–1000mm above pitch line.
- **D** Lower handrail at 600–750mm above landings and pitch line.
- **E** Contrast nosings extending the full width of the step at 50–70mm deep.
- **F** Less than 1800mm rise in one flight between landings.
- **G** Non-continuous support provided to handrail below.
- **H** 1200mm clear space allows for fitting a stair-lift.
- **I** Straight flights of stairs with no winders.
- **J** Handrail ends turned towards the wall or downwards.

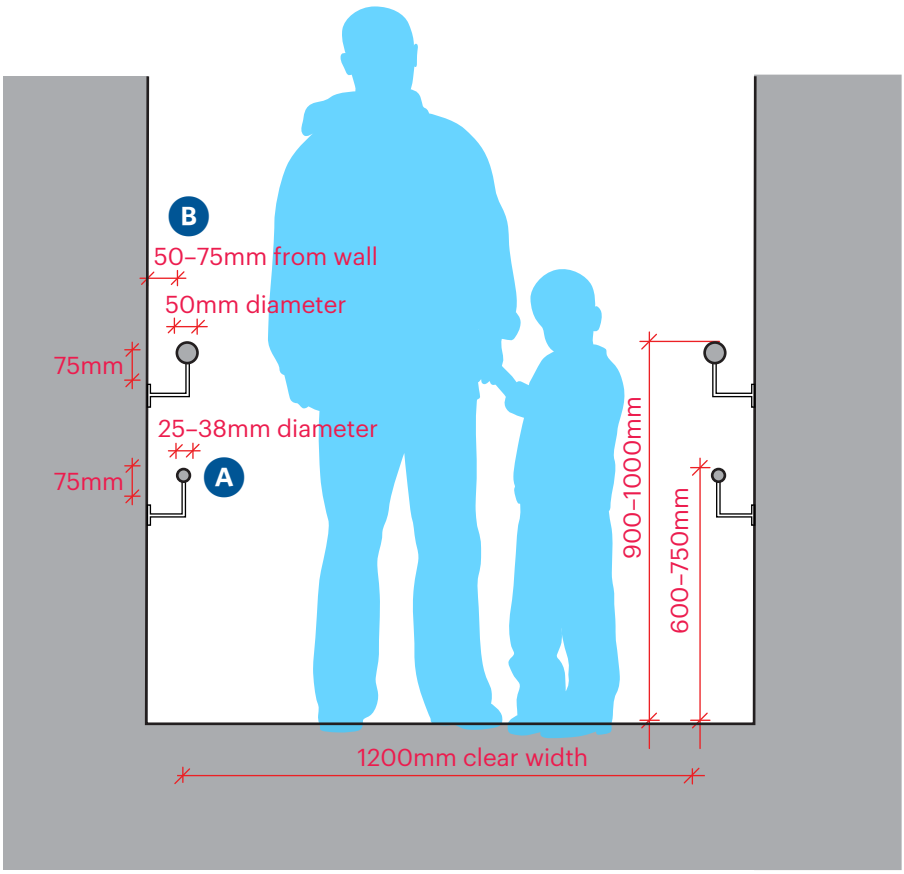
UD Home and UD Home + Guidance

- Avoid single steps anywhere in the building as this can cause a trip hazard.
- Design the stairs with a clear width of not less than 1200mm measured between handrails.
- Construct the stair with an easy rise of 150–170mm, and an easy going of 300–450mm.
- Ensure that every flight of stairs within a stairwell has the same number of steps in order to avoid confusion.
- Ensure that the total rise of a flight of stairs is no more than 1800mm between landings, with no more than 12 steps.
- Ensure that landing lengths are the same as the width of the stair and a minimum of 1200mm, clear of door swings.
- Design each step with a non-slip surface and a nosing or single contrasting strip to highlight the step edge, extending for the full width of the step.
- Consider installing tactile TWSi's to top and bottom of stairs with maximum 3mm high ridges.
- Ensure that the step nose profile is straight, with no projections, or if projections are required, they should have maximum 25mm overhang and be smoothly profiled.
- Provide continuous handrails on both sides of the stairs set at 900–1000mm above the pitch line of the stair, and 1100mm above landings.
- + Provide a second continous handrail 600–750mm above the pitch of the stair and landing to benefit people of different heights. The diameter of this handrail should be 25-32mm to be suitable for smaller hands.
- Design handrails which:
  - extend 300mm beyond the end of the last step.
  - are continuous around landings and on both sides of the stair.
  - have profiles which are circular in cross-section (40–50mm diameter) or elliptical (50mm wide and 38mm deep) which are easy to grasp.
  - are supported centrally on the underside.
  - are constructed with a clear gap of minimum 75mm below the handrail.

