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Agrément Certificate
15/5269
Product Sheet 1 Issue 3

RAISED LOFT FLOORING SYSTEM

STOREFLOOR

This Agrément Certificate Product Sheet(1) relates to StoreFloor(2), for use as a raised loft flooring system to provide space for insulation materials.

(1) Hereinafter referred to as 'Certificate'.
(2) StoreFloor is a registered trademark.

The assessment includes

Product factors:

- compliance with Building Regulations
- compliance with additional regulatory or non-regulatory information where applicable
- evaluation against technical specifications
- assessment criteria and technical investigations
- uses and design considerations

Process factors:

- compliance with Scheme requirements
- installation, delivery, handling and storage
- production and quality controls
- maintenance and repair

Ongoing contractual Scheme elements†:

- regular assessment of production
- formal 3-yearly review

KEY FACTORS ASSESSED

Section 1. Mechanical resistance and stability
Section 2. Safety in case of fire
Section 3. Hygiene, health and the environment
Section 4. Safety and accessibility in use
Section 5. Protection against noise
Section 6. Energy economy and heat retention
Section 7. Sustainable use of natural resources
Section 8. Durability

The BBA has awarded this Certificate to the company named above for the system described herein. This system has been assessed by the BBA as being fit for its intended use provided it is installed, used and maintained as set out in this Certificate.

On behalf of the British Board of Agrément

Date of Third issue: 30 April 2024
Originally certified on 16 February 2016

Hardy Giesler
Chief Executive Officer

This BBA Agrément Certificate is issued under the BBA's Inspection Body accreditation to ISO/IEC 17020. Sections marked with † are not issued under accreditation
The BBA is a UKAS accredited Inspection Body (No. 4345), Certification Body (No. 0113) and Testing Laboratory (No. 0357).
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The Certificate should be read in full as it may be misleading to read clauses in isolation.
Any photographs are for illustrative purposes only, do not constitute advice and should not be relied upon.

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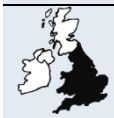
SUMMARY OF ASSESSMENT AND COMPLIANCE

This section provides a summary of the assessment conclusions; readers should refer to the later sections of this Certificate for information about the assessments carried out.

Compliance with Regulations

Having assessed the key factors, the opinion of the BBA is that StoreFloor, if installed, used and maintained in accordance with this Certificate, can satisfy or contribute to satisfying the relevant requirements of the following Building Regulations:



The Building Regulations 2010 (England and Wales) (as amended)

Requirement:	**A1(1)**	**Loading**
Comment:		The system will have sufficient strength and stiffness to sustain and transmit dead and imposed loads to the supporting structures. See section 1 of this Certificate.
Regulation:	**7(1)**	**Materials and workmanship**
Comment:		The system is acceptable. See sections 8 and 9 of this Certificate.

The Building (Scotland) Regulations 2004 (as amended)

Regulation:	**8(1)**	**Fitness and durability of materials and workmanship**
Comment:		The system is acceptable. See sections 8 and 10 of this Certificate.
Regulation:	**9**	**Building standards applicable to construction**
Standard:	1.1(a)(b)	Structure
Comment:		The system will have sufficient strength and stiffness, with reference to clauses 1.1.1(1) to 1.1.4(1) of this Standard. See section 1 of this Certificate.
Standard:	7.1(a)	Statement of sustainability
Comment:		The system can contribute to satisfying the relevant requirements of Regulation 9, Standards 1 to 6, and therefore will contribute to a construction meeting a bronze level of sustainability as defined in this Standard.

(1) Technical Handbook (Domestic).

The Building Regulations (Northern Ireland) 2012 (as amended)

Regulation:	**23(1)(a)(ii)**	**Fitness and durability of materials and workmanship**
Comment:	**(iv)(b)(ii)**	The system is acceptable. See sections 8 and 9 of this Certificate.
Regulation:	**30**	**Stability**
Comment:		Loft floors incorporating the system can be designed to sustain and transmit dead and imposed loads to the supporting structures. See section 1 of this Certificate.

Fulfilment of Requirements

The BBA has judged StoreFloor to be satisfactory for use as described in this Certificate. The system has been assessed as for use as a raised loft flooring system to provide space for insulation materials.

ASSESSMENT

Product description and intended use

The Certificate holder provided the following description for the system under assessment. StoreFloor consists of:

- Plastic support brackets (see Figure 1)
- Tri-Supports and Uni-Supports – 279 mm in height and incorporating fixing holes at the base and top (see Figure 2)
- Lightweight galvanized steel Cross-Beams (C section)(1) – two types:
  - 80 mm wide x 50 mm deep, incorporating 50 mm x 18 mm slots, and 18 mm diameter holes at 100 mm centres on each side face (see Figure 3)
  - 80 mm wide x 30 mm deep, incorporating 50 mm x 18 mm slots, without any holes on side faces (see Figure 4).

