BRITISH STANDARD

BS 8000-5: 1990

Workmanship on building sites —

Part 5: Code of practice for carpentry, joinery and general fixings

CAWS G20, H21, K11, K20, L10, L20, L30

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Council and Civil Engineering (B/-) to Technical Committee B/146, upon which the following bodies were represented:

Building Employers' Confederation
Chartered Institute of Building
Consumer Policy Committee of BSI
Department of the Environment (Building Research Establishment)
Department of the Environment (Property Services Agency)
Federation of Associations of Specialists and Sub-Contractors
Institute of Clerks of Works of Great Britain Inc
Institution of Civil Engineers
Institution of Structural Engineers
National Building Specification Ltd.
National Council of Building Materials Producers
National House Building Council
Royal Institute of British Architects
Royal Institution of Chartered Surveyors
Society of Chief Architects of Local Authorities

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Amendments issued since publication

Amd. No.	Date	Comments

Contents

Foreword

This Part of BS 8000 has been prepared under the direction of the Council for Building and Civil Engineering. It makes recommendations and gives guidance on basic workmanship for conventional types of building work.

The recommendations given are not necessarily comprehensive; particular project documents, e.g. project specifications, may need to cover particular recommendations not dealt with by this code of practice.

This code of practice is unique in that unlike other British Standards, it draws together recommendations given in other codes of practice.

The purpose of this code of practice is to encourage good workmanship by providing the following:

a) the most frequently required recommendations on workmanship for building work in a readily available and convenient form to those working on site;

b) assistance in the efficient preparation and administration of contracts;

c) recommendations on how designers' requirements for workmanship may be satisfactorily realized;

d) definitions of good practice on building sites for supervision and for training purposes; this guidance is not intended to supplant the normal training in craft skills;

e) a reference for quality of workmanship on building sites.

It is recognized that design, procurement and project information should be conducive to good workmanship on site.

During the preparation of this code of practice the Building Industry's Co-ordinating Committee for Project Information (CCPI), produced a Common Arrangement of Work Sections (CAWS) for building work. This code of practice has generally been arranged in accordance with the Common Arrangement so that it can be used easily with project specifications and bills of quantities using this arrangement. Other major documents are being restructured in accordance with the Common Arrangement.

NOTE The CCPI was sponsored by the Association of Consulting Engineers, the Building Employer's Confederation, the Royal Institution of Chartered Surveyors and the Royal Institute of British Architects.

When complete BS 8000 will comprise the following Parts.

— *Part 1: Code of practice for excavation and filling;*

— *Part 2: Code of practice for concrete work;*

— *Part 3: Code of practice for masonry;*

— *Part 4: Code of practice for waterproofing;*

— *Part 5: Code of practice for carpentry, joinery and general fixings;*

— *Part 6: Code of practice for roof, slate, tile covering and cladding;*

— *Part 7: Code of practice for glazing;*

— *Part 8: Code of practice for plasterboard partitions and dry linings;*

— *Part 9: Code of practice for cement/sand floor screeds and concrete floor toppings;*

— *Part 10: Code of practice for plastering and rendering;*

— *Part 11: Code of practice for wall and floor tiling;*

— *Part 12: Code of practice for decorative wallcoverings and painting;*

— *Part 13: Code of practice for above ground drainage and sanitary appliances;*

— *Part 14: Code of practice for below ground drainage;*

— *Part 15: Code of practice for hot and cold water services (domestic scale).*

Technical Committees CSB/32, Structural use of timber, and TIB/22, Quality in joinery, have also participated in the preparation of this Part of BS 8000 and the content is based on and consistent with that of BS 1186 and BS 5268. However, BS 5268 covers the subject matter more comprehensively and includes design, materials and other related aspects in addition to workmanship on site.
BS 1186-2 gives the requirements for the fit of parts in various details of joinery.

The text of this Part of BS 8000 includes commentaries and figures. These commentaries are separately identified and are intended to be for guidance only and do not form part of the recommendations. They refer, unless otherwise stated, to the clause which immediately precedes each commentary.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv pages 1 to 26, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

Section 1. General

1.1 Scope

This Part of BS 8000 gives recommendations on basic site workmanship and covers those tasks which are frequently carried out in relation to carpentry, joinery and general fixings.

NOTE This code of practice includes supplementary elements in the form of commentaries to assist in its use and understanding. Compliance with the commentaries is not necessary in order to be able to claim conformity with the standard.

1.2 References

1.2.1 Normative references

This Part of BS 8000 incorporates, by reference, provisions from specific editions of other publications. These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 8000 only when incorporated in it by amendment or revision.

1.2.2 Informative references

This Part of BS 8000 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

1.3 Definitions

For the purposes of this Part of BS 8000, the definitions given in BS 6100-4.4:1985 apply.

Section 2. Materials handling and preparation

2.1 Checking, handling and site storage of materials and components

2.1.1 General

Keep the site clean and tidy in order that the checking, handling and storage of materials and components can be carried out speedily and effectively.

2.1.2 Checking

2.1.2.1 Carry out detailed checks on delivery in accordance with the criteria set out in Table 1 to Table 4. In particular:

a) check quantities during unloading;

b) check for damage to manufactured components during unloading;

c) carry out moisture measurement on all manufactured joinery components delivered "in the white" as soon as possible after delivery, checking against the values set out in Table 10;

d) assess moisture content during unloading, on all components other than manufactured joinery components delivered "in the white".

COMMENTARY. *The most convenient way to measure moisture content on site is by means of an electrical resistance moisture meter used in accordance with the manufacturer's directions. The person using the meter should be experienced in its use as inaccurate results can be obtained in some circumstances by an inexpert operator.*

Some preservatives tend to distort the reading and make the moisture content appear higher than it is. If this is suspected advice should be sought from the preservative manufacturer. Plywood also tends to give falsely high readings.

2.1.2.2 Reject items which fail on any aspect of condition or specification.

COMMENTARY. *The species and grades of timber should be shown on the delivery note, as should preservative treatment. Any identification marks on stress graded timber should be checked against the specification.*

Surface moisture on carpentry components such as roof trusses may not be critical at the time of delivery when the components can continue to "breathe" even after completion of the building and are in any case likely to be exposed to the weather during construction.

2.1.3 Handling and site storage

2.1.3.1 General

a) Programme deliveries in accordance with the contract programme, to reduce site storage to a minimum.

b) Prepare storage arrangements for each item in advance of delivery.

c) Unload straight into the designated storage space.

2.1.3.2 *Handling.* When handling ensure that items are not subject to stresses greater than those that they will sustain once installed. In particular:

a) support flat, planar items at all corners;

b) support linear items adequately along their length to avoid undue "bow".

Table 1 — Checking loose carpentry

Characteristic to be checked	How to check	Criterion
Quantity	Check against delivery note	In accordance with order
Species and grade		In accordance with specification
Preservative treatment where called for	Check against delivery note and confirm by inspection	
Size	Check random samples against order	In accordance with order
Moisture condition	Visual/tactile check	Whether or not there is opportunity to adjust to specified value before building-in. Ability to "breathe" after building-in

Table 2 — Checking fabricated carpentry components

Characteristic to be checked	How to check	Criterion
Quantity	Check against delivery note	In accordance with order
Preservative treatment where called for	Check against delivery note and confirm by inspection	In accordance with specification
Squareness and flatness	Take spot dimensions	No distortion outside the limits set in Table 22
Overall size	Take spot dimensions	No deviation from specified dimensions to exceed the limits set in Table 22
Local damage	Visual inspection	No splits in timber: damaged or missing connectors
Moisture condition	Visual/tactile check	Whether or not there is opportunity to adjust to specified value before building-in. Ability to "breathe" after building-in

Table 3 — Checking loose joinery

Characteristic to be checked	How to check	Criterion
Quantity	Check against delivery note	In accordance with order
Timber specification	Check against delivery note	In accordance with contract specification
Specified finish	Visual inspection	In accordance with contract specification
Size	Check random samples against order	In accordance with order
Moisture condition	Carry out moisture measurement on all lengths delivered "in the white" and on joinery intended for internal use	Value not to exceed those set out in Table 10

Table 4 — Checking manufactured joinery components

Characteristic to be checked	How to check	Criterion
Quantity	Check against delivery note	In accordance with order
Timber specification	Check against delivery note	In accordance with contract specification
Specified finish	Visual inspection	In acccordance with contract specification
Damage in transit	Visual inspection	No measureable damage to structure or finish
Moisture condition	Carry out moisture measurement on all lengths delivered "in the white"	Values not to exceed those set out in Table 10

2.1.3.3 *Storage.* Provide storage in accordance with Table 5 to Table 8 to ensure that materials and components are maintained free from damage and are in conditions suitable for their specified moisture contents.

