

CHAPTER 1: Tolerances

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FUNCTIONAL REQUIREMENTS

INTRODUCTION

This chapter provides guidance on the required standard of finishes in new homes, for our Warranty requirements. It is important that all workmanship carried out during construction is completed in accordance with the relevant tolerances, so that the required finishes are achieved.

Limitations of Functional Requirements

- i. A more stringent tolerance may be stated within an existing National or European Standard however, for the purposes of coverage under the relevant policy, where we have identified a tolerance requirement, this would be deemed suitable to meet the requirements of the Technical Manual.
- ii. We only measure tolerances which are identified within the chapters of the Technical Manual.
- iii. These Functional Requirements do not and will not apply to create any policy liability for any remedial works carried out by the contractor or otherwise, nor to any materials used in those remedial works.

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1.1 Masonry

1.1.1 Brickwork: straightness on plan

There should be a 10mm maximum deviation in any length of wall up to 5m.

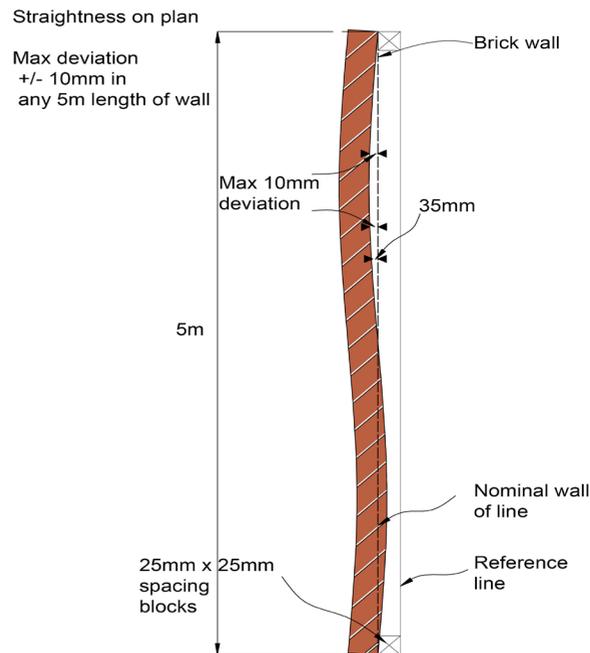


Figure 1: Brickwork: straightness on plan

1.1.2 Level of bed joints

A 10mm deviation is suggested for walls 5m long (a pro rata tolerance is applicable for walls less than 5m long), and a 15mm maximum deviation for walls over 5m long. There should be no recurrent variations in the level of the bed joint line.

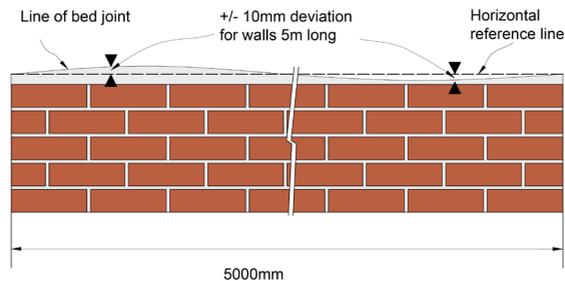


Figure 2: Level of bed joints

1.1.3 Thickness of bed joint

The thickness of an individual bed joint should not vary from the average of any eight successive joints by more than 5mm.

1.1.4 Perpendicular alignment

Vertical alignments of perpendicular joints should not deviate drastically from the perpendicular. As a result of the manufacturing process, not all bricks are uniform in length. Therefore, not all perpendicular joints will align. However, there should be no collective displacement of the perpendicular joints in a wall.

1.1.5 Plumb of wall: overall height

There should be a maximum deviation of 20mm in the overall height of a wall.

1.1.6 Plumb of wall: storey height

The maximum deviation is 10mm in a storey height of approximately 2.5m. Using a 50mm wide spacing block, the plumb bob should be between 40mm and 60mm away from the wall.