- have a clearance from a wall of minimum 50mm with a smooth wall, and 75mm for a rough surface.
- have ends turned towards the wall or downwards to avoid catching clothes and to indicate that the end of the stair has been reached.
- contrast visually with the background.
- are warm to touch – for example timber or plastic-coated steel.

Technical Sketch:

Dimensions for Handrails in Apartment Buildings.



A Non-continuous support provided to handrail below.

B Distance from the wall is greater if the surface is rough.

- UD Design the lighting on stairs and landings to be 150 lux minimum.
- UD Time-delay switches for lighting, if provided, will need to accommodate the needs of all users in terms of the length of time delay, method of operation, location and height of installation.
- UD Provide a refuge space within the stair enclosure and on every landing in an apartment block. This is for use of people who cannot use the stairs, when the lift is not operable, such as in an emergency.
- UD The refuge space shall be:
  - a space 1400 × 900mm that is clear of the escape route, where a single refuge space is considered sufficient.
  - enclosed in a not less than 30 minutes fire-resisting structure that has a 30 minute, fire-resisting, self-closing fire door fitted with cold-smoke seals, where the refuge is internal.
  - provided with a 30 minutes fire-resisting construction (integrity and insulation) from a fire inside the building, where the refuge is external.
  - located either within, or be a space with direct access to, each protected stairway required for means of escape.
  - provided with a two-way communication system linked between the refuge and the management control point, in order to suit a range of mobility difficulties and be compliant with the recommendations of BS5839-9: 2003.
  - separated from the general accommodation by solid enclosure with no glazing.
  - provided with clear, accessible signage indicating that the space is designated for a refuge including identification of the floor level.
  - provided with a notice providing guidance on procedures in the event of fire.
- UD Ensure that stairs are not located in the direct line of travel, but positioned at an angle to the direction of travel.
- UD For further information on evacuation please refer to Building Regulations.

UD Home ⊕⊕ Guidance

A gentler pitch for the stairs will obviously take up more space, but will be easier for many people to use comfortably. An easy rise of between 150mm and 170mm, and an easy going of between 300mm and 450mm can be beneficial.

Inside lift with handrails, mirrored surface at correct heights and large numbers with Braille on the buttons. The lift buttons shown in the photo should contrast more with the surrounding lift wall to make them easier to see.

Lifts in Apartment Buildings

Design Considerations and Awareness

A universally designed passenger lift is preferred to a platform lift, as they carry more people at a time, are faster and easier to use.

A common concern of many people who are considering a home in an apartment building is what will happen if the lift is out of action due to breakdown or for routine maintenance. It is therefore preferable for more than one lift to be provided so that convenient access can be maintained at all times. If only one lift is provided it is important to ensure that the maintenance contract minimises any time that the lift is out of use for maintenance.

Glass-walled lifts can be of great assistance to some people, such as those with hearing difficulties, while others may be distressed with vertigo. If a glass-walled lift is provided, there should also be the alternative of an enclosed lift nearby.

Easy access to the lift is important, with enough space to allow people to pass as they enter and exit. A clear landing space is therefore required in front of the lift, and this will also facilitate someone turning round in a wheelchair or turning a buggy, for instance.

Ideally there should be at least one lift installed which is large enough for people to use with a mobility scooter or a stretcher wheelchair, or to accommodate a number of people with buggies or walking aids.

The interior of a lift must be carefully specified to ensure it is easy to use and understand. For example mirrored surfaces that meet the floor can make it difficult for many people to understand how big the space is.

UD Home (UD) and UD Home (+) Guidance

(UD) Ensure lifts are easy to find, and located adjacent to the stairs.

(UD) Ensure that lifts serve all floor levels in apartment buildings, including underground parking and floors containing communal facilities.

(UD) Provide a lift with internal dimensions greater than 1525 × 2030mm. In exceptional circumstances where there are up to 4 storeys and no more than 3 units per floor, the lift can have internal dimensions of 1100 × 1400mm. Please note that this is not an ideal size as wheelchair-users or parents with strollers will have to reverse out of the lift.

(+) at least one small passenger lift of minimum dimensions 1100 × 1400mm.

(UD) In four and five storey buildings provide:
one passenger lift of minimum dimensions 1525 × 2030mm.

(+) at least two passenger lifts of minimum dimensions 1525 × 2030mm.

(UD) In apartment buildings of six or more storeys provide:
two passenger lifts of minimum dimensions 1525 × 2030mm.

(+) at least three passenger lifts of minimum dimensions 1525 × 2030mm.