COMMENTARY. *When providing covered storage other than in an existing building, it is important to ensure that there is cross-ventilation over the top of the items stored. Alternative ways of achieving this are shown in Figure 1 and Figure 2.*

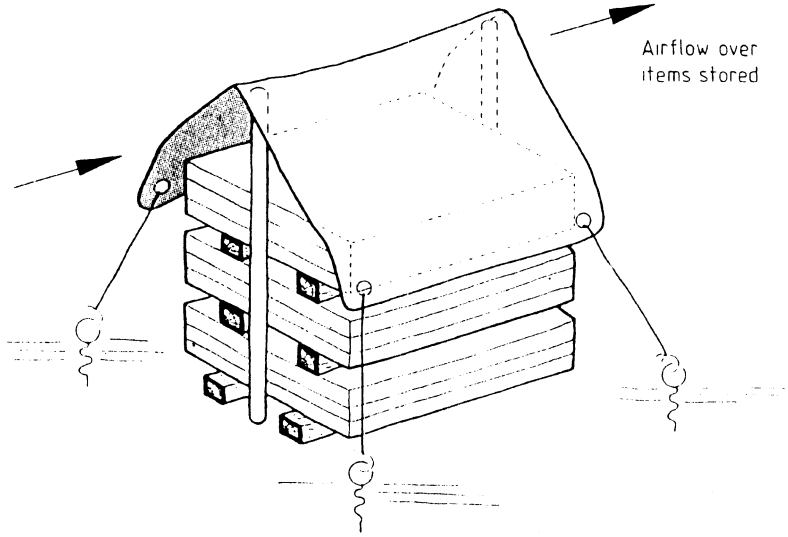


Figure 1 — Covering items with flexible sheet

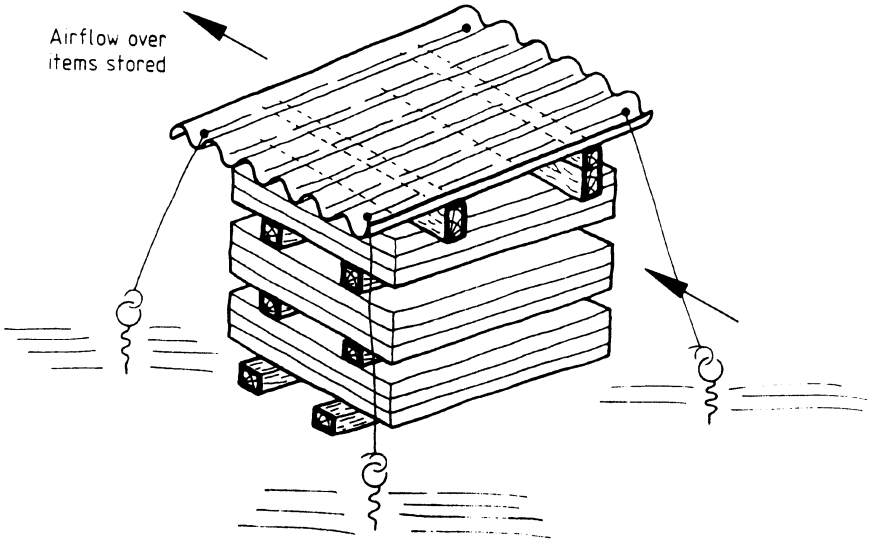


Figure 2 — Covering items with rigid sheet

Table 5 — Storing loose carpentry items

Method	When method is appropriate
Stack horizontally	Generally, to provide adequate support along length to prevent sag
Stack vertically	When space precludes horizontal storage. Ensure that adequate support is provided
Isolation between items	For different grades of timber and for preservative treated timber
On battens clear of the ground	Always
Intermediate spacers	Generally, to ensure ventilation
Under cover	For floor joints and other carcassing timber which will be unable to "breathe" after building-in
Controlled temperature/humidity	If specifically required

Table 6 — Storing fabricated carpentry components

Method	When method is appropriate
Stack horizontally	Generally
Stack vertically	Roof trusses: provide temporary stays to keep them vertical
On battens clear of the ground	Always
Intermediate spacers	If connectors or other ancillary fitments project beyond the face of the timber
Under cover	For components which will be unable to "breathe" after building-in
Controlled temperature/humidity	If specifically required

Table 7 — Storing loose joinery

Method	When method is appropriate
Stack horizontally	Generally, to provide adequate support along length to prevent sag
Stack vertically	When space precludes horizontal storage. Ensure that adequate support is provided
On battens clear of the ground	Always
Intermediate spacers	Generally, to ensure ventilation
Under cover	For any loose joinery which is being stored "in the white" and for all loose joinery intended for internal use
Controlled temperature/humidity	If specifically required

Table 8 — Storing manufactured joinery items

Method	When method is appropriate
Stack horizontally	Generally
Stack vertically	For windows: place spacer between each item to ensure that projecting items of hardware do not damage adjacent items
On battens clear of the ground	Always
Under cover	For any items delivered "in the white", pending priming, and for all items intended for internal use
Controlled temperature/humidity	If specifically required

2.2 Preparation

2.2.1 General

2.2.1.1 When materials and components are distributed to the work position:

a) do not overload any part of the structure by stacking excessive quantities of materials or components;

b) place any materials or components that are stored on upper floors near to the walls on which the joists bear and distribute the materials to avoid point loads.

2.2.1.2 Clean out all shavings, sawdust, offcuts and other rubbish from voids before these are closed in, and as the work proceeds.

2.2.2 Carpentry

2.2.2.1 Treat all surfaces of preservative treated timber exposed in cutting, with two brush applied flood coats of the appropriate preservative.

2.2.2.2 Ensure that the moisture contents of timber sections and components, when built into the work, do not exceed those in Table 9. See also Table 1 and Table 2.

2.2.3 Joinery

2.2.3.1 Before fixing or building-in any components ensure that surfaces that will be hidden are primed or sealed as specified.

2.2.3.2 Treat all surfaces of preservative treated timber exposed by cutting, with two brush applied flood coats of the appropriate preservative. Where primed timber is cut, prime the cut faces of the external joinery, working the priming paint well into the end grain of the timber.

2.2.3.3 Ensure that the moisture contents of joinery timber sections and components, when built into the work, comply with those in Table 10. See also Table 3 and Table 4.

Table 9 — Moisture content of timber when built-in

Location	Moisture content %
Timber in sheltered but unheated locations, e.g. timber framing in pitched roofs	24
Timber in covered and generally heated locations, e.g. floor joists in a house	21
Timber in continuously heated locations, e.g. structural timber in a centrally heated office	19

Table 10 — Moisture content of joinery when built-in

Location	Moisture content %
External joinery	16 ± 2
Internal joinery as follows:	
Buildings with intermittent heating	15 ± 2
Buildings with continuous heating in the range 12 °C to 19 °C	12 ± 2
Buildings with continuous heating in the range 20 °C to 24 °C	10 ± 2
Close to the heat source	8 ± 2

2.2.3.4 Before fibre building boards are fixed, adjust the moisture content in accordance with Table 11 using one of the following methods.

a) Stand boards on their edges in the room where they are to be fixed so that air can reach both faces. Use battens to space the boards if necessary.

b) Wet the rough faces with half to one litre of water per 1200 mm × 2400 mm and store the boards flat with the wet faces in contact.

If necessary seek advice.

2.2.3.5 Obtain instructions in the case of boards other than fibre boards.

Table 11 — Conditioning times for fibre boards

Board type	Type of conditioning	
	Exposure to air days	Water conditioning h
3 mm standard hardboard	3 to 5	Ideally 48 to 72; 24 minimum
3 mm tempered hardboard	5 to 7	Ideally 72 to 96; 48 minimum
Medium board LM	3 to 5	Ideally 48 to 72; 24 minimum
Medium board HM	2	Not recommended
Medium density fibre board	0 to 3	Not recommended

Section 3. Erection and installation

3.1 Fixing methods

3.1.1 General

Securely brace timber members or components temporarily during construction to hold them in position, to prevent displacement by wind or other forces and to prevent straining unfinished work.

3.1.2 Nailing

3.1.2.1 Use nails of suitable lengths as follows.

a) Where the sections to be joined are of similar thickness, use a maximum nail length equal to the total thickness to be joined less 5 mm. (See Figure 3 a).)

b) Where the section through which the nail is driven is relatively thin, use a minimum nail length twice the thickness of that section. (See Figure 3 b).)

3.1.2.2 Punch nail heads at least 2 mm below the surface of timber when they are to be stopped to receive a finish, using a punch smaller than the nail head.

3.1.2.3 Use the appropriate nail for the different fixing conditions as set out in Table 12.

3.1.2.4 In carcassing work, provide end distances, edge distances and nail spacings as set out in Table 13 and Figure 4 (based on the recommendations of BS 5268-2) to avoid undue splitting of the timber, and to ensure a sound joint.

