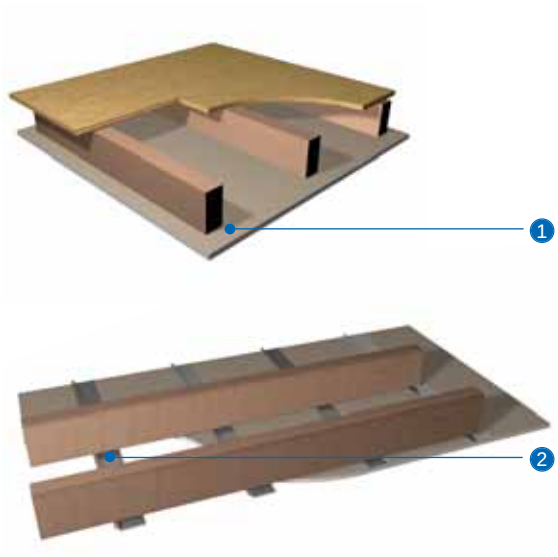
Timber joist

Timber joist ceilings and separating / compartment floors

Ceilings to timber joist floors are an established form of ceiling construction, widely used in both new housing and refurbishment. Separating / compartment floors are often specified as fire and sound resisting floors in residential units, such as flats and apartments, to meet the requirements of national Building Regulations.



1. Gyproc plasterboard - direct fix with Gyproc Drywall Timber Screw
2. Gypframe RB1 Resilient Bar or Gypframe RB2 SureFix Bar - indirect fix

Key facts

- Traditional and established method
- Versatile
- Use of Gyproc Drywall Timber Screws minimises fixing defects
- Gypframe RB1 Resilient Bar and Gypframe RB2 SureFix Bar provide enhanced acoustic performance and eliminate nail-popping
- Can achieve high performance levels
- Quick and easy to install

Components

Gyproc board products

			Take-off quantities[1]
	**Gyproc WallBoard**[2 3] Thickness Width	 12.5, 15mm 900, 1200mm	100m²
	**Gyproc FireLine**[2 3] Thickness Width	 12.5, 15mm 900, 1200mm	100m²
	**Gyproc SoundBloc**[3] Thickness Width	 12.5, 15mm 1200mm	100m²
	**Gyproc Plank** Thickness Width	 19mm 600mm	100m²
	**Gyproc HandiBoard**[3] Thickness Width	 9.5, 12.5mm 600, 900mm	100m²

[1] Quantities are for 100m² of regular shaped rectangular ceiling. Quantities are approximate for a single layer installation with Gypframe RB1 Resilient Bar or Gypframe RB2 SureFix Bar component at 450mm centres when specified. Quantities are for guidance only, no allowance has been made for waste.

Glasroc board products

			Take-off quantities[1]
	**Glasroc MultiBoard** Thickness Width	 6, 10, 12.5mm 1200mm	100m²
	**Glasroc FireCase s** Thickness Width	 15mm 600, 1200mm	100m²

Gypframe metal products

	**Gypframe RB1 Resilient Bar** Length	 3000mm	250 m
	**Gypframe RB2 SureFix Bar** Length	 3000mm	250 m

[2] Moisture resistant boards are specifed in intermittent wet use areas e.g. shower cubicles.

[3] Also available in DUPLEX grades where vapour control is required.

Fixing and finishing products	Take-off quantities[1]
 **Gyproc Drywall Timber Screws or Glasroc FireCase Screws** For a positive direct fix of boards to timber joists.	1560
 **Gyproc Drywall Screws** For fixing ceiling lining boards to Gypframe SureFix Bars or Resilient Bars.	1800
 **Gyproc Sealant** Sealing air paths for optimum sound insulation.	1 cartridge per 35m based on 6-10mm bead
 **Gyproc jointing materials** For seamless jointing.	As required
 **Thistle Multi-Finish or Thistle Board Finish** To provide a plaster skim finish.	10m² per bag

Fixing and finishing products	Take-off quantities[1]
 **Thistle Spray Finish** Gypsum finish plaster for spray or hand application.	11m² per bag
 **Isover APR 1200** For enhanced acoustic performance. 25mm, 50mm and 100mm.	As required
 **Isover General Purpose Roll** For providing acoustic / thermal insulation.	As required
 **Isover Sound Deadening Floor Slab – Rigid Grade**	As required
 **Stone mineral wool** For providing fire performance.	As required