(+) One lift to be of minimum internal dimensions 1800mm × 1800mm.

(UD) If glass-walled lifts are provided, ensure there is an alternative enclosed lift available nearby.

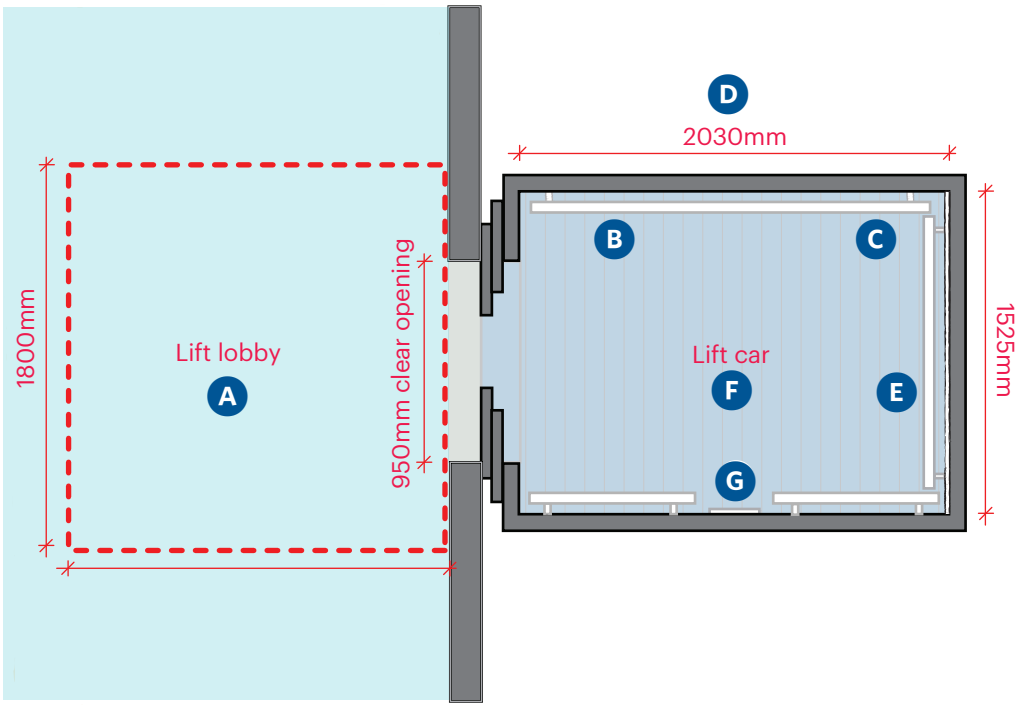
(UD) Provide a clear manoeuvring space in front of the lift at least 1800 × 1800mm and clear of all doors.

(UD) Ensure that lift controls are located 900–1200mm from floor, and 400mm from an internal front wall for ease of access.

(+) Provide an 8-person lift, with minimum internal dimensions of 1800mm × 1800mm.

Technical Sketch:

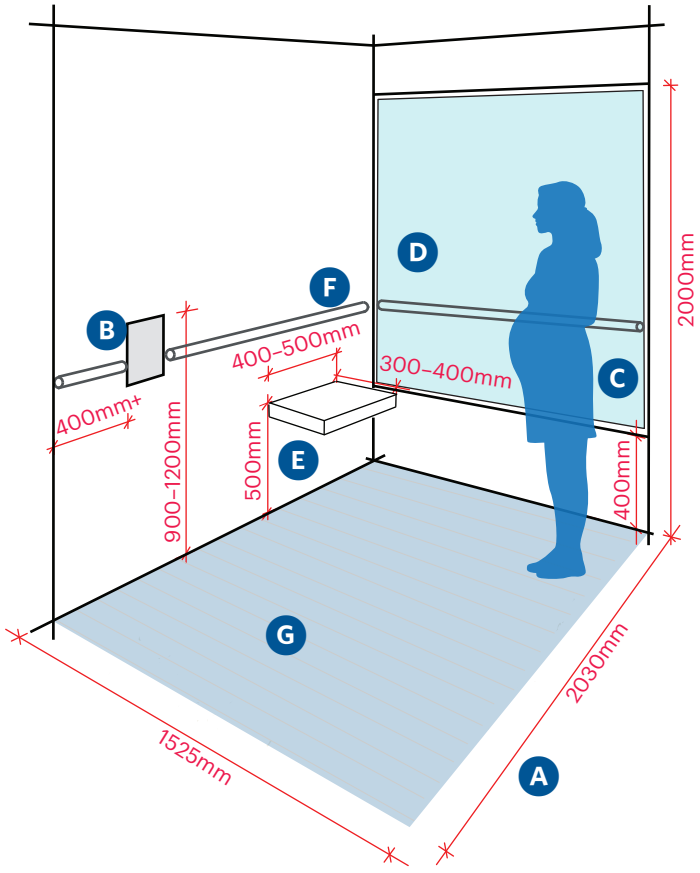
Dimensions for lifts in apartment buildings.