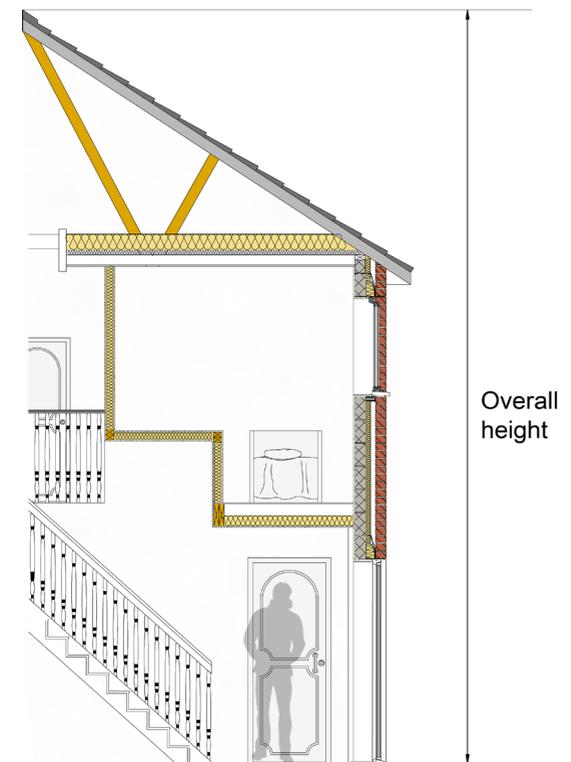


Figure 3: Overall height

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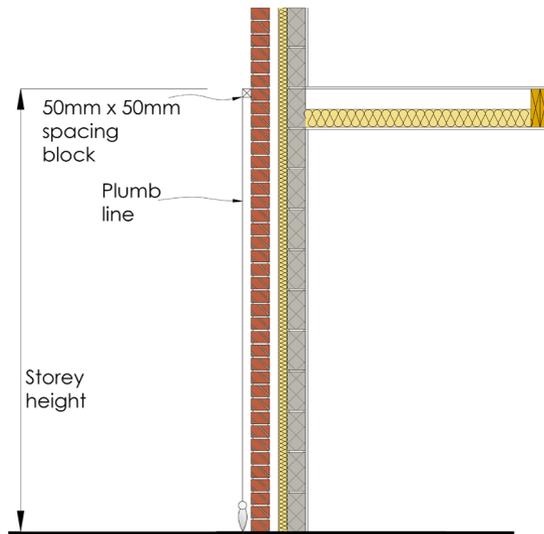


Figure 4: Plumb of wall: storey height

1.1.7 Straightness in section

The maximum deviation is 10mm in any 2.5m height of wall. Using 25mm wide spacing blocks, the masonry line should be anywhere between 15mm and 35mm from the reference line.

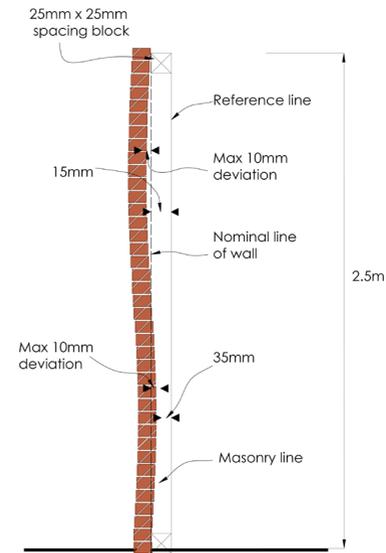


Figure 5: Straightness in section

1.1.8 Rendered walls (plain)

Unless otherwise specified, apply the render coats to produce as flat a surface as possible, and where appropriate check the surface by measuring between the face and any point along a 1.8m straight edge placed against it. The flatness of the rendered finish will depend upon the accuracy to which the background has been constructed, the thickness of the render specified and whether grounds and linings are provided and fixed to a true plane. For render less than 13mm thick, a no tolerance limit is realistic. Significant cracks in the render, or other damage, such as chips and marks greater than 15mm in diameter, are considered unacceptable.

