Brands for the offsite industry

Cullen Technical Guide

Innovation. Quality. Service.

CONSTRUCTION PRODUCTS

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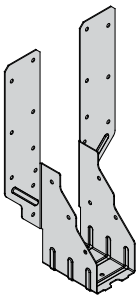

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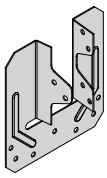

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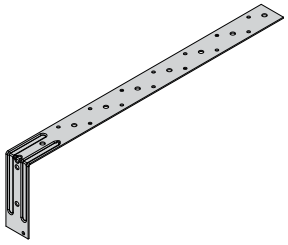


Company Profile & Services

ITW Construction Products Offsite

ITW Construction Products Offsite is part of the Illinois Toolworks family, an international corporation with over **100 years in the building and manufacturing industry.**

We are a **trusted partner to leading offsite component manufacturers**, allowing our customers to design, manufacture and sell the highest quality roof, floor and wall components.

Our collaborative and problem-solving approach ensures we remain a leader in technology, research and development – providing innovative solutions, support and superior service with market leading brands **Cullen, Gang–Nail, Toolmatic and Paslode**.

Illinois Toolworks Inc. (NYSE: ITW)

ITW is a Fortune 250 global multi-industrial manufacturing leader. The company's seven industry-leading segments leverage the unique ITW Business Model to drive solid growth in markets where highly innovative, customer-focused solutions are required.

ITWs products and solutions are at work all over the world, in deep-sea oil rigs, aerospace technology, the spaces in which we live and work, the construction of those spaces, the cars we drive, and the mobile devices we rely on.

ITW is committed to operational excellence and systematic new product development that helps our customers create the products and services that make their operations run smoothly.

Cullen

Cullen timber engineering connectors have been synonymous with innovation and quality for over 40 years.

Becoming part of ITW Construction Products Offsite in 2008, Cullen has benefitted from the expertise and resources of a global corporation allowing them to grow, invent and create more than before.

Designing and manufacturing a complete range of timber engineering connectors, Cullen is at the forefront of market trends, ideas and needs. Chosen for their highest quality and compliance of UKCA, EN845–1 and Eurocode 5, our timber engineering solutions will become a mainstay of your most valued business assets.

Service Team

We recognise that outstanding service is crucial in the construction industry and can assure a positive experience from a dedicated team of experts. With our service team, you are fully supported by our highly qualified technical teams. With decades of experience, our technical experts are ready to offer assistance in timber engineering related matters.

Our skilled professionals are not only experts within ITW, but they also play a **leading role in the industry's representative bodies across the globe**.

What makes us unique is that we have team members who are constantly involved **in finding and developing innovative solutions to future challenges** with these industry bodies. Assisting and driving the creations and updates for building legislation and standards.

Our customer service team plays an important role delivering a best in class customer experience.

They can assist you with:

- Processing your orders
- Providing pricing and delivery information
- Answering questions and queries
- Putting you in touch with the correct member of our organization

Available Monday to Friday from 8.30am – 4:30pm.

Experience in Innovation

We remain a leader in technology, research and development, regularly collaborating along the value chain. We are constantly working with construction experts to create future-proof and innovative compliant solutions that increase productivity and solves industry problem.

Our state of the art research facility in Glenrothes, Scotland includes an Instron test rig and timber conditioning chamber to allow fast track prototyping and testing.

With more than 100 years of experience in manufacturing globally, our ITW staff are highly trained and experienced in providing high-quality service to customers.

What makes us unique

Our products have made a name for themselves by holding positions in niche markets where ITW technology can address customers' unique needs like higher global standards for safety and energy efficiency as well as the growth of offsite construction projects.

We are a fully integrated supply partner for all things related to the offsite and prefab industry in U.K, Ireland and Nordics.

With an experienced team, premium fixings and our own metalwork brand, **we are the only company that can provide a holistic service for all your truss, panel, joist and metalwork needs.**

Technical requests can be submitted 24/7 by emailing us on **technical@itwcp.com**

Should you wish to call Technical Service or Customer Service, our phone lines are available Monday to Friday from 8.30am – 4.30pm

+44(0) 1592 771132
Customer Service: orders@itwcp.com.
itwcp-offsite.co.uk

General Guidelines

Technical Information

The technical information contained in this brochure is correct at the time of updating. ITW Construction Products Offsite reserve the right to amend, change or update the technical information without giving prior notice. For current product updates and technical information, visit our website **www.itwcp–offsite.co.uk**

The contents of this brochure and the latest product updates posted on the website supersede all previous Cullen publications including all brochures, installation guides, manuals and information sheets.

If you would like to be informed of new Cullen products, please visit our website.

All characteristic capacities are derived from tests and are underwritten by ITW Construction Products Offsite. All characteristic values are derived from tests carried out by independent accredited test labs (unless otherwise stated). Cullen European Technical Approvals (ETA) have been submitted for approval using British Board of Agrément (BBA) as the approved notified body.

General Installation Information

- Proper product installation and construction practices must be followed at all times.
- Timber members and Engineered Wood Products may split when nailed; this may reduce their characteristic capacity.
- To achieve the characteristic capacities published all specified nails and fastenings must be used and installed as per the instructions set out in this brochure.
- Failure to follow proper nailing procedures and instructions will reduce the characteristic capacities.
- **Only bend Cullen connectors when directed to by the appropriate Cullen installation guide, and when necessary "only bend once".**

Design Information

- The integrity of the building or structure must be validated by a suitably qualified Building Designer or Engineer (the "Designer").
- The Designer is responsible for determining that the appropriate connector and/or hanger has been selected.
- Location and spacing of straps must be specified by the Designer.
- When selecting the appropriate connector and/or hanger, consideration must be given to the safe working loads or characteristic capacities required, bearing support and connection details within the building or structure.
- **For all Engineered Wood Products (EWP), ITW Construction Products Offsite recommends the hanger height be at least 60% of the joist height for lateral stability.**
- Any bespoke Cullen product designed by ITW Construction Products Offsite but manufactured by another (unless directed to by ITW Construction Products Offsite) will not be covered under ITW Construction Products Offsite's warranty.
- ITW Construction Products Offsite reserve the right to (i) change the design specifications and applications of any connector/hanger, or (ii) withdraw any connector or hanger without giving prior notice.

NB. Any modification to any Cullen custom–made or manufactured connector and/or hanger product will void any warranty given by Cullen in relation to that particular connector and/or hanger product.

Galvanised Protection

Z275 galvanised coating is the minimum corrosion protection recommended for Service Class 2 applications (BS EN1995–1–1 Table 4.1 Examples of minimum specification for material protection against corrosion for fasteners).

Z600 galvanised coating gives a greater corrosion protection for use with masonry applications (BS EN845–1 Annex A1, Table A.1 Materials and corrosion protection systems).

Service Classes **(BS EN1995–1–1 section 2.3.1.3)**

– (1) P Structures shall be assigned to one of the service classes given below.

NOTE: The service class system is mainly aimed at assigning strength values and for calculating deformations under defined environmental conditions.

NOTE: Information on the assignment of structures to service classes given in (2)P, (3)P and 4(P) may be given in the National Annex.

– (2) P Service class 1 is characterised by a moisture content in the materials corresponding to a temperature of 20°C and the relative humidity of the surrounding air only exceeding 65% for a few weeks per year.

NOTE: In service class 1 the average moisture content in most softwoods will not exceed 12%.

– (3) P Service class 2 is characterised by a moisture content in the materials corresponding to a temperature of 20°C and the relative humidity of the surrounding air only exceeding 85% for a few weeks per year.

NOTE: In service class 2 the average moisture content in most softwoods will not exceed 20%.

– (4) P Service class 3 is characterised by climatic conditions leading to higher moisture contents than in service class 2.

UK National annex to BS EN1995–1–1 states the following service classes for these applications:

Type of Construction	Service Class
Cold roofs	2
Warm roofs	1
Intermediate floors	1
Ground floors	2
Timber–frame walls, internal and party walls	1
Timber–frame walls, external walls	2
External uses where member is protected from direct wetting	2
External uses, fully exposed	3

Fixings For Cullen Connectors

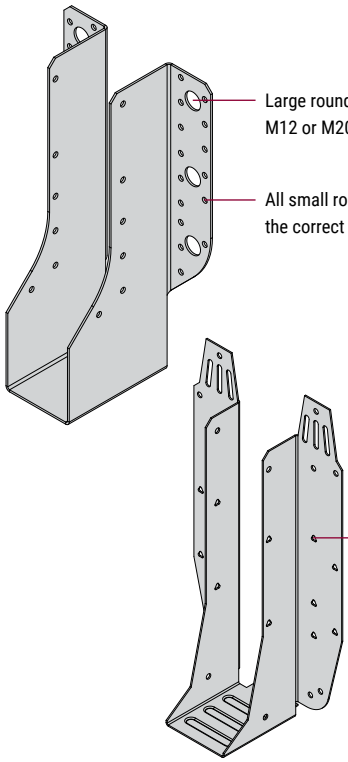
Fixings for Cullen

This section sets out to simplify the specification of ITW Construction Products Offsite fasteners and fastening systems for use with Cullen timber engineered connectors. These fasteners have been tested in conjunction with the Cullen connectors, meaning that **published design values are underwritten by ITW Construction Products Offsite** if used together.

Fastening Cullen Connectors

To achieve the characteristic capacities published in this Cullen Technical Guide and specified by roof truss or floor joist design software, connectors must be installed using the correct number and type of fasteners.

The fasteners in this section have been assessed and qualified as suitable for use with Cullen connectors. **All published values are underwritten by ITW Construction Products Offsite.** Using an unqualified or alternative fastener could result in a reduced connector capacity and the design values not being underwritten.



Paslode Gas Positive Placement Nailer

ETA – 09/0273

Product Code	Description
014095	PPN35Ci Li–ion Gas Positive Placement Nailer

Paslode PPN35Ci Li–ion Gas Positive Placement Nailer
Drives ETA approved, CE compliant hardened twist nails through connectors and hangers into solid wood beams.

Nail Specification

Product Code:	141189	141185
Box Qty:	1,250	2,500
Shank Type:	Square Twist Hardened	
Shank Diameter:	3.4mm	
Length:	35mm	
Head Diameter:	7.0mm	
Average Profile Diameter:	3.7mm	
Finish:	12µm Electro Galv	

Paslode Pneumatic Positive Placement Nailer

ETA – 09/0273

Product Code	Description
500855	F250S PP Pneumatic Positive Placement Nailer

Paslode F250S PP Pneumatic Positive Placement Nailer
Drives ETA approved, CE compliant hardened twist nails through connectors and hangers into solid wood beams.

Nail Specification

Product Code:	140588
Box Qty:	3,000
Shank Type:	Square Twist Hardened
Shank Diameter:	3.4mm
Length:	35mm
Head Diameter:	7.0mm
Average Profile Diameter:	3.7mm
Finish:	12µm Electro Galv

Fixings For Cullen Connectors

Loose Fasteners

3.4 x 35mm Electrogalvanised Square Twist Nails

CE UKCA
EN 14592

Product Code:	547389
Box Qty:	500
Shank Type:	Square Twist
Shank Diameter:	3.4mm
Length:	35mm
Head Diameter:	8.0mm
Average Profile Diameter:	3.7mm
Finish:	12µm Electro Galv

Paslode Structural Timber Screws

CE UKCA
EN 14592

Product Code:	See page 94	See page 94
Box Qty:	100	100
Outer Thread Shank Diameter:	6.5mm	8.0mm
Plain Shank Diameter:	4.8mm	5.85mm
Length:	35 – 250mm	65 – 135mm
Head Diameter:	11.5mm	16mm
Finish:	5µm Electro Galv	5µm Electro Galv

3.35 x 50mm Stainless Steel Annular Ring Shank Nails

Product Code:	ST-PFS-FIXING PACK	ST-ST-WALLTIE-NAILS-250
Box Qty:	150	250
Shank Type:	Ring Shank	Ring Shank
Shank Diameter:	3.35mm	3.35mm
Length:	50mm	50mm
Head Diameter:	–	–
Average Profile Diameter:	–	–
Finish:	Stainless Steel	Stainless Steel

SPIT Powder Actuated Tool System

CE

Product Code	Description
011071	P370 Powder Actuated Tool with Magazine (includes Single Shot Adaptor)

SPIT P370 Cordless Powder Actuated Tool

For fixing to steel of thickness 5mm to 10mm.

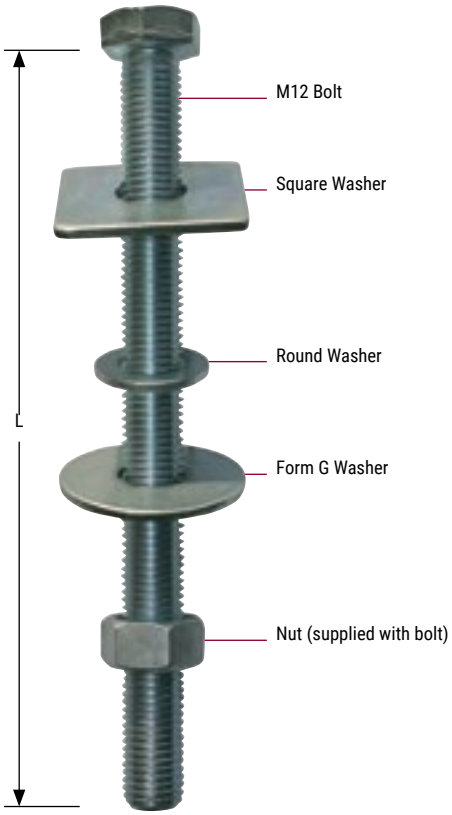
SC9 Collated Drive Pins

Product Code:	011340
Box Qty:	500
Shank Type:	Drive Pin
Shank Diameter:	4mm
Length:	15mm
Head Diameter:	9.0mm
Average Profile Diameter:	–
Finish:	7µm Electro Galv

Fixings For Cullen Connectors

BOLTS

M12 BOLT



M12 Bolt General Specification

Shank Type:	Threaded
Shank Diameter:	M12
Head Diameter A/F:	19.0mm
Head Thickness:	7.5mm
Grade:	8.8
Finish:	>5µm Electro Galv

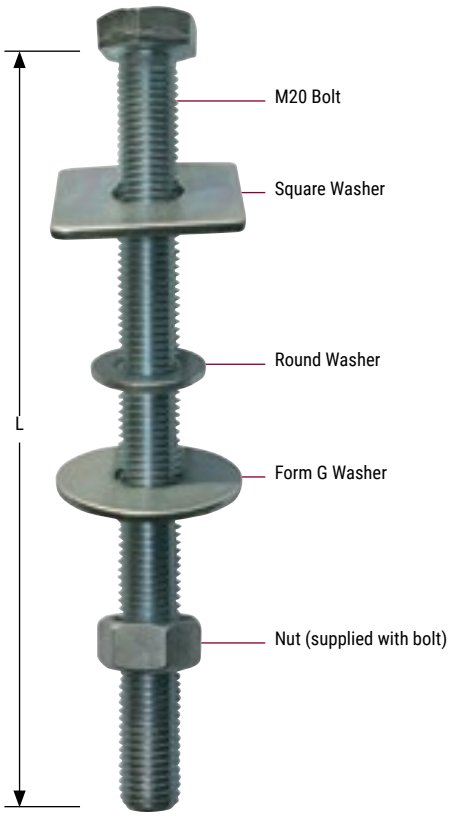
M12 Bolt Lengths

Product Code	Bolt Length (L) (mm)	Description
M-12-130-HRH-FULL-THREAD	130	M12 x 130mm HRH Bolt (full thread to suit 100 – 130mm bolt length) & Nut
M-12-180-HRH-FULL-THREAD	180	M12 x 180mm HRH Bolt (full thread to suit 140 – 180mm bolt length) & Nut
M-12-240-HRH-FULL-THREAD	240	M12 x 240mm HRH Bolt (full thread to suit 200 – 240mm bolt length) & Nut

M12 Nuts & Washers

Product Code	Diameter / Length (mm)	Thickness (mm)	Description
M-12-SQUARE	50 x 50	3.0	M12 Square Washer
M-12-ROUND	24	2.5	M12 Round Washer
M-12-FORM-G	36	3.0	M12 Form G Washer
M-12-NUT	19 A/F	10.0	M12 Nut

M20 BOLT



M20 Bolt General Specification

Shank Type:	Threaded
Shank Diameter:	M20
Head Diameter A/F:	30.0mm
Head Thickness:	12.5mm
Grade:	8.8
Finish:	>5µm Electro Galv

M20 Bolt Lengths

Product Code	Bolt Length (L) (mm)	Description
M-20-130-HRH-FULL-THREAD	130	M20 x 130mm HRH Bolt (full thread to suit 100 – 130mm bolt length) & Nut
M-20-180-HRH-FULL-THREAD	180	M20 x 180mm HRH Bolt (full thread to suit 140 – 180mm bolt length) & Nut
M-20-240-HRH-FULL-THREAD	240	M20 x 240mm HRH Bolt (full thread to suit 200 – 240mm bolt length) & Nut

M20 Nuts & Washers

Product Code	Diameter / Length (mm)	Thickness (mm)	Description
M-20-SQUARE	50 x 50	3.0	M20 Square Washer
M-20-ROUND	36	2.5	M20 Round Washer
M-20-FORM-G	60	5.0	M20 Form G Washer
M-20-NUT	30 A/F	16.0	M20 Nut

Eurocode 5

Eurocode 5 (BS EN1995–1–1)

With BS 5268 part 2 & 3 being officially withdrawn in 2009 & 2010 the UK Trussed Rafter Association & UK Engineered Wood Products Committee have agreed that all designs will now be carried out to EC5.

Eurocode 5 is the harmonised European Standard covering the design of timber structures. The purpose of the Eurocodes is to establish a common set of standards for the design of buildings across all European member states, although each member can have its own National Annex which is used in conjunction with the Eurocodes for design.

Technical Approvals

UK

Timber–to–timber hangers (these are required to be assessed by UK notified body)
With the UK having left the European Union, European Technical Assessments (ETA's) will no longer be accepted in the UK (from 1st January 2023) with timber–to–timber hangers to meet the requirements of UK Technical Assessment document (UKAD) no.130186–00–0603 Three dimensional nailing plates, which allows the hangers to be submitted for UK Technical Assessment (UKTA) which once issued enables the products to be UKCA marked.

Timber–to–masonry products (hangers, straps and wall ties)
Are tested to meet the requirements of the harmonised standard BS EN 845–1 enabling them to be UKCA marked.

Fasteners for timber structures (nails, screws and bolts)
Are tested to meet the requirements of BS EN14592 enabling them to be UKCA marked.

EU

Timber–to–timber (these are required to be assessed by European body notified body)
All timber–to–timber hangers are tested to meet the requirements of European Assessment Document (EAD) no.130186–00–0603 Three dimensional nailing plates, which allows the hangers to be submitted for a European Technical Assessment (ETA) which once issued enables the products to be CE marked.

Timber–to–masonry products (hangers, straps and wall ties)
Are tested to meet the requirements of the harmonised standard BS EN 845–1 enabling them to be CE marked.

Fasteners for timber structures (nails, screws and bolts)
Are tested to meet the requirements of EN14592 enabling them to be CE marked.

Load Tables

BS EN1995–1–1:2004+A1:2014 (EC5) is based on limit state design.

The characteristic capacity of the hanger is based on ultimate limit states and is unfactored.

What does this mean for our products?

Only characteristic values for each product will be published is this guide and any future guides.

The characteristic value is the lower 5th percentile value obtained from test results.

A series of modification factors must be applied to the characteristic value to determine the Design Value.

Timber to Timber Connectors

Design Value = $(F_k \times K_{mod}) / Y_m$
F_k = Characteristic value
K_{mod} = Modification factor for duration of load and moisture content (EN1995–1–1 table 3.1)
Y_m = Partial factors for material properties and resistance (1.3 for connections – EN1995–1–1 table 2.3)

Timber to Masonry Connectors

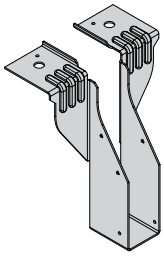
Design Value = F_k / Y_m
F_k = Characteristic value
Y_m = Partial factors for material properties and resistance (1.5 for masonry – EN845–1)

Example Load Data: UH Hanger Standard Installation – I–Joist Header without Backer Block

Hanger Depth (mm)	Fixings (3.4x35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	I–Joist Header	
(Depth Dependent Only)	Face	Top			Solid Flange	LVL Flange
195	8	2	2	3.97	11.13	12.94
220	8	2	4	3.97	11.13	12.94
235	8	2	4	3.97	11.89	11.79
300	8	2	4	3.97	11.89	11.79

Masonry Hanger Overview

3 Courses of Masonry Above (675mm)



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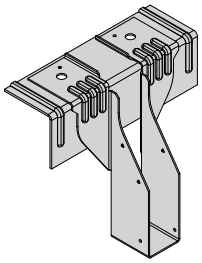

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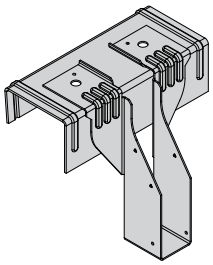

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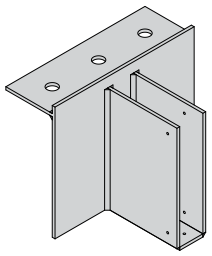

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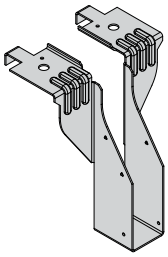

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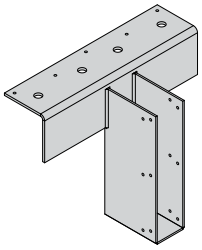

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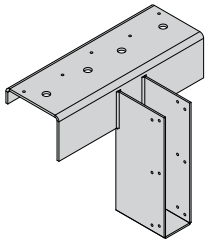

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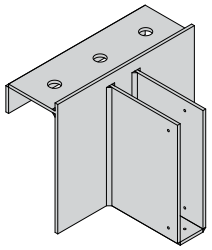

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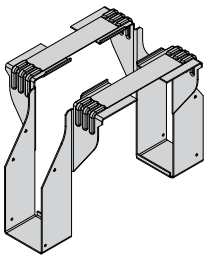
STANDARD

HIGH LOAD

VERY HIGH LOAD



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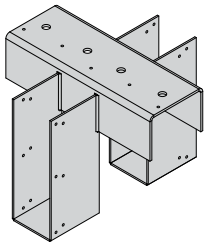

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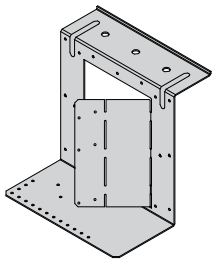

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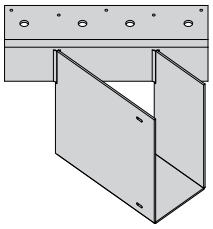

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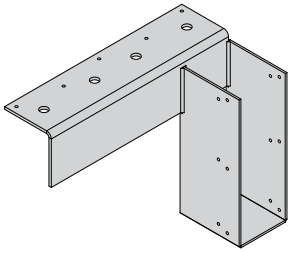
STRADDLE

SKEWED



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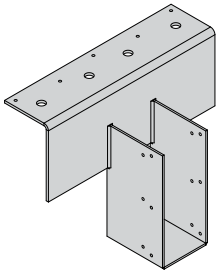

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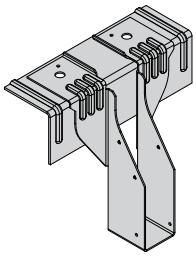
OFFSET

DROPPED

No requirement for masonry above

Unless specified to achieve higher load carrying capacity



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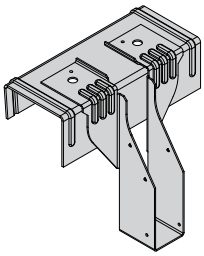

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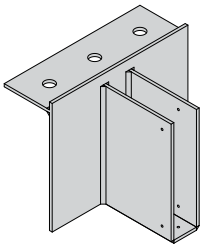

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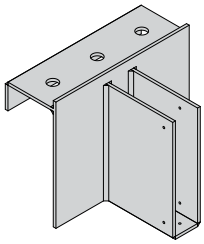


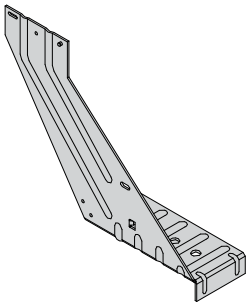
MASONRY–RTN
Page 21

HIGH LOAD

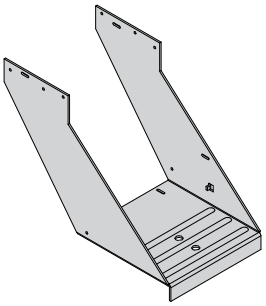
VERY HIGH LOAD

For skewed hangers with less than 3 courses of masonry above, contact Cullen Technical on 01592 771132

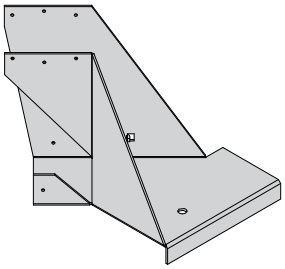
Restraint Hangers



RA
Pages 24 – 27



HRAD
Pages 24 – 27



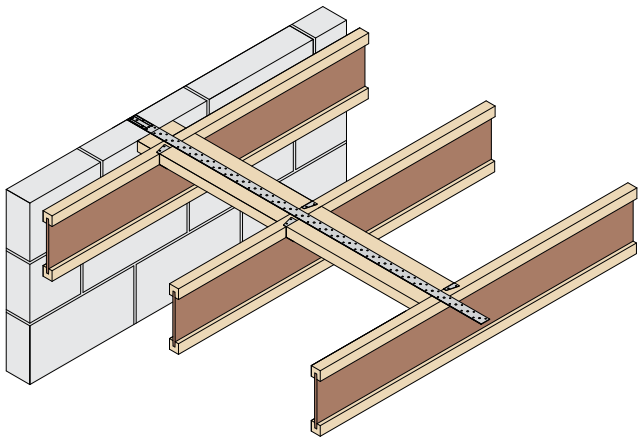
RADS
Pages 24 – 27

STANDARD

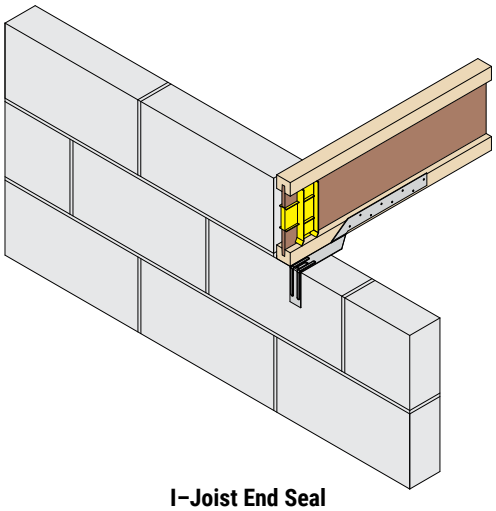
HIGH LOAD & >97MM WIDE

SKEWED

Ancillary Products



Restraint Straps
Pages 128 – 129

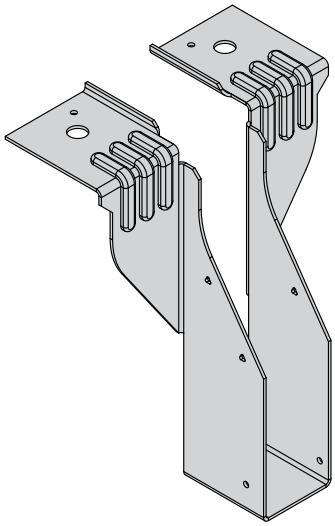


I–Joist End Seal
Pages 28 – 29

JHI

Masonry Joist Hanger

European Community Registered Design



The JHI hanger is a traditional timber to masonry hanger range designed for use with I–Joists, open web & solid timber joists/trusses.

Features & Benefits

- The same air leakage values of a wall with no protrusions, forming a major contribution towardsPart L1 Building Regulations
- Approved and tested for use with H&H Thin Joint System (Contact Technical for approved installation guide)

Material Specification

- Galvanised mild steel – Z600

Fixings

Fixings required into incoming member only. No fixings required into masonry.