- **A** 1800mm clear manoeuvring space in front of all lift clear of all doors.
- **B** Handrail on all sides of lift car at 900–1100mm above floor level, and in a contrast colour.
- **C** Fold-down seat in lift car.
- **D** 1525 × 2030mm minimum internal dimensions (please see guidance on page 80).
- **E** Mirror on back wall of lift car.
- **F** Matt finish, firm, slip-resistant flooring in light contrasting tone relative to walls and ceiling.
- **G** Lift controls.

Technical Sketch:

Dimensions of lifts in apartment buildings.



- **A** Internal dimensions to be 1100 × 1400mm minimum, and ideally 1525 × 2030mm for reasonable accessibility.
- **B** Lift controls at 900–1200mm above floor level and 400mm from the internal front wall.
- **C** Walls, floors and ceiling in contrasting colours.
- **D** Mirror facing entry.
- **E** Drop-down seat 500mm from floor level, 300–400mm deep, 400–500mm wide, to support a load of 100kg.
- **F** Handrail on all sides of lift car at 900–1100mm above floor level, and in a contrast colour.
- **G** Floor to be in a light colour.

Inside the lift car:

- Internal lighting should be at least 100 lux, without glare.
- Walls, ceiling and floors should contrast with each other to avoid confusion and be of a matt finish to avoid glare.
- Mirror surfaces should not be used below 300mm from the car floor.
- A mirror should be positioned on the wall opposite the door opening with bottom edge 400mm from the floor and top edge 200mm above the floor.
- Provide a handrail on at least one side of the lift car for support to users while the lift is moving.
- The floor surface should be a matt finish, firm and slip-resistant. It should not be dark in colour or tone, in order to avoid confusion with an empty lift shaft.
- Lift controls should have visual and audio means of indication of the requested floors, direction of travel and whether the doors are opening or closing.

Provide a fold-down seat for someone who is unsteady on their feet while the lift is moving, located 500mm above the floor, depth 300-400mm and width 400-500m, and capable of supporting a load of up to 100kg.

UD Home ⊕⊕ Guidance

For full accessibility for everyone, consider installing a lift in all residential buildings of two or more storeys.

Increasing the landing outside the lift to 2400 × 2400mm will enable good manoeuvring space for wheelchair users, those with walking aids or a buggy, and for people with hearing difficulties signing to each other as they use the lift.

2.2 Moving About The Home

This section relates to all homes, whether communal homes, apartments or houses. Homes which are designed logically and simply create an environment which is instantly legible with a clear, easy and convenient circulation route for everyone to use.

10

Double doors set within bookcase between a living area and entrance hall

Photo Design Features

- Tall and wide doors will allow everyone to move easily around the house, increase the sense of space, and make it easier to manage large objects.
- The lack of saddle boards or any threshold makes it easy for everyone to move around between rooms.
- The hallway beyond is spacious.

Photo Design Tip

- Wider doors between rooms can facilitate ease of movement, as well as make the home appear more spacious.

11

A recessed fixed mat is supplied in the entrance lobby. Good colour differentiation between walls, floor and doors. Space is provided for storage of buggies, wheelchairs or scooters, with a power point for charging.

Entrance Hallway in the Home

Design Considerations and Awareness

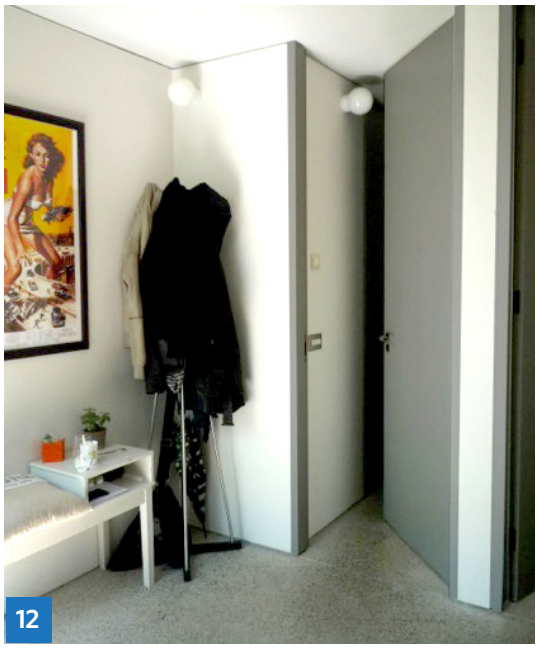
The entrance hallway should be a welcoming, well-lit and spacious room in which to greet people, manage buggies, coats and shoes, and shopping. Contrasts in light levels between spaces outside and inside the home can be uncomfortable or disorienting for many people. The hallway is therefore usefully considered as a transition zone, where accessible and adaptable lighting may be required.