Construction tips

- Estimated construction time 15 - 20m² / man hour (single layer ceiling - boarding only) or 8 - 10m² / man hour (double layer ceiling - boarding only) ready for finishing
- To minimise the risk of cracking at plasterboard joints, use seasoned timber with a moisture content not exceeding that recommended in *BS5268: Part 2*. Even timber conforming to the standard will shrink on drying and fixing defects could occur if plasterboard is fixed directly using nails
- To minimise the risk of fixing defects occurring, use Gyproc Drywall Timber Screws for fixing into standard softwood, super-dried timber (approx. 12% moisture content) and engineered I beams. Fix boards tight to accurately spaced, aligned and levelled framing. Alternatively, use Gypframe RB2 SureFix Bar which eliminates nail-popping
- Select the right length of fixing (nominal entry into timber of 25mm, nominal entry into Gypframe RB1 Resilient Bar and RB2 SureFix Bar metal of 10mm)
- Ensure that the dimensions of timber supports are sufficient to allow positive fixing of plasterboards. Bearing surface of existing framing can be increased by fixing timber battens
- Install cavity barriers where specified
- Airtightness is essential for optimum sound insuation. While most junctions can be sealed with standard jointing materials, gaps at the perimeter of the ceiling, and other small airpaths, can be sealed using Gyproc Sealant

Construction tips (cont'd)

- Consider fixing DUPLEX grade board as the face layer where a vapour control layer is required
- Consider fixing Gypframe RB1 Resilient Bars to partially isolate linings from the timber framing to provide improved acoustic performance
- The designer should ensure that the floor construction is suitable to support any imposed loads. For construction advice please refer to the UK Timber Frame Association (UKTFA), website: www.timber-frame.org
- Consider the requirements for timber noggings to support board edges (see Table 1 – Requirements for timber noggings)
- Electrical and other small service runs can be routed within the floor cavity
- Minimise the number of service penetrations. Where these occur, they must be adequately fire-stopped by the appropriate contractor
- Fixtures should be made into joists, or to supplementary timber

Table 1 - Provision of timber noggings within traditional softwood timber floors [1]

Board thickness	Maximum joist centres with noggings mm	Maximum joist centres without noggings mm
6mm Glasroc MultiBoard	450	400
10mm Glasroc MultiBoard	600	450
12.5mm Gyproc plasterboard / Glasroc MultiBoard	600	450
15mm & 19mm Gyproc plasterboard	600	600
Gyproc ThermaLine laminates	600	450

[1] To be read in conjuction with Timber noggings within timber floors.

NB For engineered joists, please consult joist manufacturer / supplier for specific information.

Timber noggings within traditional softwood timber floors (direct fix applications)

Suitable timber noggings, typically 38mm x 38mm or 50mm x 50mm, may be required between joists and at the ceiling perimeter to support the edges / ends of the board. The provision of noggings depends on several factors; the thickness of board, spacing of timber joists and any technical performance requirements, e.g. vapour resistance and fire resistance performance. Table 1 provides information on the general requirement of noggings. However, reference must also be made to the relevant technical performance tables within the WHITE BOOK to establish the need for noggings in fire-rated situations. Furthermore, timber noggings should always be incorporated when fixing boards offering a vapour control layer, irrespective of joist spacing, e.g. DUPLEX grade Gyproc plasterboard and thermal laminates providing vapour control. Timber noggings are always required around the ceiling perimeter, except when using 15mm Gyproc WallBoard and 19mm Gyproc Plank in non fire-rated situations. In multi-layer plasterboard ceilings, the provision for noggings relates to the outer layer board only (unless otherwise stated).

Installation - direct fix plasterboard ceiling

Direct fix plasterboard ceiling

- Install boards to ceilings, prior to lining walls and partitions, with the long edges at 90º to the joists. Locate cut ends over a joist or timber nogging support.
- Provide timber noggings (where required) between joists and at perimeter to support board edges.

NB The provision of noggings, normally 38mm x 38mm, depends on the thickness of boards used, the spacing of timber joists and performance criteria (see Table 1).

Single layer linings

- Fix boards to timber supports using Gyproc Drywall Timber Screws. The former provide a superior fixing and will minimise any risk of fixing defects occurring.
- Where screws are used, install at 230mm centres.