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes – JHI/JHIST/JHIR(1)

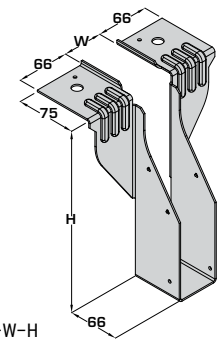
Hanger Width (W) (mm)	Hanger Depth (H) (mm)							
	150	195	225	240	250	300	350	400
39	JHI–39–150	JHI–39–195	JHI–39–225 (1)	JHI–39–240	–	JHI–39–300	JHI–39–350	JHI–39–400
46	JHI–46–150	JHI–46–195	JHI–46–225 (1)	JHI–46–240	JHI–46–250	JHI–46–300	–	–
50	JHI–50–150	JHI–50–195	JHI–50–225 (1)	JHI–50–240	JHI–50–250	JHI–50–300	–	–
55	–	–	JHI–55–225	–	–	JHI–55–300	–	–
61	–	–	JHI–61–225	JHI–61–240	–	JHI–61–300	–	–
65	–	–	JHI–65–225	JHI–65–240	–	JHI–65–300	–	–
72	–	–	JHI–72–225	JHI–72–240	–	JHI–72–300	–	–
75	JHI–75–150	JHI–75–195	JHI–75–225 (1)	JHI–75–240	JHI–75–250	JHI–75–300	JHI–75–350	JHI–75–400
92	–	–	JHI–92–225 (1)	–	–	JHI–92–300	–	–
100	JHI–100–150	JHI–100–195	JHI–100–225 (1)	JHI–100–240	JHI–100–250	JHI–100–300	JHI–100–350	JHI–100–400
110	–	–	JHI–110–225	–	–	–	–	–
122	–	–	JHI–122–225	–	–	–	–	–
125	–	JHI–125–195	JHI–125–225	JHI–125–240	JHI–125–250	JHI–125–300	–	–
130	–	–	–	JHI–130–240	–	–	–	–
150	–	JHI–150–195	JHI–150–225	JHI–150–240	JHI–150–250	JHI–150–300	–	–
198	–	–	JHI–198–225	JHI–198–240	JHI–198–250	JHI–198–300	–	–

(1) Sizes available as return (to suit 100mm block work only)

ALL RETURN AND NON–RETURN HANGERS REQUIRE 675MM OF MASONRY ABOVE

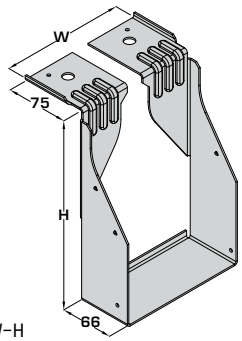
Dimensions (mm)

JHI – 39–138MM WIDE



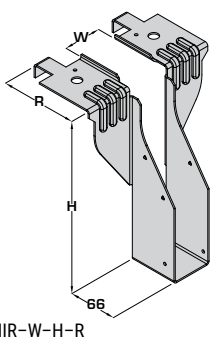
JHI–W–H
Example: JHI–50–225

JHI – 144–198MM WIDE



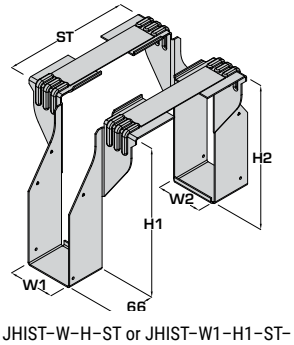
JHI–W–H
Example: JHI–150–225

JHIR – RETURN



JHIR–W–H–R
Example: JHIR–50–225–100
Only sizes marked (1) available
(Returns available to suit 100mm block work only)

JHIST – STRADDLE



JHIST–W–H–ST or JHIST–W1–H1–ST–W2–H2
Example: JHIST–50–225–100
Example: JHIST–50–225–100–75–225

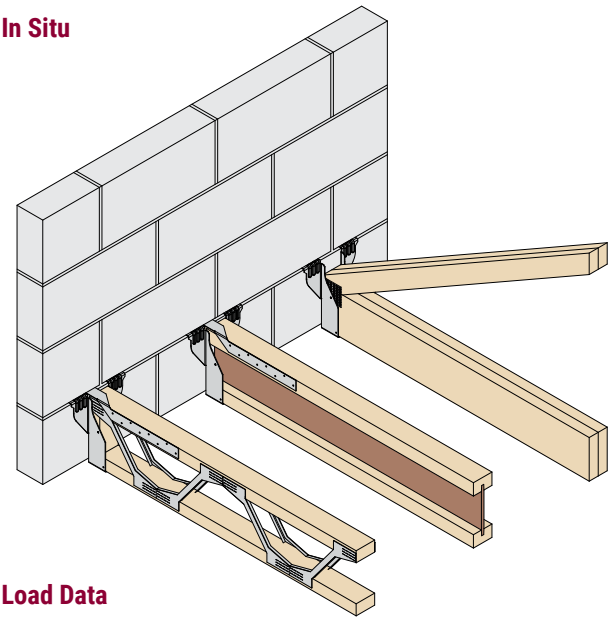
JHI

Masonry Joist Hanger

European Community Registered Design

- Suitable for use with Open Web Joists, I–Joists and trusses
- Floor can be propped with acroprops and fully decked but must not be fully loaded until the masonry above has fully cured

In Situ



- A minimum of **3 courses (675mm)** of masonry above is required for hanger to achieve loads stated
- The masonry above must be fully cured for **28 days** prior to loading the floor
- All hangers in this range do not provide restraint, therefore restraint straps may be required for joist applications (see pages 128 – 129)

Load Data

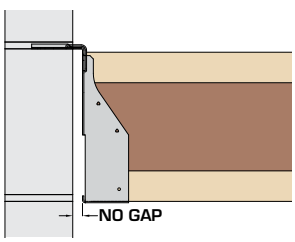
Product Code	Masonry Above (Min 675mm)	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)				
			Uplift	Masonry Crushing Strength			
				2.8N/mm²	3.5N/mm²	7.0N/mm²	
		Incoming		All widths	All widths	39 – 100mm wide	122 – 198mm wide
JHI JHIR JHIST	Yes	2	2.00	11.17	13.97	23.04	13.97
		5 (2)	4.50				

Enhanced Uplift(2)

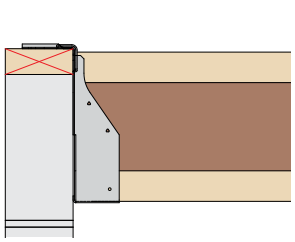
- Fixings into the incoming joist/truss are required to resist uplift
- Increased uplift figures can be achieved by nailing the additional triangular nail holes into the incoming member
- Web stiffeners required for I–Joists, 2No end blocks required for Open Web Joists & minimum bottom chord depth/vertical required for trusses
- Requires minimum **full storey** of masonry above to achieve values

Hanger Depth (mm)	Min Timber Depth (mm)
150	84
175 – 195	122
225 – 240	172
250	195
300	235
350	300
400	350

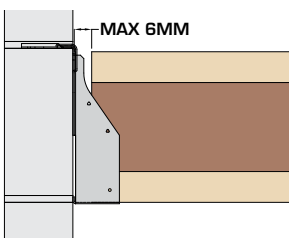
Incorrect Installation



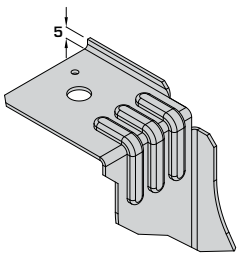
Do not install the hanger with a gap between the hanger and the face of the block work.



Do not install the hanger onto a timber wall plate.



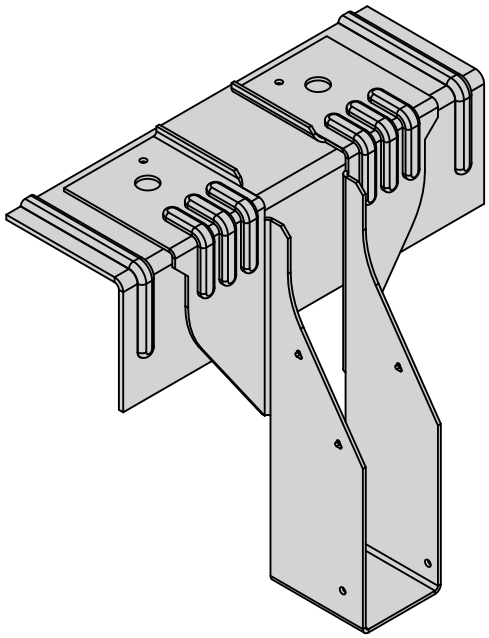
Do not install the hanger with a gap exceeding 6mm between the joist/truss and the hanger.



Do not flatten the 5mm upstands on the hanger top flanges. These are critical to the performance.

RB–JHI

Rapid Build Masonry Joist Hanger



The RB–JHI hanger is a timber to masonry hanger range designed for use with I–Joists, open web & solid timber joists/trusses. The RB–JHI combines the standard JHI hanger with a reinforced top plate to provide a superior level of performance.

Features & Benefits

- The addition of the reinforced top plate keeps the hanger in position eliminating the need for masonry above (unless required for futher additional performance)
- Supporting block work only needs to cure for 3 days instead of the standard 28 days for traditional masonry hangers, speeding up the build process
- A major contribution to compliance with air leakage – Part L1 Building Regulations

Material Specification

- Galvanised mild steel – Z600

Fixings

Fixings required into incoming member only. No fixings required into masonry.

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

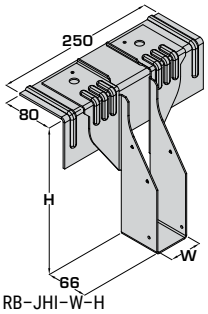
Available Sizes – RB–JHI/RB–JHIR(1)

Hanger Width (W) (mm)	Hanger Depth (H) (mm)							
	150	195	225	240	250	300	350	400
39	RB–JHI–39–150	RB–JHI–39–195	RB–JHI–39–225(1)	RB–JHI–39–240	RB–JHI–39–250	RB–JHI–39–300(1)	RB–JHI–39–350	–
46	–	–	RB–JHI–46–225(1)	RB–JHI–46–240	–	RB–JHI–46–300	–	–
50	RB–JHI–50–150	RB–JHI–50–195	RB–JHI–50–225(1)	RB–JHI–50–240	RB–JHI–50–250	RB–JHI–50–300	–	–
55	–	–	RB–JHI–55–225	–	–	–	–	–
61	–	–	RB–JHI–61–225	–	–	RB–JHI–61–300	–	–
65	–	–	RB–JHI–65–225	RB–JHI–65–240	–	RB–JHI–65–300	–	–
72	–	–	RB–JHI–72–225	RB–JHI–72–240	–	RB–JHI–72–300	–	–
75	RB–JHI–75–150	RB–JHI–75–195	RB–JHI–75–225(1)	RB–JHI–75–240	RB–JHI–75–250	RB–JHI–75–300	RB–JHI–75–350	RB–JHI–75–400
92	–	–	RB–JHI–92–225	–	–	RB–JHI–92–300	–	–
100	RB–JHI–100–150	RB–JHI–100–195	RB–JHI–100–225(1)	RB–JHI–100–240	RB–JHI–100–250	RB–JHI–100–300	–	RB–JHI–100–400
110	–	–	RB–JHI–110–225	–	–	RB–JHI–110–300	–	–
122	–	–	RB–JHI–122–225	RB–JHI–122–240	–	RB–JHI–122–300	–	–
125	–	–	RB–JHI–125–225	RB–JHI–125–240	RB–JHI–125–250	RB–JHI–125–300	RB–JHI–125–350	RB–JHI–125–400
130	–	–	RB–JHI–130–225	RB–JHI–130–240	–	RB–JHI–130–300	–	–
138	–	–	RB–JHI–138–225	RB–JHI–138–240	–	–	–	–
144	–	–	RB–JHI–144–225	–	–	RB–JHI–144–300	–	–
150	–	RB–JHI–150–195	RB–JHI–150–225(1)	RB–JHI–150–240	RB–JHI–150–250	RB–JHI–150–300	RB–JHI–150–350	RB–JHI–150–400
198	–	–	RB–JHI–198–225(1)	RB–JHI–198–240	RB–JHI–198–250	RB–JHI–198–300	–	–
225	–	–	RB–JHI–225–225	–	RB–JHI–225–250	RB–JHI–225–300	–	–
250	–	–	RB–JHI–250–225(1)	–	RB–JHI–250–250	RB–JHI–250–300(1)	–	–

(1) Sizes available as return (to suit 100mm block work only)

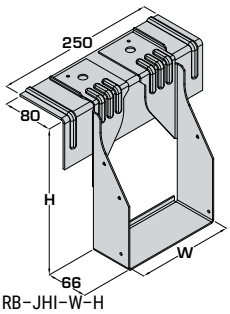
Dimensions (mm)

RB–JHI – 39–138MM WIDE



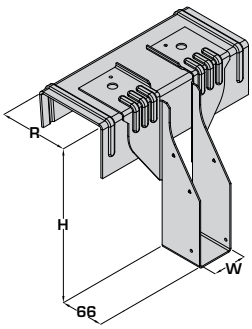
RB–JHI–W–H
Example: RB–JHI–50–225

RB–JHI – 144–198MM WIDE



RB–JHI–W–H
Example: RB–JHI–150–225

RB–JHIR – RETURN

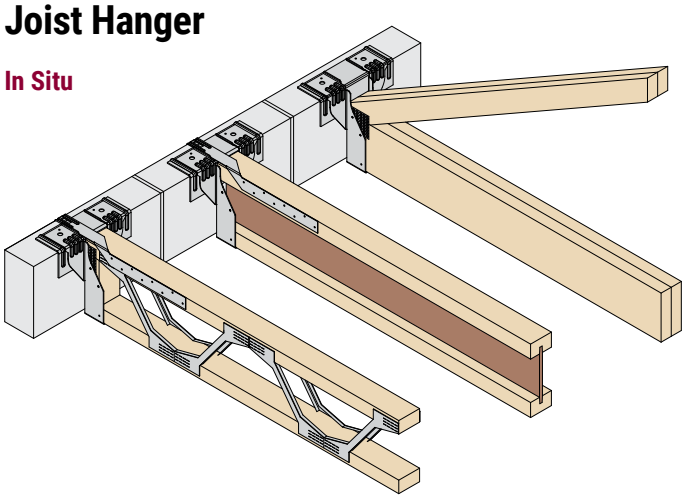


RB–JHIR–W–H–R
Example: RB–JHIR–50–225–100
Only sizes marked (1) available
(Returns available to suit 100mm block work only)

RB–JHI

Rapid Build Masonry Joist Hanger

In Situ



- Suitable for use with Open Web Joists, I–Joists and trusses
- Non return hangers are suitable with no masonry above. Return only required for increased load capacity

- **No masonry** is required above the hanger (unless stated for increased load capacity).
- The masonry supporting the hanger must be cured for **3 days** prior to loading the floor.
- The RB–JHI/RB–JHIR does not provide restraint, therefore restraint straps may be required (see pages 128 – 129)

Load Data

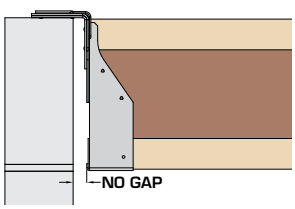
Hanger Type	Masonry Above (Min 675mm)	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)			
			Uplift	Masonry Crushing Strength		
		Incoming		2.8N/mm²	3.5N/mm²	7.0N/mm²
RB–JHI	No	2	n/a	12.56	15.71	21.26
RB–JHIR	No	2	n/a	16.00	20.01	28.31
RB–JHI/RB–JHIR	Yes	2	2.00	19.83	24.79	39.60
		5(2)	4.50			

Enhanced Uplift(2)

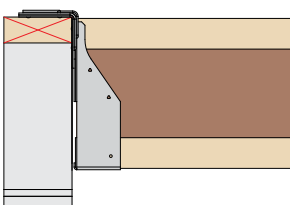
- Fixings into the incoming joist/truss are required to resist uplift
- Increased uplift figures can be achieved by nailing the additional triangular nail holes into incoming member
- Web stiffeners required for I–Joists, 2No end blocks required for Open Web Joists & minimum bottom chord depth/vertical required for trusses
- Requires minimum full storey of masonry above to achieve values

Hanger Depth (mm)	Min Timber Depth (mm)
150	84
175 – 195	122
225 – 240	172
250	195
300	235
350	300
400	350

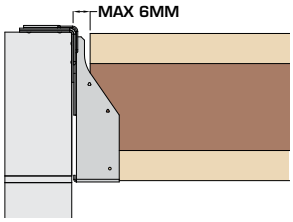
Incorrect Installation



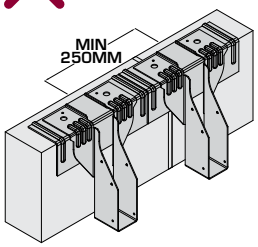
Do not install the hanger with a gap between the hanger and the face of the block work.



Do not install the hanger onto a timber wall plate.



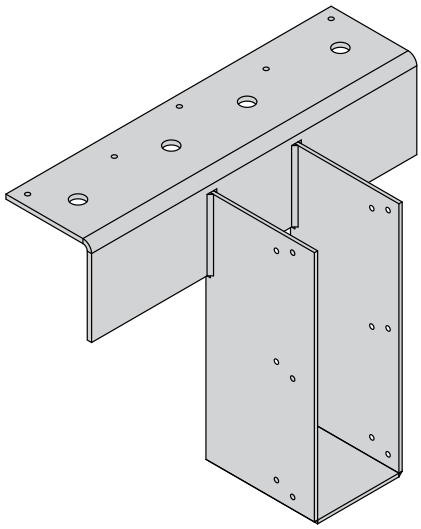
Do not install the hanger with a gap exceeding 6mm between the joist/truss and the hanger.



Do not cut/modify the top flanges. These are critical to the performance.

FMHI

Flexible Masonry Hanger



FMHI – 4mm top plate, 3mm stirrup, 100mm bearing
FTHI – 4mm top plate, 4mm stirrup, 150mm bearing

The FMHI hanger is used to support joists and trusses from masonry walls in high load situations with 675mm masonry above.

Features & Benefits

- Increased top flange to allow for greater load distribution
- Options available for skewed, offset, dropped and straddle connections

Material Specification

- 4mm top plate & 3mm stirrup – mild steel with zinc undercoat and an organic bituminous top coat to BS EN845–1:2013+A1:2016

Fixings

Fixings required into incoming member only.

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

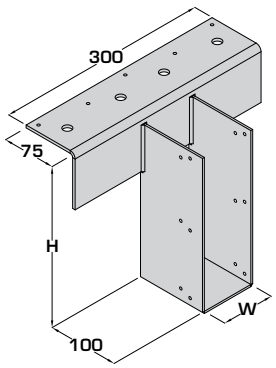
Available Sizes

Hanger Width (W) (mm)	Hanger Depth (H) (mm)								
	150	175	195	225	240	250	300	350	400
39	–	–	FMHI–39–195	FMHI–39–225	FMHI–39–240	FMHI–39–250	FMHI–39–300	FMHI–39–350	FMHI–39–400
46	–	–	FMHI–46–195	FMHI–46–225	FMHI–46–240	FMHI–46–250	FMHI–46–300	FMHI–46–350	FMHI–46–400
50	–	–	FMHI–50–195	FMHI–50–225	FMHI–50–240	FMHI–50–250	FMHI–50–300	FMHI–50–350	–
55	–	–	–	RB–JHI–55–225**	FMHI–55–240	–	RB–JHI–55–300**	–	–
61	–	–	FMHI–61–195	RB–JHI–61–225**	RB–JHI–61–240**	–	RB–JHI–61–300**	FMHI–61–350	FMHI–61–400
65	FMHI–65–150	–	FMHI–65–195	RB–JHI–65–225**	RB–JHI–65–240**	FMHI–65–250	RB–JHI–65–300**	FMHI–65–350	–
72	–	–	FMHI–72–195	RB–JHI–72–225**	RB–JHI–72–240**	–	RB–JHI–72–300**	FMHI–72–350	FMHI–72–400
75	–	–	FMHI–75–195	FMHI–75–225	FMHI–75–240	FMHI–75–250	FMHI–75–300	FMHI–75–350	FMHI–75–400
78	–	–	FMHI–78–195	FMHI–78–225	FMHI–78–240	FMHI–78–250	FMHI–78–300	FMHI–78–350	FMHI–78–400
92	FMHI–92–150	FMHI–92–175	FMHI–92–195	FMHI–92–225	FMHI–92–240	FMHI–92–250	FMHI–92–300	FMHI–92–350	FMHI–92–400
100	–	–	FMHI–100–195	FMHI–100–225	FMHI–100–240	FMHI–100–250	FMHI–100–300	FMHI–100–350	FMHI–100–400
110	–	–	–	RB–JHI–110–225**	FMHI–110–240	–	FMHI–110–300	–	–
122	–	–	FMHI–122–195	RB–JHI–122–225**	RB–JHI–122–240**	–	RB–JHI–122–300**	FMHI–122–350	FMHI–122–400
125	–	–	FMHI–125–195	FMHI–125–225	FMHI–125–240	RB–JHI–125–250**	FMHI–125–300	FMHI–125–350	FMHI–125–400
130	–	–	FMHI–130–195	RB–JHI–130–225**	RB–JHI–130–240**	–	RB–JHI–130–300**	FMHI–130–350	–
138	–	–	FMHI–138–195	RB–JHI–138–225**	RB–JHI–138–240**	FMHI–138–250	FMHI–138–300	FMHI–138–350	FMHI–138–400
144	–	–	FMHI–144–195	RB–JHI–144–225**	FMHI–144–240	–	RB–JHI–144–300**	FMHI–144–350	FMHI–144–400
150	–	–	RB–JHI–150–195**	RB–JHI–150–225**	RB–JHI–150–240**	RB–JHI–150–250**	RB–JHI–150–300**	RB–JHI–150–350**	RB–JHI–150–400**
183	–	–	FMHI–183–195	FMHI–183–225	FMHI–183–240	–	FMHI–183–300	FMHI–183–350	FMHI–183–400
198	–	–	FMHI–198–195	RB–JHI–198–225**	RB–JHI–198–240**	RB–JHI–198–250**	RB–JHI–198–300**	FMHI–198–350	FMHI–198–400
225	–	–	–	RB–JHI–225–225**	RB–JHI–225–240**	RB–JHI–225–250**	RB–JHI–225–300**	FMHI–225–350	FMHI–225–400
250	–	–	–	RB–JHI–250–225**	FMHI–250–240	RB–JHI–250–250**	RB–JHI–250–300**	FMHI–250–350	FMHI–250–400
300	–	–	–	FMHI–300–225	–	FMHI–300–250	FMHI–300–300	FMHI–300–350	FMHI–300–400

**FMHI hanger can be swapped directly with RB–JHI

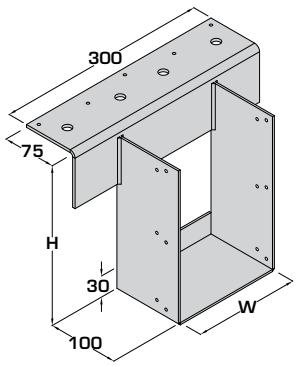
Dimensions (mm)

FMHI 39 – 144MM WIDE



FMHI–W–H
Example: FMHI–100–225

FMHI 150 – 300MM WIDE

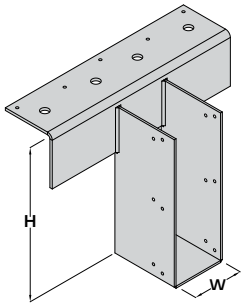


FMHI–W–H
Example: FMHI–225–350

FMHI

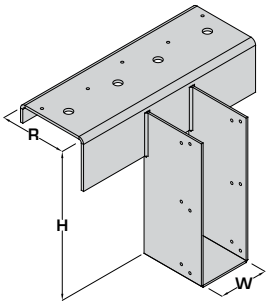
Dimensions (mm) continued

FMHI



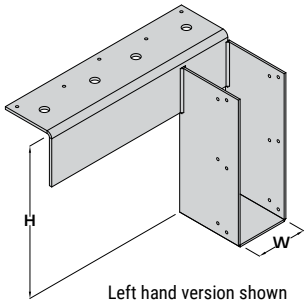
FMHI–W–H
Example:
FMHI–75–225

FMHIR – RETURN



FMHIR–W–H–R
Example:
FMHIR–100–225–100
(2mm added to return for tolerance)

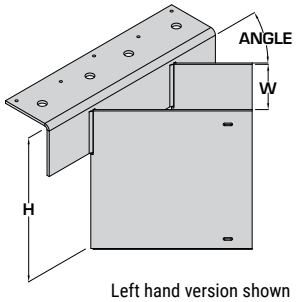
FMHIO – OFFSET



Left hand version shown

FMHIO–W–H–OFFSET DIRECTION
Example:
FMHIO–75–225–R
FMHIO–75–255–L

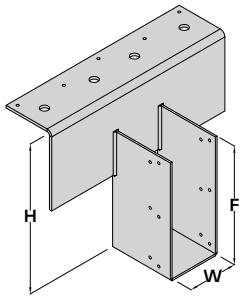
FMHIS – SKEW



Left hand version shown

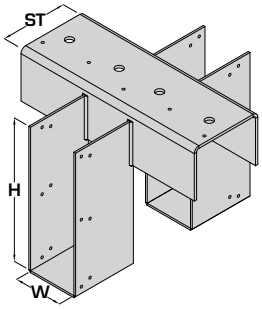
FMHIS–W–H–DIRECTION–ANGLE
Example:
FMHIS–75–225–L–45
FMHIS–100–250–R–67.5
(skews from 30–87.5º in 2.5º increments, with 5mm automatically added to ordered width to allow for tolerance)

FMHID – DROPPED



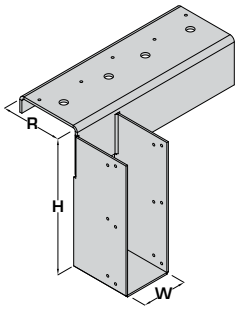
FMHID–W–H–F
Example:
FMHID–75–260–240

FMHIST – STRADDLE



FMHIST–W–H–ST
Example:
FMHIST–75–225–100
(2mm added to straddle for tolerance)

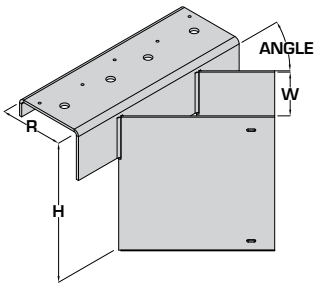
FMHIOR – OFFSET & RETURN



Right hand version shown

FMHIOR–W–H–OFFSET DIRECTION–R
Example:
FMHIOR–75–225–R–100
(2mm added to return for tolerance)

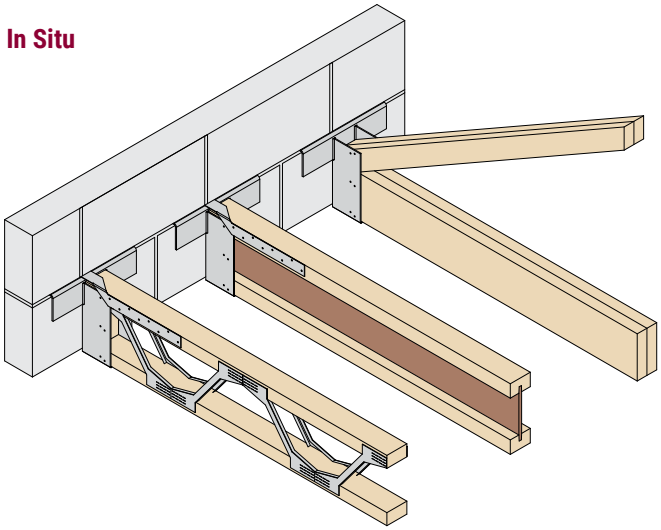
FMHIRS – SKEW & RETURN



Left hand version shown

FMHIRS–W–H–DIRECTION–ANGLE–R
Example:
FMHIRS–75–225–R–45–100
FMHIRS–75–225–L–45–100
(skews from 30–87.5º in 2.5º increments, with 5mm automatically added to ordered width to allow for tolerance)

In Situ



- Suitable for use with Open Web Joists, I–Joists and trusses
- Floor can be propped with acroprops and fully decked but must not be fully loaded until the masonry above has fully cured

- A minimum of **3 courses (675mm)** of masonry is required for hanger to achieve loads stated
- The masonry above must be fully cured for **28 days** prior to loading the floor
- All hangers in this range do not provide restraint, therefore restraint straps may be required for joist applications (see pages128 – 129)

FMHI

Flexible Masonry Hanger

Load Data

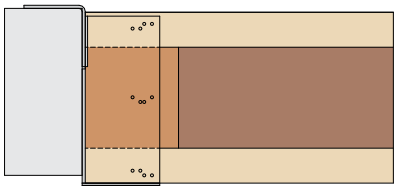
Hanger Type	Masonry Above (Min 675mm)	Fixings (3.4 x 35mm) Incoming	Angle	Characteristic Capacity (kN)				
				Uplift	Masonry Crushing Strength			
					2.8N/mm²	3.5N/mm²	7.0N/mm²	Padstone
FMHI/R	No	4	90°	n/a	–	20.01	28.31	–
FMHI/R	Yes	4	90°	2.00	19.83	24.79	43.00	43.00
FMHIS/FMHIRS	Yes	4	30 – 42.5°	2.00	9.98	12.48	18.30	20.00
			45 – 57.5°	2.00	12.48	15.60	22.90	25.00
			60 – 72.5°	2.00	14.97	18.72	27.50	30.00
			75 – 87.5°	2.00	17.44	21.80	32.00	35.00

Enhanced Uplift

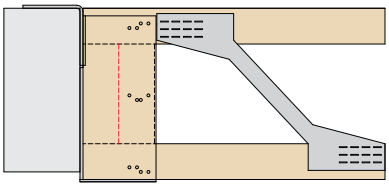
- Fixings into the incoming joist/truss are required to resist uplift
- Increased uplift figures can be achieved by nailing the additional triangular nail holes into the incoming member

Hanger Depth (H) (mm)	Min Timber Depth (mm)	Characteristic Capacity (kN) Uplift
150	97	4.67
175 – 195	122	
225 – 240	147	
250	147	
300	172	
350	197	
400	222	
150 – 400	FULL DEPTH	14.72

- Enhanced uplift only applicable for 90° hangers over 72mm wide
- Requires minimum **full storey** of masonry above to achieve values

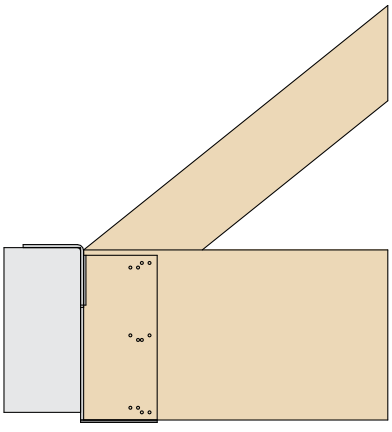


Web stiffeners required for I–Joists



2No end blocks required for Open Web Joists

Block must be the full width of the joist

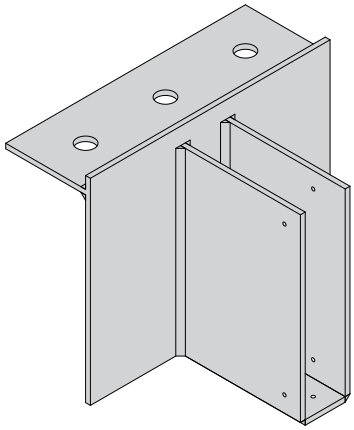


Plates omitted for clarity

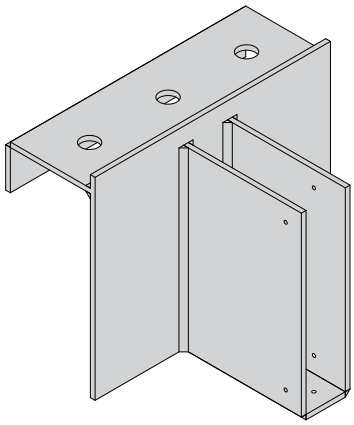
Minimum bottom chord depth or vertical required for trusses

M–STD/M–RTN

Very High Load Masonry Hanger



MASONRY–STD



MASONRY–RTN

The Masonry Standard and Masonry Return hangers are used to support joists and trusses from masonry walls in very high load situations.