UD Home UD and UD Home ⊕ Guidance

- UD Provide entrance hallways with a space of between 1500 × 1500mm and 1800 × 1800mm adjacent to the entrance door.
- ⊕ Provide entrance hallways with a space of at least 1800 × 1800mm adjacent to the entrance door.
- UD Provide space for storing outdoor wear, coats, shoes and bags.
- UD Provide additional storage space for a buggy and/or shopping trolley.
- UD Ensure hallways are well-lit to 200 lux measured at floor level.
- UD Provide a dimmer switch for changing the lighting level in the hallway.
- UD Provide natural daylight directly or indirectly to the entrance hall. Indirect daylight may be introduced into the hallway by using glazed doors where rooms have natural light.
- UD Provide a flow of fresh air from windows or controlled ventilation system.
- UD Provide a power point for charging.

UD Home ⊕⊕ Guidance

A transfer space between the entrance hall and outside is useful, where someone can change from an outdoor wheelchair to an internal one. If possible, this space should be 1700 × 1100mm with the long dimension open onto another space and therefore fully accessible.



12

Full height doors will allow everyone to move easily around the house, increase the sense of space, and make it easier to manage large objects.

13

'Cat and Kitten Doors' provide flexibility for everyone, making it easy to move around the house.

Corridors and Doors in the Home

Design Considerations and Awareness

Wide corridors and doors facilitate comfortable and unimpeded movement between spaces. Corridors, when wide enough, can be used as multi-purpose spaces in the home, such as a library or storage.

Natural daylight and ventilation are beneficial to all, for good orientation, well-being and reduction in energy use. Wider corridors make it easier to move around between rooms and to move furniture around as required.

The width of the door opening needs to be directly related to the width of the corridor it leads from. For example a narrow corridor will require a wider door opening, to make access easy. The direction of approach is also relevant, as less space is needed for someone going straight through a door, than someone needing to turn into the opening.

How the door opens into a room can also affect how the room can be accessed and used. Ideally the door into a room opens with the hinge side against the return wall, so that there is no necessity for negotiating furniture and the door itself when entering.

Raised timber thresholds or saddleboards at doorways, that in the past were used to separate floor coverings and reduce draughts, should be avoided as they are not easy for many people to navigate. All doors should be flush at the threshold and floor materials continuous between rooms where possible. Where necessary, different floor finishes between spaces may necessitate different finish levels in the floor construction and should be considered from an early stage in the design. Avoid strong contrasts in floor colours as this can cause confusion (please refer to Section 04).

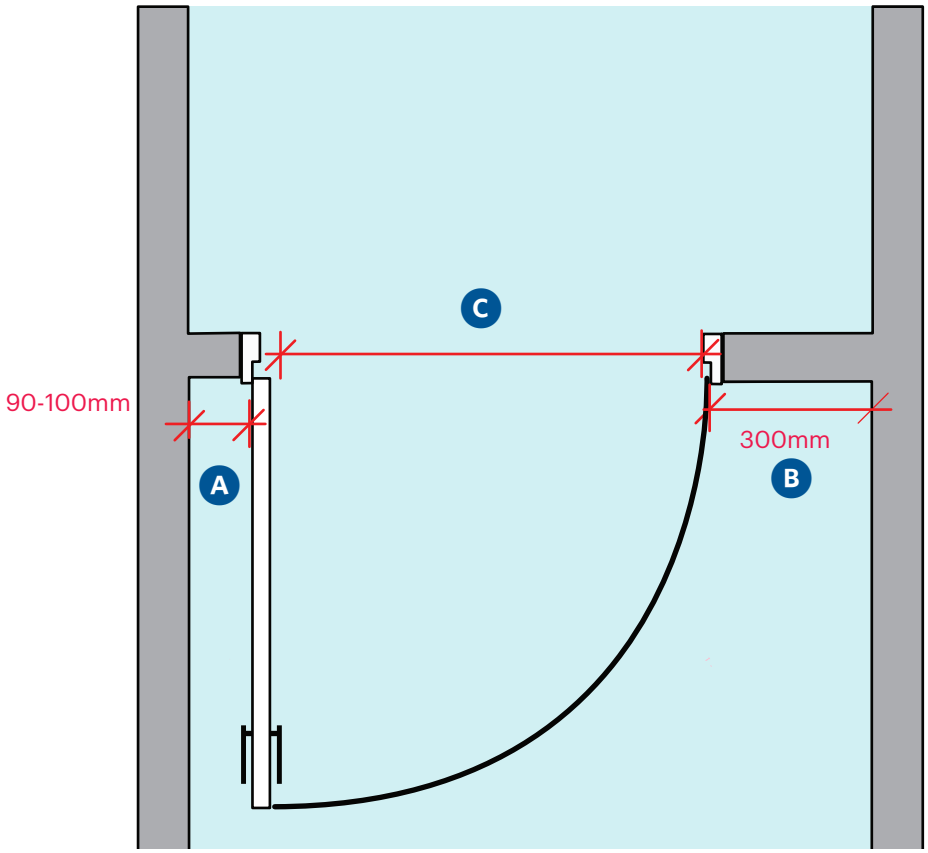
Residents should be able to access and open the door independently. To assist this, a clear space is required on the handle side, or leading edge, of the door, on the side opening towards them. This enables someone to reach for the door handle and manoeuvre clear of the door swing.