COMMENTARY. *For a typical carcassing nailed joint using* 4 mm *diameter round wire nails the distances (see Table 13) would be:* (1): 64 mm; (2): 20 mm; (3): 32 mm; (4): 64 mm.

In practice, it is possible to nail closer to the edge by cutting a timber over length, then nailing and subsequently trimming. It is also common practice to stand the nail on its head and flatten the point; the resulting nail tip tends to shear the wood as it goes through rather than splitting it.

3.1.2.5 In carcassing work, where the spacings indicated in Table 13 would preclude use of sufficient nails for an effective joint, use sheet metal connectors in accordance with the manufacturer's instructions.

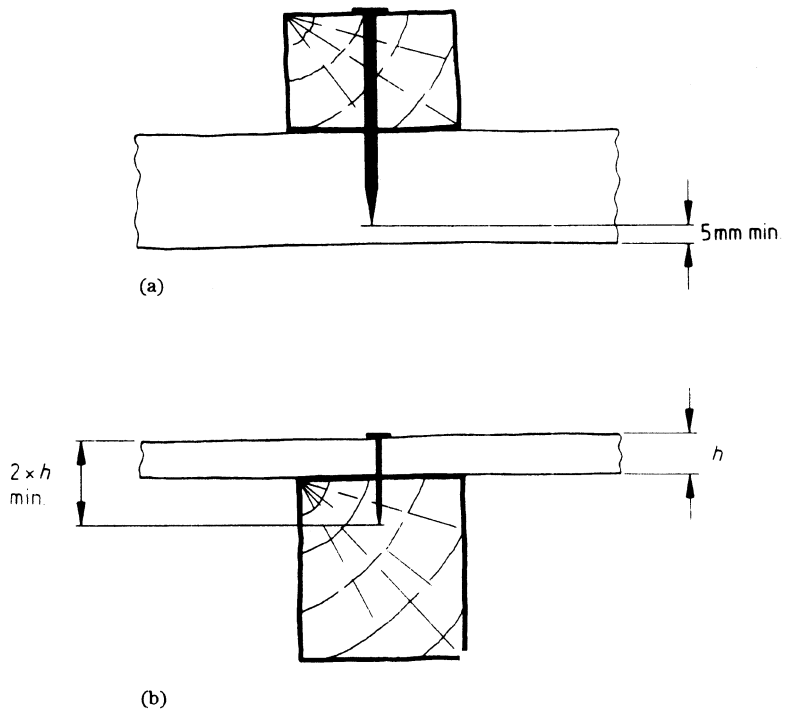


Figure 3 — Nail lengths in joints

Table 12 — Basic nail types and appropriate applications in accordance with BS 1202

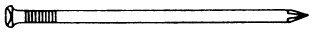
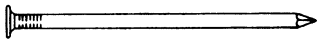
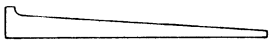
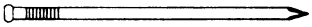
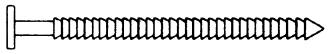
Nail type	Application
Oval wire 	For joinery work generally, i.e. architraves and other mouldings. Drive in with oval head parallel to grain to minimize splits. NOTE The nail can be punched home and filled.
Round wire nail (plain head) 	General purpose carcassing nail where the nail is not seen in finished work. NOTE This is the standard nail used in calculated structural work, e.g. timber framed housing.
Cut nail or flooring brad 	For fixing softwood floorboards.
Lost heads 	General carpentry nail used for hardwood flooring. Can be punched home and filled.
Annular ringed shank nails 	For fastening sheet materials. NOTE This nail can be used where improved withdrawal resistance is required.
Coated nails NOTE These nails are generally galvanized but other coatings are available which give improved protection and provide greater holding power.	Used in situations subject to moisture. Plain and lost heads used for fixing external cladding.

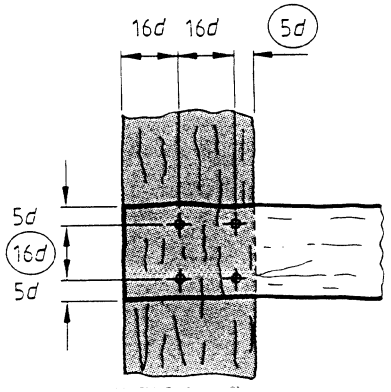
Table 13 — Nail spacings

Distance	Without pre-drilling *d*	With pre-drilling[a] *d*
(1) End distance parallel to grain	16	8
(2) Edge distance perpendicular to grain	5	5
(3) Distance between lines of nails, perpendicular to grain	8	3
(4) Distance between adjacent nails in any one line, parallel to grain	16	8

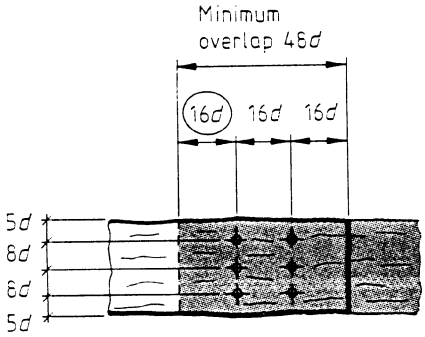
NOTE 1 *d* is the nail diameter.

NOTE 2 These values apply to all softwoods except Douglas Fir. For Douglas Fir and all hardwoods, increase all spacings by 25 %.

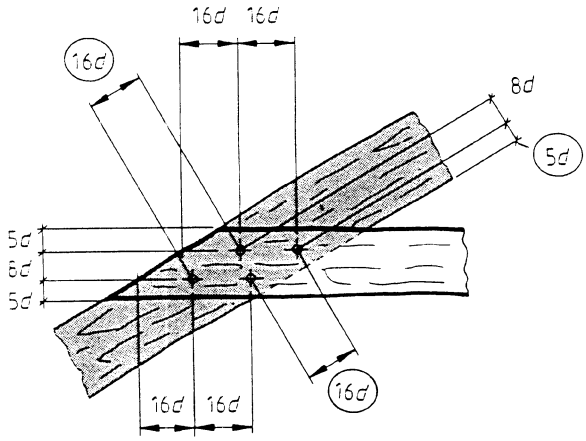
[a] Pre-drilling for nailing is only needed in special cases.



(a) Connection at right angles



(b) Connection in a straight line



(c) Angled connection

NOTE 1. *d* is the nail diameter.

NOTE 2. Distances shown are the minimum permissible.

NOTE 3. Ringed distances are determined by the member beneath that through which the nail is driven (shown in outline and shaded).

Figure 4 — Nail spacings

3.1.3 Screwing

a) Select screw lengths according to the criteria applicable to nail lengths given in **3.1.2**.

b) Drill through the head side piece of timber at the required position and part of the way into the point side piece of timber to be joined using a drill bit one size smaller than the diameter of the screw.

COMMENTARY. *More precise instructions on screwing of structural components are contained in BS 5268-2.*

c) If lubricant is to be used, e.g. to assist screwing into hardwood, use non-staining wax or soap.

d) Sink countersunk heads flush with the surface, or 2 mm below it if they are to be stopped. (See **3.1.4** for pelleting.)

e) If screw heads are to be left exposed as a feature of part of the joinery detailing, they should be left with slots aligned in one direction.

f) Do not deface screw heads during insertion of the screws.

g) In carcassing work, provide end distances, edge distances and screw spacings as set out in Table 14 (based on the recommendations of BS 5268-2) to avoid undue splitting of the timber and to ensure a sound joint.

Table 14 — Minimum screw spacings

Spacing	With pre-drilled holes *d*
End distance parallel to grain	10
Edge distance perpendicular to grain	5
Distance between lines of screws, perpendicular to grain	3
Distance between adjacent screws in any one line, parallel to grain	10

NOTE *d* is the shank diameter of the screw.

3.1.4 Pelleting

a) Sink screw heads to a minimum of 6 mm below the timber surface leaving a neat hole vertical to the surface and with clean edges.

b) Glue in pellets to match the timber and grain of the surrounding surface.

c) Finish pellets flush with the timber surface.

3.1.5 Bolting

a) Bore holes for bolts no more than 2 mm greater in diameter than the bolts.

b) Place a washer under each head, except in the case of cup-square bolts; and under each nut.

c) Tighten nuts so that the washers just bite into the surface of the timber.

d) Ensure bolts are of sufficient length to allow one full thread to project from the nut when tightened.

e) Space bolts in accordance with the sitework instructions. Otherwise do not reduce the space between bolts below five times the diameter of the bolt. Do not reduce the distance from the end of the timber to the centre of the nearest bolt hole below seven times the bolt diameter. Do not reduce the distance from the edge of the timber to the centre of the nearest bolt hole below four times the bolt diameter.