Features & Benefits

- Partial penetration butt welds allow for greater performance over FMHI hanger
- Available in 2 thickness options to accommodate higher loads
- Return option available to keep hanger tight to masonry wall

Material Specification

- 6mm & 8mm mild steel with zinc phosphate undercoat and an organic bituminous top coat to BS EN845–1:2013+A1:2016

Fixings

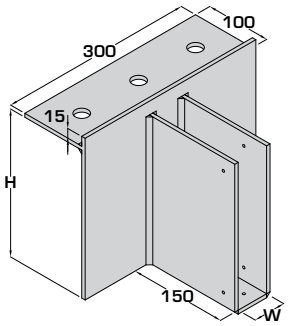
Fixings required into incoming member only. No fixings required into masonry.

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

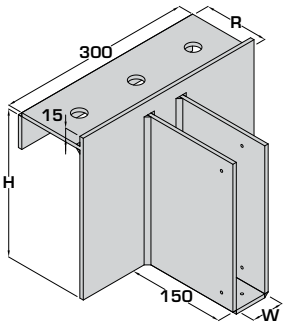
Dimensions (mm)

MASONRY–STD



MASONRY–STD–THICKNESS–W–H
Example:
MASONRY–STD–6MM–100–225

MASONRY–RTN



MASONRY–RTN–THICKNESS–W–H–R
Example:
MASONRY–RTN–8MM–100–225–100

Available Sizes

Hanger Widths (mm): 39 – 300

Hanger Depths (mm): 150 – 400

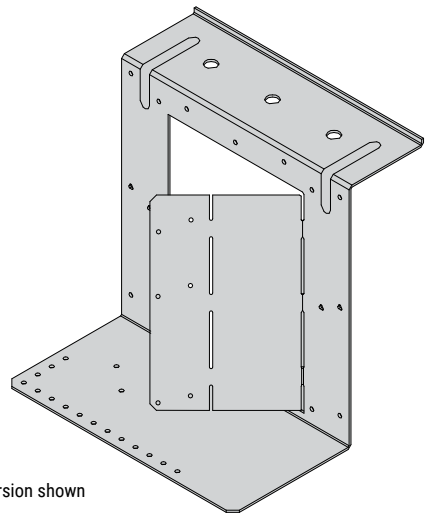
Contact Technical Support for skewed and straddle options

Load Data

Hanger Type	Masonry Above (Min 675mm)	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)				
			Uplift**	Masonry Crushing Strength			
		Incoming		2.8N/mm²	3.5N/mm²	7.0N/mm²	Padstone (Min C30)
Masonry–Std–6mm	Yes	6	2.00	30.00	38.00	50.00	50.00
Masonry–Rtn–6mm	Yes	6	2.00	30.00	38.00	50.00	70.00
Masonry–Std–8mm	Yes	6	2.00	40.00	42.00	50.00	50.00
Masonry–Rtn–8mm	Yes	6	2.00	40.00	42.00	60.00	90.00
Masonry–Std–6mm	No	6	0.00	30.00	38.00	50.00	50.00
Masonry–Rtn–6mm	No	6	0.00	30.00	38.00	50.00	70.00
Masonry–Std–8mm	No	6	0.00	40.00	42.00	50.00	50.00
Masonry–Rtn–8mm	No	6	0.00	40.00	42.00	60.00	90.00

VSM

Variable Skew Masonry Hanger



Right Hand version shown

The VSM hanger is used to support joists and trusses up to 97mm wide from masonry walls in skewed applications between 30 – 90°.

Features & Benefits

- Unique hanger design provides a variable skew angle between 30 – 90°
- No need to mitre cut joists
- Angle scale on base to ease adjustment

Material Specification

- Galvanised mild steel – Z600

Fixings

Fixings required into incoming member only. No fixings required into masonry.

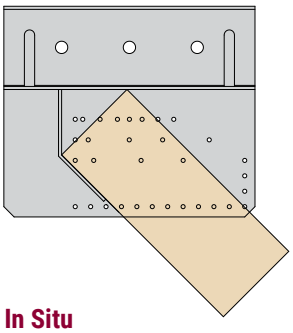
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

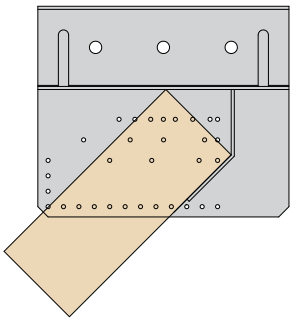
Available Sizes

Min Joist Width (mm)	Max Joist Width (mm)	Handing	Hanger Depth (H) (mm)			
			225	240	300	>300
38	97	Right	VSM–225–R	VSM–240–R	VSM–300–R	See FMHIS on pages 18 – 20
38	97	Left	VSM–225–L	VSM–240–L	VSM–300–L	
>97		See FMHIS on pages 18 – 20				

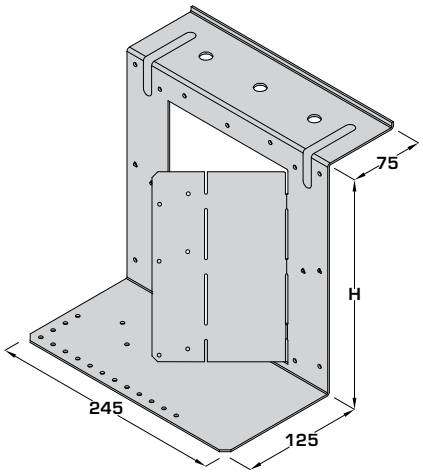
Left Hand



Right Hand



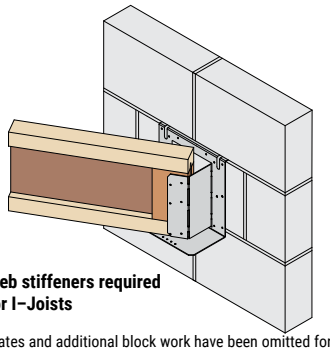
Dimensions (mm)



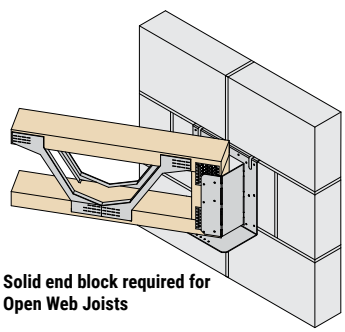
In Situ

- Suitable for use with Open Web Joists, I–Joists and trusses.
- Floor can be propped with acroprops and fully decked but must not be fully loaded until the masonry above has fully cured.

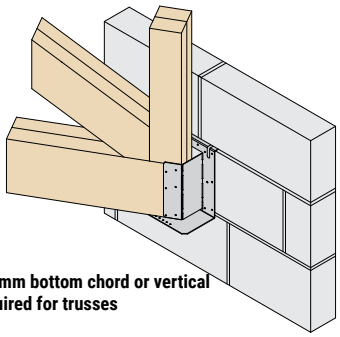
- A minimum of **3 courses (675mm)** of masonry above is required for hanger to achieve loads stated.
- The masonry above must be fully cured for **28 days** prior to loading the floor.



Web stiffeners required for I–Joists



Solid end block required for Open Web Joists



222mm bottom chord or vertical required for trusses

Plates and additional block work have been omitted for clarity

VSM

Load Data

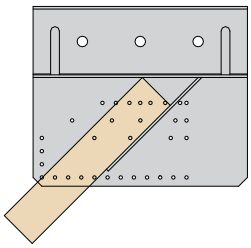
Hanger Depth (mm)	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)			
		Uplift	Masonry Crushing Strength		
	Incoming		2.8N/mm²	3.5N/mm²	7.0N/mm²
225/240/300	6	2.40	8.32	10.40	10.40

Installation Instructions

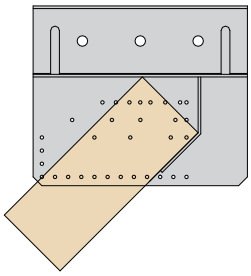
Stage 1

Adjust side plate to approximate angle between 30° and 90° using scale on base of hanger, bending only once. Refer to the angle table below to determine if one or two bends are required.

Single Bend



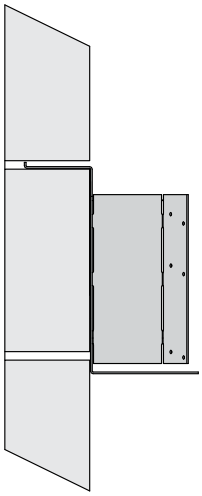
Double Bend

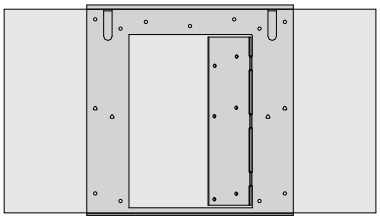


Joist Width (mm)	Double bend	Single Bend
35	n/a	30–90°
38	n/a	30–90°
44	n/a	30–90°
45	n/a	30–90°
47	n/a	30–90°
51	30–32°	>32–90°
53	30–32°	>32–90°
58	30–34°	>34–90°
59	30–34°	>34–90°
60	30–34°	>35–90°
63	30–37°	>37–90°
70	30–39°	>39–90°
72	30–40°	>40–90°
76	30–42°	>42–90°
88	30–46°	>46–90°
89	30–46°	>46–90°
90	30–46°	>46–90°
94	30–48°	>48–90°
97	30–49°	>49–90°

Stage 2

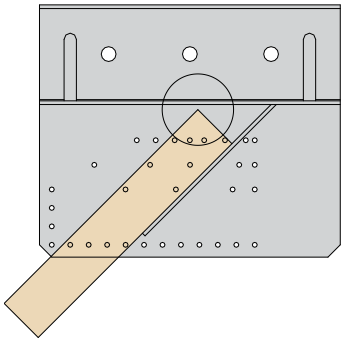
Position VSM flush against masonry.

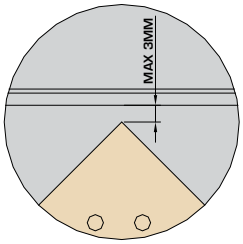




Stage 3

Locate incoming member and adjust side plate to correct angle, ensuring maximum gap between incoming joist and back plate is no greater than 3mm.

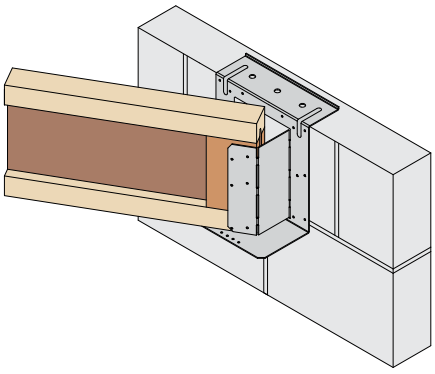




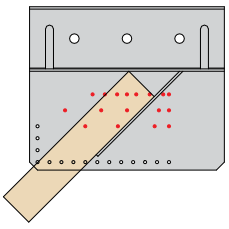
Max – 3mm gap at any given time

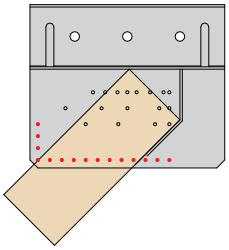
Stage 4

Fix to incoming member using 6No 3.4 x 35mm square twist nails. Where incoming member is an I–joist, web stiffeners must be fixed as per I–joist manufacturer's guidelines.



Ensure that 1No inner nail hole (indicated in red) and 1No outer nail hole (indicated in red) are filled on the underside with a 3.4 x 35mm square twist nail.

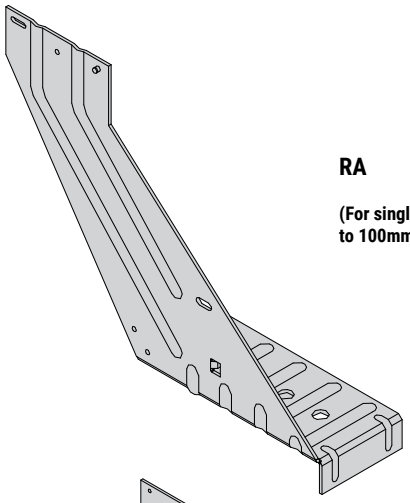




RA Range

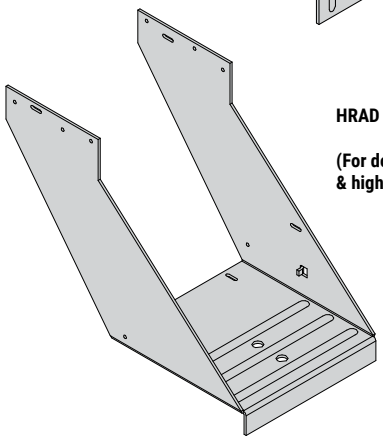
Restraint Angle Range

UK CA



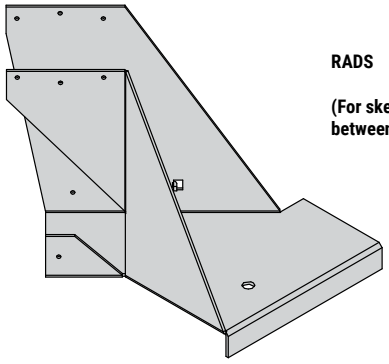
RA

(For single joists up to 100mm wide)



HRAD

(For double joists & high loads)



RADS

(For skewed applications between 30 – 87.5°)

The RA hanger range comprises of 3 hangers to suit all applications: the RA, HRAD and RADS. This is a timber to masonry hanger range designed for use with I–Joists, Open Web Joists, LVL & Glulam. The hangers provide lateral restraint(1) and require no masonry above to perform to their full capacity.

Features & Benefits

- Provides lateral restraint ((1)equivalent to restraint straps at 2m centres. Additional straps required for buildings over 2 storeys or openings greater than 600mm)
- No coursing option required as RA range supports joists on top of previous block course, allowing joist to be built in at one end without adjustment
- Supporting block work only needs to cure for 3 days instead of the standard 28 days for traditional masonry hangers, speeding up the build process

Material Specification

- Galvanised mild steel – Z600

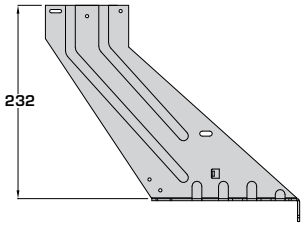
Fixings

Fixings required into incoming member only. No fixings required into masonry.

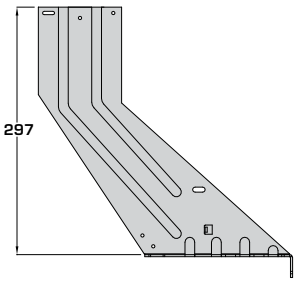
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

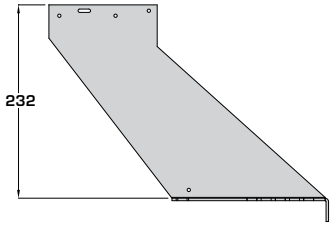
Height Suitability**



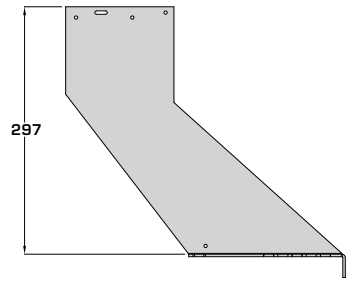
RA–240
(To suit 235 – 245 deep I–Joists)
(To suit 253 – 254 deep Open Web Joists)



RA–300
(To suit 300 – 302 deep I–Joists)
(To suit 304 deep Open Web Joists)



HRAD–240
(To suit 235–245 deep I–Joists)
(To suit 253–254 deep Open Web Joists)



HRAD–300
(To suit 300–302 deep I–Joists)
(To suit 304 deep Open Web Joists)

**Also applies to RADS hangers

RA Range

Available Sizes (RA)

Hanger Width (W) (mm)	Hanger Depth (H) (mm)	
	240	300
One size (to suit joist widths 38 – 97mm wide)	RA–240	RA–300

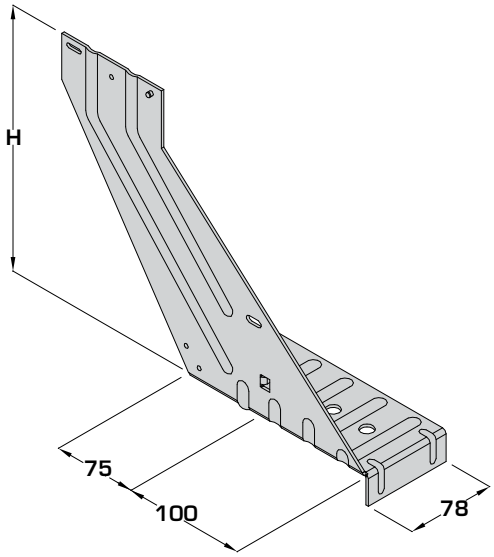
RA–H

Example: RA–240

(TO SUIT 100MM BLOCKWORK ONLY)

Dimensions (mm)

RA HANGER



Available Sizes (HRAD)

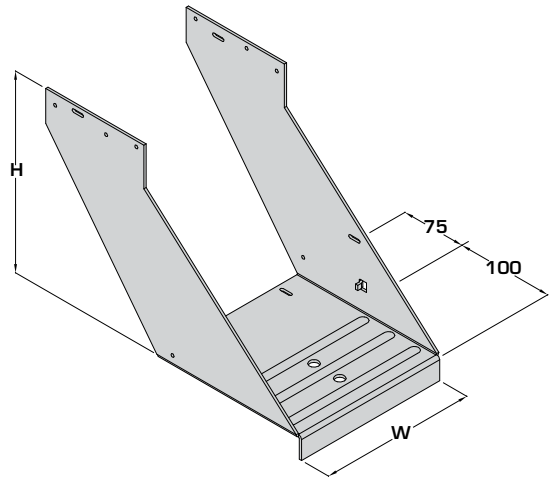
Hanger Width (W) (mm)	Hanger Depth (H) (mm)	
	240	300
92	HRAD–240–92	HRAD–300–92
100	HRAD–240–100	HRAD–300–100
122	HRAD–240–122	–
125	HRAD–240–125	–
144	–	HRAD–300–144
150	HRAD–240–150	–
198	HRAD–240–198	HRAD–300–198
250	HRAD–240–250	–
300	HRAD–240–300	–

HRAD–H–W

Example: HRAD–240–92

(TO SUIT 100MM BLOCKWORK ONLY)

HRAD HANGER



Available Sizes (RADS)

For skewed connections the RADS is made to order upon request.

TO ORDER:

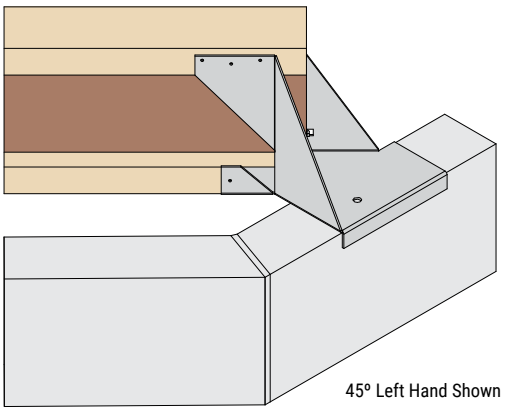
RAD–S–ANGLE–ORIENTATION–DEPTH–WIDTH

Example: RAD–S–45–L–240–46 (to suit 100mm block work)

Available in angles between 30 – 87.5°.

Increments of 2.5° (30, 32.5, 35, 37.5...)

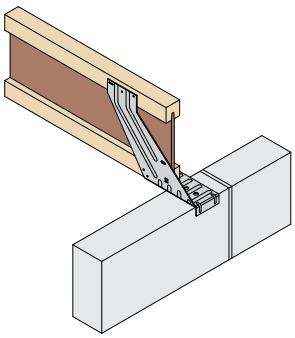
RADS HANGER



RA Range

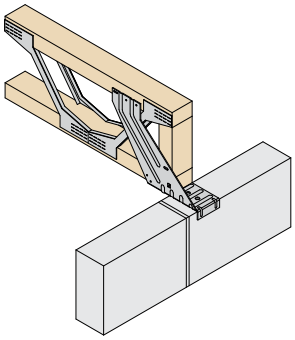
Restraint Angle Range

Load Data



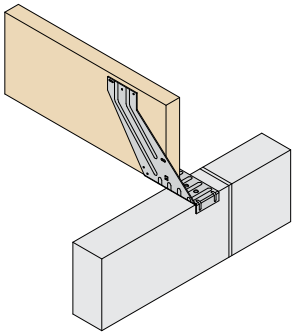
Hanger Type	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)			
	I–Joist	Uplift*	Masonry Crushing Strength		
			2.8N/mm²	3.5N/mm²	7.0N/mm²
RA	6	7.11	9.10	11.38	11.38
HRAD	12	7.11	22.51	28.14	28.14
RADS	9	7.11	11.48	14.35	14.35

*Uplift only applicable when hangers are fully built in with a minimum of 675mm of fully cured masonry above the base plate.



Hanger Type	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)			
	Open Web Joist	Uplift*	Masonry Crushing Strength		
			2.8N/mm²	3.5N/mm²	7.0N/mm²
RA	6	7.11	9.10	11.38	11.38
HRAD	12	7.11	22.51	28.14	28.14
RADS	9	7.11	11.48	14.35	14.35

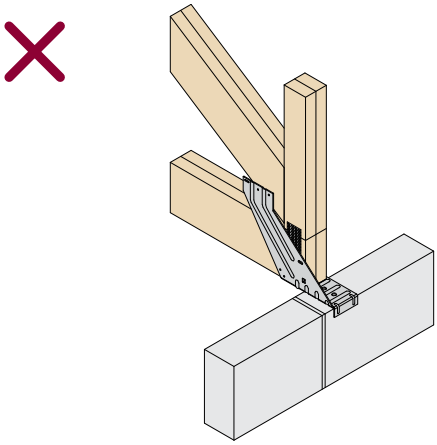
*Uplift only applicable when hangers are fully built in with a minimum of 675mm of fully cured masonry above the base plate.



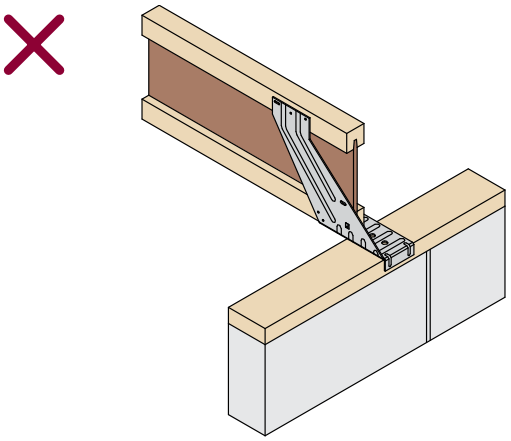
Hanger Type	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)			
	LVL/GL	Uplift*	Masonry Crushing Strength		
			2.8N/mm²	3.5N/mm²	7.0N/mm²
RA	6	7.11	11.49	14.37	14.37
HRAD	12	7.11	27.34	34.18	34.18
RADS	9	7.11	11.48	14.35	14.35

*Uplift only applicable when hangers are fully built in with a minimum of 675mm of fully cured masonry above the base plate.

Incorrect Installation



Do not use the RA range with trussed rafters.

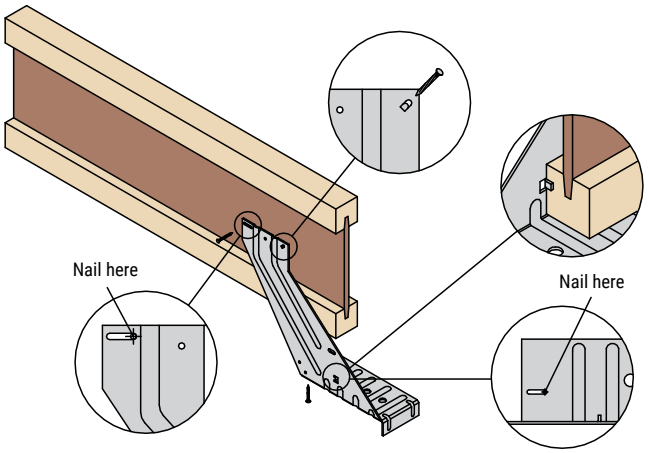


Do not install the RA range onto a timber wall plate.

RA Range

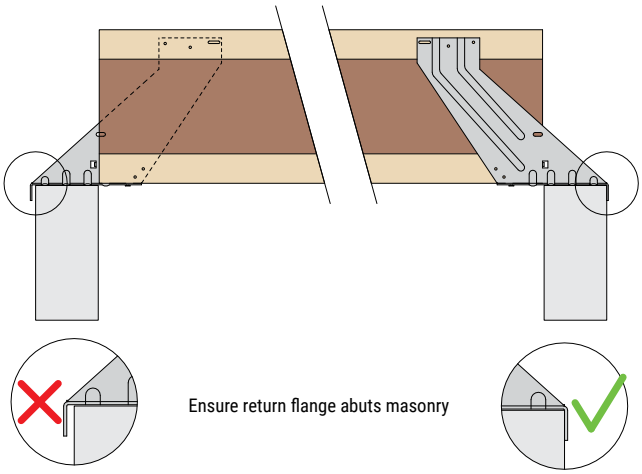
Installation Instructions

Stage 1 – INSTALLATION



- Ensure joists just fit between the walls
- If using I–joists and they are too long, trim to fit
- Position joist against location tab
- Pre–fix RA to each end of pre–cut joist, nailing through slotted holes in base plate and side flange only, as shown
- Slide to opposite side of slots to provide full 6mm adjustment on wall head
- Always pre–fix hangers at ground level or on scaffolding

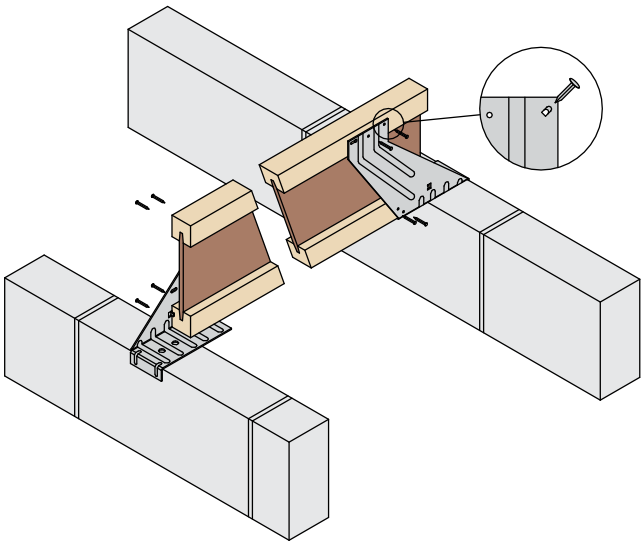
Stage 2 – ADJUSTMENT



- Locate assembled joist on wall head allowing equaladjustment at both ends
- Adjust each end by tapping with a hammer untilreturn flange is correctly positioned tight againstblockwork
- This stage provides a maximum horizontal adjustment of 12mm and suits blockwork built toBS5606:1990 Accuracy in Building

Ensure return flange abuts masonry

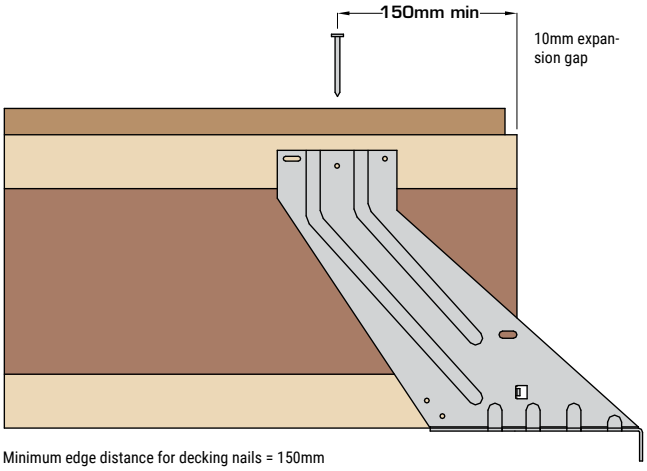
Stage 3 – FINAL ADJUSTMENT



- Fully nail using 3.4 x 35mm square twist nails

DO NOT apply any load to joist prior to RA being fully nailed

DECKING INSTALLATION FOR FLOORS

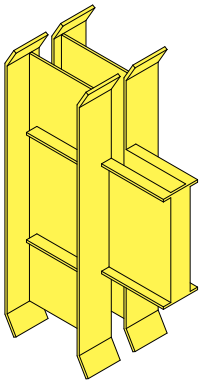


Minimum edge distance for decking nails = 150mm

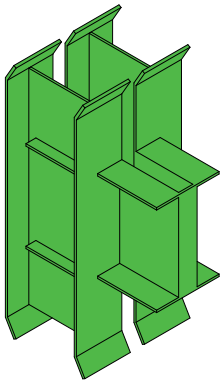
HV–GR

Hi–Vis Gripper

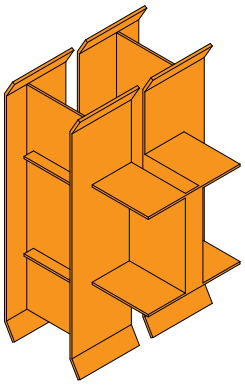
Patent Pending



HV–GR–1
38 – 53MM WIDE



HV–GR–2
58 – 72MM WIDE



HV–GR–3
89 – 97MM WIDE

The Hi–Vis Gripper is a build–in detail for I–joists into masonry providing an air–tight seal at joist end. The Hi–Vis Gripper can be used on both external and party walls.

Features & Benefits

- Range of striking colours and unique design enables high visibility for post installation inspection
- Bend and push fit with no mortar to front face speeds up install
- Easy to install – no nailing required or need to trim joists to fit, saving time on site
- Mastic not required to seal I–Joist perimeter, reducing site costs
- Suitable for joists with either 90 or 100mm bearingwithout protruding into cavity
- A major contribution to compliance with air leakage

Build–in Detail Advantages

(Requiring external mortar sealing only)

- In line with existing building practice
- Easy access
- Quick and effective
- Visual quality check from outside

Approvals

- Meets NHBC technical requirements
- Part E: Compliant with the requirements of Appendix A of the Robust Details Part E Handbook
- Assessed to BS ISO–TR12470:1998 for 60 minute fire requirements

Material Specification

High density Polyethylene

Additional parallel and perpendicular restraint may be required. Please refer to pages 128 – 129 for further guidance on built in restraint.