UD Home (UD) and UD Home (+) Guidance

- (UD) Provide a width of corridor of 1050–1200mm between walls.
- (+) Provide a width of corridor of 1200–1500mm between walls.
- (UD) Provide natural daylight directly or indirectly to the entrance hall.
- (UD) Provide a flow of fresh air from openable windows or controlled ventilation system.
- (UD) Ensure that lighting levels are at 100 lux at floor level.
- (UD) Ensure that all doorways to all rooms on the entrance level of the home have a level transition and threshold.
- (UD) Position doors that open into rooms, such as living rooms, bedrooms and kitchens, so that the hinge-side of the door is adjacent to a return wall.
- (UD) Provide a 300mm clear area beside the leading edge of all doors at entrance level.

Technical Sketch:

Dimensions for Leading Edges of Entrance Doors.



- **A** Space on the hinge side of the door allows the door to open more than 90˚ so that the door handle doesn't obstruct the opening.
- **B** Space on the leading edge of the door gives ease of access to the door.
- **C** Clear width opening depends on the angle of approach.
- **D** Use door stops to prevent damage to walls if the door opens more than 90 degrees.

- UD Provide effective clear door widths as follows, depending on the direction of approach:

Effective clear opening width of door:	Direction of approach & width of corridor:
800mm	Straight-on approach.
800mm	Right-angled approach via corridor at least 1100mm wide.
850mm	Right-angled approach via corridor less than 1150mm wide.

- UD Ensure doors or the architraves round them are colour and tone-contrasted with the adjacent walls for good orientation and way-finding round the home.
- UD Where door closers are unavoidable, they should be selected to suit the type of door, size, weight and location. Ensure door closers are adjustable.
- ⊕ Install wider doorways of 850mm–1200mm, such as double doors or leaf-and-a-half doors (cat and kitten doors) to provide additional flexibility and better circulation.
- ⊕ Provide power spurs at each door for future remote control or assisted opening to be added.

UD Home ⊕⊕ Guidance

For greater ease of getting around the home, and particularly if one or more of the household uses walking aids or a wheelchair, a corridor of at least 1500mm between walls will be beneficial.

Providing full storey height doors where possible ensures that very tall people do not need to stoop, increases the sense of space, and makes it easier to manage large objects such as ladders and furniture.

Stairs in the Home

Design Considerations and Awareness

The design of the stair needs to facilitate comfortable and unimpeded movement between floors, with flexibility and space for example to easily adapt for a stair lift. It is important to design the stair so that it has filled risers; as open risers can also cause visual confusion and disorientation because the eye is drawn to the spaces beyond the stair.