1.1.9 Fair-faced brickwork and blockwork

Fair-faced masonry should be completed to a reasonable level, ensuring texture, finish and appearance are consistent. A reasonable appearance for single leaf 102.5mm brick walls should be to have one finished side only. A neat and tidy finish should be applied to the other side. Shrinkage due to drying out could lead to the fracturing of unplastered blockwork walls, although cracks of up to 3mm are generally normal due to thermal movement and drying shrinkage.

1.1.10 Tile hanging

The uniform appearance is to be maintained for panels of tile hanging, especially at abutments.

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1.2 Internal Walls and Ceilings

1.2.1 Walls and ceilings (plastered and dry lined)

There should be no sharp differences of more than 4mm in any 300mm flatness of wall; the maximum deviation is +/-5mm from a 2m straight edge with equal offsets, horizontally and vertically, for all wall and ceiling surfaces.

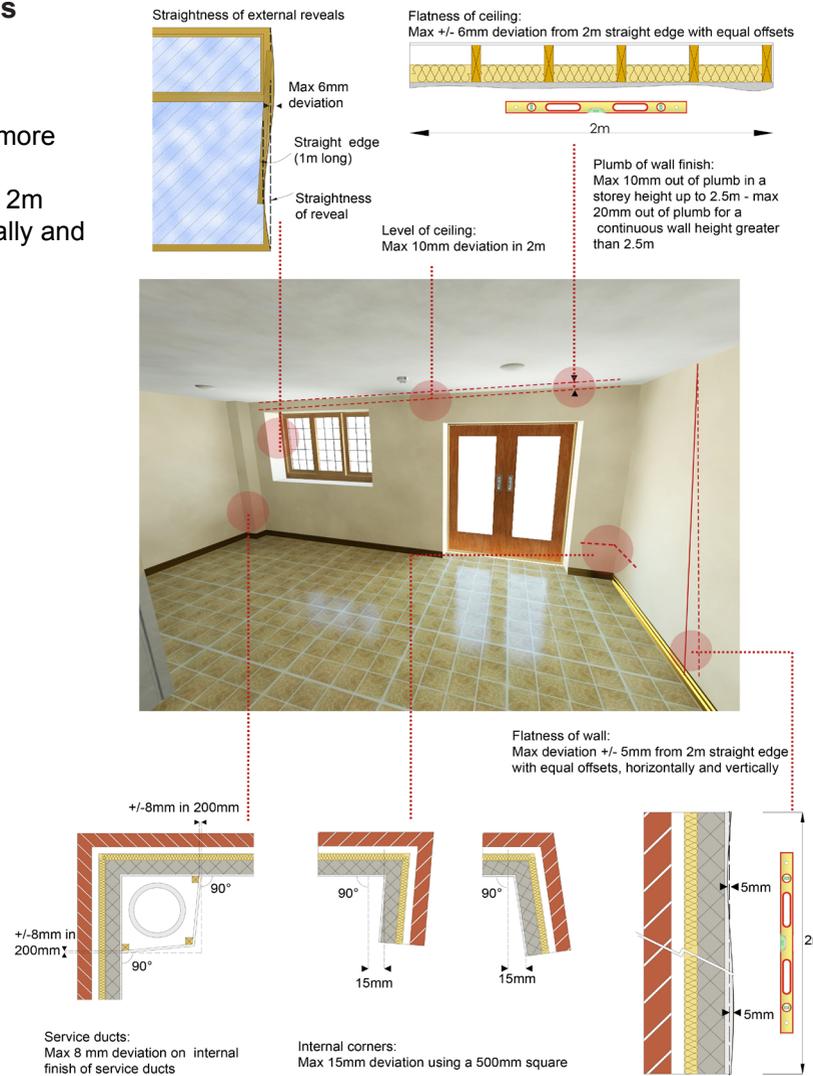


Figure 6: Maximum deviation in walls and ceilings

1.3 Junctions

If there are changes in the construction materials used due to shrinkage and the differential movement of materials; small cracks (up to 3mm wide) may become visible in the surface at wall, floor and ceiling junctions.