3.1.6 Glueing

a) Follow the adhesive manufacturer's recommendations with respect to shelf life, mixing, environmental conditions for application and curing, moisture content of members and all other factors relevant to the proper use of the adhesive.

b) Ensure that surfaces to be glued are freshly prepared, clean and free from dirt, dust, oil or other contamination likely to affect the performance of the adhesive, and that there is close contact of the surfaces over the area to be joined. Apply sufficient glue evenly over the surfaces to ensure that, after application of the bonding pressure, an unbroken glue line is obtained.

COMMENTARY. *There should be some "squeeze out" of adhesive when the bonding pressure is applied.*

c) Ensure that bonding pressure is maintained for the period required by the adhesive manufacturer and until the adhesive attains its full initial set. For adhesives which require a conditioning period after initial set, before attaining full design strength, restrict the application of load to the bonded joint for the necessary time.

d) If unsanded plywood which exhibits an abnormally hard or glazed surface, sometimes referred to as a "platen finish", is to be glued, sand it first.

e) If the smooth face of tempered hardboard is to be glued, lightly sand it first.

COMMENTARY. *Site glueing of components of a structural or load bearing nature is a difficult and specialized operation, therefore site glueing of any type should be undertaken only in exceptional circumstances.*

Special precautions may be necessary when glueing timber treated with a wood preservative or flame retardant. The species of timber, adhesive and wood preservative or flame retardant should be compatible.

3.1.7 Toothed-plate connectors

a) To prepare a connectored joint, accurately set out the positions of the bolt holes with reference to the point of intersection of the centrelines of the members. When drilling the bolt holes, fit the members together in their correct positions and clamp them while drilling the bolt holes through all the members.

b) Fit bolts and washers for each size of connector as set out in Table 15.

c) Ensure that bolt holes are as close as practicable to the nominal diameter of the bolt, and it is important that they are not more than 2 mm larger than the bolt diameter.

d) Fit round or square washers between the timber and the head and nut of the bolt, and ensure that connectors do not bear on the threads of bolts.

e) For calculated structural applications, space bolts and provide end distances and edge distances in accordance with the sitework instructions. Otherwise do not reduce the spacing between connectors below 150 mm and adhere to the minimum end and edge distances set out in Table 16.

Table 15 — Sizes of toothed-plate connectors and minimum sizes of washers

Connector		Bolt	Minimum size of round or square washers	
Type	Nominal size mm	Nominal size and thread diameter	Diameter or length of side mm	Thickness mm
Round toothed-plate, double-and single-sided				
	38	M10	38	3
	51	M12	38	3
	64	M12	50	5
	76	M12	60	5
Square toothed-plate, double-and single-sided				
	38	M10	38	3
	51	M12	50	3
	64	M12	60	5
	76	M12	75	5

NOTE The connector sizes in this table are metric conversions of the imperial sizes given in BS 1579.

Table 16 — End and edge distances for toothed-plated connectors

Toothed-plate connector size	Round plate		Square plate	
	End	Edge	End	Edge
38	83	25	86	29
51	89	32	92	35
64	95	38	98	41
76	102	44	105	48

NOTE Distances quoted relate to the centreline of connectors.

COMMENTARY. *The fixing of toothed-plate connectors should only be carried out in exceptional circumstances.*

3.2 Fixing loose carpentry

3.2.1 Accuracy

Construct all work square, true to level and in correct alignment within the following limits of deviation.

a) Spacing of joists, studs, rafters and ceiling members of trussed rafters: ± 6 mm.

b) Variation in level from end to end of horizontal members of length:

1) up to and including 3 m: 5 mm max;

2) 3 m up to and including 6 m: 7 mm max;

3) over 6 m: 10 mm max.

c) On a straight line at any position at right angles across joists, the difference in level between:

1) any two adjacent joists: 2 mm max;

2) the first and last joists in the element of construction: number of joists times 1.5 mm but not exceeding 25 mm.

d) Verticality of studs or posts in any 3 m height: 12 mm max.

Seek instructions if the accuracy is otherwise determined by an adjacent construction or if the construction would be adversely affected.

3.2.2 Battens, bearers and grounds

Fix battens, bearers and grounds securely, ensuring that:

a) they offer an even surface so that items fixed to them are secure and are not distorted;

b) if spacings are not specified, fixing is to the sitework instructions of the manufacturer of the items to be fixed.

3.2.3 Notches and holes

a) Unless otherwise specified, cut notches and holes in timber beams and joists of height not greater than 250 mm, within the areas indicated by hatching on Figure 5. Ensure that sizes of notches and holes are as small as practical.

b) Seek instructions for beams and joists in excess of 250 mm high, or where the size of notches will exceed those indicated in Figure 5.

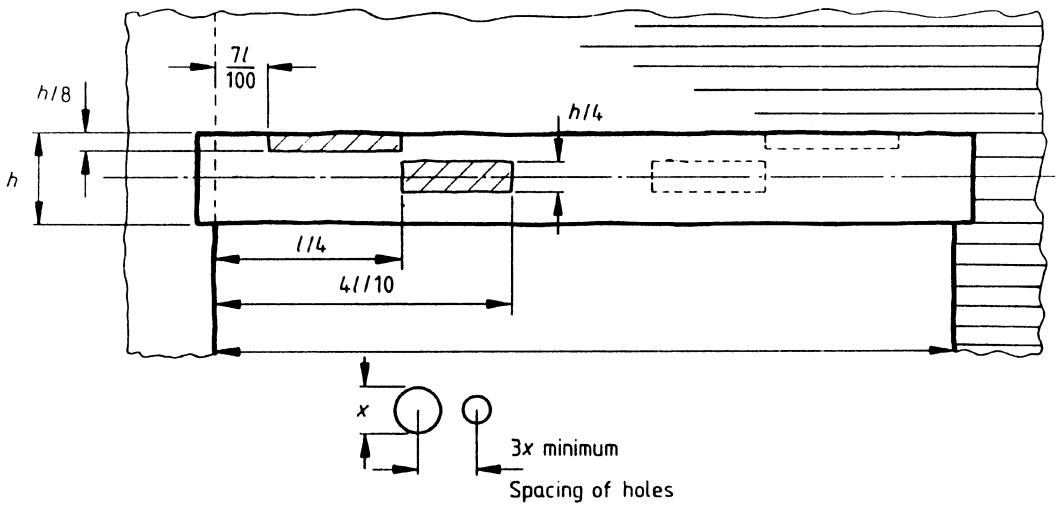


Figure 5 — Locations for notches and holes in timber beams and joists not greater than 250 mm high

c) Form notches "U" shaped by saw cuts parallel to the previously bored holes.

d) Do not position holes with their centres closer together than three times the diameter of the larger hole. See Figure 5.

3.2.4 Wall plates

a) Use one piece of timber only for wall plate lengths of less than 3 m.

b) When making up wall plate lengths of 3 m and over, use the least practicable number of separate pieces, with the shortest piece of sufficient length to support at least three joists or trusses.

c) Join pieces with half lap running joints not less than 100 mm and twice nail. (See Figure 6.)

d) Fix wall plates in accordance with Table 17.

COMMENTARY. *Wall plate holding down straps can only be used to resist wind uplift when the trusses/joists are bracketed or bolted to the plate. Otherwise, holding down straps are connected directly to the joists or trusses.*

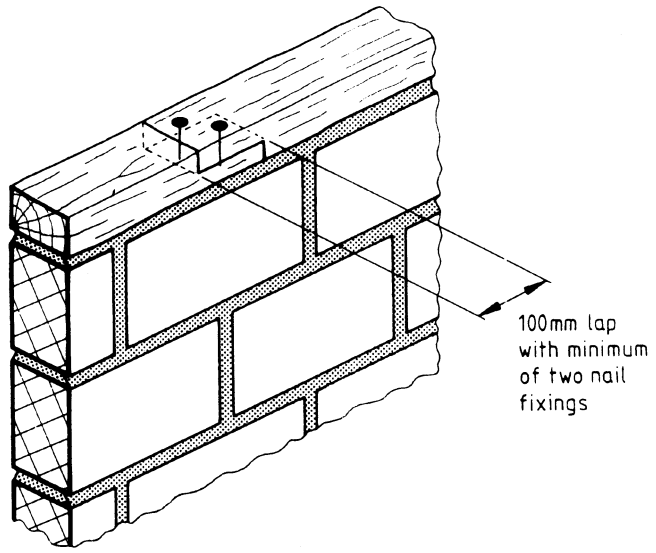


Figure 6 — Half lap running joint

Table 17 — Wall plate fixing

Operation	Recognized method(s) (depending on project details)	Recommendations
Fix for location only	(1) Nailing	Use into blockwork only. Level plate on mortar bed, allow to set, then fix with 100 mm masonry nails at 1 m centres, taking care to avoid mortar joints.
	(2) Straps	Use light gauge steel (20 or 22 gauge) extending 150 mm min. down face of wall with masonry nail fixings, and wrap over plate with nail fixing into top of plate.
Fixing for holding down against wind uplift	Heavy gauge steel straps	Use straps of correct length and gauge, and fix at spacings along the wall, as specified; and plug and screw to wall at 150 mm centres max. down the length of each strap.