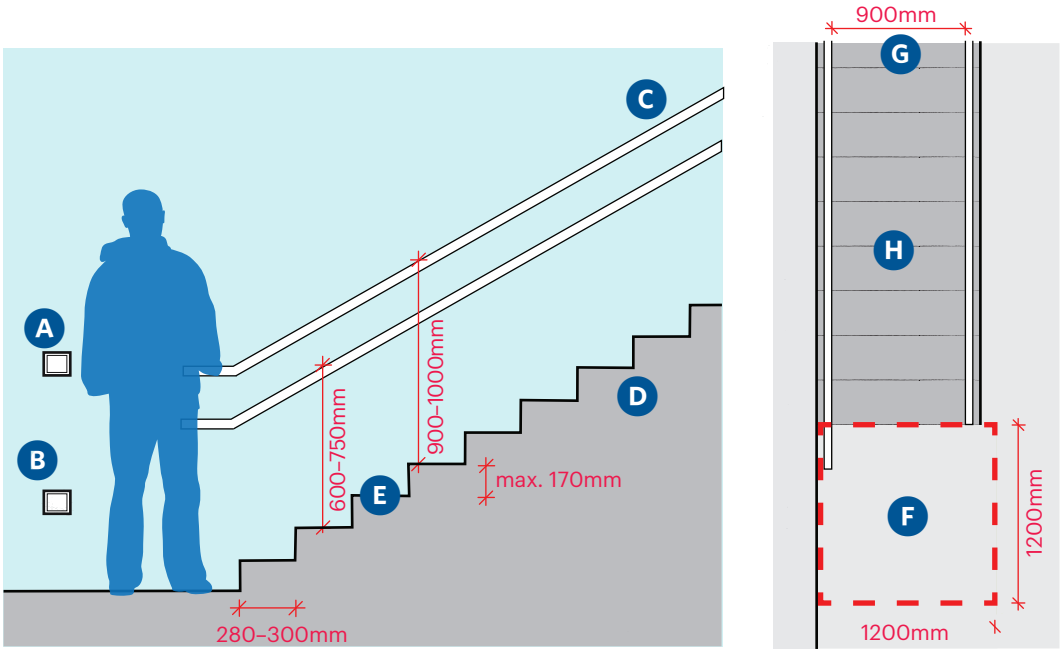
Stairs with winders should be avoided as treads are smaller and awkwardly shaped on the turn, causing people to miss their footing. Therefore, it is important that all stairs are designed to be straight or turn at a square landing for safety and ease of use for all. Accidents are caused by steep stairs, a shallower stair is easy for the majority of people to use, and may help them to remain active in their home for longer.

UD Home UD and UD Home + Guidance

- UD Avoid a change in level of 2 risers or fewer.
- UD Ensure that the stair design will allow a stair lift to be fitted at a later date by providing at least 900mm clear width between handrails.
- UD Ensure that stairs have filled risers.
- UD Provide only straight flights with integral landings in the line of the stair.
- UD Construct the stair with an easy rise of no more than 170mm, and an easy going of between 280mm – 300mm.
- \+ Construct the stair with an easy rise of no more than 170mm, and an easy going of at least 300mm.
- \+ Provide nosing or single contrasting strip to highlight the step edge, extending for the full width of the step.

Technical Sketch:

Section and plan: Dimensions for stairs in a dwelling.



- **A** Light switch at bottom and top of stairs.
- **B** Capped electrical point for future stair lift.
- **C** Continuous handrail on one side as a minimum, ideally with additional handrail for people of smaller stature in UD+ Homes.
- **D** Stairs should have filled risers for safety.
- **E** Step nosings are straight with no projections.
- **F** Clear landing of 1200mm × 1200mm minimum for UD+ Homes.
- **G** 900mm clear space allows for fitting a stairlift.
- **H** Straight flights of stairs with no winders.

- ⊕ Provide a second handrail 600–750mm above the pitch of the stair and landing to benefit people of different heights. The diameter of this handrail should be 25–32mm to be suitable for smaller hands.
- UD Provide a continuous handrail on one side of the stair set at 900–1000mm above the pitch line of the stair, and 1100mm above landings.
- UD Provide grounds for second handrail on the opposite side to allow for an additional handrail to be added as required.
- ⊕ Provide handrails on both sides of the stair, to provide support for those who find stairs difficult to manage.
- UD Ensure that the step nose profile is straight, with no projections, or if projections are required, they should have maximum 25mm overhang and be smoothly profiled.
- UD Provide a capped electrical point from the outset adjacent to the potential stair lift route, so that a stair lift can be installed at a later date.
- UD Provide light switches at the top and bottom of the stair so that the stair is always lit well for access.
- ⊕ Provide an unobstructed landing of 1200 × 1200mm at the top and bottom of the stair to make it easy to get on and off a stair lift safely.

UD Home ⊕⊕ Guidance

Providing 1000–1200mm clear width between handrails may be helpful for someone who needs assistance up the stairs.

A more gentle stair, with an easy rise (vertical) of between 150mm and 170mm, and an easy going (horizontal) of between 300mm and 450mm may also be helpful.

A sensor-activated light on the stairs can be helpful for anyone who is confused, who might not find the light switch, and who may miss their step in the dark.