(1) C-section Cross-Beams are available in three lengths: 1150, 1750 and 2350 mm.

Figure 1 StoneFloor system

Figure 2 Detail of Uni-Supports and Tri-Supports

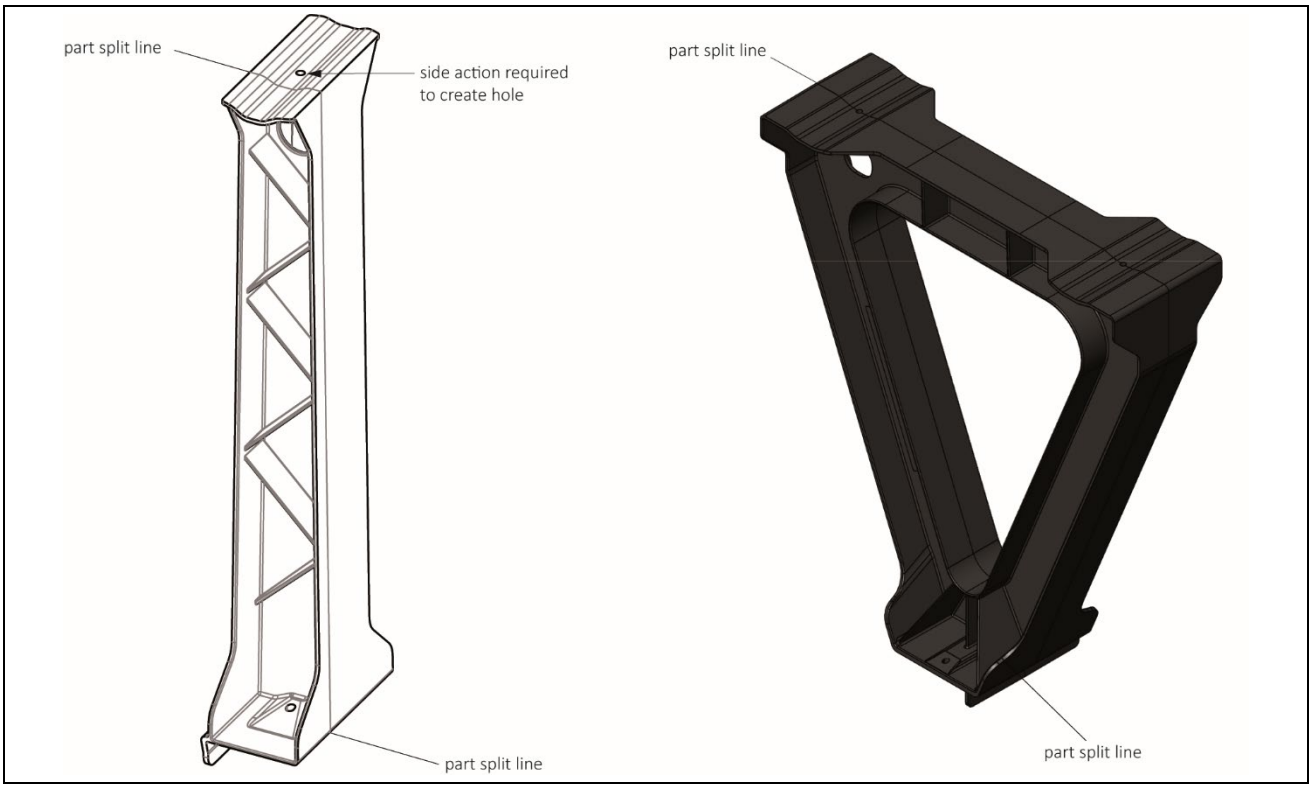