3.2.5 Structural flooring

Fix structural flooring in accordance with Table 18.

Table 18 — Fixing structural flooring

Operation	Recognized method(s) (depending on project details)	Recommendations
Joist/wall connection	(1) When building into wall	Ensure that the whole area of joisting is levelled in before building up the wall. Do not project joists into the cavity when building into double skin walls.
	(2) When using joist hangers	Build hangers into the wall so that underside of toe lines through for whole area of joisting. When fixing joists ensure that they are in close contact with the metal faces of the hangers, that their ends are cut square, and that they are positioned so that there are no gaps more than 5 mm between their ends and the backs of the hangers.
Joist to joist connection to form trimmers	(1) Nailing	Proceed as in **3.1.2**.
	(2) Bolting	Proceed as in **3.1.5**.
Joist to joist connection at right angles	Use lightweight hanger with fold-over on to receiving joist	When fixing joists ensure that they are in close contact with the metal faces of the hangers, that their ends are cut square, and that they are positioned so that there are no gaps more than 5 mm between their ends and the backs of the hangers. Fold arms tightly over receiving joist. Nail through all available holes in connector.
Floor bracing	(1) When the wall is parallel with the span of the joists, and pre-drilled straps are used	Engage turn-down and connect tail of each strap to a minimum of three joists. Fix to top or bottom of joists using 50 mm long No. 10 woodscrews, or 75 mm × 4 mm No. 8 (SWG) round nails. Sink the straps into the depth of the joists to avoid interference with floor or ceiling finishes. Pack the gap between the last timber wedges. Fix solid strutting closely between the timbers along the line of the straps.
	(2) When the wall is at right angles to the span of the joists, and pre-drilled straps are used, having a twist along their length, to allow fixing to the side of the joists	Engage turn down into the wall and fix along the side of the joists, using screws or nails as described in (1), at not less than 110 mm centres with a minimum of four fixings.
Strutting	(1) Herringbone	Ensure that unstrutted joist length does not exceed 1.5 m, and that there is full contact between angled ends and struts sides of joists. Use solid blocking for joist spacings 200 mm and less. Provide solid blocking at ends of rows of strutting, between last joist and wall face.
	(2) Solid	Ensure that unstrutted joist length does not exceed 1.5 m. Stagger line of blocks and fix each block with four nails. Use timber section, one standard depth below joist depth to ensure no projection above or below joists

3.2.6 Roof bracing

Fix roof bracing in accordance with Table 19. See also Figure 7 and BS 5268-3.

Table 19 — Fixing roof bracing

Operation	Recognized method(s) (depending on project details)	Recommendations
Connecting bracing member to truss chords	Nailing	Use two No. 10 gauge × 65 mm wire nails per member per truss. Provide overlap of two trusses at all joints in the length of bracing members, which should not normally be less than 3 m in length. Butt ends of bracing tightly against wall, splay cutting diagonal braces as necessary to ensure full contact.

3.2.7 Stud walling

Construct stud walling in accordance with Table 20.

Table 20 — Constructing stud walling

Operation	Recognized method(s) (depending on project details)	Recommendations
Fixing to top and bottom rails	(1) Nailing	Run top and bottom rails continuously beneath studs. Fix with two No. 10 gauge × 75 mm nails through top and bottom rails into end grain of each stud.
	(2) Framing anchors	Fix in accordance with manufacturer's instructions. Nail through all available holes in connector.
Fixing noggings	Nailing	Fix one row of noggings at half stud height on all load bearing panels. Stagger noggings and use two No. 10 gauge × 75mm nails through studs into end grain of noggings at each end. When floor to ceiling height exceeds 2.4 m, fix noggings to suit sheet length (e.g. plasterboard).

3.2.8 Cistern supports

3.2.8.1 Distribute the additional load from the tank and its contents by spreader beams supported close to the node points on the ceiling ties (see Figure 8).

3.2.8.2 When water tanks are supported on trussed rafters, construct the supporting framework in accordance with Figure 9, selecting detail A or B according to project requirements. Use the timber sizes set out in Table 21.

COMMENTARY. *It is recommended in BS 5268-3 that, wherever possible, supports for water tanks should be independent of trussed rafters. The project documentation should always be carefully checked for tank support requirements.*

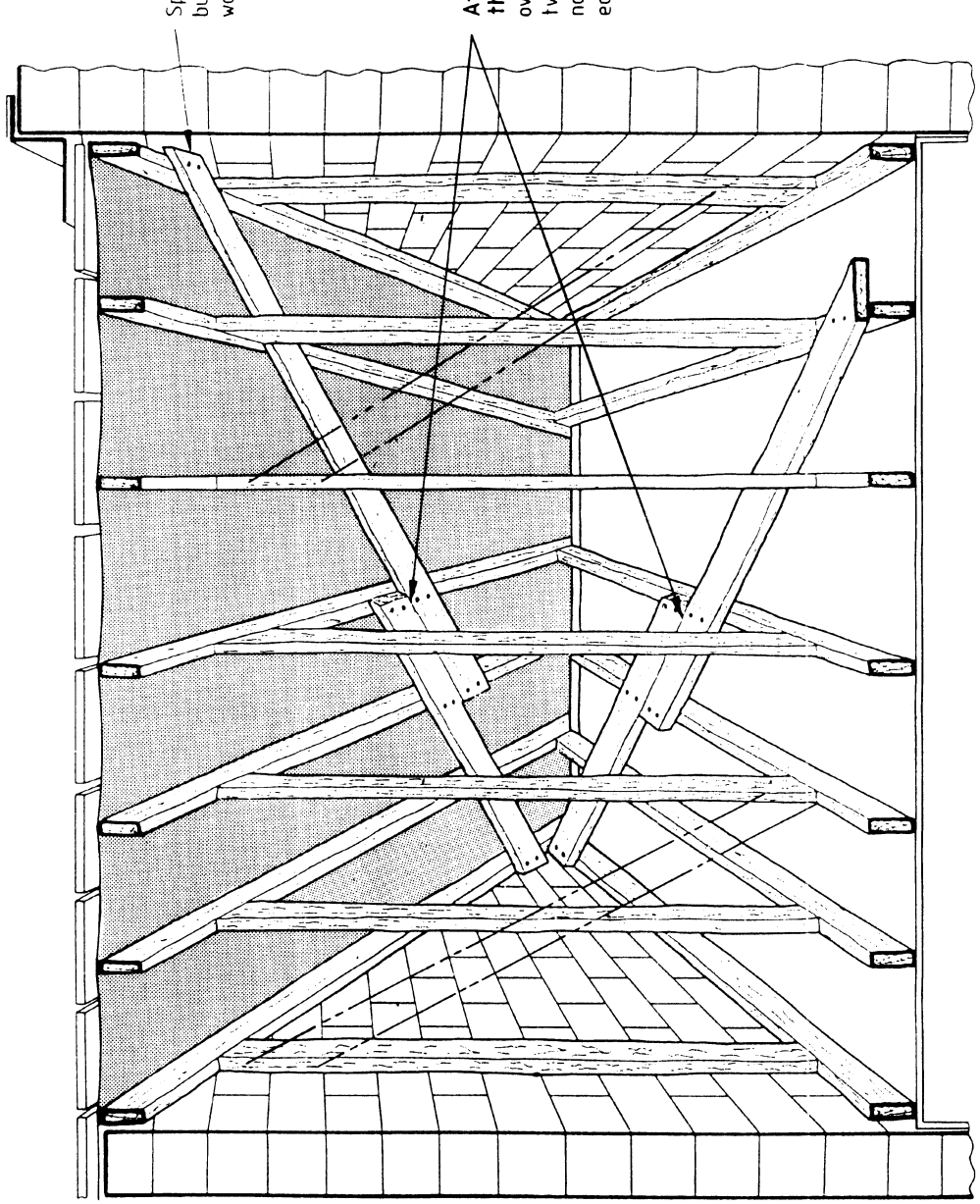
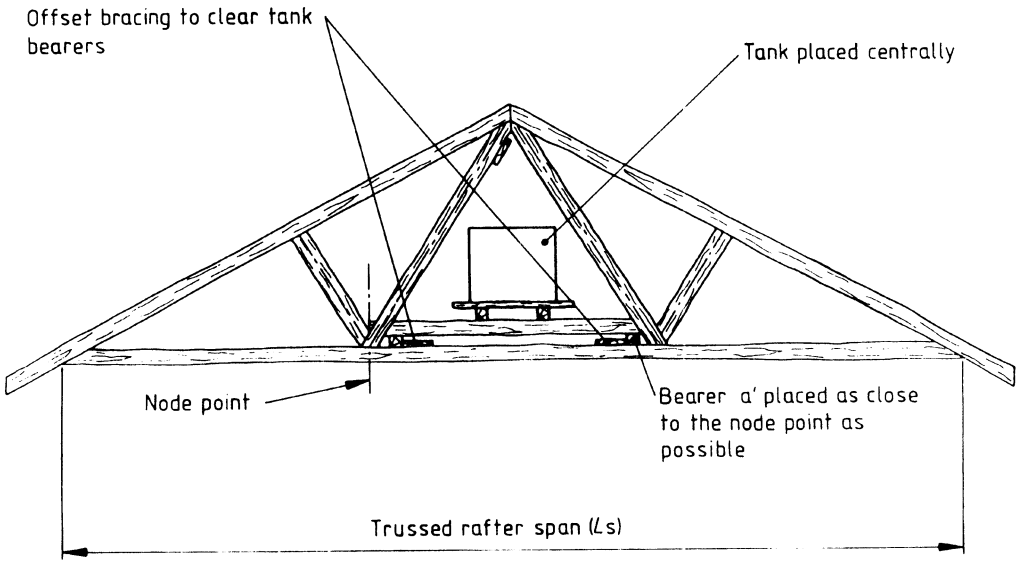
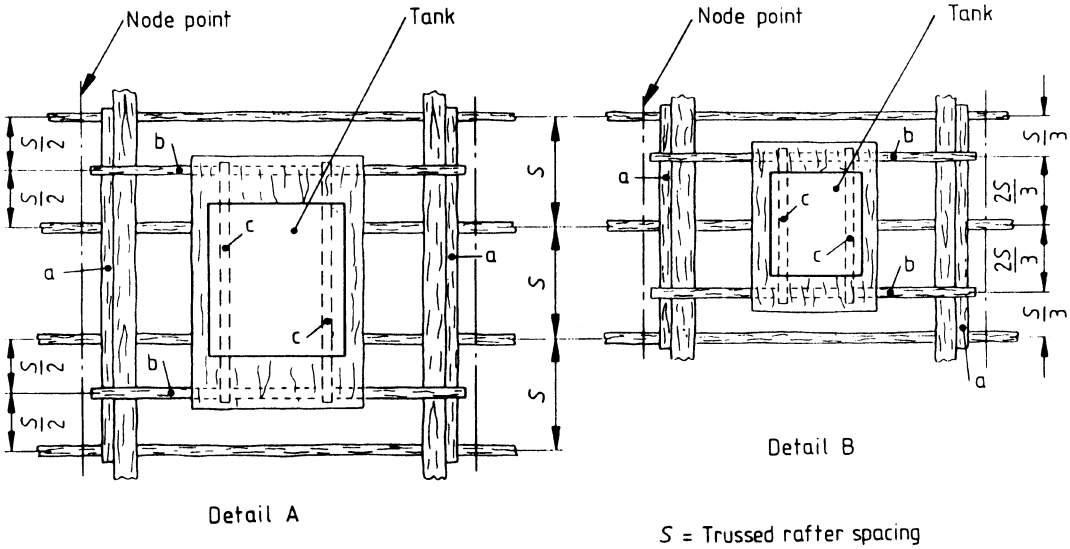