Available Sizes

Joist Manufacturer	Flange Depth (mm)	Joist Depth (mm)	Joist Width (mm)		
			38 – 53	58 – 72	89 – 97
James Jones (JJI)	45	220	HV–GR–220–1	HV–GR–220–2	HV–GR–220–3
		245	HV–GR–240–1	HV–GR–240–2	HV–GR–240–3
		300	HV–GR–300–1	HV–GR–300–2	HV–GR–300–3
Metsawood (FJI)	36 & 39	220	HV–GR–220–1	HV–GR–220–2	HV–GR–220–3
		240	HV–GR–240–1	HV–GR–240–2	HV–GR–240–3
		300	HV–GR–300–1	HV–GR–300–2	HV–GR–300–3
Steico (SJI)	39	220	HV–GR–220–1	HV–GR–220–2	HV–GR–220–3
		240	HV–GR–240–1	HV–GR–240–2	HV–GR–240–3
		300	HV–GR–300–1	HV–GR–300–2	HV–GR–300–3
Masonite (H, HB, HI, HL, HM)	47	220	HV–GR–220–1	HV–GR–220–2	HV–GR–220–3
		240	HV–GR–240–1	HV–GR–240–2	HV–GR–240–3
		300	HV–GR–300–1	HV–GR–300–2	HV–GR–300–3

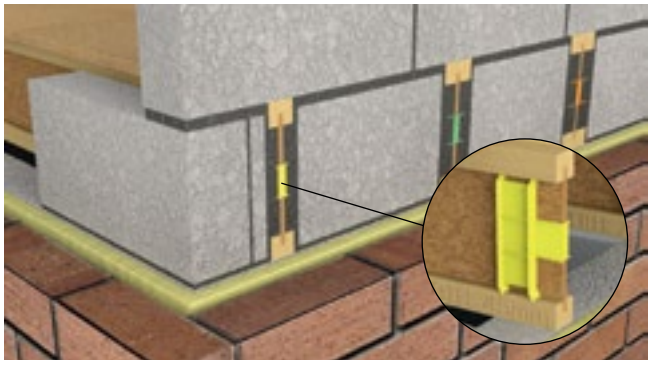
HV–GR

Hi–Vis Gripper

Patent Pending

External Wall Application

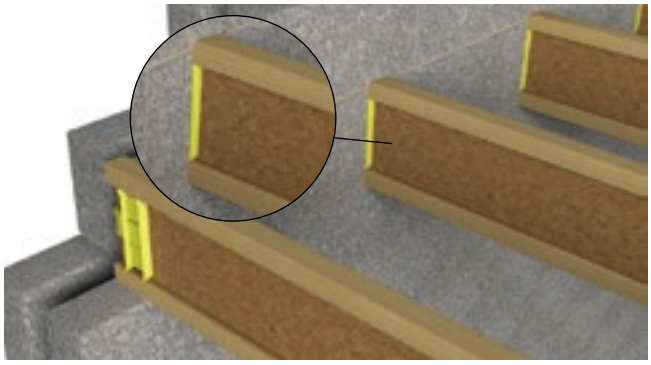
Install the I–Joists onto the masonry at required centres ensuring that they each have a minimum bearing onto the masonry of 90mm.



Mortar cavity side to achieve air tightness performance.

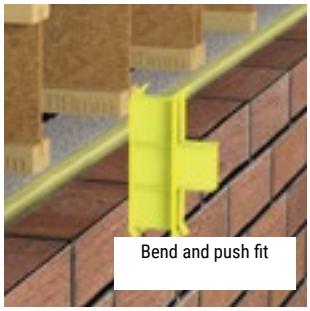
Party Wall Application

Install the I–Joists onto the masonry at required centres ensuring that they each have a minimum bearing onto the masonry of 90mm.



Mortar cavity side to achieve 60 minute Fire Rating and air tightness performance.

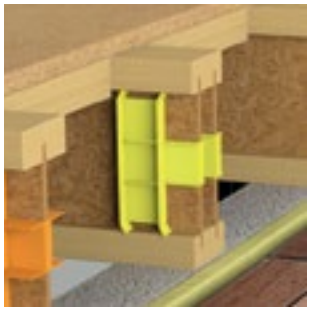
Single Ply



Place the Hi–Vis Gripper onto one end of the I–Joist to be built into the masonry. Push fit until it is fully engaged. Ensure it tightly abuts the I–Joist web and that both ends of the Hi–Vis Gripper tightly abut the I–Joist flanges.

Double Ply

Second Hi–Vis Gripper abuts first to provide an air tight seal.



Installation of the Hi–Vis Gripper is now complete.

Double I–Joists must be securely joined with I–Clips.

Installation Instructions

Stage 1

Install joists and deck as per manufacturer's instructions. Select the correct Hi–Vis Gripper to suit joist width, fold on its easy fold hinges and push onto the end of the joist, no additional fixing required.

Stage 2

Lay mortar bed between joists, add mortar to perp end of block. Install block between joists tight to face of Hi–Vis Gripper.

Stage 3

Add mortar to void created between block, joist and Hi–Vis Gripper and flush up.

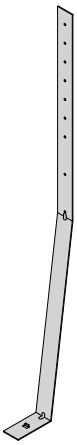
Stage 4

Ends of joist can be inspected to ensure correct installation before external brickwork built up.

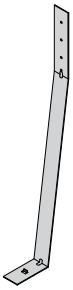
Stage 5

No mortar or mastic required to internal face. Hi–Vis Grippers visible for post installation inspection prior to plasterboard being installed.

Timber Frame Overview

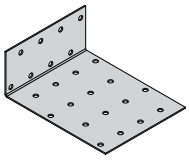


ST–PFS
Page 31

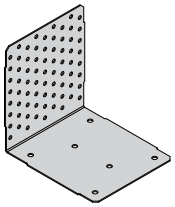


ST–PFS–M
Page 31

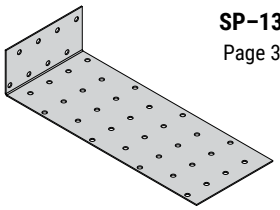
TIMBER FRAME HOLDING DOWN STRAPS



SP–90
Page 32

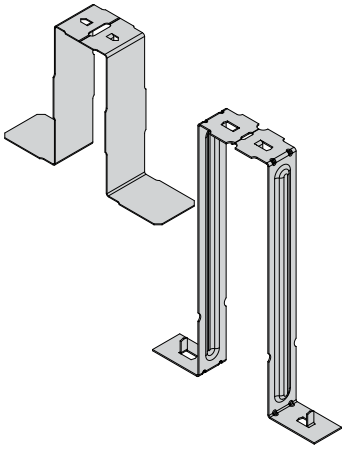


SP–138
Page 32



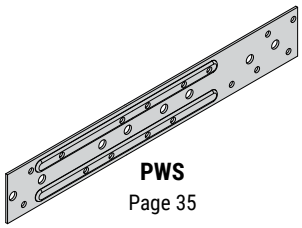
SP–240
Page 32

SOLE PLATE ANCHORS

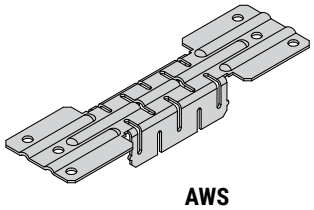


IR–CLIP
Page 33

INSULATING RETAINING CLIPS

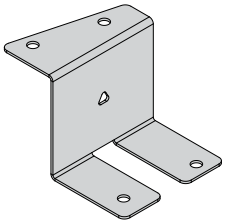


PWS
Page 35



AWS
Page 34

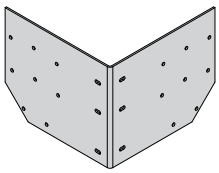
PARTY WALL STRAPS



UZ CLIP
Page 45

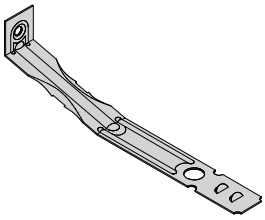
PSTS
Page 36

PANEL CONSTRUCTION

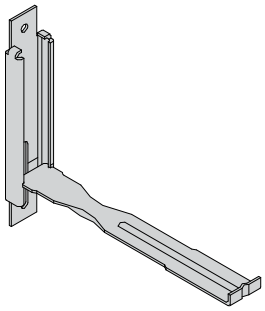


RD–CDCR
Page 37

DISPROPORTIONATE COLLAPSE CONNECTIONS



FT
Page 39 – 42

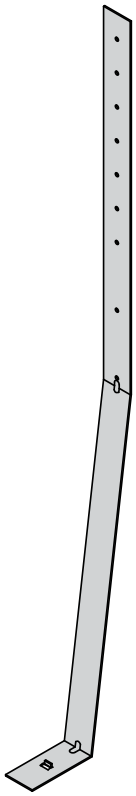


HMT
Page 43 – 44

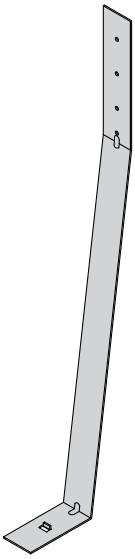
TIMBER FRAME WALL TIES

ST–PFS/ST–PFS–M

Timber Frame Holding Down Strap



ST–PFS–50–100



ST–PFS–50–100––M

The ST–PFS and ST–PFS–M stainless steel straps are an engineered solution to restrain timber structures against uplift when using either timber joists, engineered joists or concrete ground floors.

Features & Benefits

- Unique design allows one part to accommodatecavities between 50 – 100mm wide
- Provides unparalleled performance in restraint against uplift to timber frame structures
- Centrally positioned holes minimising any nail slippage or timber splitting

Material Specification

- Austenitic stainless steel

Approvals

- Meets NHBC & Homebond technical requirements

Fixings

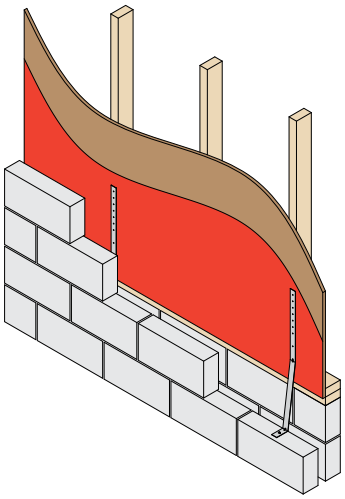
3.35 x 50mm Annular Ring Shank Nails

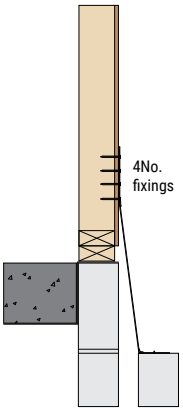
Code	Box Qty
ST–PFS–FIXING–PACK	150
ST–ST–WALLTIE–NAILS–250	250

100No fixings required for ST–PFS–M bundle

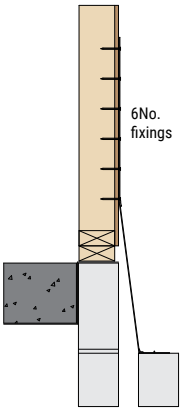
150No fixings required for ST–PFS bundle

In Situ

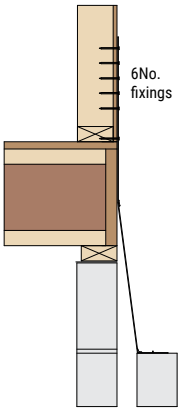




Typical Concrete Ground Floor ST–PFS–50–100–M

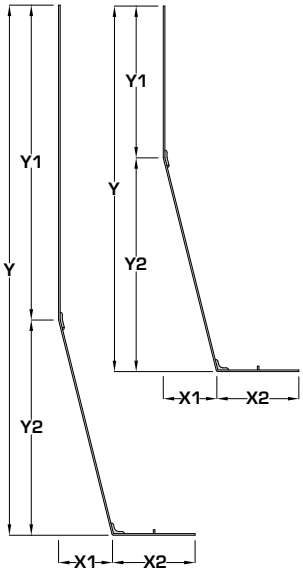


Typical Concrete Ground Floor ST–PFS–50–100



Typical Suspended Ground Floor ST–PFS–50–100

Dimensions (mm)

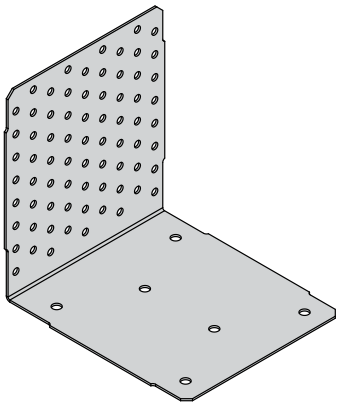


Load Data

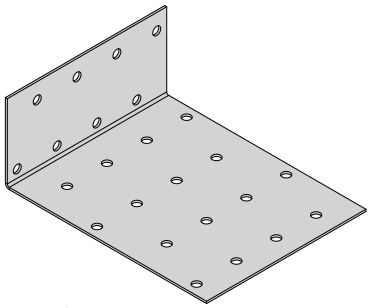
Product Code	Min Cavity Width (mm)	Max Cavity Width (mm)	Fixings (3.35 x 50mm)	Dimensions (mm)					Characteristic Capacity (kN)
				X1	X2	Y	Y1	Y2	
ST–PFS–50–100	50	100	6	50 – 100	75	722 – 711	346	376 – 365	6.90
ST–PFS–50–100–M	50	100	4	50 – 100	75	506 – 516	140	376 – 365	5.40

SP

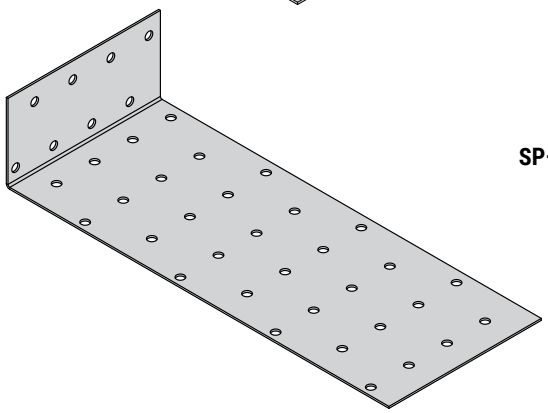
Sole Plate Anchor



SP–90



SP–138



SP–240

The SP anchor range comprises of 3 anchors to suit various applications. The anchors are designed to locate and anchor timber sole plates.

Features & Benefits

- Multiple nail holes offering various nailing options
- Provides secure location without puncturing the DPC

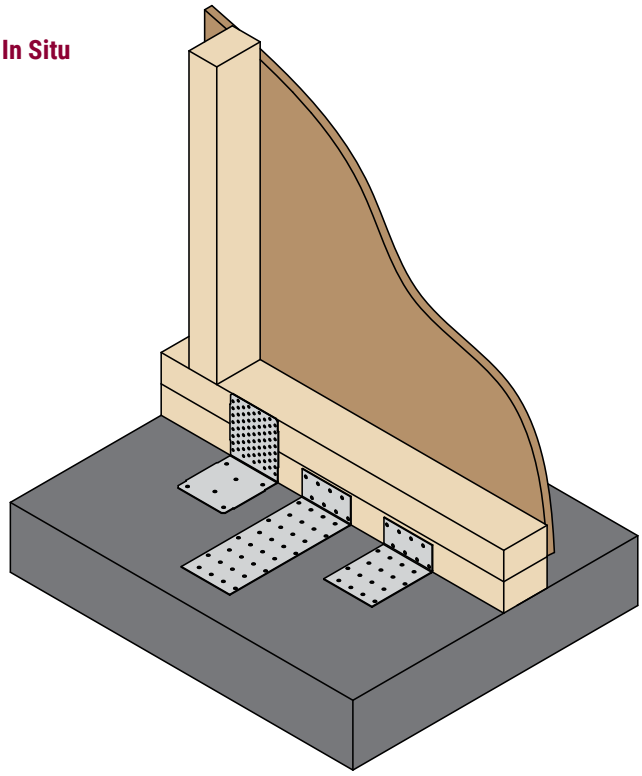
Material Specification

- Galvanised mild steel – Z275

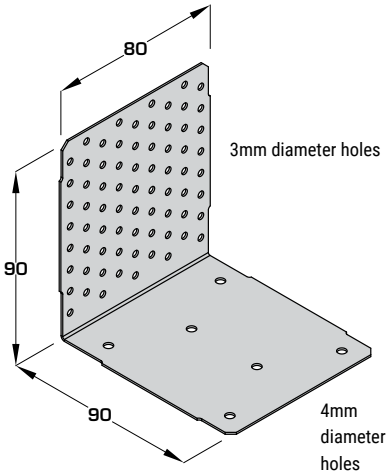
Fixings

Fixings to be specified by Building Designer

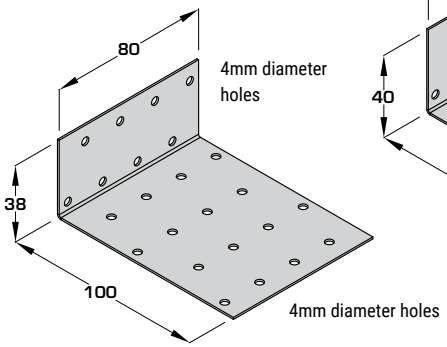
In Situ



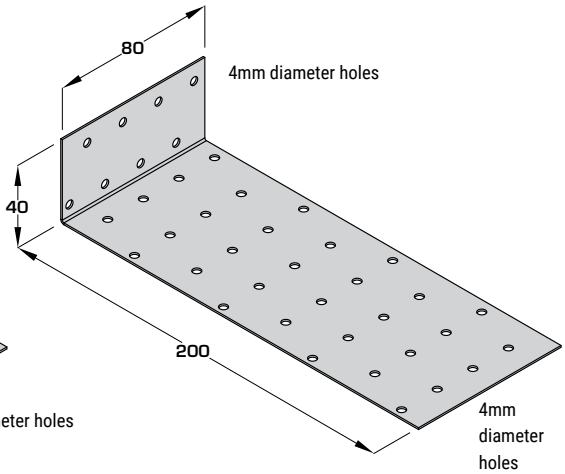
Dimensions (mm)



SP–90



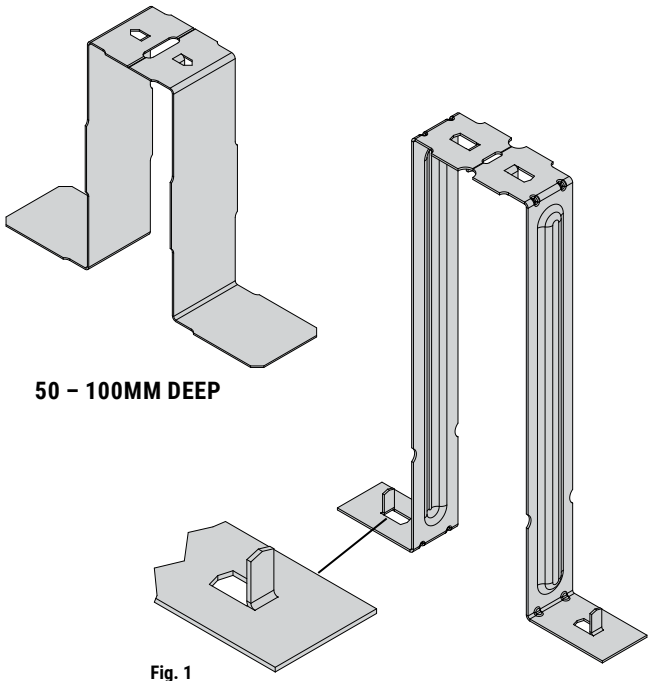
SP–138



SP–240

IR–CLIP

Insulation Retaining Clip



50 – 100MM DEEP

110 – 130MM DEEP

Fig. 1
Toothed Base Plate

The IR–Clip allows for the use of high performance rigid insulation within a timber frame panel, whilst maintaining a service gap.

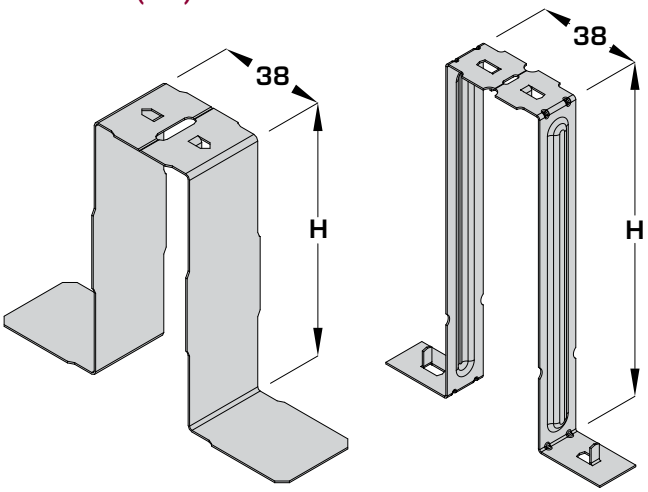
Features & Benefits

- Snap–off detail splits the IR–Clip into two halves, for use on multiple studs or single use applications i.e panel ends
- Speeds up panel manufacturing time, as insulationand OSB can be fitted from the same side
- Toothed profile to allow easy installation with no nailsor screws required
- Guaranteed service void (2No IR–Clips can be used to create two void areas within a panel)

Material Specification

- Galvanised mild steel – Z275

Dimensions (mm)



50 – 100MM DEEP

110 – 130MM DEEP

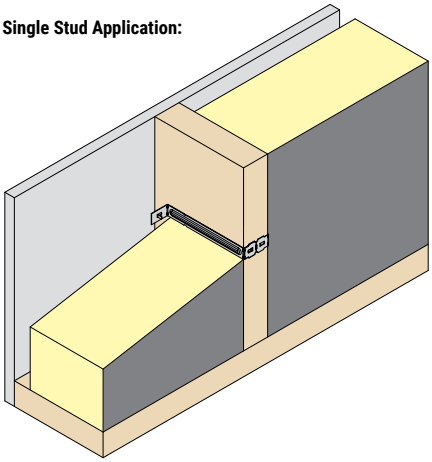
Available Sizes

Product Code	Height (H) (mm)
IR–Clip–70	70
IR–Clip–100	100
IR–Clip–110	110
IR–Clip–120	120
IR–Clip–130	130

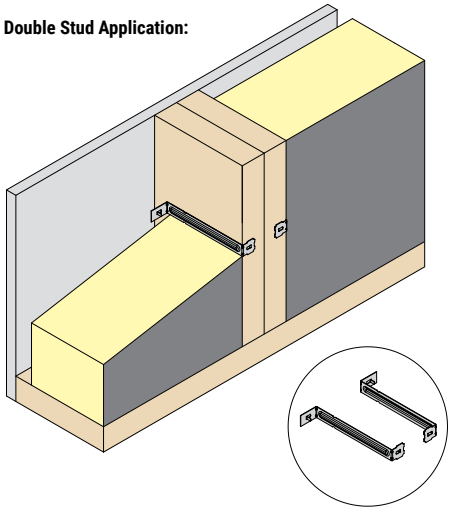
In Situ

Quantity required to be confirmed by Building Designer / Manufacturer (Non Structural item)

Single Stud Application:



Double Stud Application:



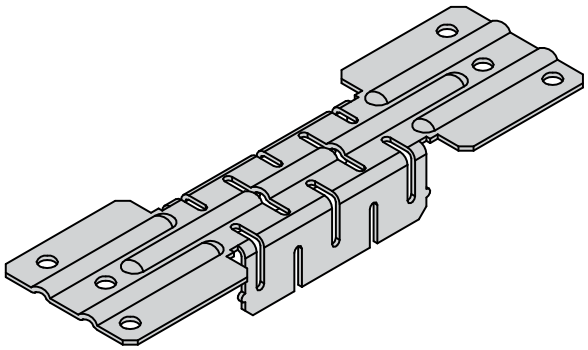
AWS

Acoustic Wall Strap

GB Patent: 2448765

UKTA–21/0008

ETA–20/0999



The AWS wall straps are used to connect separating walls in attached dwellings.

Features & Benefits

- Special design allows for greater strength and acoustic properties over standard straps
- Ensures correct cavity width, eliminating site errors
- Increased compression and tension strength enabling greater transfer of wind loadings
- Unique slotted profile reduces sound transmission

Material Specification

- Galvanised mild steel – Z275

Approvals

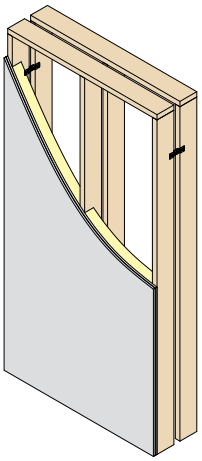
- Compliant with Part E (England & Wales) – Part E & Approved Document E
- Compliant with Part E (Ireland)
- Compliant with E–WT–1 & E–WT–2 (Robust Details)for separating wall straps
- Compliant with Building Standards Scotland – Section 5 (Noise)
- Compliant with Regulation G2 Northern Ireland – DOE Technical Booklet G

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

In Situ

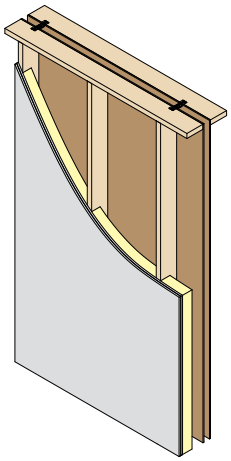


E–WT–1
(timber frame cavity wall without sheathing)

AWS fixed to face of panel.

Straps at 1200mm (min) centres horizontally, one row of ties per storey height vertically.

To be positioned near top of panel.

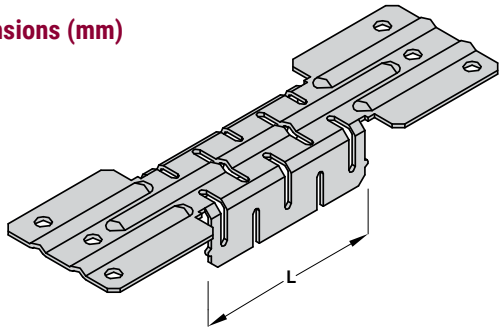


E–WT–2
(timber frame cavity wall with sheathing)

AWS fixed to top rail.

Straps at 1200mm (min) centres horizontally, one row of ties per storey height vertically.

Dimensions (mm)



Load Data

Product Code	L (mm)	Cavity Width (mm)	Fixings (3.4 x 35mm)	Safe Working Load (kN) Compression & Tension Short Term	Characteristic Capacity (kN) Compression & Tension**
AWS–50	50	50	6	1.70	3.20
AWS–65	65	65	6	1.70	3.20

**Values obtained from tests carried out by ITW Construction Products Offsite and calculated in accordance with ETAG 015.

PWS

Party Wall Strap

UKTA–21/0008

ETA–20/0999

The PWS wall straps are used to connect separating walls in attached dwellings.

Features & Benefits

- 2 parts can accommodate cavity widths from 50 – 100mm

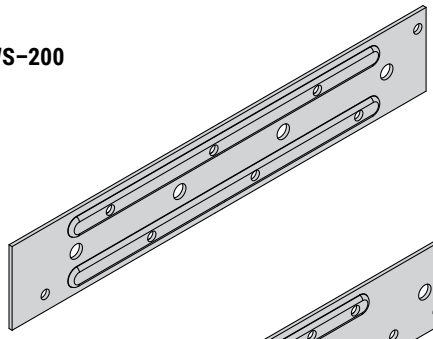
Material Specification

- Galvanised mild steel – Z275

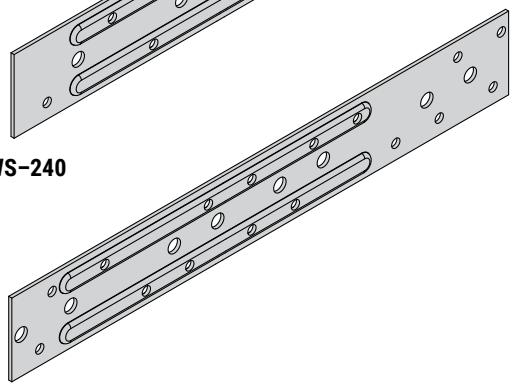
Approvals

- Compliant with Part E (England & Wales) – Part E & Approved Document E
- Compliant with Part E (Ireland)
- Compliant with E–WT–1 & E–WT–2 (Robust Details)for separating wall straps
- Compliant with Building Standards Scotland – Section 5 (Noise)
- Compliant with Regulation G2 Northern Ireland – DOE Technical Booklet G

PWS–200



PWS–240

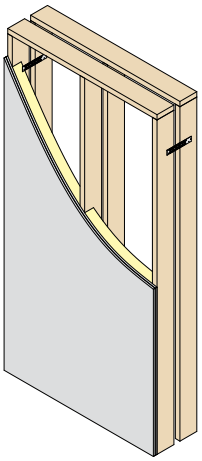


Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

In Situ



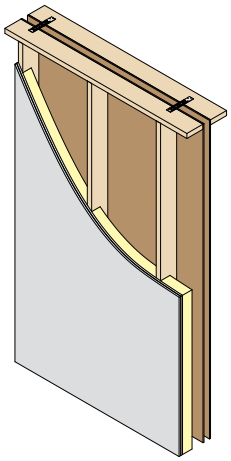
E–WT–1
(timber frame cavity wall without sheathing)

PWS fixed to face of panel.

Straps at 1200mm (min) centres horizontally, one row of ties per storey height vertically.

To be positioned near top of panel.

Nails to have minimum 20mm edge distance.



E–WT–2
(timber frame cavity wall with sheathing)

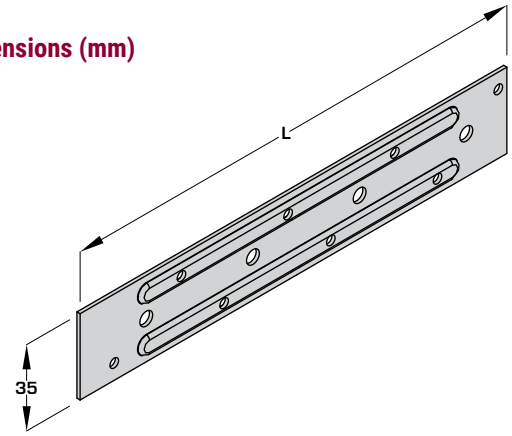
PWS fixed to top rail.

Straps at 1200mm (min) centres horizontally, one row of ties per storey height vertically.

When levels change straps should be fixed to the face of the panel.

Nails to have minimum 20mm edge distance.