Figure 3 Detail of Cross-Beams 80 mm wide x 50 mm deep

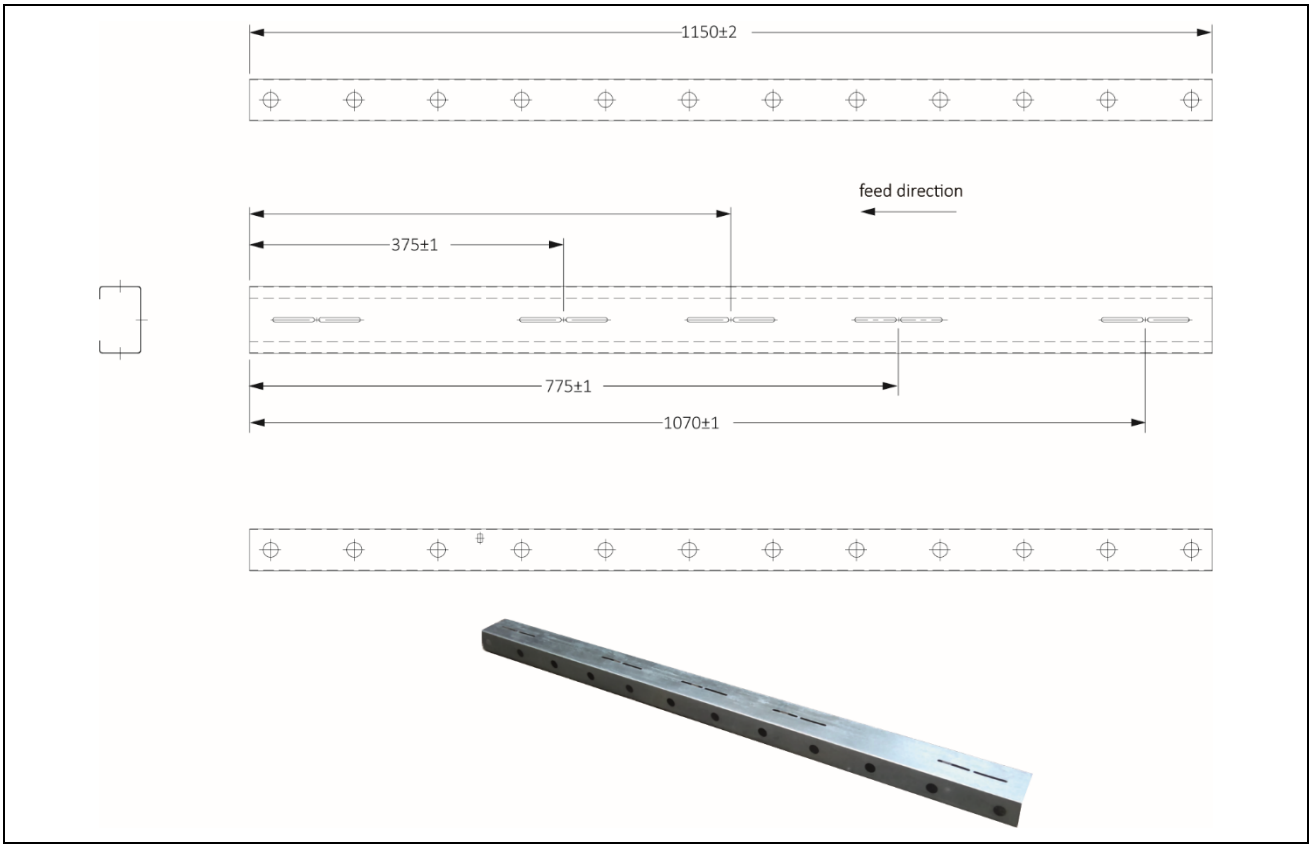
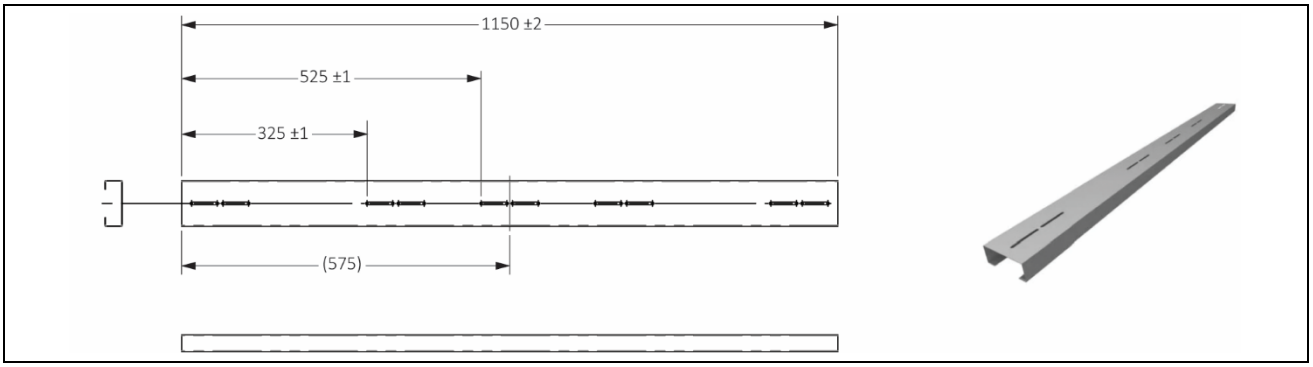


Figure 4 Detail of Cross-Beams 80 mm wide x 30 mm deep



The system has the nominal characteristics given in Table 1.