Figure 7 — Fixing of typical diagonal roof bracing



NOTE. For bracing details see section five of BS 5268 : Part 3.

Figure 8 — Support for spreader beams on ceiling ties



NOTE. For bracing details see section five of BS 5268 : Part 3.

Figure 9 — Construction of tank supports

Table 21 — Timber sizes for tank supports (see Figure 9)

Tank capacity to marked waterline	Support member sizes		Trussed rafter span, max.
	a and c	b	
	mm	mm	m
Detail A			
Not more than 300 L supported on 4 trussed rafters	50 × 75	2/38 × 100 or 1/150 × 125	6.50
	50 × 75	2/38 × 125 or 1/150 × 150	9.00
	50 × 75	2/38 × 150	12.00
Detail B			
Not more than 230 L supported on 3 trussed rafters	50 × 75	1/50 × 100	6.50
	50 × 75	2/38 × 100 or 1/50 × 125	9.00
	50 × 75	2/38 × 125 or 1/50 × 150	12.00

NOTE Support members may be of any species with a permissible bending stress not less than that of European redwood/whitewood of GS stress grade (see **14.1** of BS 5268-3:1985)

3.3 Fixing loose joinery

3.3.1 Accuracy

3.3.1.1 Provide a true flat surface so that when sheets and boards are fixed, inaccuracies will be within the following permitted deviations:

a) verticality on any 3 m height: 10 mm max;

b) flatness: the gap under a 2 m straight edge laid on the surface in any position: 3 mm max.

3.3.1.2 Make any adjustments to the supports to correct excessive inaccuracies.

3.3.2 Flooring

Ensure that the building is weathertight and dry in the area where the flooring is to be laid.

3.3.3 Laying boarded floors

a) Use nails with a length two and a half times the thickness of the boards. For surface nailing use two cut floor brads or other similar nails at each support. For secret nailing use one oval lost head nail at each support. In each case punch nails well below the board surface. See also Table 12.

b) Make all end joints centrally over a support. Do not joint adjoining boards on the same support.

c) Make joints between the long edges of floor boards close fitting.

3.3.4 Laying plywood floors

a) Firmly screw or nail plywood to joists, battens or existing timber floors.

b) Use annular nails (see Table 12) unless a floor is to be left uncovered.

c) Where a floor is to be left uncovered, use lost head nails (see Table 12). In the case of proprietary brands of plywood which have been selected primarily for their appearance, follow any additional manufacturer's instructions.

d) When panels are nailed, use No. 10 gauge × 65 mm nails at 150 mm centres along the edges and at 300 mm centres elsewhere along the joints. Ensure nails are at least 10 mm from the edge of the panel. Where screws are used, follow the same spacing recommendations as for nails.

e) On a cement/sand screed or on another substrate which calls for adhesive fixing, use a polyvinyl acetate adhesive complying with BS 4071:1966, or a suitable bitumen preparation.

f) To ensure maximum strength, position square edge plywood panels with the grain of the face ply at right angles to the line of the joists. Support edges occurring at right angles to the joists on noggings. Support, edges parallel to the joists on the joists, noggings or trimmers.

g) Position tongued and grooved plywood panels over joists in the same way as square edged panels, with two end joints occurring over the centre of the joists. Obtain confirmation of the suitability of the chosen method from the manufacturer or supplier, and whether or not noggings should be provided. Use secret nailing if the panels are to be left uncovered, otherwise nail through the face of the panel. Use adhesives in joints to tongued and grooved plywood only in the case of insulated ground floor construction.

h) When using either square edged or tongued and grooved panels, stagger the end joints transversely across the floor and keep all longitudinal joints in line.

i) Leave a gap between the edges of the sheets and the wall. Allow 2 mm width of gap for each metre across the floor with a minimum gap width of 10 mm.

3.3.5 Laying chipboard panel floors

a) Screw or nail square edged wood chipboard panels to joists, battens or existing timber floors. Use annular nails (see Table 12). Nail or screw panels at 200 mm to 300 mm centres along the edges and 400 mm to 500 mm centres elsewhere along the joists. Use 10 gauge nails, positioned at least 9 mm from the edge of the panel.

b) Lay square edged wood chipboard panels with the long edges of the panels supported along the centre of the joists and with the short edges carried on noggings.

c) Position tongued and grooved wood chipboard panels with the long edges across the joists, the short edges being supported by the joists.

d) When using either square edged or tongued and grooved panels, stagger the end joints transversely across the floor and keep all longitudinal joints in line.

e) Leave a gap between the edges of the sheets and the wall. Allow 2 mm width of gap for each metre across the floor with a minimum gap width of 10 mm.

f) Protect the chipboard with a temporary layer of hardboard or similar material in doorways, at the top and bottom of stairs and at other places where traffic is concentrated and leave in position until the building is handed over or until flooring finish or covering is to be laid.

3.3.6 Laying panel floors over an insulating material

3.3.6.1 When tongued and grooved wood chipboard panels are placed on a continuous layer of rigid insulating material (see Figure 10) use adhesives in the tongued and grooved panel joints. For wider thresholds and in internal positions fix the chipboard to battens supported by the subfloor.

COMMENTARY. *Although glueing of tongued and grooved joints between panels is only essential in the special case illustrated in Figure 10, it is strongly recommended as a general rule to avoid squeaking and nail popping. The adhesive used should comply with BS 4071:1966.*

3.3.6.2 When using plain edge hardboard, lay the hardboard sheets at right angles to the insulating underlay and bond them to the underlay using styrene-butadiene rubber adhesive.

3.3.7 Roofing

a) Lay timber boarding on flat roofs with all drips, rolls, upstands, kerbs, angle fillets, gutter boards and sides as specified.

b) Ensure moisture content of boards is as specified. See **2.2.2**.

c) Use annular nails with length two and a half times the thickness of the boards. Nail each board twice to each support and punch the nails well below the board surface.

d) Make all end joints centrally over a support. Do not joint adjoining boards on the same support.

e) Make joints between the long edges of boards close fitting.

f) Where boarding is to receive metal or other thin roof finish make the surface flush and flat.