Dimensions (mm)



Load Data

Product Code	L (mm)	Cavity Width (mm)	Fixings (3.4 x 35mm)	Safe Working Load (kN) Compression & Tension Short Term	Characteristic Capacity (kN) Compression & Tension
PWS–200	200	50 – 75	6	1.70	2.70
PWS–240	240	76 – 100	6	1.20	1.70

PSTS

Open Panel Connection (8mm)

CE UKCA
EN 14592

The Paslode Structural Screws are specifically designed for the UK Construction market. The 8mm diameter screws can quickly and easily join timber frame panels together.

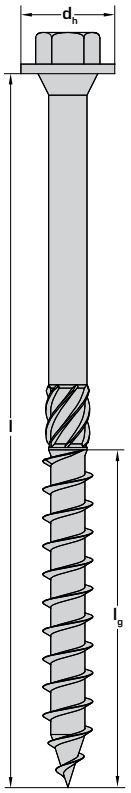
Features & Benefits

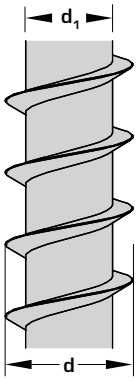
- Draws panels tightly together to maximise strength and minimise air leakage
- Higher lateral load capacity than nails or conventional screws
- Suitable for Service Class 2

Available Sizes For Application

Code	Reference	Description	Box Qty
551110	PSTS8.0x65	Structural Timber Screw 8.0 x 65mm Hex Head	100
551103	PSTS8.0x85	Structural Timber Screw 8.0 x 85mm Hex Head	100

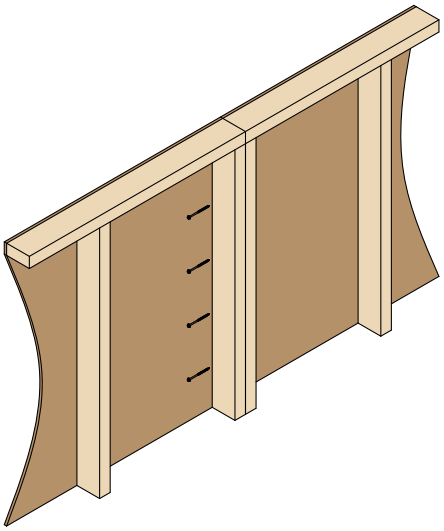
Dimensions (mm)





	PSTS 8.0 x 65 (mm)	PSTS 8.0 x 85 (mm)
d_h	16.00	16.00
l	65.00	85.00
l_g	52.00	52.00
d_1	5.25	5.25
d	8.00	8.00

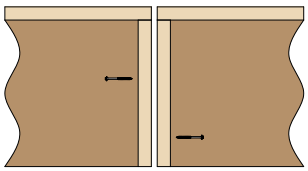
In Situ

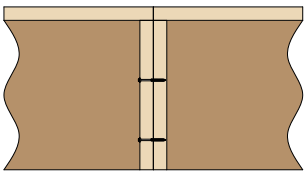


PSTS to be fixed at panel joints to engineer's specification.

PSTS can be fixed from both sides.

Once installed panels will be drawn tightly together to maximise strength and minimise air leakage.



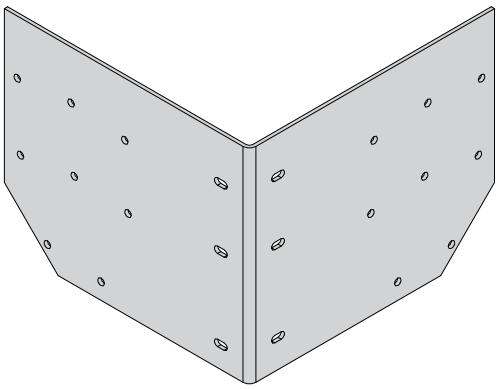


Load Data

Thickness of Each Member (mm)	Length of Fastener (mm)	Long–Term Permissable Lateral Load–Carrying Capacity (kN) of 2 Member Joints Made From			Characteristic Lateral Load–Carrying Capacity (kN) of 2 Member Joints Made From		
		C16	C24	TR26	C16	C24	TR26
35	65	0.74	0.84	0.88	1.78	1.99	2.07
38	65	0.70	0.79	0.84	1.68	1.86	1.99
45	85	0.97	1.10	1.16	2.37	2.65	2.75
47	85	0.98	1.10	1.17	2.34	2.62	2.72

RD–CDCR

Corner Disproportionate Collapse Restraint



The RD–CDCR hanger is a disproportionate collapse detail for connecting rim beams at corner junctions.

Features & Benefits

- Face fixed corner bracket with high load connectionavoids base plate compromising air tightness of the rim beam
- One bracket to suit all joist depths

Material Specification

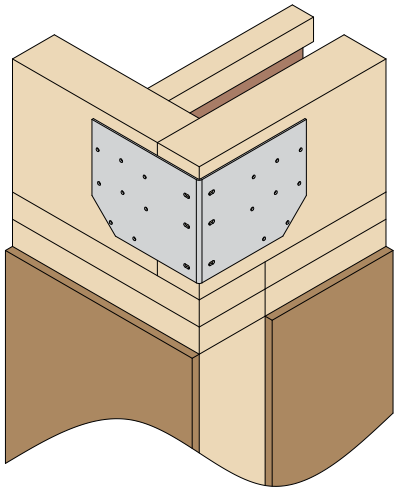
- Galvanised mild steel – Z275

Fixings

16No Paslode PSTS 6.5 x 35mm supplied with hanger

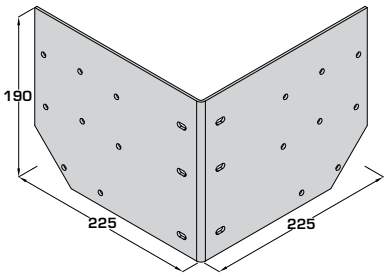
3No Paslode PSTS 6.5 x 115mm supplied with hanger

In Situ



Must be installed on the outer side

Dimensions (mm)



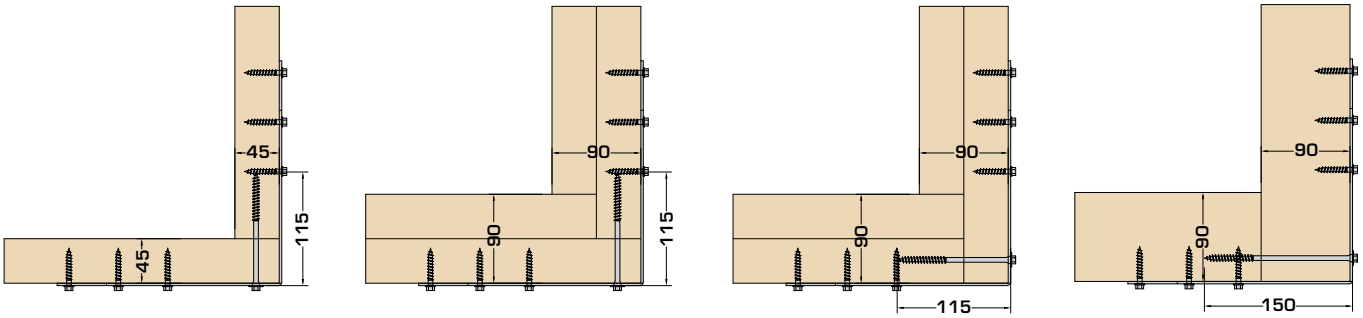
Installation

Suitable for 45mm and 90mm rim beams as shown in installations below.

150mm long screws are required when installing 90mm rim beams.

Code	Description	Box Qty
551107	PSTS 6.5 x 150	100

Contact Technical Support to dicuss other applications.



Load Data

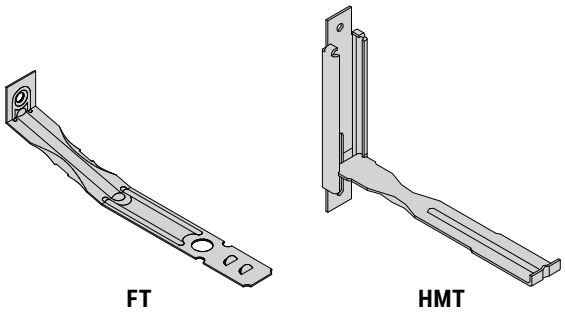
Product Code	Joist Depth (mm)		Fixings		Characteristic Capacity (kN)*
	Min	Max	PSTS 6.5 x 35mm	PSTS 6.5 x 115mm	
RD–CDCR	220	304	16	3	25.00

*Values obtained from tests carried out by ITW Construction Products Offsite and calculated in accordance with ETAG 015

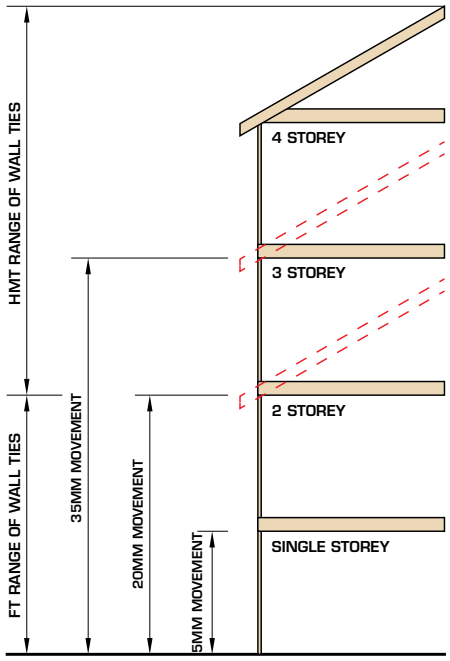
Timber Frame Wall Ties

Differential Movement in Timber Frame

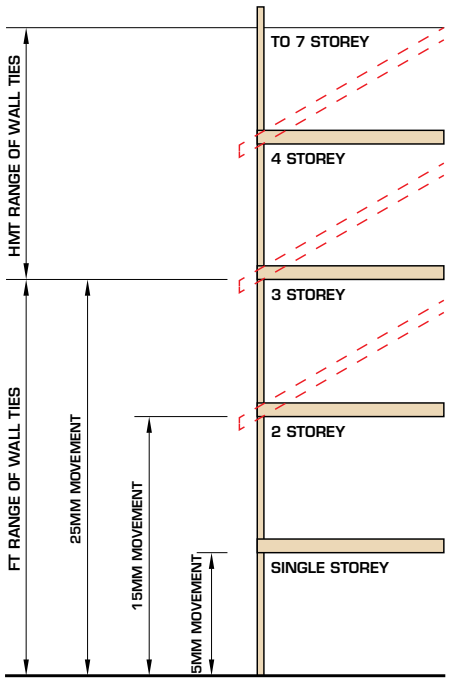
New Requirements (Build Type)		Vertical Movement Allowed (mm)	Solution
Solid timber joists	2 storey	20	FT
	3 storey and above	35+	HMT
EWP joists	2 storey	15	FT
	3 storey	25	FT
	4 storey and above	35 – 60	HMT



Cullen standard wall ties FT–50, 75 &100 accommodate maximum differential movement of 25mm and therefore can be used up to eaves level on a 2 storey for solid timber joists and up to 3 storey for EWP joist floors. For 3 storey solid timber joists and 4 storey EWP joists you will now require the Cullen High Movement Tie (HMT).



INTERMEDIATE FLOORS CONSTRUCTED USING SOLID TIMBER JOISTS



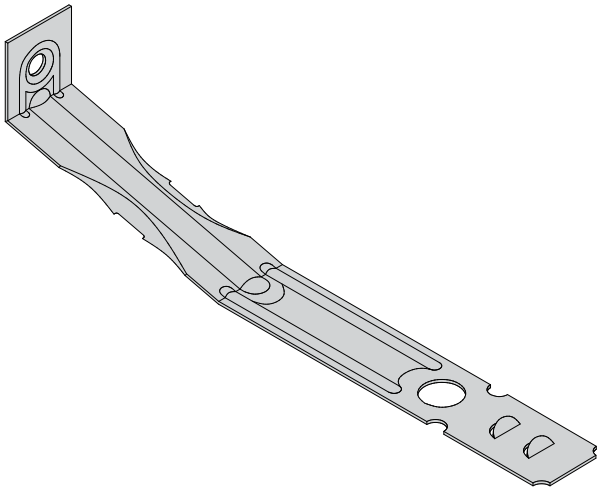
INTERMEDIATE FLOORS CONSTRUCTED USING EWP JOISTS

The above information is for guidance only, it states the maximum allowed movement of the Cullen timber frame wall tie range. For specific tie fixings please refer to the Building Engineer and/or section 6.2 of NHBC standards.

Gap Location	W	Gap sizes Closing Gap (CG) at window sills level and Opening (OG) at windows head levels	
		Joist Material	
		Solid Timber (mm)	Engineered I–Joist (mm)
Bottom level (single storey)	A	5	5
Level 1 (2 storey)	B	20	15
Level 2 (3 storey)	C	35	25
Level 1 (4 storey)	D	45	35
Level 4 (5 storey)	E	Specialist calculation to be submitted to NHBC	45
Level 5 (6 storey)	F		53
Level 6 (7 storey)	G		61
Eaves / verge		Add 5mm to level below	

FT

Timber Frame Wall Tie



The FT wall ties are used to restrain the external blockwork/brickwork back to the timber frame structure.

Features & Benefits

- Accommodates maximum differential movement of 24mm
- Available to suit up to 115mm wide cavities

Material Specification

- Austenitic stainless steel

Approvals

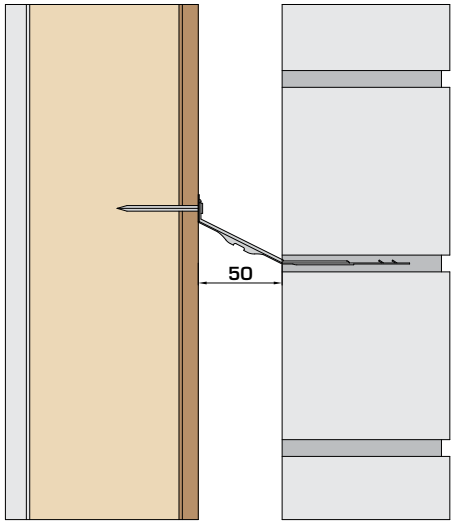
- CE marked and tested in accordance with BS EN 845–1
- Meets NHBC & Homebond technical requirements

Fixings

3.35 x 50mm annular ring shank nails supplied with part

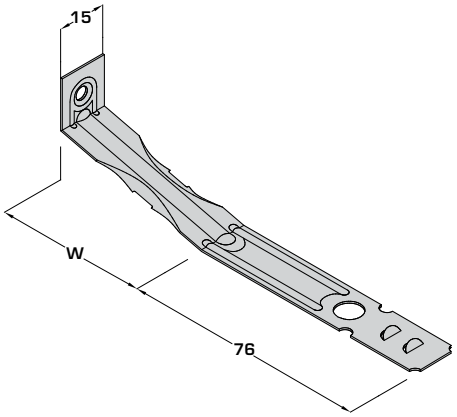
Code	Description	Box Qty
114386	5.0 x 25mm Pozidrive Stainless Steel Screws	200

In Situ



- Maximum horizontal expansion of 1.4mm on a 50mm cavity
- Additional ties are required at door and window openings (Spacing should be no more than 300mm vertical centres and within 225mm of the jambs at openings)
- Top row of ties should be 3 courses below top of brickwork
- Spacing also required at each side of vertical expansion joints
- Closer vertical spacing may be required in exposed locations as determined by the Building Designer

Dimensions (mm)



Product code	Minimum cavity (mm)	Maximum cavity (mm)
FT–50	45	65
FT–75	70	90
FT–100	95	115

Load Data

On the basis of wall ties having different failures in different materials e.g, tension – nail withdrawal (timber), compression – buckling (steel), we are now no longer publishing the lowest values and to assist the Building Designer we have shown the test results, failures modes and calculations.

FT

Timber Frame Wall Tie

FT–50

Tested Values

	Compression	Y_m	Tension	Y_m
Nail end (as received)	1057		648 (nail withdrawal)	1.3
(24mm movement)	612	1.15 (buckling of tie)	690	
Masonry end	954	1.15 (buckling of tie – steel failure)	1836 (masonry withdrawal)	3

Based on the following criteria the following calculations have been done:

In the following examples a factored windload of 1.65kN/m² is suggested

Partial factor for variable action		1.5
Combined pressure coefficient		1.1
Peak velocity pressure		= 1.0 kN/m²
Applied wind load on gable panel	= 1.5 x 1.1 x 1.0	= 1.65 kN/m²

Failure	Test Result (kN)	Y_m	kmod*	Result x kmod / Y_m (kN)
Compression	0.612	1.15	0.9	0.4790
Tension	0.648	1.3	0.9	0.4486
Compression	1.836	3	0.9	0.5508
Tension	0.954	1.15	0.9	0.7466
				0.4486

*A short term action (kmod value – 0.9) has been used. An instantaneous action (kmod value – 1.1) may be used.

Maximum net surface wind pressure for the FT–50

Product Code	Vertical Tie Spacing (mm)							
	225		300		375		450	
	Stud Centres (mm)							
	600		600		600		600	
	Maximum Net Surface Wind Pressure							
	kN/m²	ties/m²	kN/m²	ties/m²	kN/m²	ties/m²	kN/m²	ties/m²
FT–50	3.32	7.4	2.47	5.5	1.97	4.4	1.66	3.7

	1000/225 = 4.4444 4.4444x(1000/600) = 7.4 ties/m²	1000/300 = 3.3333 3.3333x(1000/600) = 5.5 ties/m²	1000/375 = 2.6666 2.6666x(1000/600) = 4.4 ties/m²	1000/450 = 2.2222 2.2222x(1000/600) = 3.7ties/m²
Lowest failure (with Ym & kmod applied)	0.4486 x 7.4 = 3.32kN/m²	0.4486 x 5.5 = 2.47kN/m²	0.4486 x 4.4 = 1.97kN/m²	0.4486 x 3.7 = 1.66kN/m²
Peak velocity pressure (kN/m²)	2.01	1.50	1.20	1.01

Based on the above values this could be worked backwards
Provide a maximum wind load for 3.7 ties/m2 = (1.66/1.1/1.5) = 1.01kN/m2 peak velocity pressure

FT

Timber Frame Wall Tie

FT–75

Tested Values

	Compression	Y_m	Tension	Y_m
Nail end (as received)	504		672 (nail withdrawal)	1.3
(24mm movement)	582	1.15 (buckling of tie)	690	
Masonry end	786	1.15 (buckling of tie – steel failure)	2265 (masonry withdrawal)	3

Based on the following criteria the following calculations have been done:

In the following examples a factored windload of 1.65kN/m2 is suggested

Partial factor for variable action		1.5
Combined pressure coefficient		1.1
Peak velocity pressure		= 1.0 kN/m^2
Applied wind load on gable panel	= 1.5 x 1.1 x 1.0	= 1.65 kN/m^2

Failure	Test Result (kN)	Y_m	kmod	Result x kmod / Y_m (kN)
Compression	0.504	1.15	0.9	0.3944
Tension	0.672	1.3	0.9	0.4652
Compression	2.265	3	0.9	0.6795
Tension	0.786	1.15	0.9	0.6151
				0.3944

*A short term action (kmod value – 0.9) has been used. An instantaneous action (kmod value – 1.1) may be used.

Maximum net surface wind pressure for the FT–75

Product Code	Vertical Tie Spacing (mm)							
	225		300		375		450	
	Stud Centres (mm)							
	600		600		600		600	
	Maximum Net Surface Wind Pressure							
	kN/m^2	ties/m^2	kN/m^2	ties/m^2	kN/m^2	ties/m^2	kN/m^2	ties/m^2
FT–75	2.92	7.4	2.17	5.5	1.74	4.4	1.46	3.7

	1000/225 = 4.4444 4.4444x(1000/600) = 7.4 ties/m^2	1000/300 = 3.3333 3.3333x(1000/600) = 5.5 ties/m^2	1000/375 = 2.6666 2.6666x(1000/600) = 4.4 ties/m^2	1000/450 = 2.2222 2.2222x(1000/600) = 3.7ties/m^2
Lowest failure (with Ym & kmod applied)	0.3944 x 7.4 = 2.92kN/m^2	0.3944 x 5.5 = 2.17kN/m^2	0.3944 x 4.4 = 1.74kN/m^2	0.3944 x 3.7 = 1.46kN/m^2
Peak velocity pressure (kN/m^2)	1.77	1.31	1.05	0.88

Based on the above values this could be worked backwards
Provide a maximum wind load for 3.7 ties/m2 = (1.46/1.1/1.5) = 0.88kN/m2 peak velocity pressure

FT

Timber Frame Wall Tie

FT–100

Tested Values

	Compression	Y_m	Tension	Y_m
Nail end (as received)	522		756 (nail withdrawal)	1.3
(24mm movement)	504	1.15 (buckling of tie)	840	
Masonry end	1417	1.15 (buckling of tie – steel failure)	943 (masonry withdrawal)	3

Based on the following criteria the following calculations have been done:

In the following examples a factored windload of 1.65kN/m² is suggested

Partial factor for variable action		1.5
Combined pressure coefficient		1.1
Peak velocity pressure		= 1.0 kN/m²
Applied wind load on gable panel	= 1.5 x 1.1 x 1.0	= 1.65 kN/m²

Failure	Test Result (kN)	Y_m	kmod	Result x kmod / Y_m (kN)
Compression	0.504	1.15	0.9	0.3944
Tension	0.756	1.3	0.9	0.5234
Compression	0.943	3	0.9	0.2829
Tension	1.417	1.15	0.9	1.1090
				0.2829

*A short term action (kmod value – 0.9) has been used. An instantaneous action (kmod value – 1.1) may be used.

Maximum net surface wind pressure for the FT–100

Product Code	Vertical Tie Spacing (mm)							
	225		300		375		450	
	Stud Centres (mm)							
	600		600		600		600	
	Maximum Net Surface Wind Pressure							
	kN/m²	ties/m²	kN/m²	ties/m²	kN/m²	ties/m²	kN/m²	ties/m²
FT–100	2.09	7.4	1.56	5.5	1.24	4.4	1.05	3.7

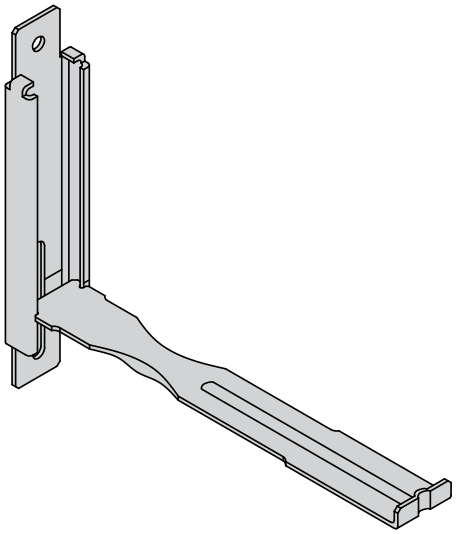
	1000/225 = 4.4444 4.4444x(1000/600) = 7.4 ties/m²	1000/300 = 3.3333 3.3333x(1000/600) = 5.5 ties/m²	1000/375 = 2.6666 2.6666x(1000/600) = 4.4 ties/m²	1000/450 = 2.2222 2.2222x(1000/600) = 3.7ties/m²
Lowest failure (with Ym & kmod applied)	0.2829 x 7.4 = 2.09kN/m²	0.2829 x 5.5 = 1.56kN/m²	0.2829 x 4.4 = 1.24kN/m²	0.2829 x 3.7 = 1.05kN/m²
Peak velocity pressure (kN/m²)	1.27	0.94	0.75	0.63

Based on the above values this could be worked backwards

Provide a maximum wind load for 3.7 ties/m² = (1.05/1.1/1.5) = 0.63kN/m² peak velocity pressure

HMT

High Movement Timber Frame Wall Tie



The HMT wall ties are used to restrain the external blockwork/brickwork back to the timber framed structure. They provide greater performance to accommodate differential movement in medium to high–rise structures.

Features & Benefits

- Accommodates maximum differential movement of75mm

Material Specification

- Austenitic stainless steel

Approvals

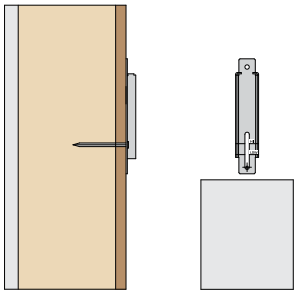
- CE marked & tested in accordance with BS EN 845–1
- Meets NHBC & Homebond technical requirements

Fixings

3.35 x 50mm annular ring shank nails supplied with part

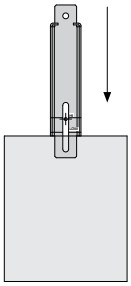
Installation Instructions

STAGE 1



Nail channel into wall panel by nailing 1No fixing at the bottom of the slot. Allow adequate space above the masonry to hammer fix.

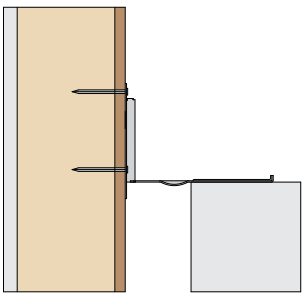
STAGE 2



Position channel by lightly tapping with a hammer until channel is in correct position.

The tie should line through with the LOW marker to allow full 75mm movement.

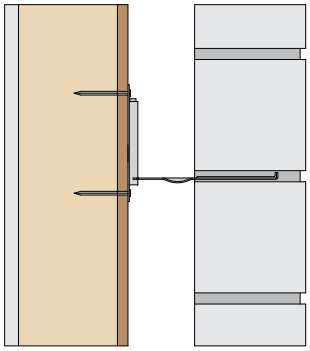
STAGE 3



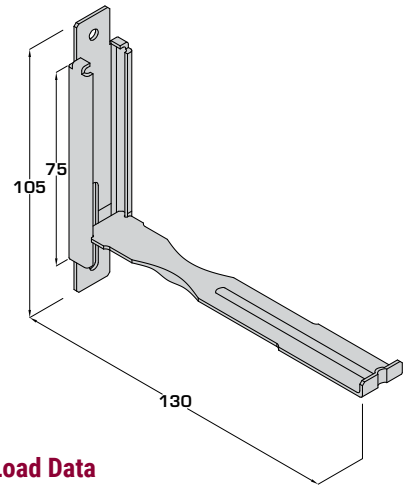
Once the channel is in position fix the top round hole into the wall panel, position the tie and build the next course of block work.

LOW – 75mm movement
HIGH – 65mm movement

In Situ



Dimensions (mm)



Load Data

On the basis of wall ties having different failures in different materials e.g, tension – nail withdrawal (timber), compression – buckling (steel), we are now no longer publishing the lowest values and to assist the Building Designer we have shown the test results, failures modes and calculations.

HMT

High Movement Timber Frame Wall Tie

Product code	Minimum cavity (mm)	Maximum cavity (mm)
HMT–50	45	65

HMT–50

Tested Values

	Compression	Y_m	Tension	Y_m
Nail end (as received)	1705		895 (nail withdrawal)	1.3
Masonry end	2376	1.15 (buckling of tie – steel failure)	2176 (masonry withdrawal)	3

Based on the following criteria the following calculations have been done:

In the following examples a factored windload of 1.65kN/m2 is suggested

Partial factor for variable action		1.5
Combined pressure coefficient		1.1
Peak velocity pressure		= 1.0 kN/m^2
Applied wind load on gable panel	= 1.5 x 1.1 x 1.0	= 1.65 kN/m^2

Failure	Test Result (kN)	Y_m	kmod	Result x kmod / Y_m (kN)
Compression	1.705	1.15	0.9	1.3343
Tension	0.895	1.3	0.9	0.6196
Compression	2.176	3	0.9	0.6528
Tension	2.376	1.15	0.9	1.8595
				0.6196

*A short term action (kmod value – 0.9) has been used. An instantaneous action (kmod value – 1.1) may be used.

Maximum net surface wind pressure for the HMT–50

Product Code	Vertical Tie Spacing (mm)							
	225		300		375		450	
	Stud Centres (mm)							
	600		600		600		600	
	Maximum Net Surface Wind Pressure							
	kN/m^2	ties/m^2	kN/m^2	ties/m^2	kN/m^2	ties/m^2	kN/m^2	ties/m^2
HMT–50	4.59	7.4	3.41	5.5	2.73	4.4	2.29	3.7

	1000/225 = 4.4444 4.4444x(1000/600) = 7.4 ties/m^2	1000/300 = 3.3333 3.3333x(1000/600) = 5.5 ties/m^2	1000/375 = 2.6666 2.6666x(1000/600) = 4.4 ties/m^2	1000/450 = 2.2222 2.2222x(1000/600) = 3.7ties/m^2
Lowest failure (with Ym & kmod applied)	0.6196 x 7.4 = 4.59kN/m^2	0.6196 x 5.5 = 3.41kN/m^2	0.6196 x 4.4 = 2.73kN/m^2	0.6196 x 3.7 = 2.29kN/m^2
Peak velocity pressure (kN/m^2)	2.78	2.07	1.65	1.39

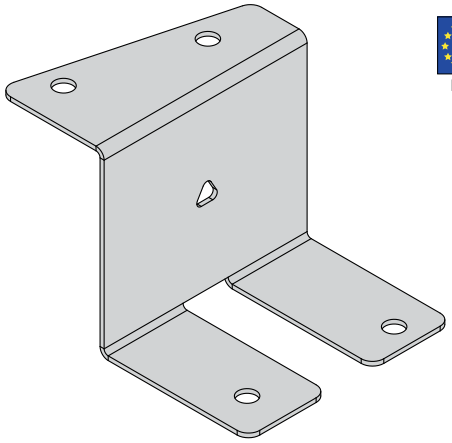
Based on the above values this could be worked backwards
Provide a maximum wind load for 3.7 ties/m^2 = (2.29/1.1/1.5) = 1.39kN/m^2 peak velocity pressure

UZ CLIP

Noggin Support

UKTA–21/0008

ETA–20/0999



The UZ Clip is a multifunctional connector for solid timber noggins.