- Lightly butt boards (maximum separation of 3mm), inserting fixings not closer than 10mm from bound edges and 13mm from cut edges.
- Position cut edges to internal angles and remove the paper burr using fine sand paper.
- Stagger all board end joints.

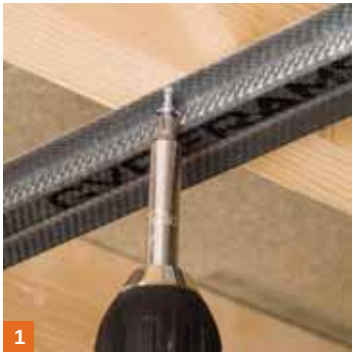
Refer to Section 2, 'General Site Considerations - Fixing to timber supports', for recommendations on fixing tolerances, increasing the bearing surface of 35mm trussed rafters, and length of screw-fixings required.

NB If fixing 15mm Glasroc FireCase s use 60mm Glasroc FireCase Screws and locate at 150mm centres. In specifications using Glasroc MultiBoard strips in the cavity, fix to the side of joists at 300mm centres (top and bottom).

Double layer linings

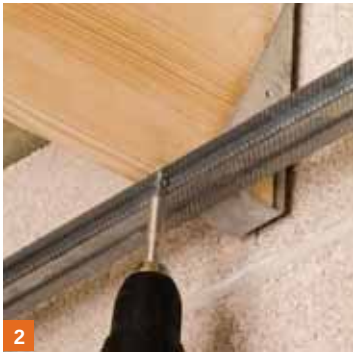
- Mark the position of joists and noggings at the perimeter prior to installing first layer boards. After first layer boards have been installed, transfer their dimensions to the lining and mark lines to indicate the position of timber supports.
- Install second layer boards with edges/ends against the centre line of supports with all joints staggered in relation to the first layer.

Installation - indirect fix plasterboard ceiling

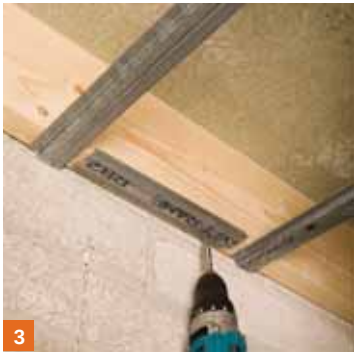


Indirect fix to Gypframe RB2 SureFix Bars

- Position the bar at maximum 600mm centres for single layer 15mm thick boards and at maximum 450mm centres for single layer 12.5mm.
- Fix Gypframe RB2 SureFix Bar through the single fixing flange to underside of joists using 36mm Gyproc Drywall Screws. Run Gypframe RB2 SureFix Bars at 90º to joists.



- Fix the first and last rows of Gypframe RB2 SureFix Bar as close to the perimeter wall as possible.



- Fix noggings of Gypframe RB2 SureFix Bar to remaining perimeters i.e. those perimeters parallel to the joists.

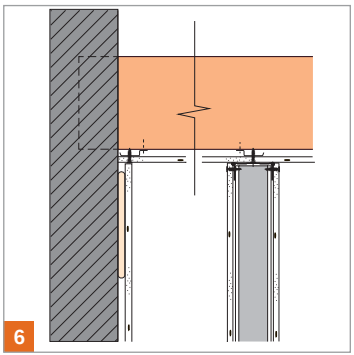
• If the bars are not long enough to span the ceiling, join by nesting together under a joist and a screw through both flanges.

Board fixing

• Fix board at 90º to Gypframe RB2 SureFix Bar with end joints staggered. Locate screws at 230mm centres in the field of the board and 150mm centres at board ends. Insert screws no closer than 10mm from bound board edges and 13mm from cut edges.

NB For a single layer of 12.5mm board and a single layer of 15mm board use 25mm Gyproc Drywall Screws. Take care to ensure the screw-fixing through the plasterboard is not driven into the joist.

• If Gyproc Plank is used as an under layer, insert 32mm Gyproc Drywall Screws and 42mm when over boarding with 12.5mm board. Lightly butt all board edges and, in multiple layer applications, position Gypframe RB2 SureFix Bars at 450mm maximum centres with joints between layers staggered.



