

Floor joists

Even if the loft was previously used for light storage you will almost certainly have to strengthen the ceiling joists in the loft floor. You can do this by adding larger and stronger timber floor joists between the existing ceiling joists. Support them on the existing walls if they are strong enough, or add extra timber support beams if necessary. A professionally designed loft conversion plan that complies with building regulations will be needed. Check with a structural engineer.

Building regulations require 30-minute fire resistant floors for loft conversions in two or more-storey homes.

Load-bearing walls and foundations

New floor joists will need support. This can be achieved either from an existing wall, which will need to continue all the way down through the house to a foundation, or by an adequate intermediate support, such as steel or timber beams. It is particularly important to assess the structural integrity of houses with rooms knocked through on lower storeys and older properties.

In some cases, the proposed increase in load could require underpinning of the foundations. Check with a structural engineer or your building control body.

Getting your services in

There are rules about where and how much a structural timber member can be notched or drilled for wiring and pipework, as even a small amount of drilling or notching can significantly weaken the timber.

Holes or notches should not be cut in any rafters, purlins or engineered timber joists unless justified by the structural engineer.

Take advice from a structural engineer and your local building inspector.

Engineered products, such as I-joists may have drilling positions marked. Follow manufacturer's instructions.



Photo: TwoTwenty stairs

Bats

Bats and bat roosts are protected by law. If there are bats living in a roof, they cannot be disturbed or removed. If you see bats or bat droppings in the loft, you must notify the local Statutory Nature Conservation Organisation (see Further information and advice) to seek advice before work starts.



Stairs

Building Regulations apply, such as:

- A minimum headroom of 2m above a staircase, which means that the top of the stairs often needs to be close to where the roof is highest.
- In a multi-storey dwelling with a habitable loft and the stairs are the sole means of escape, the staircase must be constructed and enclosed so that it attains 'protected stair' status.

The main types of timber staircase you could use for a habitable loft conversion are conventional, spiral and alternating tread.

Retractable ladders are not acceptable for habitable rooms in the roof because they don't provide constant access and means of escape.

Spiral stairs and alternating tread stairs are only allowed to access one habitable room (as well as a bathroom and/or toilet in the case of alternating tread stairs, as long as it isn't the only toilet in the building).

The opening for new stairs is normally formed by cutting away some of the existing ceiling joists between the existing the loft-space and the floor below. As these joists support the existing ceiling and restrain the pitched roof from spreading, you must provide replacement support, such as timber "trimmers" around the opening. These will probably be at least two timbers fixed together (double trimmer) to ensure the load is transferred to remaining timbers.

Not all the guidance in the Building Regulations is compulsory for sound transmission, but you may need to comply with Approved Document E if any additional work is required to meet the standard in the existing property.

Bespoke staircases can be purchased from joinery manufacturers. Look for a member of the [BWF Stair Scheme](#). Alternatively, timber components can be assembled on site. [Download the BWF Stair Installation Guide](#).



Photo: Velux

Windows

Part L1B of the Building Regulations requires a target C rating (or U-value of 1.6) in England and Wales, though higher-rated windows are widely available. See *Timber Trade Topic No. 2 Wood Windows*.

Factory-finished timber window frames are a high quality solution. They may cost a little more than PVC-u, but will last up to twice as long, only need re-coating every 8-10 years, are much more environmentally-friendly.

When installing a roof window, achieve an airtight seal round the frame to maintain the thermal performance of the roof. Consider solar-control glass to minimize heat gain from the sun, or use a fitted blind. See *Timber Trade Topic No. 2 Wood Windows* for more information on frame types and installation.

Fire safety

Additional fire protection may be necessary in the existing parts of the house. For example, a typical loft conversion to a two-storey house will require new fire-resisting doors, and sometimes partitions, to protect the stairway, as it is too dangerous to escape via windows from floors above first floor level. Fire doors are life-critical. So it makes sense to use certified products. Certification schemes, like the BWF-CERTIFIRE Fire Door and Doorset Scheme and BM TRADA's Q-Mark Fire Door Scheme, ensure doorsets are fit for purpose. See *Timber Trade Topic No. 3 Fire doors & doorsets* for more information.

Mains powered, interlinked smoke alarms are also required within the stairway at each level; and you may need to upgrade the fire protection to some parts of the structure of the house, such as the floors, where building regulations require 30-minute fire resistant floors for loft conversions in two or more-storey homes.

Consult [Approved Document B \(fire safety\)](#).

Insulation

Building regulations require a minimum 270mm of insulation in the void between the floor joists (see *adding larger, stronger joists* above).

You can achieve acceptable sound insulation by using a wood-based board, such as plywood or 22mm tongued and grooved chipboard, weighing more than 15kg/m² for the floor surface. With a terraced or semi-detached house, the building control body may also ask for sound insulation between the converted loft and the neighbours loft to be improved.

A timber floor makes sense, as it is durable, easy to keep clean and good-looking. If you are laying a decorative timber floor, use an acoustic underlay. See *Timber Trade Topic No. 15 Flooring* for more information.