Table 1 Nominal characteristics of lightweight galvanized steel Cross-Beams (C section)

Characteristic (unit)	Components	
	Lightweight galvanized steel grade S280 GD + Z140 NA-C to BS EN 10346 : 2015 (Table 8) (C-section) 80 mm wide x 50 mm deep	Lightweight galvanized steel grade S280 GD + Z140 NA-C to BS EN 10346 : 2015 (Table 8) (C-section) 80 mm wide x 30 mm deep
Proof strength Rp0,2 (MPa)	280	360
Tensile strength (MPa)	280	360
Minimum elongation Ag (%)	18	18

Ancillary items

The Certificate holder recommends the following ancillary items for use with the system, but these materials have not been assessed by the BBA and are outside the scope of this Certificate:

- loft floorboards – meet the requirements of the relevant standards for floorboard typically tongue-and-groove boards 1220 by 325 by 18 mm
- insulation material, such as mineral wool quilts, etc
- screws to secure the boards to the Cross-Beam.

Product assessment – key factors

The system was assessed for the following key factors, and the outcome of the assessment is shown below. Conclusions relating to the Building Regulations apply to the whole of the UK unless otherwise stated.

1 Mechanical resistance and stability

Data were assessed for the following characteristics.

1.1 Behaviour under loading and thermal cycling

1.1.1 Results of compressive tests on Uni-Supports and Tri-Supports; lateral load and thermal cycling tests on a 1.2 x 1.2 m Floor Deck; and ambient conditioning on a 1.2 x 1.2 m Floor Deck, are shown in Table 2 of this Certificate.

Table 2 Behaviour under loading and thermal cycling

System assessed	Assessment method	Requirement	Result
Polypropylene Uni-Support	Compressive test	Uni-Support placed in conditioning chamber for 24 hours at -20, 20, 50 and 60°C, then tested under compressing loading	Pass
Polypropylene Tri-Support	Compressive test	Polypropylene Tri-Support placed in conditioning chamber for 24 hours at 60°C and at 20°C, then tested under compressing loading	Pass
1.2 x 1.2 m Floor Deck incorporating all the components in a LoftZone 'StoreFloor' system	Lateral load test	A lateral service load of 50 kg was applied in the direction of the joists and perpendicular to the direction of the joists	Pass
1.2 x 1.2 m Floor Deck incorporating all the components in a LoftZone 'StoreFloor' system	Thermal cycling	The deck was installed inside a hygrothermal chamber. A uniformly distributed imposed load of 2.5 $kN \cdot m^{-2}$ (representing un-factored residential loading) was applied to the deck. The hydrothermal chamber was then cycled at a temperature of 60°C and relative humidity of 60% for 6 hours, followed by a temperature of -15°C and relative humidity of 10% for 6 hours. This cycle was then repeated over a 14-day period (plus time required to transition from one temperature to another). This gave 28 cycles of heating and 28 periods of freezing	Pass
Ambient conditioning on a 1.2 x 1.2 m Floor Deck incorporating all the components in a LoftZone 'Storefloor' System	Test against a uniformly distributed imposed	A uniformly distributed imposed load of 2.5 $kN \cdot m^{-2}$ (representing un-factored residential loading) was applied to the deck. The deck was then left loaded during the same 14 day period to which the thermally conditioned panel was subjected, except that the deck was within a normal test environment, ambient temperature at approximately 20°C with a relative humidity of 50%. Following this, the floor deck was loaded to failure	Pass

1.2 On the basis of data assessed, the system has sufficient load bearing capacity to resist against loads mentioned in Table 2 of this Certificate and Approved Document A, Table 4 .

2 Safety in case of fire

Not applicable.

3 Hygiene, health and the environment

Not applicable.

4 Safety and accessibility in use

Not applicable.

5 Protection against noise

Not applicable.

6 Energy economy and heat retention

Not applicable.

7 Sustainable use of natural resources

Data were assessed for the following characteristics.

7.1 Environmental information

The system contains polypropylene and nylon supports, and galvanized steel beams, all of which can be recycled.

8 Durability

8.1 Service life

Under normal service conditions, the system will have a life of at least 60 years, provided it is designed, installed and maintained in accordance with this Certificate and the Certificate holder's instructions.

PROCESS ASSESSMENT

Information provided by the Certificate holder was assessed for the following factors:

9 Design, installation, workmanship and maintenance

9.1 Design

9.1.1 A suitably experienced and competent individual must take into account the following:

9.1.1.1 The maximum recommended loading on the system is restricted by the usual capacity of the loft floor joists to 0.25 $kN \cdot m^{-2}$ together with a concentrated load of 0.9 kN (refer to Table 4 of Approved Document A). In order to utilise this capacity, Uni-Supports must be installed at intermediate locations on the loft floor joists.

9.1.1.2 The imposed UDL must not exceed 1.5 $kN \cdot m^{-2}$ in accordance with BS EN 1991-1 : 2002 and its UK National Annex.

9.1.1.3 Applying excessive concentrated loads, which could result in excessive deflections of the loft floor and failure, is outside the scope of this Certificate. However, to support excessive concentrated loads, such as the cold-water tank, special design must be conducted and additional joists must be provided (to support the cold water tank).

9.1.1.4 The system has resistance against small lateral loads as defined in section 1 of this Certificate. However, it is recommended that at least one lateral restraint is provided in each direction for the completed installation.