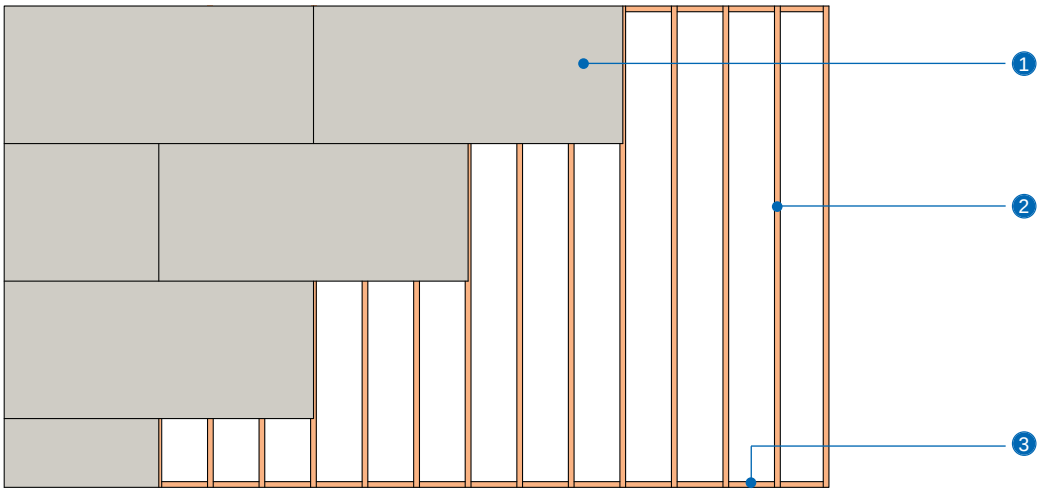
Partition fixing

• If GypWall RAPID or a similar partition type is to be installed to the underside of the ceiling, provision should be made to fix the head channel of the partition. If the partition is at 90º to the Gypframe RB2 SureFix Bar, connection through to it can be made using an appropriate length Gyproc Drywall Screw. If the partition is parallel to the Gypframe RB2 SureFix Bar, an extra length of section should be installed in the line of the partition.

Indirect fix to Gypframe RB1 Resilient Bars

• The procedure is similar to that for Gypframe RB2 SureFix Bars.

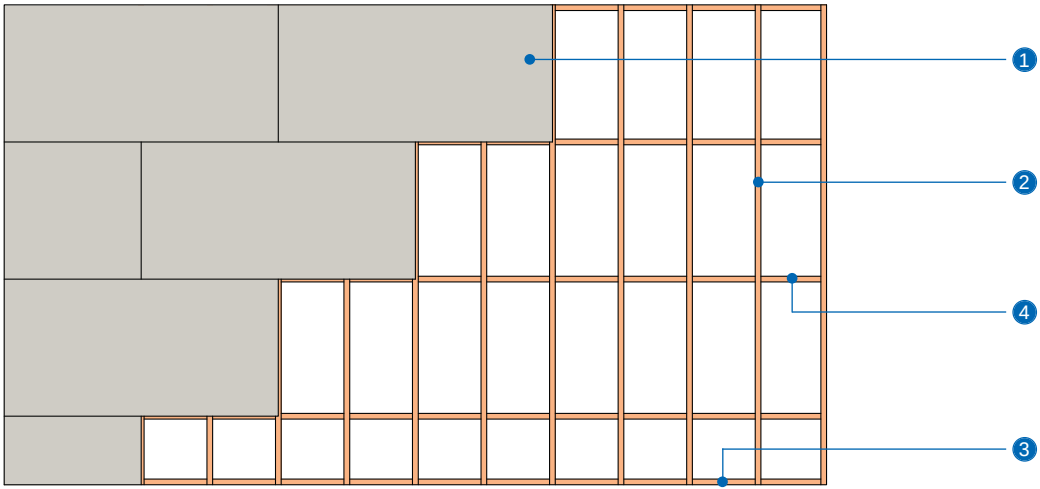
Ceiling plan – direct fix to timber joist



7 Reflected ceiling plan - single layer. 12.5mm plasterboard with joists at maximum 450mm centres (or 15mm plasterboard with joists at maximum 600mm centres)