Features & Benefits

- Suitable for supporting noggins in various applications
- Adjacent noggins can be aligned without clashing

Material Specification

- Galvanised mild steel – Z275

Fixings

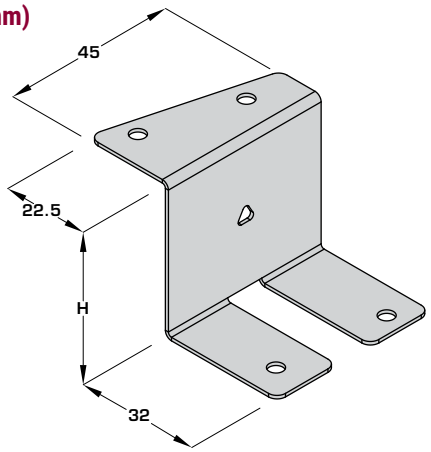
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

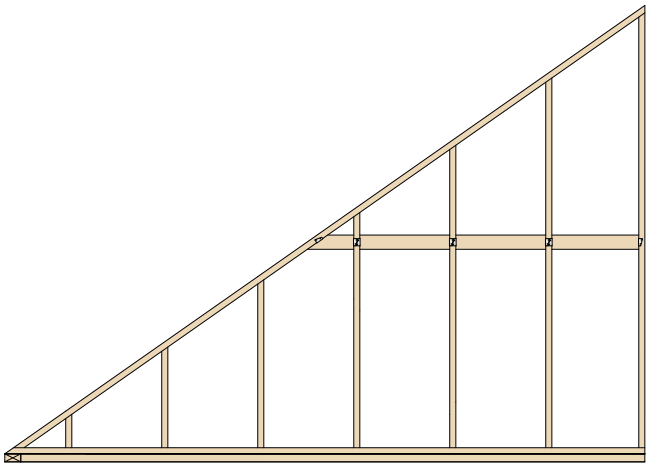
Available Sizes

Product Code	Height (H) (mm)
UZ–35	35
UZ–38	38
UZ–45	45
UZ–47	47

Dimensions (mm)

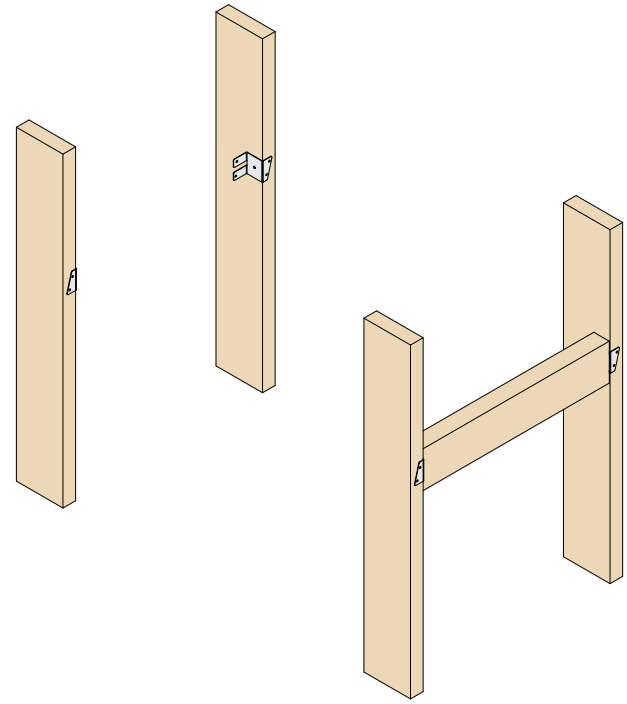


In Situ



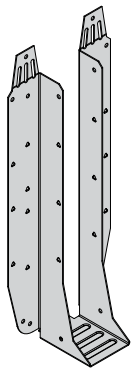
PLASTERBOARD NOGGINS
Supporting plasterboard in spandrel panels
or other timber panel applications

Installation



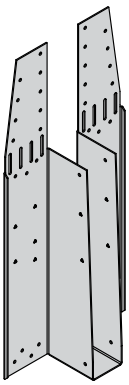
EWP Timber Hanger Overview

I–JOIST APPLICATIONS

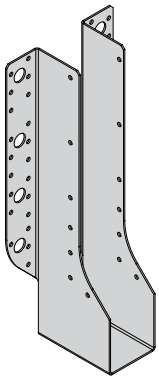


(39 – 100mm wide)

UH
Pages 49 – 57



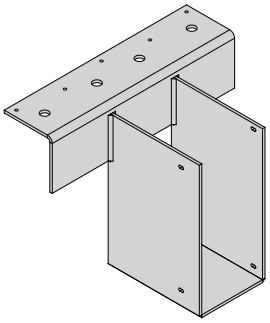
HUH
Pages 63 – 66



MHE
Pages 77 – 78

STANDARD

HIGH LOAD



FTHI
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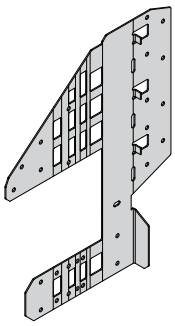
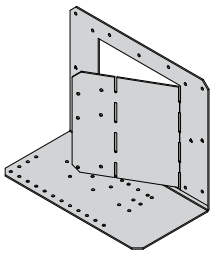
VERY HIGH LOAD



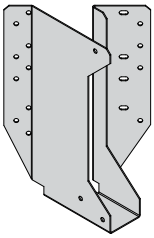
(39 – 100mm wide)

VRC
Pages 83 – 84



(39 – 100mm wide)

VS
Pages 81 – 82



(39 – 100mm wide)

45L/R
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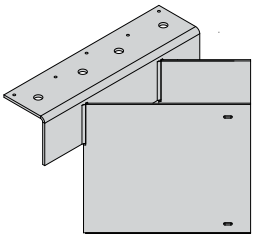
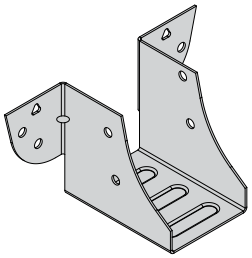


(39 – 300mm wide)

FTHIS
Page 80

SLOPED* & SKEWED

(*VRC ONLY)



KM
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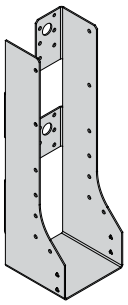
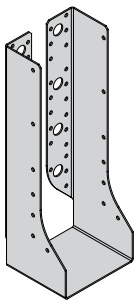
MINI



(39 – 78mm wide)

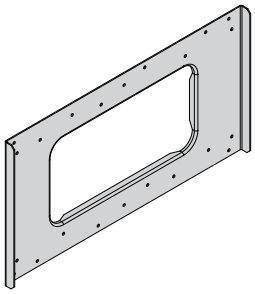
MHIC
Pages 77– 78



(92 – 300mm wide)

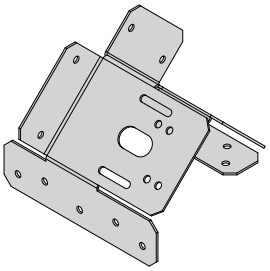
MHI
Pages 77– 78

INTERNAL FLANGE



SHI
Page 99

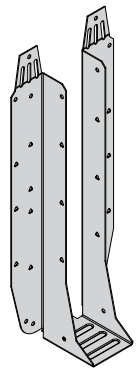
SERVICE HOLE PLATE



ACE
Page 85

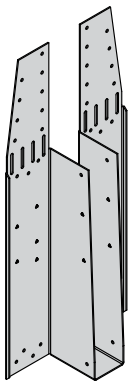
RAFTER / WALL PLATE

OPEN WEB APPLICATIONS

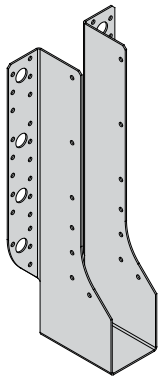


(39 – 100mm wide)

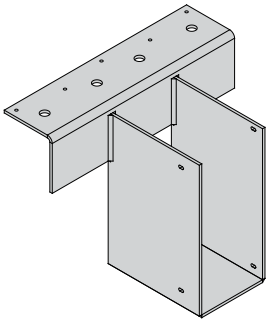
UH
Pages 57 – 62



HUH
Pages 67 – 73



MHE
Pages 77 – 78

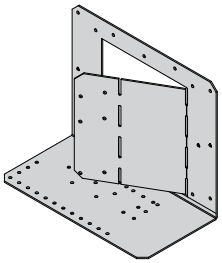


FTHI
Page 80

STANDARD

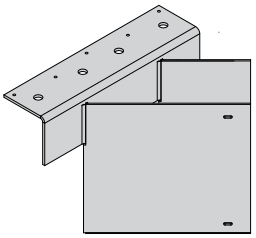
HIGH LOAD

VERY HIGH LOAD



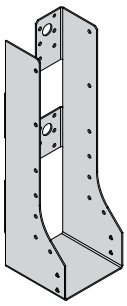
(39 – 100mm wide)

VS
Pages 81 – 82



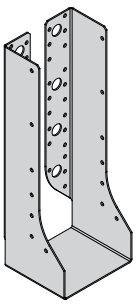
(39 – 300mm wide)

FTHIS
Page 80



(39 – 78mm wide)

MHIC
Pages 77 – 78



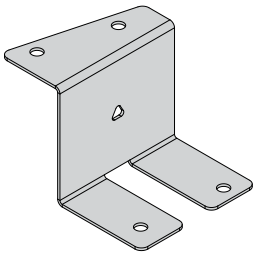
(92 – 300mm wide)

MHI
Pages 77 – 78

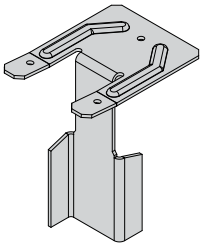
SKEWED

INTERNAL FLANGE

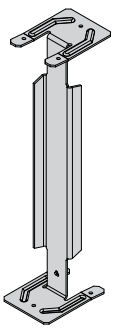
ANCILLARY PRODUCTS



UZ CLIP
Pages 87 – 89



OW–CLIP
Pages 92 – 93



I–CLIP
Pages 90 – 91

PSTS
Pages 94 – 98

NOGGIN SUPPORT

MULTIPLE CONNECTIONS

At A Glance

UH – QUICK REFERENCE GUIDE

		Characteristic Capacity (kN)																					
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Hanger	**Header**																							
UH	I–Joist Without Backer / Top Tabs Removed	7.43 – 7.83kN																						
	I–Joist Without Backer	11.13 – 12.94kN																						
	I–Joist With Backer	13.09 – 21.02kN																						
	Open Web / Top Tabs Removed	7.43kN																						
	Open Web	13.23 – 14.19kN																						
	Open Web With Plywood Gusset	16.84 – 22.16kN																						
	Glulam (Min GL28)	16.84 – 22.16kN																						
	LVL	15.25 – 22.17kN																						

HUH – QUICK REFERENCE GUIDE

		Characteristic Capacity (kN)																												
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Hanger	**Header**																														
HUH	I–Joist Without Backer	15.50 – 18.50kN																													
	I–Joist With Backer	28.50kN																													
	Open Web	13.95 – 18.60kN																													
	Open Web With Blocking	24.00kN																													
	Open Web With Plywood Gusset	29.50kN																													
	Glulam (Min GL28)	29.50kN																													
	LVL	29.50kN																													

PLEASE REFER TO PRODUCT PAGES FOR EXACT LOAD CAPACITIES

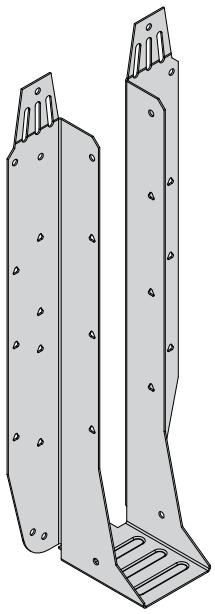
UH (I–Joist Applications)

Universal Hanger

GB Patent 2497747

UKTA–21/0008

ETA–20/0999



The UH hanger is designed for any joist to joist, joist to trimmer or joist to steel application.

Features & Benefits

- Elongated slots and unique snap off feature allows for height adjustment and face fix only option
- One hanger solution for backer and backerless I–Joists
- Rear location tab to assist with installation
- Additional triangular fixing holes for increased performance on solid members
- Suitable for connections to steel work – see pages 74 – 76

Material Specification

- Galvanised mild steel – Z275

Fixings

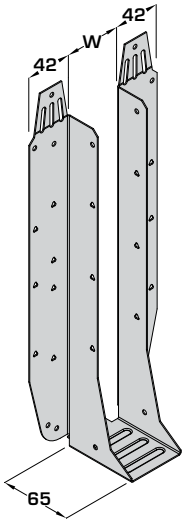
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci
(or 3.5 x 30mm wood screw for sacrificial stairwell installation only)

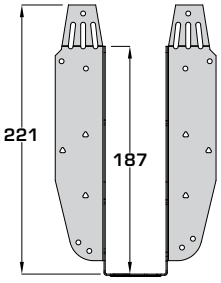
Available Sizes

Hanger Width (W) (mm)	Hanger Depth (mm)				
	195	220	235	300	>300
39	–	UH–39–220	UH–39–235	UH–39–300	SEE HUH (PAGES 63 – 66) OR UH–MHE/ UZ–CLIP (PAGES 54 – 56)
46	UH–46–195	UH–46–220	UH–46–235	UH–46–300	
50	UH–50–195	UH–50–220	UH–50–235	UH–50–300	
55	–	UH–55–220	UH–55–235	UH–55–300	
61	–	UH–61–220	UH–61–235	UH–61–300	
65	–	UH–65–220	UH–65–235	UH–65–300	
72	–	UH–72–220	UH–72–235	UH–72–300	
75	UH–75–195	UH–75–220	UH–75–235	UH–75–300	
78	–	UH–78–220	UH–78–235	UH–78–300	
92	–	UH–92–220	UH–92–235	UH–92–300	
100	UH–100–195	UH–100–220	UH–100–235	UH–100–300	
>100	SEE HUH (PAGES 63 – 66) OR MHE (PAGES 77 – 78)				

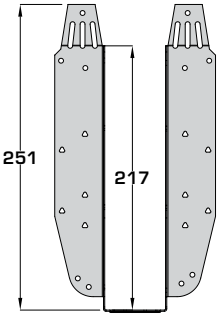
Dimensions (mm)



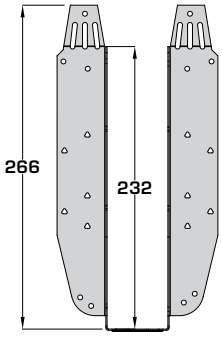
Height Suitability



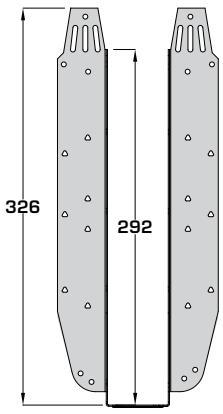
UH–195
(To suit 195 – 200mm deep i–joists)



UH–220
(To suit 220mm deep i–joists)



UH–235
(To suit 235 – 245mm deep i–joists)

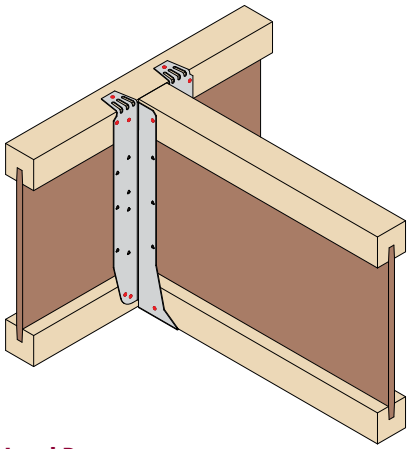


UH–300
(To suit 300 – 302mm deep i–joists)

UH (I–Joist Applications)

Universal Hanger

Standard Installation – I–Joist Header without Backer Block



See Page 53 For Installation Instructions

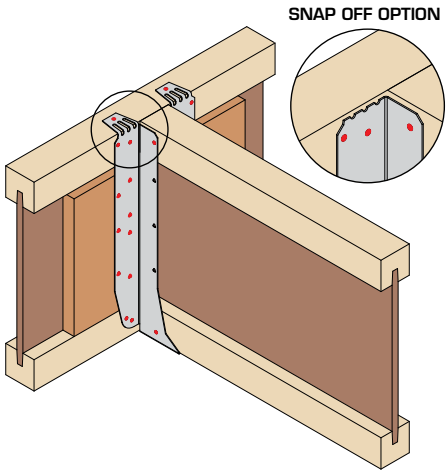
- Fill all red holes as indicated for this installation
- No backer block required
- No web stiffeners required*
- Top tabs to be wiped over and nailed
- Additional triangular holes into face only required for solid headers

*Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 51)

Load Data

Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	I–Joist Header	
(Depth Dependent Only)	Face	Top			Solid Flange	LVL Flange
195	8	2	2	1.98	11.13	12.94
220	8	2	4	3.97	11.13	12.94
235	8	2	4	3.97	11.89	11.79
300	8	2	4	3.97	11.89	11.79

Enhanced Installation – I–Joist Header with Backer Block



See Page 53 For Installation Instructions

- Fill all red holes as indicated for this installation
- All nail holes filled into backer block (including triangular)
- Backer block required to hanger side only (follow I–joist manufacturer's guidelines)
- No web stiffeners required when using same hanger/joist depth*
- Top tabs to be wiped over and nailed or snapped off to give face fix only option

*Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 551)

Load Data

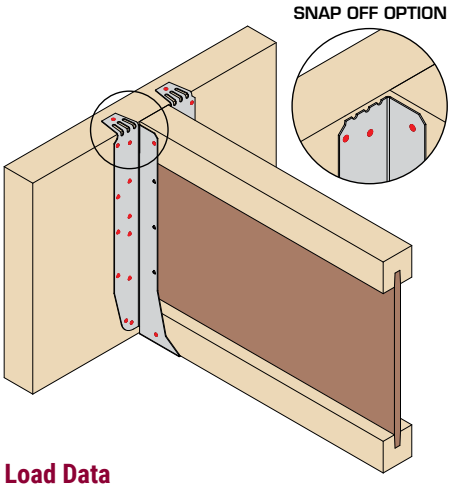
Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	I–Joist Header	
(Depth Dependent Only)	Face	Top			Solid Flange	LVL Flange
195	14	2 (0**)	2	1.98	13.09	13.49
220	18	2 (0**)	4	3.97	19.66	18.81
235	18	2 (0**)	4	3.97	19.66	18.81
300	22	2 (0**)	4	3.97	21.02	20.88

**No fixings required when using snap off option.

UH (I–Joist Applications)

Universal Hanger

Enhanced Installation – Solid Header



- Fill all red holes as indicated for this installation
- All nail holes filled into solid header (including triangular)
- No web stiffeners required when using same hanger/joist depth*
- Top tabs to be wiped over and nailed or snapped off to give face fix only option

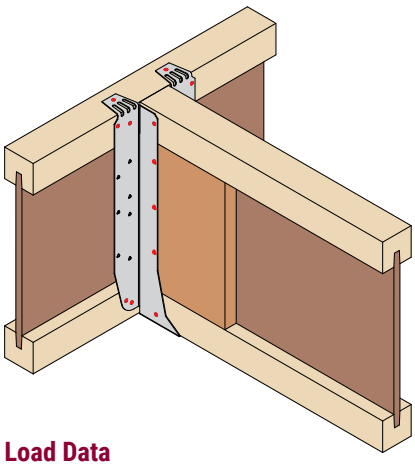
*Additional triangular holes into incoming joist only required for enhanced uplift. (for details see below)

Load Data

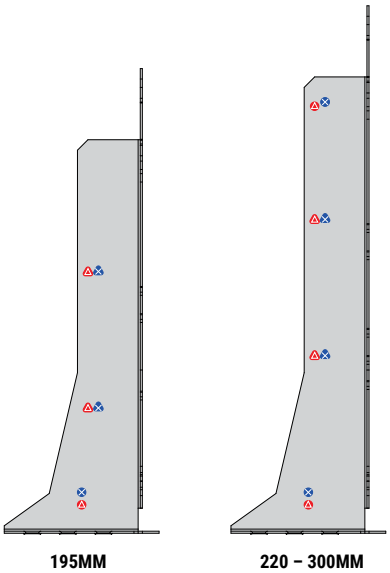
Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	Solid Header	
(Depth Dependent Only)	Face	Top			GL (Min GL28)	LVL
195	14	2 (0**)	2	1.98	16.84	15.25
220	18	2 (0**)	4	3.97	19.69	18.65
235	18	2 (0**)	4	3.97	22.16	21.58
300	22	2 (0**)	4	3.97	22.16	22.17

**No fixings required when using snap off option.

Enhanced Uplift



- Fill all red holes as indicated for this installation
- Fixings into the incoming joist are required to resist uplift
- Increased uplift figures can be achieved by nailing the additional triangular nail holes into the incoming member – solid incoming or web stiffeners are required



Load Data

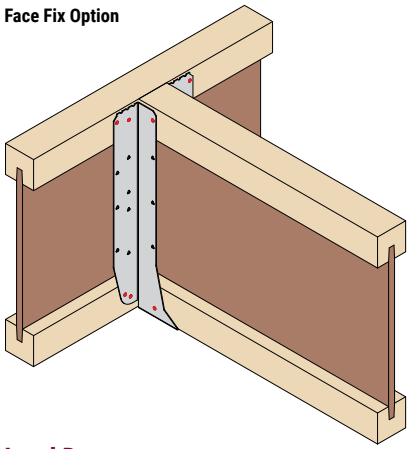
Hanger Depth (mm)	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)
	Incoming	Uplift
(Depth Dependent Only)		
195	6	5.97
220 – 300	8	7.97

UH (I–Joist Applications)

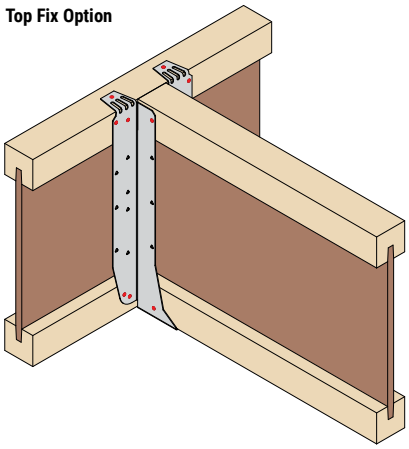
Universal Hanger

Sacrificial Stairwell Installation

Face Fix Option



Top Fix Option



- Fill all red holes as indicated for these installations
- No backer blocks required
- No web stiffeners required

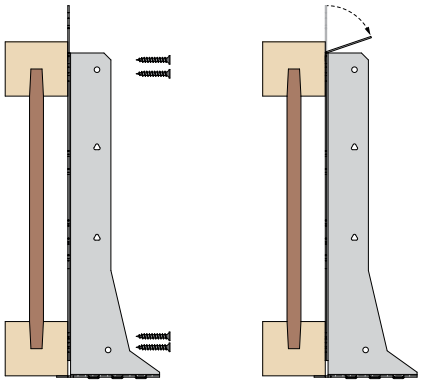
Load Data

Hanger Depth (mm) (Depth Dependent Only)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	I–Joist Header	
	Face	Top			Solid Flange	LVL Flange
195	8	2 (0**)	2	1.98	7.43	7.83
220	8	2 (0**)	4	3.97	7.43	7.83
235	8	2 (0**)	4	3.97	7.43	7.83
300	8	2 (0**)	4	3.97	7.43	7.83

**No fixings required when using snap off option.
3.5 x 30mm multi–purpose wood screws may be used as an alternative fixing for temporary supporting hanger.

Installation Instructions

Face Fix Option

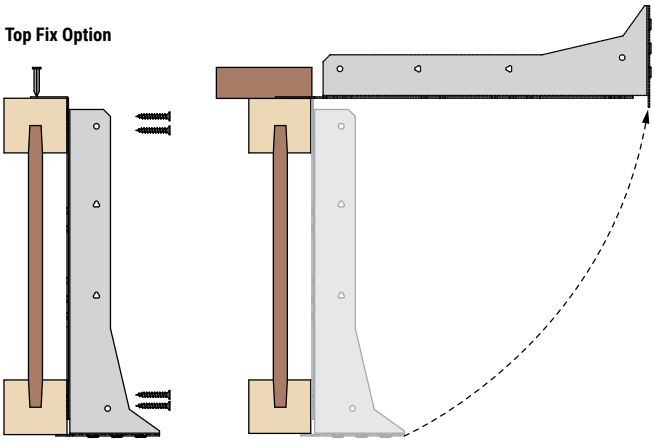


Face fix to top and bottom flanges using 8No 3.5 x 30mm multi purpose wood screws or 3.4 x 35mm square twist nails.

Bend tabs forward and snap off.

Once ready for stairs to be installed the deck can be cut and joists/ hangers removed.

Top Fix Option



Face fix to top and bottom flanges using 8No 3.5 x 30mm multi purpose wood screws or 3.4 x 35mm square twist nails.

Bend top tabs over joist top flange and nail using 1No 3.4 x 35mm square twist nail per leg.

Once ready for stairs to be installed the deck can be cut and joists/ hangers removed.

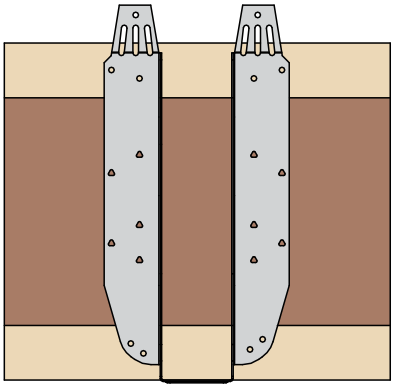
Hanger to be rotated through 90 degrees to snap off at break line.

UH (I–Joist Applications)

Universal Hanger

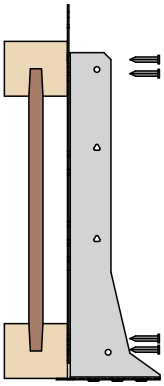
Standard Installation Instructions – I–Joist Header without Backer Block

Stage 1



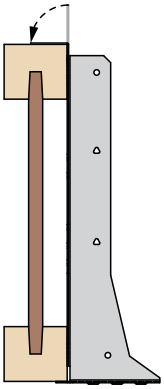
Position hanger against face of I–Joist with locating tab tight to underside of joist.

Stage 2



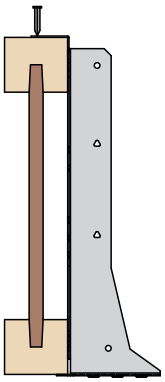
Face nail to top and bottom flanges using 8No 3.4 x 35mm square twist nails in total.

Stage 3



Wipe over top tabs to give a flush fit to the joist.

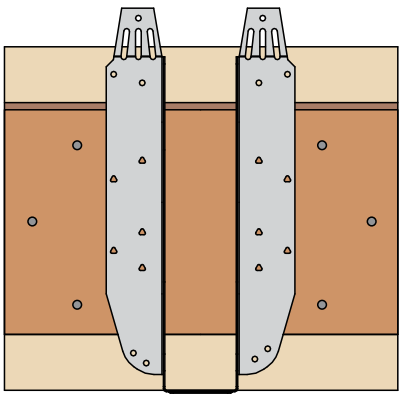
Stage 4



Nail top tabs into top flange of joist – 1No 3.4 x 35mm square twist nail per tab.

Enhanced Installation Instructions – I–Joist Header with Backer Block

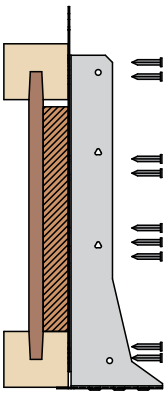
Stage 1



Position hanger against face of I–Joist with locating tab tight to underside of joist.

Backer block installed as per I–Joist manufacturer's guidelines.

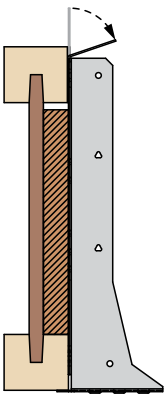
Stage 2



Fill all round and triangular nail holes to header and backer face with 3.4 x 35mm square twist nails.

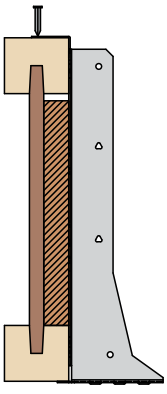
Stage 3

Option 1



Bend top tab forward and snap off.

Option 2



Wipe over top tabs to give a flush fit to the joist.

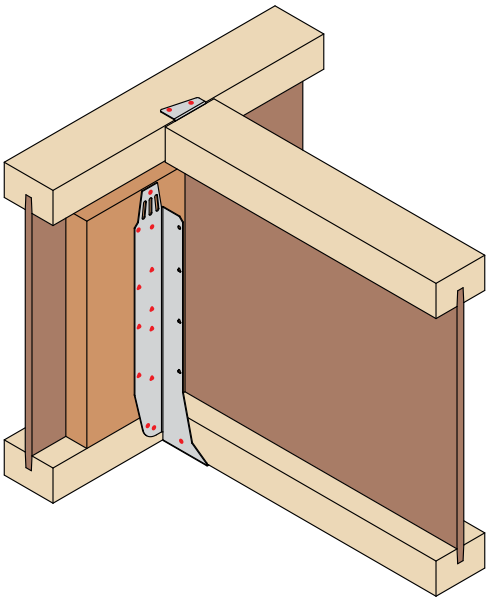
Nail top tabs into top flange of joist – 1No 3.4 x 35mm square twist nail per tab.