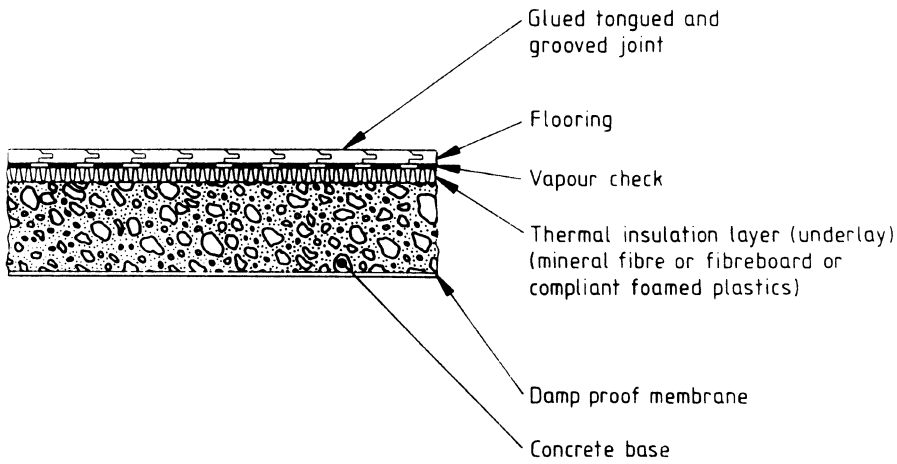


Figure 10 — Panel flooring carried on continuous layer of insulating material

COMMENTARY. *Requirements for upstands, drips, rolls and other ancillary details vary according to the roof finish. Always check the manufacturer's recommendations applicable to the finish which is being used.*

3.3.8 Timber board external cladding

a) Check that all fixtures and features around which the cladding is to be fixed have been installed.

b) Where boards are to lap maintain the specified lap throughout.

c) Use nails as specified, and where required to be stopped, punch them at least 2 mm below the surface.

d) Make running joints in boards neatly and centre over a support. Stagger running joints in adjoining rows of boards.

e) Before fixing, ensure that the boards have been primed, sealed or given at least one coat of stain in accordance with the sitework instructions.

f) Ensure that the cladding when fixed shows a true, even surface free from undulations and other defects.

COMMENTARY. *Any shrinkage of the boards after fixing will expose unstained timber unless the boards have been stained before fixing.*

3.3.9 Rigid sheet linings

a) Unless otherwise specified, stagger the position of joints in sheet and board linings on opposite faces.

b) Ensure that joints between panels are true and of even width in any one joint, that the joints are of the widths specified and, where continuous, that they are kept in true alignment.

c) Keep the faces of panels in alignment.

d) Where sheets or boards have a decorative finish keep protective wrappings in position as long as practicable and leave the work properly protected from damage that may be caused by following trades.

3.3.10 Laminated plastics veneers

a) Cut edges of veneers neatly, following the manufacturer's instructions, and ensure that the veneers are not splintered.

b) Fix with adhesive used in accordance with the manufacturer's sitework instructions.

c) Ensure joints in the laminated plastics veneer do not coincide with joints in the supporting layer.

d) Finish exposed edges with a neat bevel, unless otherwise specified.

3.3.11 Loose trim

a) Fix loose trims in one length between ends of runs as far as possible.

b) If it is necessary to make joints in the running length, splay cut the meeting ends, lap them neatly, pin them and leave them smooth to receive any applied finish.

c) Do not use jointed lengths for architraves round individual door and window frames.

d) Mitre external angles and scribe internal angles.

e) At external angles fix trims not more than 150 mm from the ends.

f) Scribe the edges of trims as necessary to obtain a neat fit where they abut return surfaces.

3.3.12 Fixing loose trim with nails

a) Drive nails in such a way as to prevent hammer marks occurring on the surface of the timber, and so as to prevent splitting of the timber.

b) When nails are to be driven below the surface, carry out the driving with a punch smaller than the nail head.

c) When nails are to finish flush with the surface of the wood trim, take extra care to avoid hammer marks on the surface.

d) When nailing tongued and grooved, overlapped or shiplap boards, position the nails to allow subsequent movement of boards to take place without splitting due to nailing restraint.

e) Punch nail heads at least 2 mm below the surface of the timber, when they are to be stopped to receive a finish, with a punch smaller than the nail head.

COMMENTARY. *For exterior use, or interior use in conditions of high humidity, care should be taken in the specification of nails.*

3.3.13 Fixing loose trim with screws

a) When wood trim is to be fixed by screws, screw into the pre-drilled holes.

b) When screws are to be counterbored and plugged, ensure that any plug:

1) is of the same species as the surrounding timber;

2) lies with its grain in the same general direction as the grain of the piece into which it is inserted;

3) is well secured by an adhesive suitable for the end use;

4) occupies the whole depth of the hole;

5) is of a diameter not more than 6 mm larger than the size of the round knot permitted for the relevant class and dimension of timber (see Figure 1 of BS 1186-3:1990).

COMMENTARY. *Any countersinking should be properly formed to suit the screw head.*

Countersunk screws, to be used without holes being countersunk, should be placed in surface mounted cups.

When screwed fixings are to be counter-bored and filled, the filler should be suitable for the end use and should be compatible with any finish to be applied.

3.4 Fixing fabricated carpentry components

3.4.1 General

a) Prior to erection of prefabricated panels, ensure that there are no deviations (from specified dimensions) that exceed those set out in Table 22.

b) Ensure that any difference in level between the tops of any two adjacent panels does not exceed 3 mm.

c) Ensure that deviations from vertical of timber components after erection do not exceed 6 mm over a 2.4 m height, pro rata for other heights; subject to a maximum of 12 mm.

d) Do not alter or in any way modify a fabricated component. If necessary seek advice.

3.4.2 Trussed rafters

a) Do not use damaged trusses unless the damage has been repaired in accordance with the manufacturer's sitework instructions.

Table 22 — Permitted limits of deviation in size and squareness of fabricated carpentry components

Length and height (wall panels); any horizontal dimension (floor and roof decks and panels)	+0, –5 mm
Squareness (check for square and rectangular components)	No diagonal should exceed the square root of the sum of the square of specified dimensions for opposite and adjacent edges of the component

b) Ensure punched metal plate fasteners are not damaged or corroded and are properly embedded; and ensure that they are not damaged during site fixing.

c) Space trusses accurately and securely brace them temporarily.

d) Fix ends to the wall plates as specified. If metal holding-down clips are to be used nail through every hole in accordance with the manufacturer's sitework instructions.

e) Ensure that trusses are positioned accurately, so that the bottom chord sits firmly on the wall plate at each side, and that any oversail is in accordance with the project drawings.

f) Fix trussed rafters plumb within the permitted deviations from vertical shown in Table 23.

Table 23 — Maximum deviation from vertical

Rise of trussed rafter m	Deviation from vertical measured at apex mm
1	10
2	15
3	20
4 or more	25

3.5 Fixing manufactured joinery components

3.5.1 General

Observe the following general rules for all components and their accessories except where otherwise specified for particular items or in the project specification.

a) For components and their accessories which are fixed in the interior of the building, ensure that the building is weathertight where the work is to be carried out, that all surfaces are dry, that water used in construction has had several weeks of free ventilation to dry out, and that the work of wet trades is complete.

b) Ensure that components are not distorted when being positioned and are fixed plumb, level and in alignment as necessary and in accordance with the manufacturer's sitework instructions.

c) Keep components clean and dry and keep protective wrappings in place as long as practicable and avoid damage to, or marking of, surfaces which will be visible in the completed work.

d) Check that all doors, moving parts and ironmongery operate properly and make necessary adjustments.

e) Soften arrises to approximately 1 mm radius, unless otherwise specified.

3.5.2 Hanging of doors

a) Adjust clearance on prefinished doors by adjusting the frame position.

b) Plane or sand unfinished doors equally on both edges to adjust clearance. Bevel the leading edge slightly to clear the frame.

c) Where doors are to be hung on rising butts maintain equal clearance between the door frame at top and sides.

d) Allow for the thickness of floor finishes at the bottom edge.

e) Check that all surfaces of external timber doors, including undersides and cut-outs, have been sealed or painted.

COMMENTARY. *For finished doors the frame itself should be carefully squared and plumbed prior to offering up the door, using a dummy former if necessary.*

3.5.3 Frames to fire rated doors

Fill any gap between the frame and the structure with incombustible material.

3.5.4 Loose thresholds

Fit thresholds closely to frames at each end, not more than 100 mm from each end and at not more than 450 mm centres between ends.