Through-Floor Lifts in the Home

Design Considerations and Awareness

Through-floor lifts can provide useful access to upper levels of the home when a stair can't be used and a stair lift is not appropriate. For example, people who have difficulties balancing or with vertigo often find a stair lift uncomfortable.

Provision should therefore be made for the future installation of a homelift (platform lift) or Through-floor lift capable of serving the entrance level and at least one other floor level of the house.

Generally, the higher the specification, the more robust the lift will be, and therefore suitable for continuous use. Some through-floor lifts are not designed to be used more than 3 to 4 times per hour, and burn out quickly.

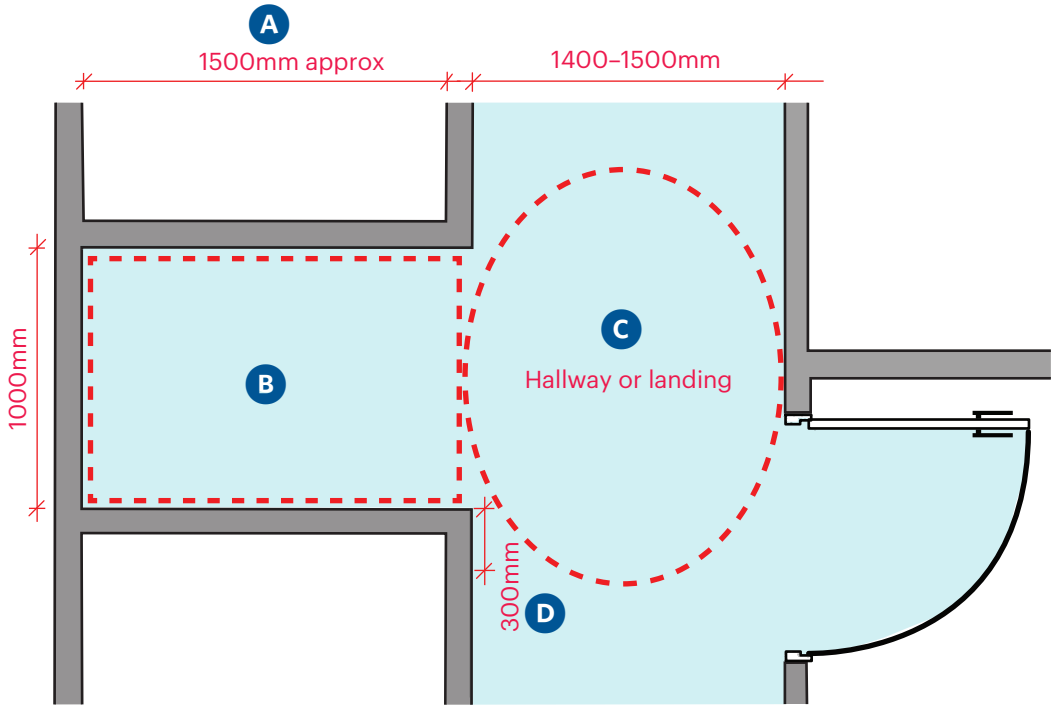
Ideally the through floor lift should be located where it moves between circulation spaces, rather than between habitable rooms. A dedicated space can be provided by locating two large cupboards accessed from a corridor, one above the other on plan, which can be converted into a shaft for the through-floor lift to use. There should be additional provision for storage elsewhere, if the stores are later occupied by the lift.

UD Home and UD Home ⊕ Guidance

- UD Indicate and facilitate future provision of a 1000mm × 1500mm aperture on plans for a through-floor lift.
- ⊕ Ensure that the lift space is accessed from corridors rather than habitable rooms.
- UD Specify a robust lift that will be suitable for continuous use.
- UD Provide a 300mm nib on the side of the leading edge of the lift car door.
- ⊕ Provide a store/cupboard on two floors of the right size to allow future conversion for lift installation.

Technical Sketch:

Plan: dimensions For Through-Floor Lifts.



A With timber floors indicate a 1000 x 1500mm aperture for future provision of a through-floor lift.

B Future lift space is ideally used as a cupboard on both floors until needed for the lift, accessed off a circulation space. Alternatively the location could be in a living space rising to a main bedroom.

C Clear turning space required outside the location for 1500mm turning circle or 1400 x 1700mm ellipse.

D There should be 300mm clear on one side of the future lift position for the leading edge of the lift car door.

UD Home ⊕⊕ Guidance

In some homes it will be useful to provide for a through-floor lift from the outset. It will need to be tailored to the specific requirements of the household, and therefore might involve installing a homelift (platform lift), rather than a through-floor lift. Ideally the installed lift serves all floors of the dwelling.