9.1.1.5 Thermal insulation does not form part of the assessed system and is therefore outside the scope of this Certificate. However, adequate provision for installation of insulation in the loft should be considered by a suitably experienced and competent individual.

9.2 The effect of thermal bridging from StoreFloor components is not significant and so can be ignored when calculating the U value of roof constructions incorporating the system. Therefore, installing StoreFloor in an existing loft will not adversely affect the roof's U values. The overall roof U value will depend on the existing insulation and timber ceiling joist spacing and new insulation material above ceiling joists.

9.3 The requirements of the national Building Regulations for roofs is given in Table 3.

Table 3 Roof U values ($W \cdot m^{-2} \cdot K^{-1}$)

Roof	England	Wales	Scotland	Northern Ireland
Existing building with loft insulation	0.16	0.16	0.13	0.16
New dwelling	0.13	0.13	0.11	0.13

9.4 The system provides extra space of up to 230 mm above the existing ceiling joist to allow further insulation to be accommodated in the loft, under the floorboards. The extra thermal resistance is dependent on the insulation material used. For quilt insulation with a thermal conductivity of 0.037 $W \cdot m^{-1} \cdot K^{-1}$, the extra 230 mm together with the existing insulation (minimum 100 mm high) between joists at spacings of 600 mm, should satisfy the minimum U value requirement of 0.11 $W \cdot m^{-2} \cdot K^{-1}$ specified for lofts in the national Building Regulations for new dwellings (provided the insulation is enclosed around the Uni-Supports and Tri-Supports and that no nominal cavities bridge the additional insulation layer).

9.5 It is essential to keep an airspace between the underside of the loft floor boards and the top of the insulation. To ensure adequate ventilation of the airspace, it must be kept open at opposite sides and not blocked or sealed in any way. A 50 mm gap is required to prevent the risk of interstitial condensation.

9.6 Adequate ventilation in a cold loft space is required.

9.2 Installation

9.2.1 Installation instructions provided by the Certificate holder were assessed and judged to be appropriate and adequate.

9.2.2 Installation must be carried out in accordance with this Certificate and the Certificate holder's instructions. A summary of instructions and guidance is provided in Annex A.

9.3 Workmanship

Practicability of installation was assessed by the BBA on the basis of the Certificate holder's information. To achieve the performance described in this Certificate, installation of the system must be carried out by a competent general builder, or a contractor, experienced with this type of system.

9.4 Maintenance and repair

As the system is confined within the floor loft and has suitable durability, maintenance is not required.

10 Manufacture

10.1 The production processes for the system have been assessed, and provide assurance that the quality controls are satisfactory according to the following factors:

10.1.1 The manufacturer has provided documented information on the materials, processes, testing and control factors.

10.1.2 The quality control operated over batches of incoming materials has been assessed and deemed appropriate and adequate.

10.1.3 The quality control procedures and system testing to be undertaken have been assessed and deemed appropriate and adequate.

10.1.4 The process for management of non-conformities has been assessed and deemed appropriate and adequate.

10.1.5 An audit of each production location was undertaken, and it was confirmed that the production process was in accordance with the documented process, and that equipment has been properly tested and calibrated.

† 10.2 The BBA has undertaken to review the above measures on a regular basis through a surveillance process, to verify that the specifications and quality control operated by the manufacturer are being maintained.

11 Delivery and site handling

11.1 The Certificate holder stated that the system is delivered to site in packaging bearing the system name, the Certificate holder's name, batch number, health and safety information and weight of contents in kilograms.

11.2 Delivery and site handing must be performed in accordance with the Certificate holder's instructions and this Certificate, including:

11.2.1 The Uni-Supports and Tri-Supports are supplied in boxes and the Cross-Beams are delivered strapped in bundles.

11.2.2 Where temporary storage of the components is necessary, items should be stored inside, in a dry environment.

11.2.3 Due care is required during delivery of the system into lofts through the loft entrance, and during installation.

ANNEX A – SUPPLEMENTARY INFORMATION †

Supporting information in this Annex is relevant to the system but has not formed part of the material assessed for the Certificate.

Construction (Design and Management) Regulations 2015
Construction (Design and Management) Regulations (Northern Ireland) 2016

Information in this Certificate may assist the client, designer (including Principal Designer) and contractor (including Principal Contractor) to address their obligations under these Regulations.

Management Systems Certification for production

The management system of the manufacturer has been assessed and registered as meeting the requirements of BS EN ISO 9001 : 2015 by BSI (Certificate Q 06391) and Intertek (Certificate DBY-041801-QMS-2020).

Additional information on installation

A.1 Installation must be in accordance with the Certificate holder's instructions and this Certificate.

General

A.2 Care must be taken when using a ladder to access a loft space. Walking boards are required to provide access during the installation of the system.