Fix thresholds not exceeding 100 mm wide with one row of fixing along the centreline; and thresholds exceeding 100 mm with two rows of fixings not more than 50 mm from each edge.

3.5.5 Internal door frames

Offer up jambs and heads and pack them out to give square openings. Pre-drill and screw the frames at 300 mm centres using the appropriate screws.

3.5.6 External door frames and windows

a) Securely fix frames to the surrounding structure on both sides and, where practicable, at heads and thresholds/cills.

COMMENTARY. *For security reasons, external doors frames are securely fixed to the surrounding structure at 600 mm centres for dwellings (see* **3.3.1.4** *of BS 8220-1:1986) and at 450 mm centres for offices and shops (see* **5.4.2.3** *of BS 8220-2:1987). External door frames should be fixed at floor level and 150 mm above the threshold/cill.*

b) When using steel fixing cramps for windows:

1) install cramps to jambs 150 mm above cill/threshold level and 150 mm below head level and at 450 mm centres max. Provide additional fixings at heads for frames exceeding 1500 mm in horizontal length;

2) secure fixing cramps to the backs of frames with at least two screws per cramp.

c) When using screw or expanding bolt fixings directly through the frame, ensure that the receiving hole is formed in accordance with the joinery manufacturer's instructions. Use the same number of fixings per frame as when using cramps.

d) Ensure that flexible damp proof courses are accurately located and securely fixed between masonry walling and door and window frames.

e) Place packings above fixing points to prevent distortion as the fixings are tightened. Fix specialist items in accordance with the manufacturer's sitework instructions.

f) When frames have dowelled feet, place the dowels centrally in the bottom ends of the frame, ensuring that they are a tight push fit and that they are inserted at least 75 mm into the frame.

3.5.7 Sealant pointing around external joinery components

a) Check that the dimensions of the joint are within the prescribed limits.

b) Ensure that the joints are clean, dry and frost free. Mask adjoining surfaces as necessary for protection.

c) Prime the joints and insert backing strips as specified.

d) Prepare and apply sealant according to the manufacturer's sitework instructions ensuring that the correct dimensions of depth and width are maintained. Form to profile if shown in the job specification.

COMMENTARY. *It is essential that sealants are applied by skilled operatives.*

If sealant is a two pack material, thorough and correctly proportioned mixing is essential or the chemical set will not take place.

3.5.8 Cupboard units

a) Before fixing ensure that provision has been made for all servies and, where necessary, that services are fixed in position.

b) Fix cupboard units in position and ensure there is a neat fit to adjoining surfaces. Scribe edges or cover strips as necessary to achieve this.

c) Ensure that wall units are securely and adequately fixed to the wall with screws that give at least 35 mm hold into the timber framing or bearers or into proprietary plugs in the masonry walls.

3.5.9 Staircases

a) Where carriages and brackets are used, ensure that carriages bear fully and tightly at top and bottom and fix at both points. Check that brackets are tight against the underside of treads.

b) Ensure that strings are accurately tenoned into newels and that newels stand straight and firm. Pin twice with hardwood dowels or steel pins.

c) Where balusters are not housed into the string and handrail, butt tightly and twice screw.

d) Fix wall handrails securely at a slope parallel with the wall string.

e) Plug wall strings securely to walls at each alternative tread using the appropriate screws.

f) On concrete floors place a felt strip under the foot of the stair to prevent direct contact between the timber and the concrete.

3.6 Fixing ancillary items

3.6.1 Ironmongery

a) Assemble and fix ironmongery carefully and accurately using correctly sized matching screws.

b) Prevent damage to ironmongery or adjoining surfaces and do not burr screw heads.

c) Check, adjust and lubricate as necessary to ensure correct functioning. Follow the manufacturer's sitework instructions.

3.6.2 Cavity barriers of solid timber in cavity walls

a) Fix cavity barriers with round wire nails at 600 mm centres.

b) When forming intersections, run one barrier through and butt the others tightly to both sides, ensuring no gaps are left.

c) Form joints in the length of a barrier with a tight butt.

3.6.3 Cavity barriers of compressible material in cavity walls

a) Fix cavity barriers with corrosion resistant nails or staples at centres not more than 300 mm apart and close to ends of sections of cavity barriers.

b) Ensure that the cavity barrier is thick enough to be firmly compressed in the cavity so that gaps are closed and the barrier is held firmly in position between opposing faces of the cavity.

c) Do not compress or distort cavity barriers with the fixing nails so as to form a gap that would enable smoke to bypass the barrier.

d) Where barriers intersect, run one barrier through and butt the others tightly to both sides, ensuring no gaps are left.

e) Form joints in the length of a barrier by lapping the ends not less than 150 mm side by side and by fixing the lengths of the overlaps to the backing to close any gaps. Do not lap one on top of the other to form a double thickness.

f) Ensure that wherever a cavity barrier is fixed around a corner it is not deformed or reduced in thickness and that it will fit closely against both faces of the cavity.

g) Ensure that damp proof courses are positioned as necessary to prevent cavity barriers conducting moisture from the external leaf of masonry construction to the interior of the building.

COMMENTARY. *The use of excessively thick cavity barriers can lead to distortion of green brickwork.*

3.6.4 Breather membrane building paper

a) Ensure that the material is of the type specified.

b) Fix breather membrane building paper with corrosion resistant staples or clout (felt) nails.

c) Make horizontal laps 100 mm min. and vertical laps 150 mm min. and arrange horizontal laps so that water always drains downwards and outwards.

COMMENTARY. *It is essential that the material is a "breather" type enabling water vapour from inside the structure to escape.*

3.6.5 Vapour check

a) Fix vapour check with corrosion resistant staples or clout (felt) nails.

b) Form joints between sheets over supports. Overlap edges of adjoining sheets and seal with adhesive tape that is 50 mm wide.

c) Ensure that the vapour check is continuous.

d) If damage occurs repair small, simple tears not exceeding 300 mm long with adhesive tape at least 50 mm wide. In the case of more extensive damage cover the area within which the damage lies with an additional sheet of vapour check material, extending to the timber supports that form the boundary of the damaged area. Staple or nail the new piece of vapour check to the timber and seal the edges all round with adhesive tape at least 50 mm wide.

e) Where it is necessary to penetrate the vapour check for services make the opening as small as practicable and seal with adhesive tape around the service, when installed, to prevent leakage.

3.6.6 Insulating material

a) Do not lay or fix any insulating material that is not dry.

b) Check after installation that the insulation covers every part of the area to be insulated.

c) Do not allow loose fill insulating material to obstruct ventilation openings.

d) Do not permit PVC covered electrical cables to remain in permanent contact with expanded polystyrene insulation.

3.6.7 Roof void ventilation

Form ventilation gaps at eaves ensuring that:

a) the gaps are of sizes as specified;

b) the anti-vermin mesh is correctly fixed;

c) there is a free flow of air between the insulation where it dresses over the top of the cavity wall and the underlay felt. See Figure 11.

COMMENTARY. *Roof ventilation should be provided for pitched roofs and cold deck flat roofs. Ventilation is not required for warm deck flat roofs or inverted flat roofs.*

3.7 Inspection of construction

Inspect timber construction as each element of construction is completed and ensure that:

a) all members are correctly positioned as specified;

b) all fixings have been provided as specified;

c) all nails, screws and bolts and packings are tight.

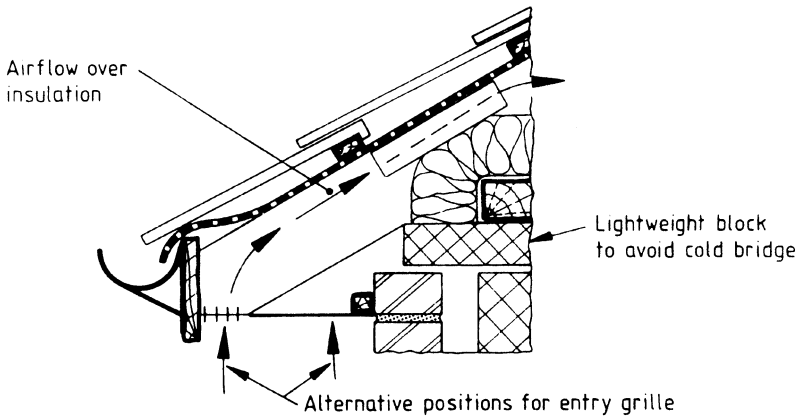


Figure 11 — Typical detail of roof void ventilation

Index

List of references (see 1.2)

Normative references

BSI standards publications

BRITISH STANDARDS INSTITUTION, London

BS 1186, *Timber for and workmanship in joinery.*
BS 1186-2:1988, *Specification for workmanship.*
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BS 8000-7, *Code of practice for glazing*[1)].
BS 8000-8:1989, *Code of practice for plasterboard partitions and dry linings.*
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[1)] In preparation.

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