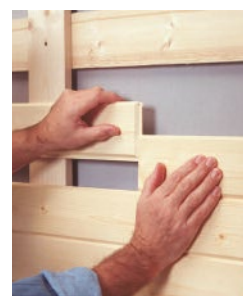
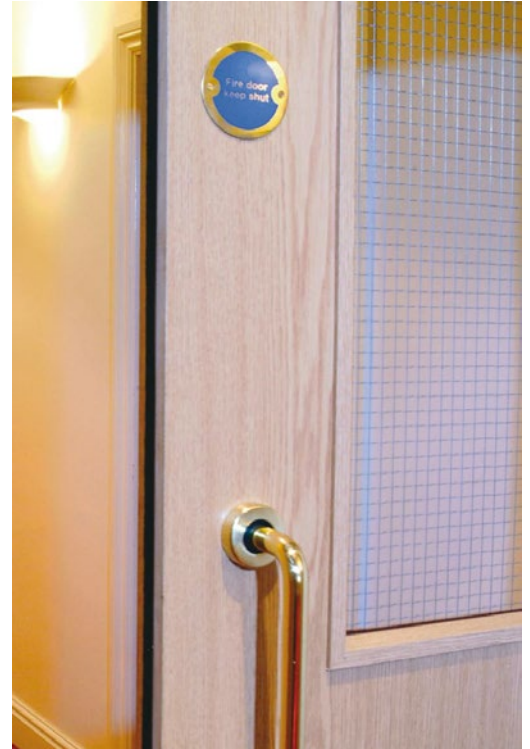
You should insulate your loft by insulating the roof itself as well as, or rather than, the loft floor. Use rigid insulation boards between the roof rafters, cut so they fit snugly between the rafters. They can then be covered by plasterboard, or timber panelling. Rafters aren't usually very deep, so to get the best performance you may have to insulate over them as well, using insulated plasterboard. If there isn't room to do this, make sure you use the highest performance insulation board.

Wood panelling

As well as adding character to a room, wood panelling can improve thermal and acoustic insulation and mask defects.

Many species are suitable, but pine and spruce are the most popular and are also available in a variety of pre-finished stains and finishes. Boards come tongued and grooved in a range of sizes and decorative profiles with thicknesses from approx. 7mm to 25mm – boards thicker than 12mm providing additional structural strength. For best results use timber manufactured from higher grades and kiln dried to 8-12%.

Store in the room for 24hrs before fitting.



Fitting wood panelling

On stud walls and unplastered ceilings, the panelling can be nailed direct to the studs or joists.

Otherwise, 22 x 38mm sawn battens provide an easy surface on which to nail the panelling and also form a flat base (fig 1).

Pack out any substantial irregularities under the battens. Use 'secret nailing': drive the nails diagonally through the tongue of each board (fig 2). Only the first and last boards require nailing through the face. Punch these home and fill with wood filler.

Don't forget to allow an expansion gap around the perimeter of the panelling, particularly across the width of the boards. Use skirting boards and moulded trims to hide these gaps (fig 3).

Sound insulation should also be considered between walls and floors in order to prevent noise transmission between floors or to an adjoining neighbour's house.

Pre-finished panelling systems are becoming increasingly available. Designed for accurate and rapid installation, they also avoid the need for on-site finishing.

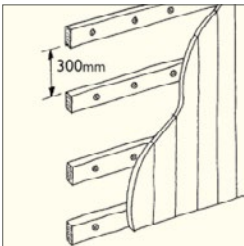


Figure 1.

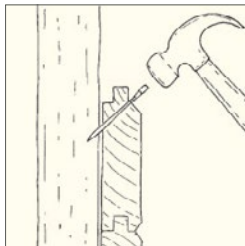


Figure 2.

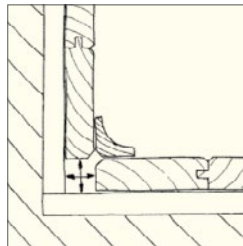


Figure 3.

Further information and advice

[Loft conversion planning permission](#)

[Loft conversion project guide](#), Construction Products Association

Building Regulations

[England and Wales Building Regulations: Approved Document B \(Fire safety\) – Volume 1: Dwellings](#)

[Approved Document E \(Resistance to the passage of sound\)](#)

[Bat Conservation Trust](#)

[The Party Wall etc. Act 1996](#)

Timber Trade Topic Sheets

No. 2 Wood windows

No. 3 Fire doors & doorsets

No. 4 Strength-grading

No. 15 Flooring

For more information on staircases and fire doors, visit bwf.org.uk

Sustainable timber

Timber is the most sustainable mainstream building product. It is naturally renewable. Over 90% of timber used in UK construction comes from Europe, where more trees are grown than harvested (*source: TTF Statistical Review 2016*).

Softwood and temperate hardwood forests in Scandinavia, Europe, Canada and North America are stable or growing. Growing forests act as carbon sinks; wood products act as carbon stores.

Ask for PEFC or FSC Chain of Custody certification.

See Wood Campus RIBA CPD module *Procuring Sustainable Timber* for more on timber certification and sustainability and government requirements.



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