1. Gyproc plasterboard
2. Timber joist
3. Timber noggings to provide support at the perimeter

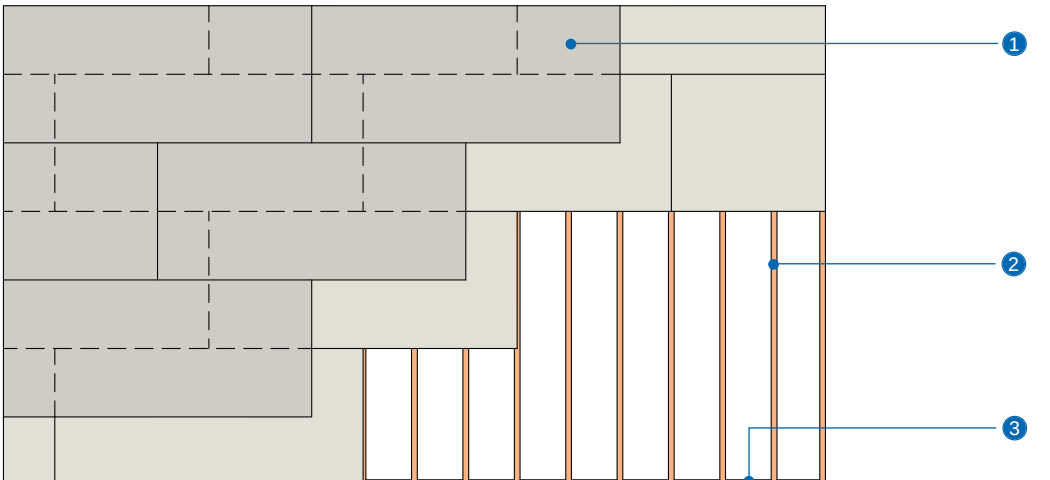
Ceiling plan – direct fix to timber joist



8 Reflected ceiling plan - single layer. 12.5mm plasterboard with joists at maximum 600mm centres

1. Gyproc plasterboard
2. Timber joist
3. Timber noggings to provide support at the perimeter
4. Timber noggings to support board edges

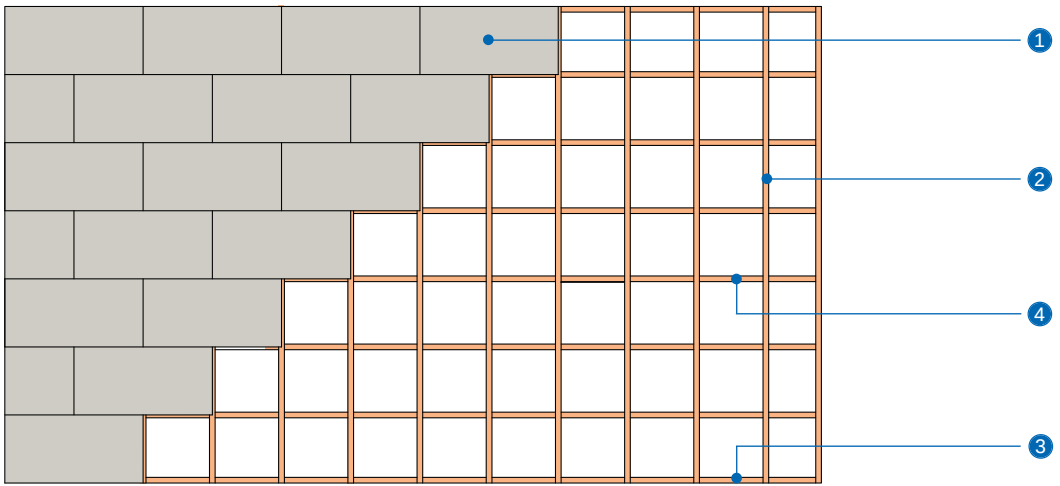
Ceiling plan – direct fix to timber joist



9 Reflected ceiling plan - double layer. 12.5mm plasterboard with joists at maximum 450mm centres (noggings may be required to support long edges of board of outer layer if fire-rated)

1. Gyproc plasterboard
2. Timber joist
3. Noggings to provide support at the perimeter

Ceiling plan – direct fix to timber joist



NB Noggings not required when joists at 406mm centre.

10 Reflected ceiling plan - single layer. 12.5mm Gyproc HandiBoard with joists at maximum 610mm centres

1. Gyproc HandiBoard
2. Timber joist
3. Noggings to provide support at the perimeter
4. Noggings to support board edges