1.4 Floors

1.4.1 Level

Floors up to 6m across can be a maximum of 4mm out of level per metre, and a maximum of 25mm overall for larger spans. The effects of normal drying shrinkage on screeded floors could cause some fracturing. Shrinkage of timber floors and staircases is a natural occurrence when drying out, which could result in the squeaking of materials as they move against each other. This again is a natural occurrence, and cannot be eliminated entirely.

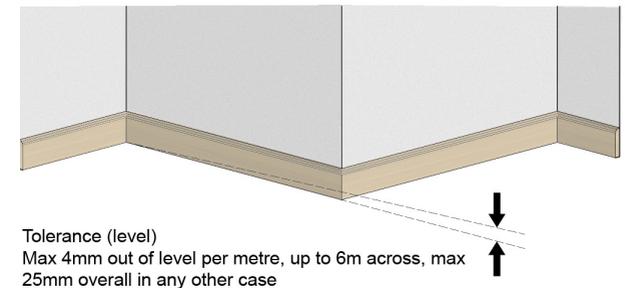


Figure 7: Level of floor

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1.4.2 Deflection

For upper floors (intermediate floors), designers and engineers must observe our tolerances requirements in this Chapter for levelness of floors. Although a joist might be designed using British standards or Eurocodes to meet permissible deflections; our tolerances requirement will take precedence.

1.5 Doors and Windows**1.5.1 Doors**

Reference of +/-3mm maximum deviation in 1m head and sill.

The maximum out of level tolerance is 5mm for openings up to 1.5m wide, and 8mm for openings more than 1.5m wide (see Figure 8).

These dimensions are without prejudice to satisfactory performance in terms of weather tightness, exclusion of draughts and fire resistance where appropriate

Door frame should not be distorted in the opening

Max 10mm out of plumb over height of frame (in one direction only)

Door distortion:
Max 5mm across width
Max 9mm in height



The gap between the underside of an internal door and unfinished floor (concrete, screed, etc) should be min 5mm and max 22mm

Max 5mm gap between door and head of jamb (for fire doors, use manufacturer's recommendations). For double doors, the gap at the meeting styles should be max 5mm

Figure 8: Gaps and distortion in doors

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1.5.2 Windows

For square reveals, a maximum +/-8mm deviation off square is applicable for a reveal up to 200mm deep.

1.5.3 Glazing

Glass must meet the visual assessment criteria of CWCT Technical Note 35 (TN 35). The total number of faults permitted in a glass unit shall be the sum total of those permitted by the relevant BS EN Standard for each pane of glass incorporated into the unit concerned.

Faults include:

- Bubbles or blisters
- Hairlines or blobs
- Fine scratches not more than 25mm long
- Minute particles

When assessing the appearance of glass:

- The viewing distance used shall be the furthest stated in any of the BS EN Standards for the glass types incorporated in the glazed unit. In the event of doubt, the viewing distance shall be 3m.
- The viewing shall commence at the viewing distance, and shall not be preceded by viewing at a closer distance.
- The viewing shall be undertaken in normal daylight conditions, without use of magnification.
- The above does not apply within 6mm of the edge of the pane, where minor scratching is acceptable.