A.3 The sides at loft entrances are to be made good. For more information, reference should be made to the Certificate holder's Installation Manual.

Procedure

A.4 The loft area should be clear and free of objects. If insulation is not already in place, insulation quilt is laid between, and up to the top of, the loft floor joists before starting installation.

A.5 The Tri-Supports are positioned at 610 mm intervals along the joists, and attached to the joists with two 4 by 40 mm galvanized steel screws for wood. In the perpendicular direction, the distance between supports on parallel joists must be no greater than 1200 mm and the supports must be aligned (see Figures 5 and 6).

A.6 The Cross-Beams are slid into position onto the Tri-Supports and secured using wood screws via the slots in the beams and the pre-drilled holes in the Tri-Supports (see Figures 6 and 7). The inclusion of this hole and slot feature makes it possible to accommodate slight variations in the spacing of loft floor joists. This process is continued, to cover the extent of the required finished floor deck.

A.7 Uni-Supports are installed on intermediate loft floor joists. Each support is positioned into the Cross-Beam from beneath, and then rotated through 90 degrees to lock it into position. It should then be screwed to the loft floor joist using one wood screw, and to the Cross-Beam with one self-tapping screw, into the pre-drilled screw hole in the Uni-Support (see Figure 8).

A.8 Once the Cross-Beams and Supports have been fitted, the insulation should be laid, leaving a gap of 50 mm below the underside of the loft floor boards. The insulation should fit tightly around the supports. Care should be taken to ensure that there are no gaps between adjacent strips of insulation.

A.9 The loft floorboards are then laid directly onto the Cross-Beams, staggered if possible, and secured with self-tapping screws (see Figure 9). The boards should be positioned such that they reach halfway across the 80 mm width of the Cross-Beam in order to allow the next board to butt up against it with equal amount of support on the Cross-Beam.

