Furniture *dimensional tolerances*: what to expect and what to specify

Typical starting points to discuss with the workshop, how to measure them, how to set a nominal inside a limit such as the 850 mm accessible counter, and how much solid wood moves.

Compliance guidance. The table figures are typical practice, starting points to discuss with the workshop and not guarantees: no UK furniture standard we could read gives them, and your piece is held to the tolerance on its approved shop drawing. Wood movement is from the USDA Wood Handbook (2021), chapter 4, and the 850 and 700 mm limits from Approved Document M, Volume 2, paragraph 4.16 (England), both read for this sheet.

AT A GLANCE

What is measured	Typical starting point	Tighter option	How it is measured	Basis
Overall length, width or depth	± 2 mm up to 1,000; ± 3 mm to 3,000	± 1 mm; ± 2 mm	Steel tape, finished piece, stated humidity	Typical practice
Height, floor to top surface (table, desk, bar)	± 3 mm	± 2 mm	From finished floor level at each leg, on a floor checked flat	Typical practice. Floors vary.
Seat height, upholstered, as sat on	± 10 mm	± 5 mm on a firm seat	Floor to the loaded seat, at a stated point	Typical practice. Our seat sheet uses ± 10.
Overall size of an upholstered piece	± 10 to 20 mm	Not usually offered	Tape across the widest points, cushions in place	Typical practice. Soft materials.
Squareness: difference between diagonals	1 to 2 mm per metre of diagonal	1 mm per metre	Diagonal to diagonal across a frame, carcase or top	Typical practice
Flatness of a top, panel or door	1 to 2 mm in 1,000 mm	1 mm in 1,000 mm	Straightedge, gap read with a feeler gauge	Typical practice. Timber moves: see below.
Gaps between doors or drawer fronts; step between flush faces	Gap 2 to 3, even to ± 1; step 1 or less	Gap even to ± 0.5; step 0.5	Gap gauge; straightedge and feeler gauge	Typical practice. Our journal: a 2 mm shadow gap.
Welded metal frames	Name a class of BS EN ISO 13920	A tighter class	As the class defines: lengths, angles, shape and position	Standard named, not read
Colour, grain and sheen	No number: the approved sample	A limit sample or a range	Against the sample, in stated light	Practice: see the sample hierarchy sheet

Millimetres. Starting points to discuss, not promises. A tighter tolerance needs more machining, checking and rework, which can show in the price and the programme: use it where a fit depends on it, and ask the workshop to price both.

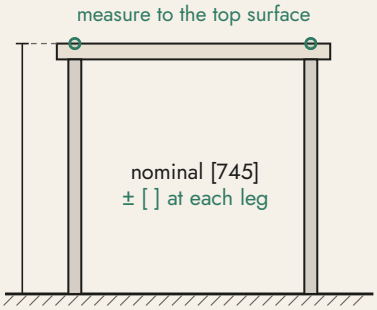
HOW MUCH SOLID OAK MOVES, FROM 50% RH AT 21 °C

Relative humidity	Moisture content	Plainsawn, 1,000 mm wide	Quartersawn, 1,000 mm wide
30%	6.2%	−11 mm	−6 mm
40%	7.7%	−6 mm	−3 mm
60%	11.0%	+7 mm	+3 mm
70%	13.1%	+15 mm	+8 mm

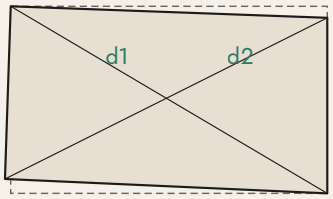
Estimate from the USDA Wood Handbook (2021), chapter 4, for white oak, not European oak. Individual pieces vary.

MEASURING

1 Height from the floor

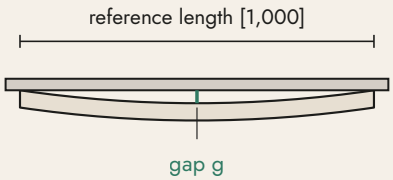


2 Squareness: the two diagonals



squareness = d1 less d2
limit stated per metre of diagonal, [ ] mm
dashed: the true rectangle (exaggerated)

3 Flatness: a straightedge



flatness = largest gap g under the straightedge, in mm over the length
(bow exaggerated)

Errors exaggerated.

SPECIFICATION WORDING

GENERAL TOLERANCES

Unless a dimension carries its own tolerance on the approved shop drawing, finished dimensions are to be within [± 2 mm up to 1,000 mm and ± 3 mm from 1,000 to 3,000 mm]. Squareness: difference between diagonals not more than [ ] mm per metre. Flatness of tops and panels: not more than [ ] mm under a [1,000] mm straightedge. Gaps between doors and drawer fronts [ ] mm, even to [±] mm. Welded metalwork to BS EN ISO 13920 class [ ] [edition to be confirmed]. Measured at [20] °C and [ ] % relative humidity, on the finished piece before dispatch, by [party], and the readings recorded.

CRITICAL DIMENSIONS

Finished table height [745] mm ± [3] mm, measured from finished floor level at each leg. Finished seat height [450] mm ± [10] mm as sat on, measured at [ ]. These are critical dimensions: checked before dispatch and again at handover, and recorded.

DIMENSION WITH A REGULATORY LIMIT

Accessible section of the working surface: nominal height [840] mm above finished floor level, tolerance ± [5] mm, so that the surface is never more than 850 mm above the floor at any point along its length. Knee space: nominal clear height [ ] mm, tolerance + [10] mm / – [0] mm, so that it is never less than [the figure taken from BS 8300-2:2018 or the access consultant's drawing]. Measured from finished floor level at [ ] points and recorded before handover.

SOLID TIMBER

Solid timber tops and panels are to be made at [ ] % moisture content for a room conditioned at [ ] to [ ] % relative humidity at [ ] °C. Tolerances on width and flatness apply when the piece is measured at its delivery conditions and do not cover seasonal movement outside that range, which the fixing details allow for as shown on the shop drawing.

TERMS USED

Tolerance
The variation either side of a stated size that is agreed to be acceptable, such as 745 mm plus or minus 3 mm. A limit is different: it has one side only.

Flatness
How much a surface departs from a plane, measured as the largest gap under a straightedge of a stated length laid on it.

One-sided limit
A maximum or a minimum that must not be crossed, such as an accessible counter surface not more than 850 mm above the floor. The nominal size is set inside it by more than the tolerance.

STANDARDS AND SOURCES

- USDA Forest Products Laboratory, Wood Handbook (FPL-GTR-282, 2021), chapter 4: Tables 4-2, 4-3 and Equation 4-9, read.
- Approved Document M, Volume 2 (2015 with 2020 and 2024 amendments, England): paragraph 4.16(b), (c) read.
- Named, not read: BS EN ISO 13920:2023 (welded constructions); BS EN 1529:2021 and BS EN 1530 (door leaves); BS EN 1334 (beds); BS 5606:2022 (accuracy and tolerance); BS 8000-5:1990 (joinery workmanship). Check current editions.
- Make Bespoke Studio journal: How to specify bespoke joinery

Full guide: https://makebespoke.com/trade/technical/furniture-dimensional-tolerances. Make Bespoke Studio coordinates manufacture through its partner workshops. Figures are guidance only and your specification governs; some may be superseded, so contact the studio to verify.