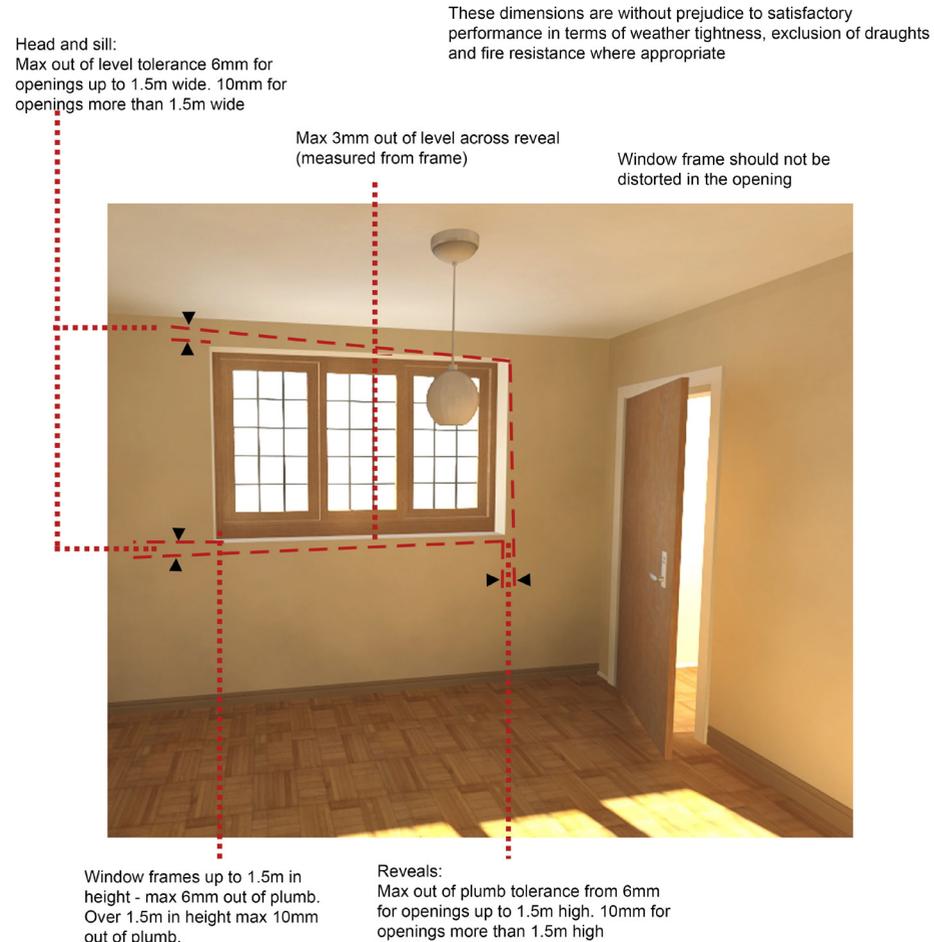


Figure 9: Distortion in windows/reveals

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1.5.4 Scratches on doors, windows and frames

Factory-finished door and window components should not have conspicuous abrasions or scratches when viewed from a distance of 0.5m.

- Surface abrasions caused during the building-in process should be removed in accordance with the manufacturer's instructions, which may include polishing out, re-spraying or painting.
- In rooms where there is no daylight, scratches should be viewed in artificial light from fixed wall or ceiling outlets, and not from portable equipment.

1.6 Skirting

It is possible that there will be joints in skirtings on long walls. When viewed from a distance of 2m in daylight, joints will need to show a consistent appearance. It is anticipated that there will be some initial shrinkage of the skirting after occupation of the building.

1.7 Finishes and fitted furniture

Fitted furniture with doors and drawers should be aligned vertically, horizontally and in plan. It should also function as designed by the manufacturer. Adjacent doors and/or drawers with any gaps between them should be consistent. At the intersection of adjacent worktops, there should not be a visible change in level.

1.7.1 Painted and varnished surfaces

All surfaces should be reasonably smooth as practicably possible when viewed in daylight from a 2 metre distance and not by shining any artificial light onto the surface. Significant nail holes, cracks and splits should not be seen and should be filled to reduce their visible appearance. Colour, texture and finish should be reasonably consistent and any joints are to be filled where necessary.

1.7.2 Knots in timber

Some seeping of resin from knots is a natural occurrence that may cause paintwork discolouration both internally and externally. The standard will be met providing the Developer finishes the timber in accordance with Functional Requirements.

1.8 External works**1.8.1 Drives and paths: standing water**

Surface variation should not exceed +/-10mm from a 2m straight edge with equal offsets. Some fracturing or weathering may also appear if using natural stone due to the make-up of the material. This tolerance applies to principle pathways and driveways to the dwelling that are required to meet the standards of Part M (Access to Dwellings).

1.8.2 - Drainage system covers

Drainage system covers in hard standing areas should line up neatly with the adjacent ground.