UH (I–Joist Applications)

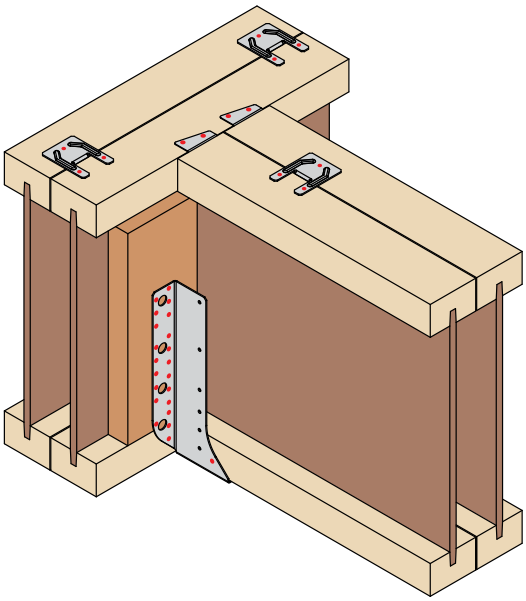
Universal Hanger

UH/MHE With UZ–Clip Installation (to support 350 – 450mm deep I–Joists)

UH–300 & UZ Clip – For Single Joists



MHE & UZ Clip – For Double Joists



Features & Benefits

- Solution to support 350 – 450mm deep I–Joists with shallower UH/MHE hanger and UZ–Clip to prevent rotation and remove the need for installing time consuming web stiffeners
- Shallower height UH (300mm) and MHE (620) hangers can be used to replace deeper FFI 350, 400 and 450mm deep hangers

Available Sizes

Joist Depth (mm)	Hanger Width (mm)									
	39	46	50	61	65	72	75	78	92	100
350	UH–39–300	UH–46–300	UH–50–300	UH–61–300	UH–65–300	UH–72–300	UH–75–300	UH–78–300	UH–92–300	UH–100–300
400	UH–39–300	UH–46–300	UH–50–300	UH–61–300	UH–65–300	UH–72–300	UH–75–300	UH–78–300	UH–92–300	UH–100–300
450	UH–39–300	UH–46–300	UH–50–300	UH–61–300	UH–65–300	UH–72–300	UH–75–300	UH–78–300	UH–92–300	UH–100–300

Joist Depth (mm)	Hanger Width (mm)						
	122	130	138	144	150	183	198
350	MHE620–122–249	MHE620–130–245	MHE620–138–241	MHE620–144–238	MHE620–150–235	MHE620–183–218	MHE620–198–211
400	MHE620–122–249	MHE620–130–245	MHE620–138–241	MHE620–144–238	MHE620–150–235	MHE620–183–218	MHE620–198–211
450	MHE620–122–249	MHE620–130–245	MHE620–138–241	MHE620–144–238	MHE620–150–235	MHE620–183–218	MHE620–198–211

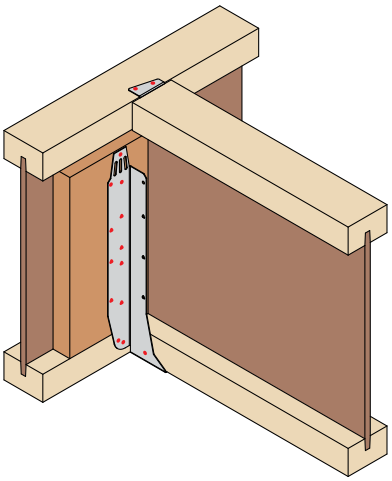
Flange Depth (mm)	UZ–Clip
36	UZ–35
39	UZ–38
45	UZ–45
47	UZ–47

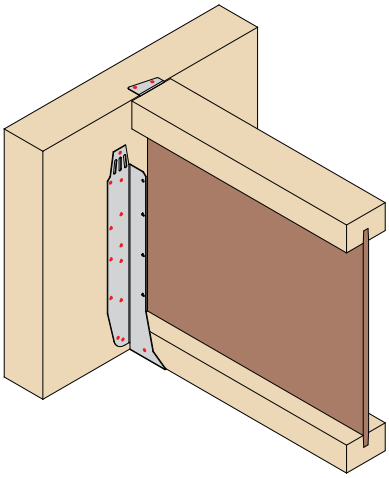
UZ–Clip size dependent on flange size only and not I–Joist width – 1No UZ–Clip required per I–Joist (38 – 97mm wide)

UH (I–Joist Applications)

Universal Hanger

UH (300) & UZ–Clip – I–Joist Header with Backer Block or Solid Header

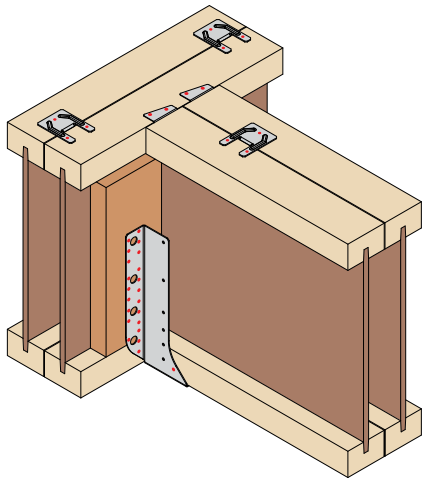


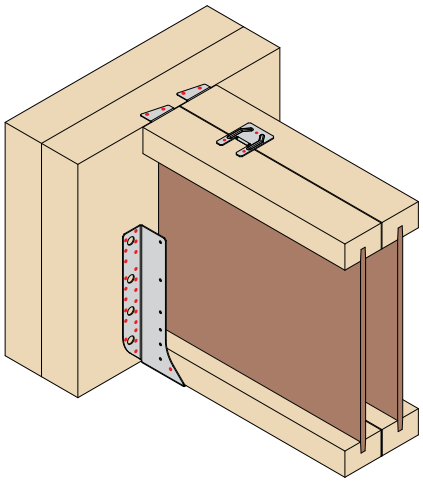


Load Data

Hanger Width (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)	
	Header		Incoming	Uplift	Header
(Width Dependent Only)	Face	Top			Solid Flange I–Joist, LVL Flange I–Joist
39 – 65	24	0	2	2.00	12.49
72 – 100	24	0	2	2.00	16.90

MHE (620) & UZ–Clip – I–Joist Header with Backer Block or Solid Header





Load Data

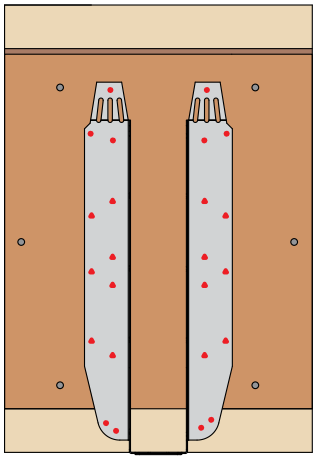
Hanger Width (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)	
	Header		Incoming	Uplift	Header
(Width Dependent Only)	Face	Top			Solid Flange I–Joist, LVL Flange I–Joist
122 – 198	24	0	2	2.00	30.58

UH (I–Joist Applications)

Universal Hanger

UH–300 & UZ–Clip – Installation

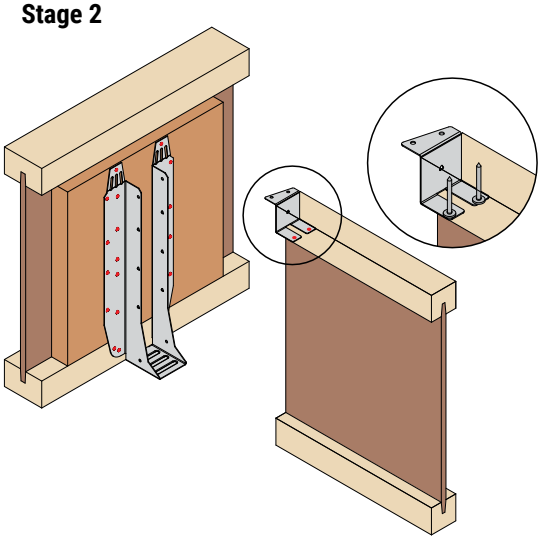
Stage 1



Position hanger against face of I–Joist with locating tab tight to underside of joist.

Backer block installed as per I–Joist manufacturer's guidelines.

Stage 2

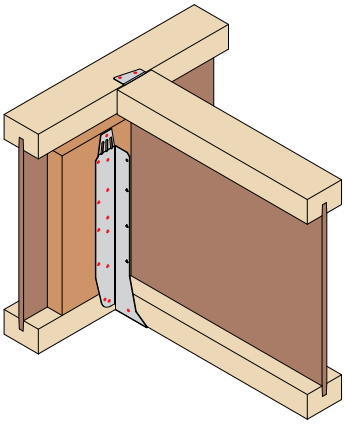


Fix UZ–Clip to top flange of supported member using:

2No 3.4 x 35mm square twist nails.

2No UZ–Clips required for double incoming.

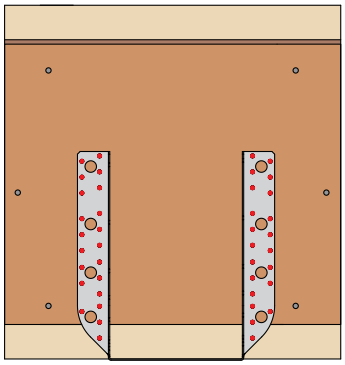
Stage 3



Offer incoming member into the UH hanger and fix to joist bottom flange/backer block and UZ–Clip to header member.

MHE & UZ–Clip – Installation

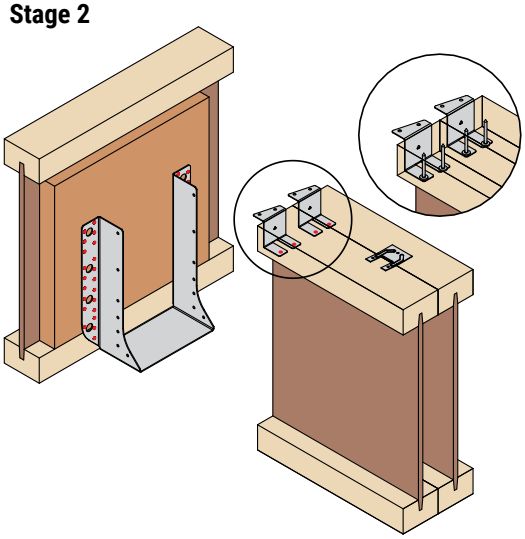
Stage 1



Position hanger against face of I–Joist with locating tab tight to underside of joist.

Backer block installed as per I–Joist manufacturer's guidelines.

Stage 2

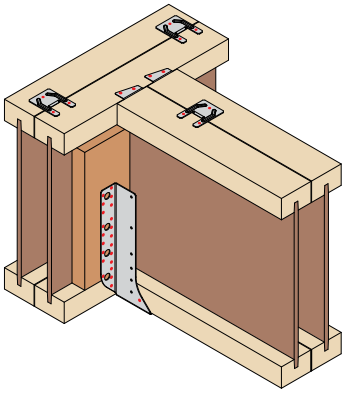


Fix UZ–Clips to top flange of supported member using:

2No 3.4 x 35mm square twist nails per UZ–Clip.

2No UZ–Clips required for double incoming.

Stage 3



Offer incoming member into the MHE hanger and fix to joist bottom flange/backer block and UZ–Clip to header member.

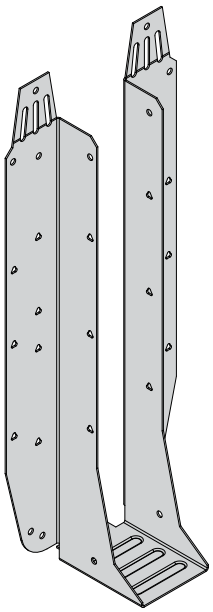
UH (Open Web Applications)

Universal Hanger

GB Patent 2497747

UKTA–21/0008

ETA–20/0999



The UH hanger is designed for any joist to joist, joist to trimmer or joist to steel application.

Features & Benefits

- Elongated slots and unique snap off feature allows for height adjustment and face fix only option
- One hanger solution for backer and backerless I–Joists
- Rear location tab to assist with installation
- Additional triangular fixing holes for increased performance on solid members
- Suitable for connections to steel work – see pages 74 – 76

Material Specification

- Galvanised mild steel – Z275

Fixings

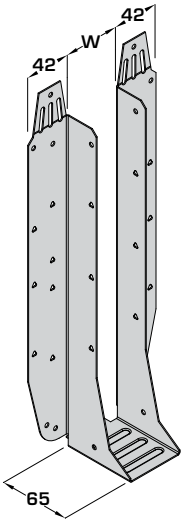
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci
(or 3.5 x 30mm wood screw for sacrificial stairwell installation only)

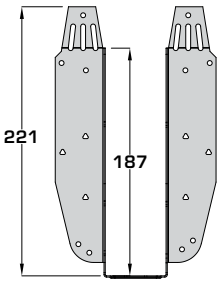
Available Sizes

Hanger Width (W) (mm)	Hanger Depth (mm)				
	195	220	235	300	>300
39	–	UH–39–220	UH–39–235	UH–39–300	SEE HUH (PAGES 67 – 73)
46	UH–46–195	UH–46–220	UH–46–235	UH–46–300	
50	UH–50–195	UH–50–220	UH–50–235	UH–50–300	
75	UH–75–195	UH–75–220	UH–75–235	UH–75–300	
78	–	UH–78–220	UH–78–235	UH–78–300	
92	–	UH–92–220	UH–92–235	UH–92–300	
100	UH–100–195	UH–100–220	UH–100–235	UH–100–300	
>100	SEE HUH (PAGES 63 – 66) OR MHE (PAGES 77 – 78)				

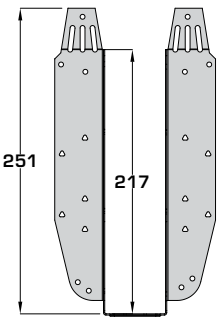
Dimensions (mm)



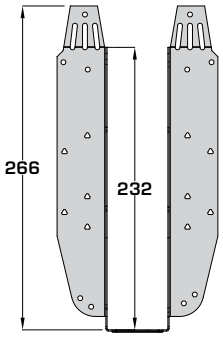
Height Suitability



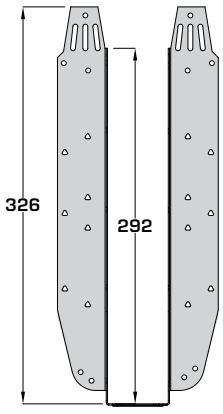
UH–195
(To suit 195 – 202mm deep open web joists)



UH–220
(To suit 219 & 225mm deep open web joists)



UH–235
(To suit 253 – 254mm deep open web joists)

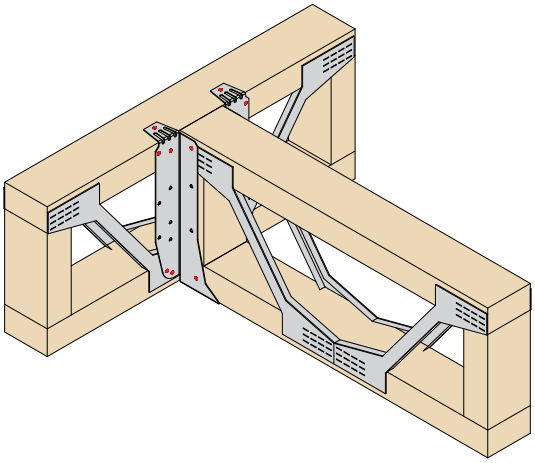


UH–300
(To suit 304mm deep open web joists)

UH (Open Web Applications)

Universal Hanger

Standard Installation – Open Web Header



See Page 61 For Installation Instructions

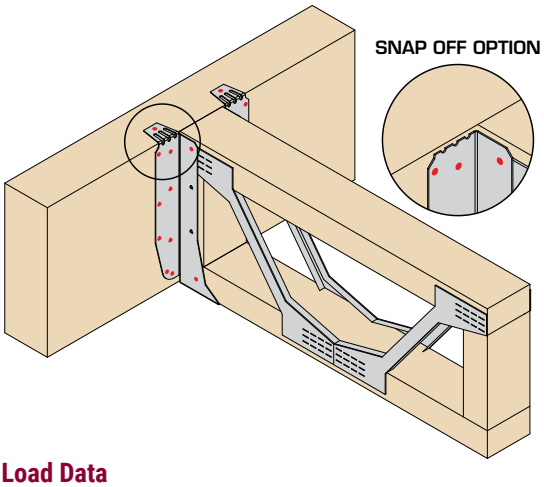
- Fill all red holes as indicated for this installation
- No backer block/plywood gusset required
- Top tabs to be wiped over and nailed
- Additional triangular holes into face only required for solid headers

Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 59)

Load Data

Hanger Depth (mm) (Depth Dependent)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)	
	Header		Incoming	Uplift	Open Web Header
	Face	Top			
195	8	2	2	1.98	14.19
220	8	2	4	3.97	14.19
235	8	2	4	3.97	13.23
300	8	2	4	3.97	13.64

Enhanced Installation – Solid Header



See Page 61 For Installation Instructions

- Fill all red holes as indicated for this installation
- All nail holes filled into solid header (including triangular)
- Top tabs to be wiped over and nailed or snapped off to give face fix only option

Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 59)

Load Data

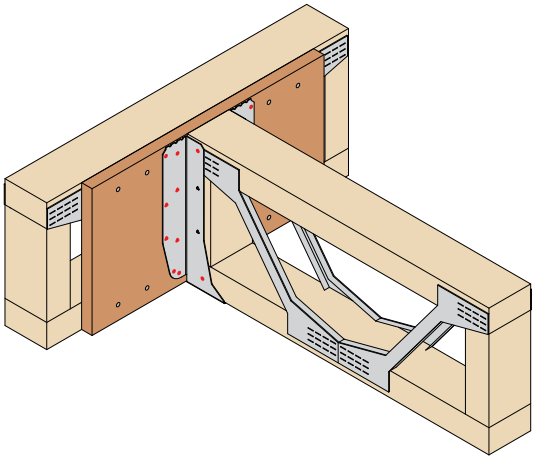
Hanger Depth (mm) (Depth Dependent)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	Solid Header	
	Face	Top			GL (Min GL28)	LVL
195	14	2 (0**)	2	1.98	16.84	15.25
220	18	2 (0**)	4	3.97	19.69	18.65
235	18	2 (0**)	4	3.97	22.16	21.58
300	22	2 (0**)	4	3.97	22.16	22.17

**No fixings required when using snap off option

UH (Open Web Applications)

Universal Hanger

Enhanced Installation – Open Web Header with Plywood Gusset



See Page 62 For Installation Instructions

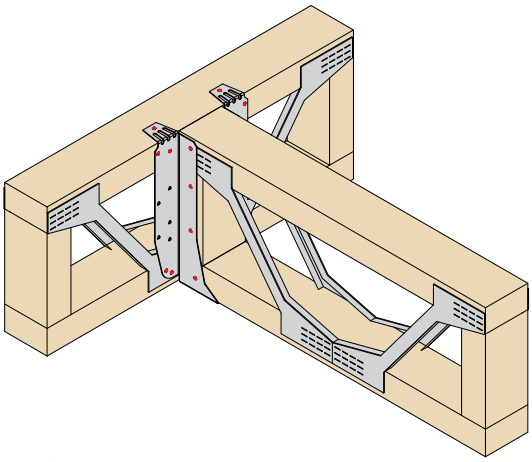
- Fill all red holes as indicated for this installation
- 18mm plywood gusset should be screwed into open web header with the appropriate screws – see installation instructions for more information
- All nail holes filled into plywood gusset (including triangular)
- Top tabs snapped off to give face fix only fixing

Additional triangular holes into incoming joist only required for enhanced uplift. (for details see below)

Load Data

Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)	
(Depth Dependent)	Header		Incoming	Uplift	Open Web Header / 18mm
	Face	Top			
195	14	0	2	1.98	16.84
220	18	0	4	3.97	19.69
235	18	0	4	3.97	22.16
300	22	0	4	3.97	22.16

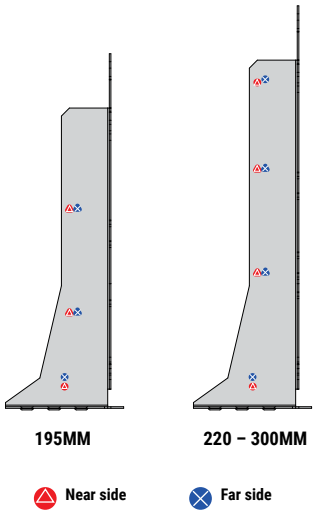
Enhanced Uplift



- Fill all red holes as indicated for this installation
- Fixings into the incoming joist are required to resist uplift
- Increased uplift figures can be achieved by nailing the additional triangular nail holes into the incoming member – solid incoming or web stiffeners are required

Load Data

Hanger Depth (mm)	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)
(Depth Dependent)	Incoming	Uplift
195	6	5.97
220 – 300	8	7.97

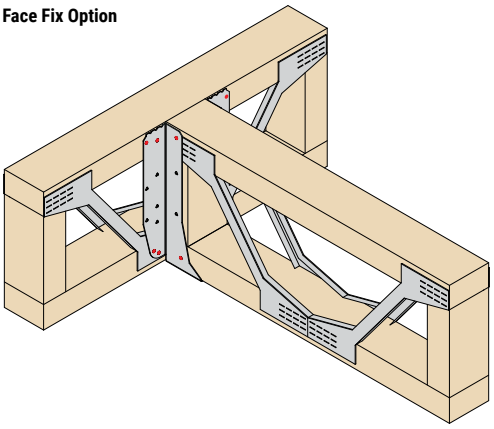


UH (Open Web Applications)

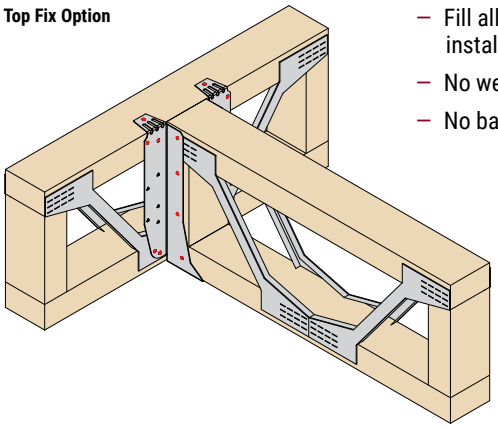
Universal Hanger

Sacrificial Stairwell Installation

Face Fix Option



Top Fix Option



- Fill all red holes as indicated for this installation
- No web stiffeners required
- No backer blocks required

Load Data

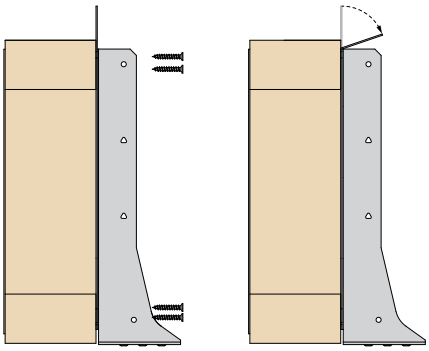
Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)	
	Header		Incoming	Uplift	Open Web Header
(Depth Dependent)	Face	Top			
195	8	2 (0**)	2	1.98	7.43
220	8	2 (0**)	4	3.97	7.43
235	8	2 (0**)	4	3.97	7.43
300	8	2 (0**)	4	3.97	7.43

**No fixings required when using snap off option

3.5 x 30mm multi–purpose wood screws may be used as an alternative fixing for temporary supporting hanger.

Installation Instructions

Face Fix Option

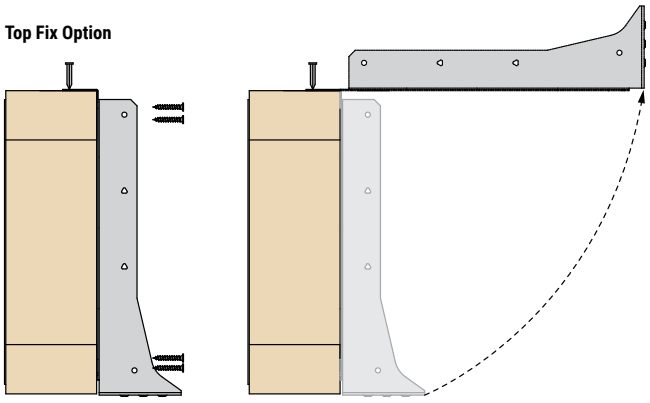


Face fix to top and bottom chords using 8No screws or nails.

Bend tabs forward and snap off.

Once ready for stairs to be installed the deck can be cut and joists/ hangers removed.

Top Fix Option



Face fix to top and bottom chords using 8No screws or nails.

Bend top tabs over joist top flange and nail using 1No fixing per leg.

Once ready for stairs to be installed the deck can be cut and joists/ hangers removed.

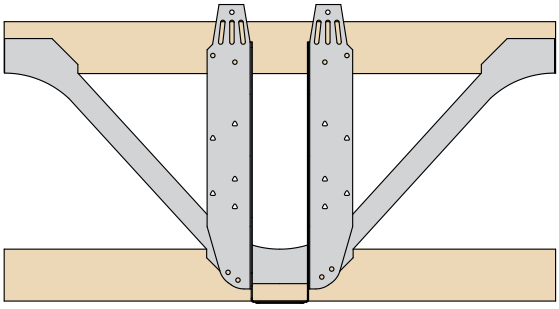
Hanger to be rotated through 90º to snap off at break line.

UH (Open Web Applications)

Universal Hanger

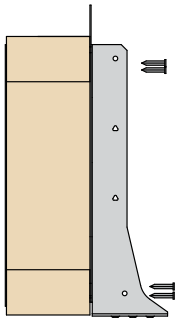
Standard Installation Instructions – Open Web Header

Stage 1



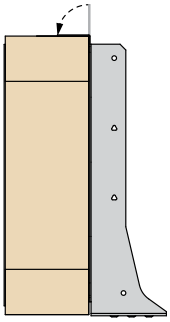
Position hanger against face of open web joist with locating tab tight to underside of joist.

Stage 2



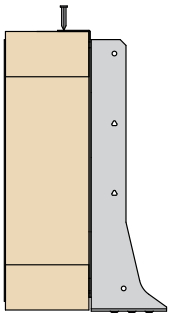
Face nail to top and bottom chords using 8No 3.4 x 35mm square twist nails in total.

Stage 3



Wipe over top tabs to give a flush fit to the joist.

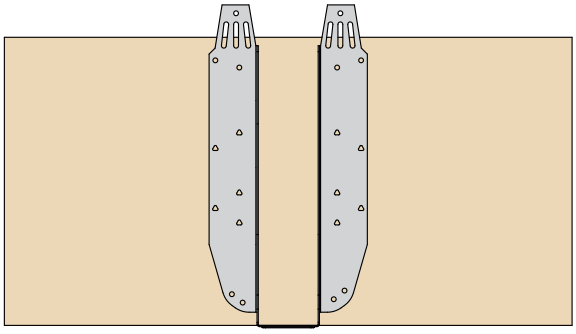
Stage 4



Nail top tabs into top chord of joist – 1No 3.4 x 35mm square twist nail per tab.

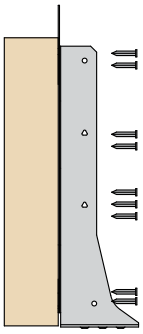
Enhanced Installation Instructions – Solid Header

Stage 1



Position hanger against face of joist with locating tab tight to underside of joist.

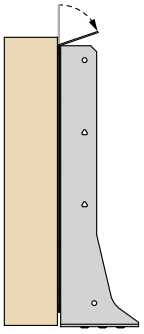
Stage 2



Fill all round and triangular nail holes to header with 3.4 x 35mm square twist nails.

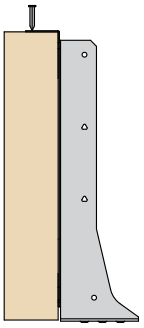
Stage 3

Option 1



Bend top tab forward and snap off.

Option 2



Wipe over top tabs to give a flush fit to the joist.

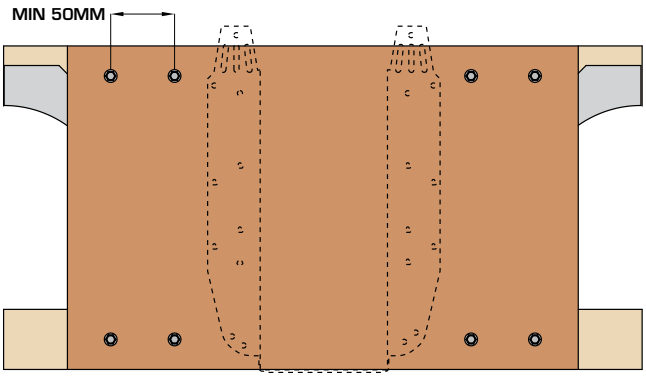
Nail top tabs into top chord of joist – 1No 3.4 x 35mm square twist nail nail per tab.

UH (Open Web Applications)

Universal Hanger

Open Web Header With Plywood Gusset Instructions

Stage 1

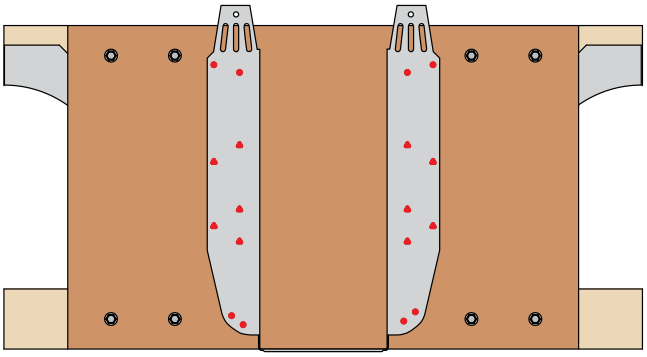


18mm plywood should be fixed to the face of the open web joist with 4No PSTS 6.5mm into the top chord and 4No PSTS 6.5mm into the bottom chord.

Plywood should be the full depth of the open web and of a width to give the screws the appropriate edge distance.

Paslode Structural Timber Screws should be used to fix the plywood to the open web joist. The screw length is dependant on the joist thickness.

Stage 2



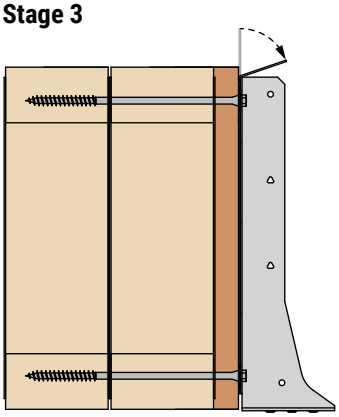
Position hanger flush with underside of joist.

Circular nail holes filled from bottom to top ensuring hanger side flanges are plumb.

All fixings are 3.4 x 35mm square twist nails.

Optional triangular nail holes should also be filled.

Stage 3



Bend top tabs forward and snap off.

Screw Specification

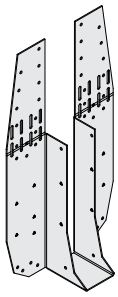
Header Joist Thickness	Fixing Ref	Product Code	Box Qty
Single 72mm	PSTS6.5X65	551105	100
Single 97mm	PSTS6.5X100	551106	100
Single 122mm	PSTS6.5X100	551106	100
Single 147mm	PSTS6.5X115	551102	100
Double 72mm	PSTS6.5X150	551107	100
Double 97mm	PSTS6.5X200	551108	100
Double 122mm	PSTS6.5X200	551108	100
Double 147mm	PSTS6.5X250	551109	100

HUH (I–Joist Applications)

Heavy Universal Hanger

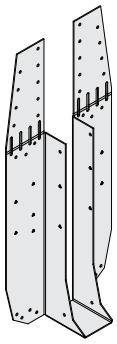
UKTA–21/0008

ETA–20/0999



NEW 220–235MM DEEP MERGED PART

- Streamlined range
- From 43 to 22 parts
- Removal of outer bend with no reduced performance



NEW 300MM DEEP DESIGN

- Removal of outer bend with no reduced performance

The HUH hanger is designed for any joist to joist, joist to trimmer or joist to steel application in high load applications.