Figure 5 Arrangement of Tri-Supports

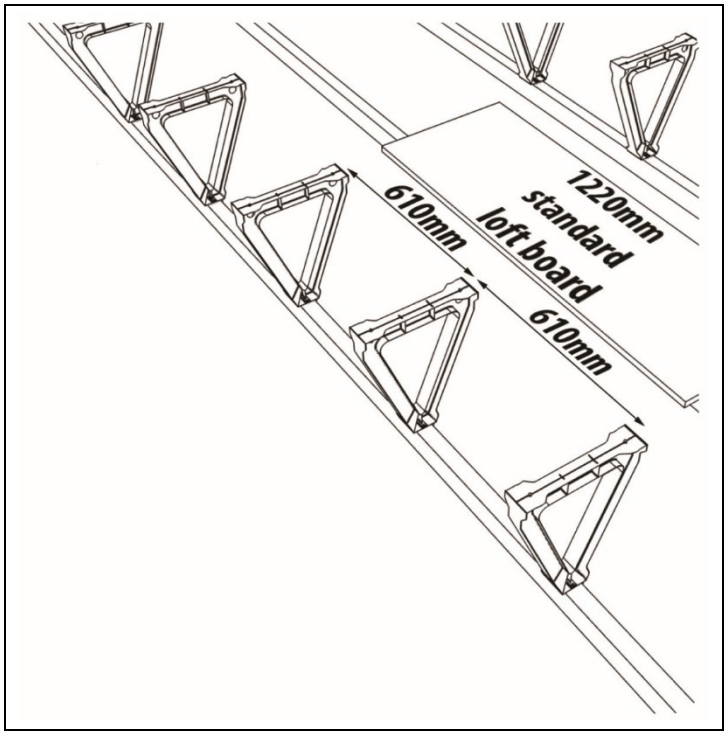


Figure 6 Fitting of Tri-Support

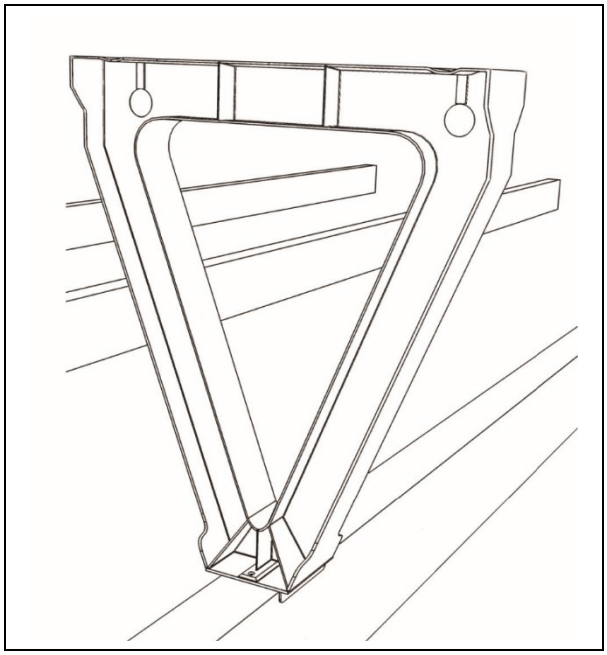


Figure 7 Fitting of Cross-Beam

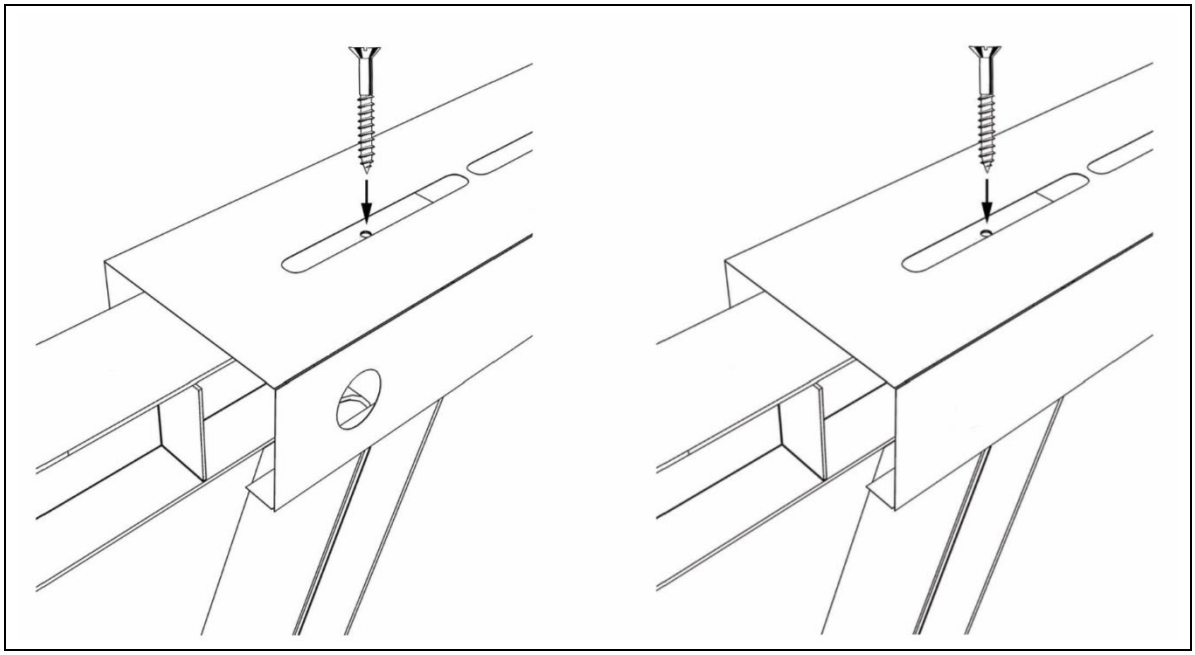


Figure 8 Fitting of Uni-Support

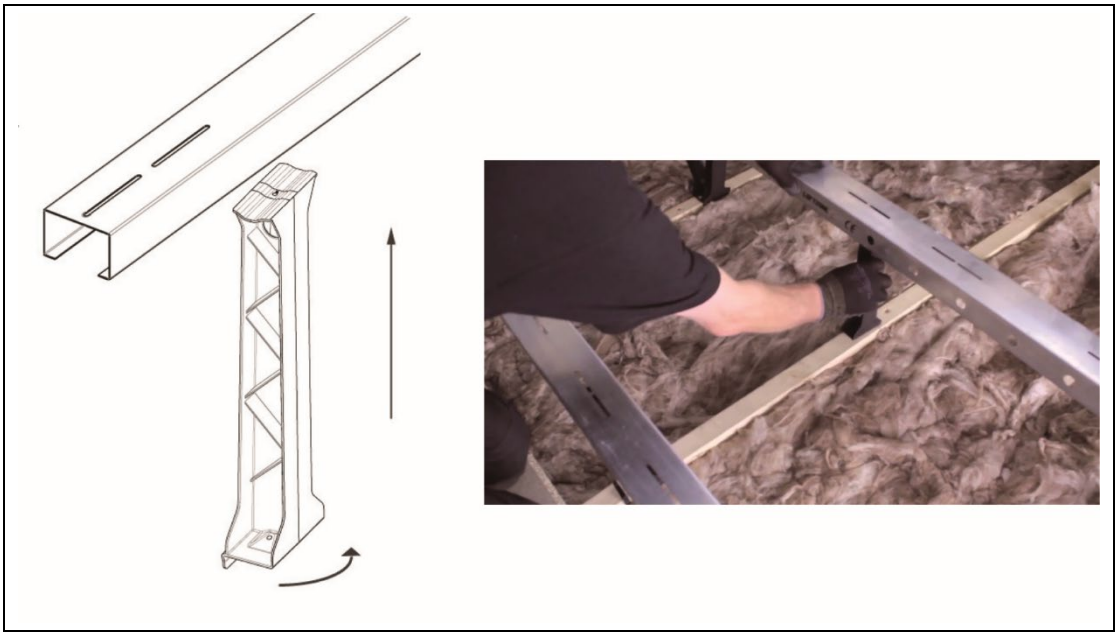
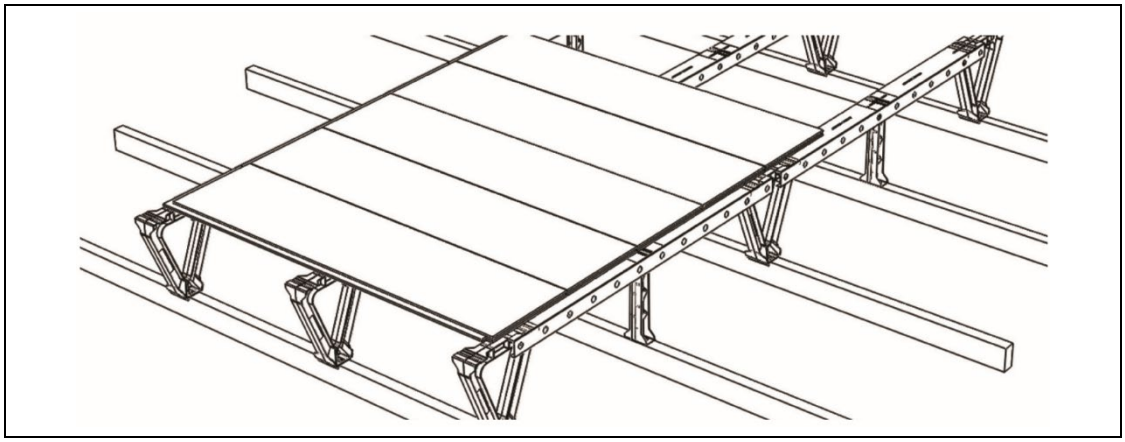


Figure 9 Fitting of ceiling floorboards



Bibliography

BS EN 1991-1-1 : 2002 *Eurocode 1 : Actions on structures — General Actions — Densities, self-weight, imposed loads for buildings*
NA to BS EN 1991-1-1 : 2002 UK National Annex to *Eurocode 1 : Actions on structures — General Actions — Densities, self-weight, imposed loads for buildings*

BS EN 10346 : 2015 *Continuously hot-dipped coated steel flat products for cold forming — Technical delivery conditions*

BS EN ISO 9001 : 2015 *Quality management systems — Requirements*

Conditions

1 This Certificate:

- relates only to the product that is named and described on the front page
- is issued only to the company, firm, organisation or person named on the front page – no other company, firm, organisation or person may hold or claim that this Certificate has been issued to them
- is valid only within the UK
- has to be read, considered and used as a whole document – it may be misleading and will be incomplete to be selective
- is copyright of the BBA
- is subject to English Law.

2 Publications, documents, specifications, legislation, regulations, standards and the like referenced in this Certificate are those that were current and/or deemed relevant by the BBA at the date of issue or reissue of this Certificate.

3 This Certificate will be displayed on the BBA website, and the Certificate Holder is entitled to use the Certificate and Certificate logo, provided that the product and its manufacture and/or fabrication, including all related and relevant parts and processes thereof:

- are maintained at or above the levels which have been assessed and found to be satisfactory by the BBA
- continue to be checked as and when deemed appropriate by the BBA under arrangements that it will determine
- are reviewed by the BBA as and when it considers appropriate.

4 The BBA has used due skill, care and diligence in preparing this Certificate, but no warranty is provided.

5 In issuing this Certificate the BBA is not responsible and is excluded from any liability to any company, firm, organisation or person, for any matters arising directly or indirectly from:

- the presence or absence of any patent, intellectual property or similar rights subsisting in the product or any other product
- the right of the Certificate holder to manufacture, supply, install, maintain or market the product
- actual installations of the product, including their nature, design, methods, performance, workmanship and maintenance
- any works and constructions in which the product is installed, including their nature, design, methods, performance, workmanship and maintenance
- any loss or damage, including personal injury, howsoever caused by the product, including its manufacture, supply, installation, use, maintenance and removal
- any claims by the manufacturer relating to UKCA marking and CE marking.

6 Any information relating to the manufacture, supply, installation, use, maintenance and removal of this product which is contained or referred to in this Certificate is the minimum required to be met when the product is manufactured, supplied, installed, used, maintained and removed. It does not purport in any way to restate the requirements of the Health and Safety at Work etc. Act 1974, or of any other statutory, common law or other duty which may exist at the date of issue or reissue of this Certificate; nor is conformity with such information to be taken as satisfying the requirements of the 1974 Act or of any statutory, common law or other duty of care.

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