Features & Benefits

- Elongated slots for height adjustment
- One hanger solution for backer and backerless I–Joists
- Additional triangular fixing holes for increased performance on solid members
- Suitable for connections to steel work – see pages 74 – 76

Material Specification

- Galvanised mild steel – Z275

Fixings

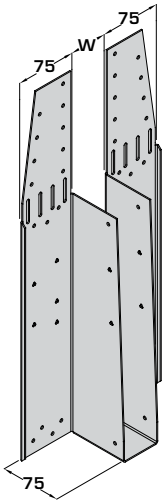
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

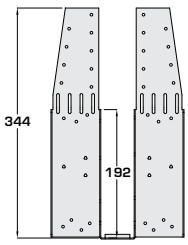
Available Sizes

Hanger Width (mm)	Hanger Depth (mm)					
	195	220	300	350	375	400
39	–	HUH–39–220–235	HUH–39–300	–	–	–
46	–	HUH–46–220–235	HUH–46–300	HUH–46–350	–	–
50	–	HUH–50–220–235	HUH–50–300	HUH–50–350	HUH–50–375	HUH–50–400
61	–	HUH–61–220–235	HUH–61–300	–	–	–
65	–	HUH–65–220–235	HUH–65–300	–	–	–
72	–	HUH–72–220–235	HUH–72–300	–	–	–
75	HUH–75–195	HUH–75–220–235	HUH–75–300	HUH–75–350	HUH–75–375	HUH–75–400
78	–	HUH–78–220–235	HUH–78–300	–	–	–
92	–	HUH–92–220–235	HUH–92–300	HUH–92–350	–	HUH–92–400
100	HUH–100–195	HUH–100–220–235	HUH–100–300	HUH–100–350	HUH–100–375	HUH–100–400
110	–	HUH–110–220–235	HUH–110–300	–	–	–
122	–	HUH–122–220–235	HUH–122–300	–	–	HUH–122–400
125	HUH–125–195	HUH–125–220–235	HUH–125–300	–	HUH–125–375	HUH–125–400
130	–	HUH–130–220–235	HUH–130–300	–	–	–
138	–	HUH–138–220–235	HUH–138–300	–	–	–
144	–	HUH–144–220–235	HUH–144–300	–	–	–
150	HUH–150–195	HUH–150–220–235	HUH–150–300	HUH–150–350	HUH–150–375	HUH–150–400
183	–	HUH–183–220–235	HUH–183–300	–	–	–
198	HUH–198–195	HUH–198–220–235	HUH–198–300	–	HUH–198–375	HUH–198–400
225	–	HUH–225–220–235	–	–	–	–
250	–	HUH–250–220–235	HUH–250–300	–	–	–
300	–	HUH–300–220–235	HUH–300–300	–	–	–

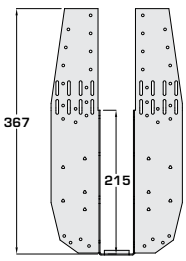
Dimensions (mm)



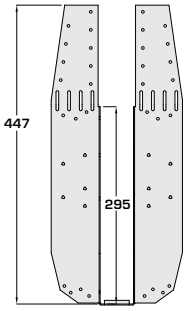
Height Suitability



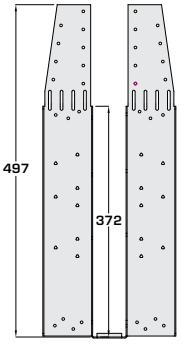
HUH–195
(To suit 195 – 200mm deep I–joists)



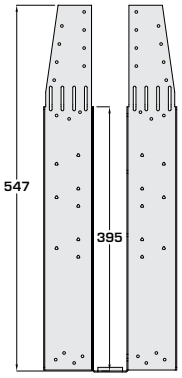
HUH–220–235
(To suit 220–245mm deep I–joists)



HUH–300
(To suit 300 – 302mm deep I–joists)



HUH–350
(To suit 350 – 360mm deep I–joists)

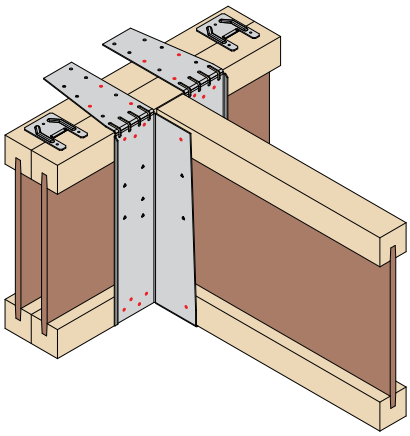


HUH–400
(To suit 400 – 406mm deep I–joists)

HUH (I–Joist Applications)

Heavy Universal Hanger

Standard Installation – I–Joist Header without Backer Block



See Page 66 For Installation Instructions

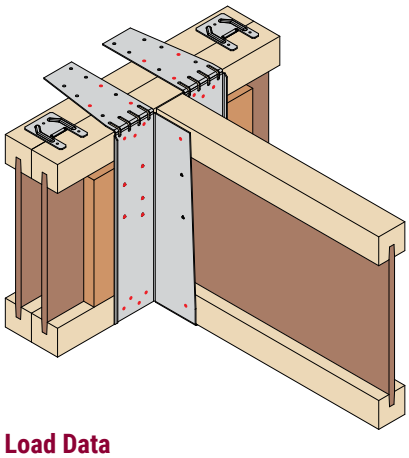
- Fill all red holes as indicated for this installation
- No backer block required
- No web stiffeners required*
- Top tabs to be wiped over and nailed
- Min 2No fixings into rear ply and 1No fixing into front ply per leg for double headers
- Additional triangular holes into face only required for solid headers

*Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 65)

Load Data

Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	I–Joist Header	
(Depth Dependent Only)	Face	Top			Solid Flange	LVL Flange
195	14	6	4	3.97	17.30	17.83
220	14	6	4	3.97	17.30	17.83
235	14	6	4	3.97	18.50	18.50
300	14	6	4	3.97	18.50	18.50
350	14	6	4	3.97	15.50	16.15
400	14	6	4	3.97	15.50	16.15

Enhanced Installation – I–Joist Header with Backer Block



See Page 66 For Installation Instructions

- Fill all red holes as indicated for this installation
- All nail holes filled into backer block (including triangular)
- Backer block required to hanger side only (follow I–joist manufacturer's guidelines)
- Min 2No fixings into rear ply and 1No fixing into front ply per leg for double headers
- No web stiffeners required when using same hanger/joist depth*

*Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 65)

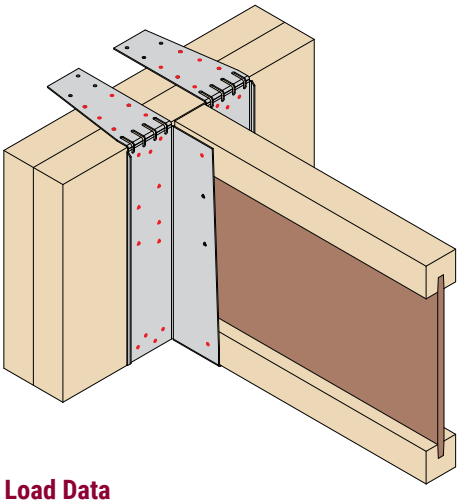
Load Data

Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	I–Joist Header	
(Depth Dependent Only)	Face	Top			Solid Flange	LVL Flange
195	20	6	4	3.97	28.50	28.50
220	24	6	4	3.97	28.50	28.50
235	24	6	4	3.97	28.50	28.50
300	24	6	4	3.97	28.50	28.50
350	30	6	4	3.97	28.50	28.50
400	30	6	4	3.97	28.50	28.50

HUH (I–Joist Applications)

Heavy Universal Hanger

Enhanced Installation – Solid Header



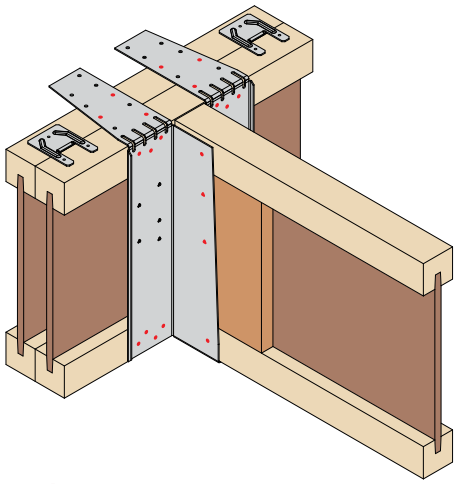
- Fill all red holes as indicated for this installation
- All nail holes filled into solid header (including triangular)
- No web stiffeners required when using same hanger/joist depth*
- Top tabs to be wiped over and nailed
- Min 2No fixings into rear ply and 1No fixing into front ply per leg for double headers

*Additional triangular holes into incoming joist only required for enhanced uplift. (for details see below)

Load Data

Hanger Depth (mm) (Depth Dependent Only)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	Solid Header	
	Face	Top			GL (Min GL28)	LVL
195	20	6	4	3.97	29.50	29.50
220	24	6	4	3.97	29.50	29.50
235	24	6	4	3.97	29.50	29.50
300	24	6	4	3.97	29.50	29.50
350	30	6	4	3.97	29.50	29.50
400	30	6	4	3.97	29.50	29.50

Enhanced Uplift



- Fill all red holes as indicated for this installation
- Fixings into the incoming joist are required to resist uplift
- Increased uplift figures can be achieved by nailing the additional triangular nail holes into the incoming member – solid incoming or web stiffeners are required

Load Data

Hanger Depth (mm) (Depth Dependent Only)	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)
	Incoming	Uplift
195 – 400	8	7.97

195 – 400MM

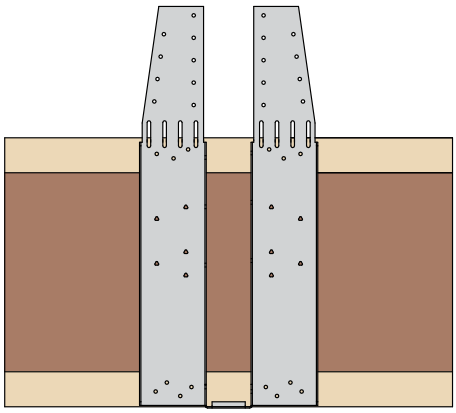
Near side Far side

HUH (I–Joist Applications)

Heavy Universal Hanger

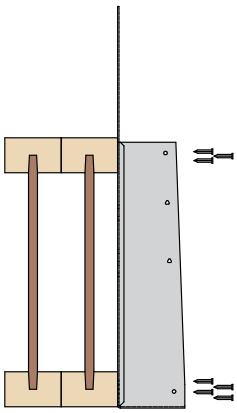
Standard Installation Instructions – I–Joist Header without Backer Block

Stage 1



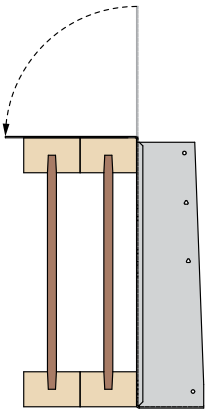
Position hanger flush with underside of joist.

Stage 2



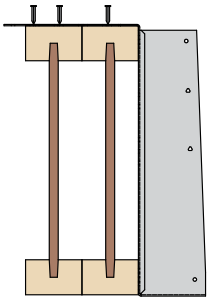
Face nail to top and bottom flanges using 14No 3.4 x 35mm square twist nails in total.

Stage 3



Wipe over top tabs to give a flush fit to the joist.

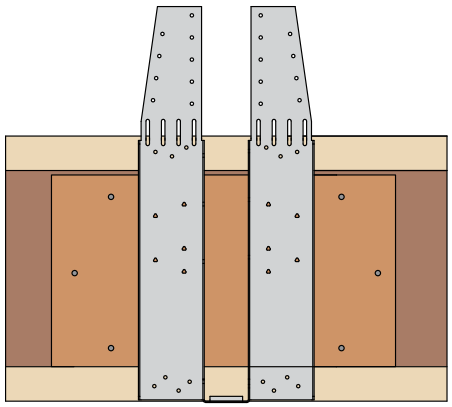
Stage 4



Nail top tabs into top flange of joist – Min 2No 3.4 x 35mm square twist nails into rear ply and 1No 3.4 x 35mm square twist nail into front ply per leg.

Enhanced Installation Instructions – I–Joist Header with Backer Block

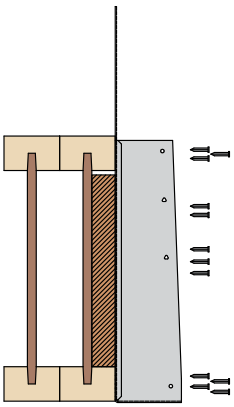
Stage 1



Position hanger flush with underside of joist.

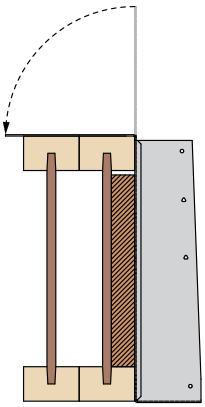
Backer block installed as per I–Joist manufacturer's guidelines.

Stage 2



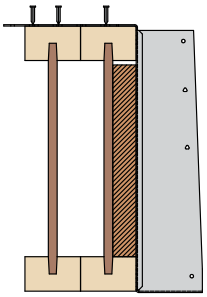
Fill all round and triangular nail holes to header and backer face with 3.4 x 35mm square twist nails.

Stage 3



Wipe over top tabs to give a flush fit to the joist.

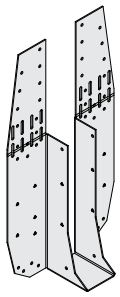
Stage 4

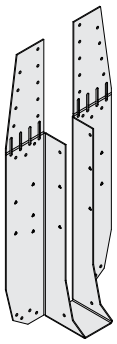


Nail top tabs into top flange of joist – Min 2No 3.4 x 35mm square twist nails into rear ply and 1No 3.4 x 35mm square twist nail into front ply per leg.

HUH (Open Web Applications)

Heavy Universal Hanger





UKTA–21/0008

ETA–20/0999

NEW 220–235MM DEEP MERGED PART

- Streamlined range
- From 43 to 22 parts
- Removal of outer bend with no reduced performance

NEW 300MM DEEP DESIGN

- Removal of outer bend with no reduced performance

The HUH hanger is designed for any joist to joist, joist to trimmer or joist to steel application in high load applications.

Features & Benefits

- Elongated slots for height adjustment
- No need for plywood gussets or backer blocks
- Additional triangular fixing holes for increased performance on solid members
- Suitable for connections to steel work – see pages 74 – 76

Material Specification

- Galvanised mild steel – Z275

Fixings

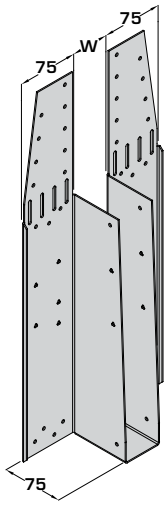
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

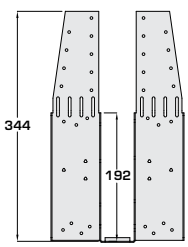
Available Sizes

Hanger Width (W) (mm)	Hanger Depth (mm)					
	195	220	300	350	375	400
39	–	HUH–39–220–235	HUH–39–300	–	–	–
46	–	HUH–46–220–235	HUH–46–300	HUH–46–350	–	–
50	–	HUH–50–220–235	HUH–50–300	HUH–50–350	HUH–50–375	HUH–50–400
61	–	HUH–61–220–235	HUH–61–300	–	–	–
65	–	HUH–65–220–235	HUH–65–300	–	–	–
72	–	HUH–72–220–235	HUH–72–300	–	–	–
75	HUH–75–195	HUH–75–220–235	HUH–75–300	HUH–75–350	HUH–75–375	HUH–75–400
78	–	HUH–78–220–235	HUH–78–300	–	–	–
92	–	HUH–92–220–235	HUH–92–300	HUH–92–350	–	HUH–92–400
100	HUH–100–195	HUH–100–220–235	HUH–100–300	HUH–100–350	HUH–100–375	HUH–100–400
110	–	HUH–110–220–235	HUH–110–300	–	–	–
122	–	HUH–122–220–235	HUH–122–300	–	–	HUH–122–400
125	HUH–125–195	HUH–125–220–235	HUH–125–300	–	HUH–125–375	HUH–125–400
130	–	HUH–130–220–235	HUH–130–300	–	–	–
138	–	HUH–138–220–235	HUH–138–300	–	–	–
144	–	HUH–144–220–235	HUH–144–300	–	–	–
150	HUH–150–195	HUH–150–220–235	HUH–150–300	HUH–150–350	HUH–150–375	HUH–150–400
183	–	HUH–183–220–235	HUH–183–300	–	–	–
198	HUH–198–195	HUH–198–220–235	HUH–198–300	–	HUH–198–375	HUH–198–400
225	–	HUH–225–220–235	–	–	–	–
250	–	HUH–250–220–235	HUH–250–300	–	–	–
300	–	HUH–300–220–235	HUH–300–300	–	–	–

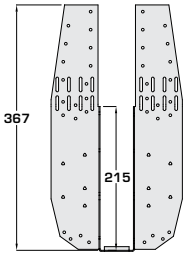
Dimensions (mm)



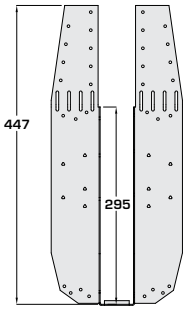
Height Suitability



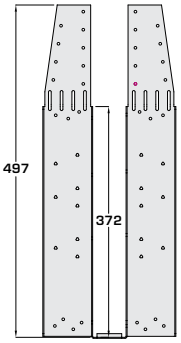
HUH–195
(To suit 195 – 202mm deep open web joists)



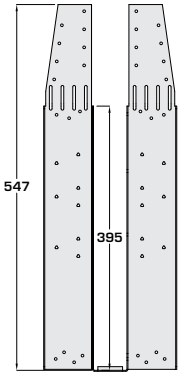
HUH–220–235
(To suit 219–254mm deep open web joists)



HUH–300
(To suit 304mm deep open web joists)



HUH–375
(To suit 373 – 375mm deep open web joists)

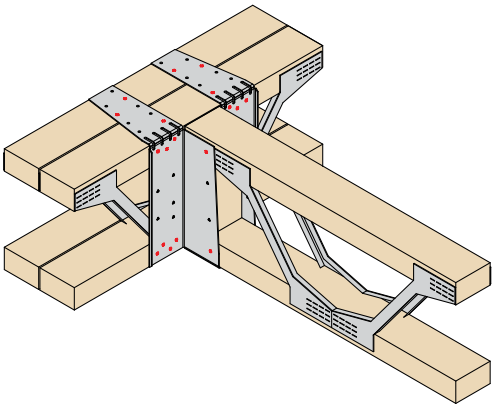


HUH–400
(To suit 417 – 424mm deep open web joists)

HUH (Open Web Applications)

Heavy Universal Hanger

Standard Installation – Open Web Header



See Page 71 For Installation Instructions

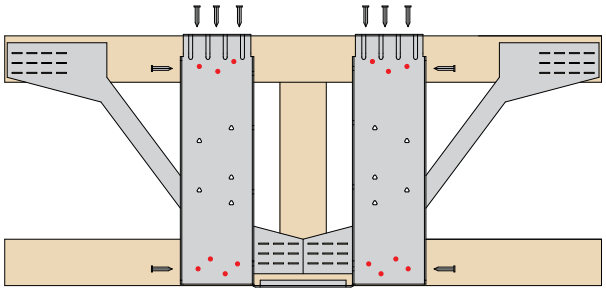
- Fill all red holes as indicated for this installation
- No backer block/plywood gusset required
- Top tabs to be wiped over and nailed
- Min 2No fixings into rear ply and 1No fixing into front ply per leg for double headers
- Additional triangular holes into face only required for solid headers

Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 70)

Load Data

Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)	
	Header		Incoming	Uplift	Open Web Header
(Depth Dependent Only)	Face	Top			
195	14	6	4	3.97	13.95
220	14	6	4	3.97	13.95
235	14	6	4	3.97	18.60
300	14	6	4	3.97	18.60
375	14	6	4	3.97	18.60
400	14	6	4	3.97	18.60

Standard Installation With Blocking – Open Web Header



See Page 72 For Installation Instructions

- Fill all red holes as indicated for this installation
- Blocking piece required within joist, centred on hanger and minimum 47 x 72mm
- No backer block/plywood gusset required
- Top tabs to be wiped over and nailed
- Min 2No fixings into rear ply and 1No fixing into front ply per leg for double headers

Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 70)

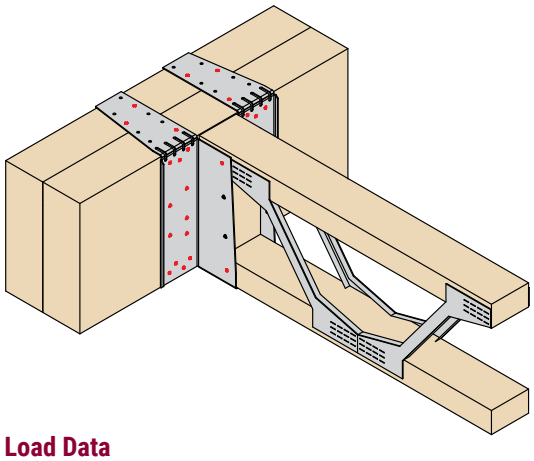
Load Data

Hanger Depth (mm)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)	
	Header		Incoming	Uplift	Open Web Header With Blocking
(Depth Dependent Only)	Face	Top			
195	14	6	4	3.97	24.00
220	14	6	4	3.97	24.00
235	14	6	4	3.97	24.00
300	14	6	4	3.97	24.00
375	14	6	4	3.97	24.00
400	14	6	4	3.97	24.00

HUH (Open Web Applications)

Heavy Universal Hanger

Enhanced Installation – Solid Header



See Page 71 For Installation Instructions

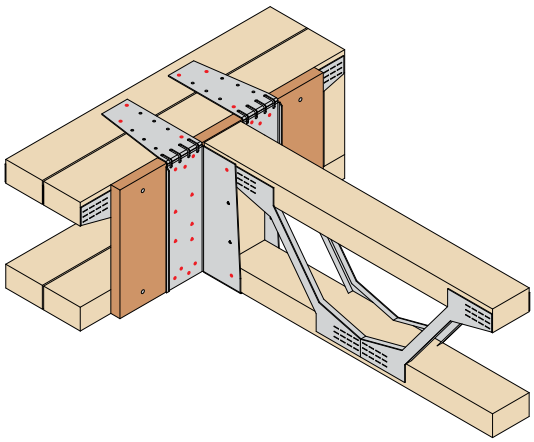
- Fill all red holes as indicated for this installation
- All nail holes filled into solid header (including triangular)
- Top tabs to be wiped over and nailed
- Min 2No fixings into rear ply and 1No fixing into front ply per leg for double headers

Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 70)

Load Data

Hanger Depth (mm) (Depth Dependent Only)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)		
	Header		Incoming	Uplift	Solid Header	
	Face	Top			GL (Min GL28)	LVL
195	20	6	4	3.97	29.50	29.50
220	24	6	4	3.97	29.50	29.50
235	24	6	4	3.97	29.50	29.50
300	24	6	4	3.97	29.50	29.50
375	30	6	4	3.97	29.50	29.50
400	30	6	4	3.97	29.50	29.50

Enhanced Installation – Open Web Header With Plywood Gusset



See Page 73 For Installation Instructions

- Fill all red holes as indicated for this installation
- 18mm plywood gusset should be screwed into open web header with the appropriate screws – see installation instructions for more information
- All nail holes filled into plywood gusset (including triangular)
- Top tabs to be wiped over and nailed
- Min 2No fixings into rear ply and 1No fixing into front ply per leg for double headers

Additional triangular holes into incoming joist only required for enhanced uplift. (for details see page 70)

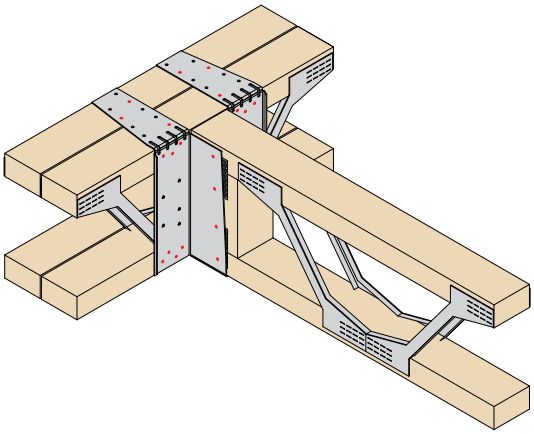
Load Data

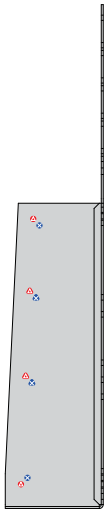
Hanger Depth (mm) (Depth Dependent Only)	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)	
	Header		Incoming	Uplift	Open Web Header / 18mm Plywood Gusset
	Face	Top			
195	20	6	4	3.97	29.50
220	24	6	4	3.97	29.50
235	24	6	4	3.97	29.50
300	24	6	4	3.97	29.50
375	30	6	4	3.97	29.50
400	30	6	4	3.97	29.50

HUH (Open Web Applications)

Heavy Universal Hanger

Enhanced Uplift



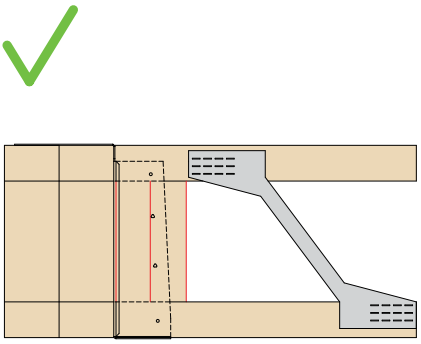


195 – 400MM

- Fill all red holes as indicated for this installation
- Fixings into the incoming joist are required to resist uplift
- Increased uplift figures can be achieved by nailing the additional triangular nail holes into the incoming member – solid incoming or full width vertical required

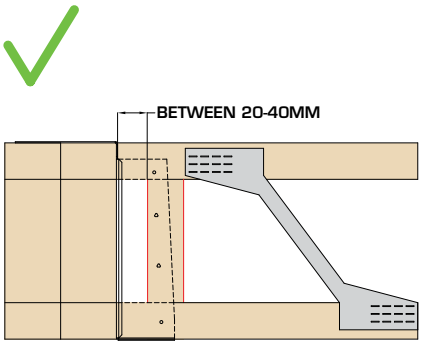
Near side

Far side



Hanger side flanges/plates omitted for clarity

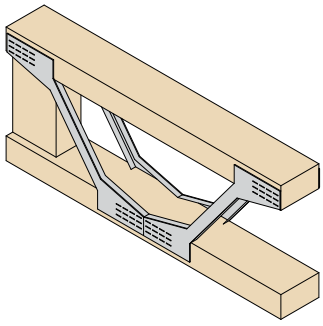
2No end verticals required to achieve full uplift capacity.



Hanger side flanges/plates omitted for clarity

Single end verticals can be used if the gap between the back of the hanger and the vertical is between 20 – 40mm.

Incorrect Installation



Do not use HUH for enhanced uplift when using trimmable ends

Load Data

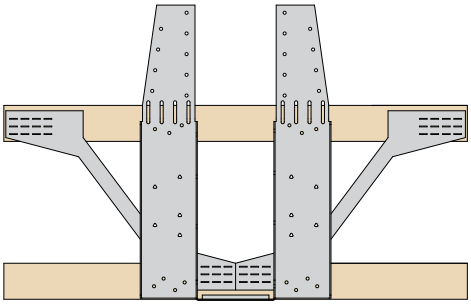
Hanger Depth (mm)	Fixings (3.4 x 35mm)	Characteristic Capacity (kN)
(Depth Dependent Only)	Incoming	Uplift
195 – 400	8	7.97

HUH (Open Web Applications)

Heavy Universal Hanger

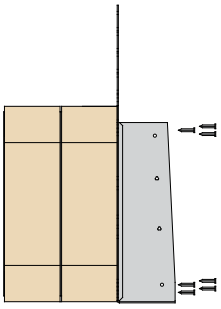
Standard Installation Instructions – Open Web Header

Stage 1



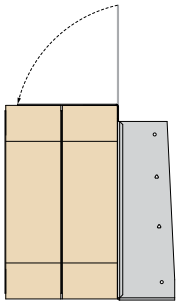
Position hanger flush with underside of joist.

Stage 2



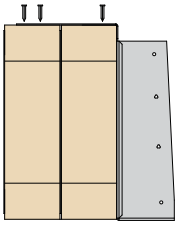
Face nail to top and bottom chords using 14No 3.4 x 35mm square twist nails in total.

Stage 3



Wipe over top tabs to give a flush fit to the joist.

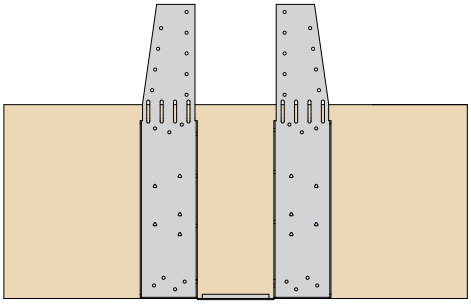
Stage 4



Nail top tabs into top chord of joist – Min 2No 3.4 x 35mm square twist nails into rear ply and 1No 3.4 x 35mm square twist nail into front ply per leg.

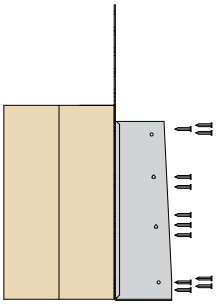
Enhanced Installation Instructions – Solid Header

Stage 1



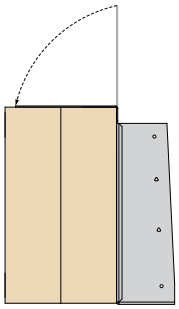
Position hanger flush with underside of joist.

Stage 2



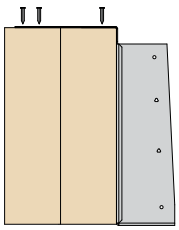
Fill all round and triangular nail holes to header joist with 3.4 x 35mm square twist nails.

Stage 3



Wipe over top tabs to give a flush fit to the joist.

Stage 4

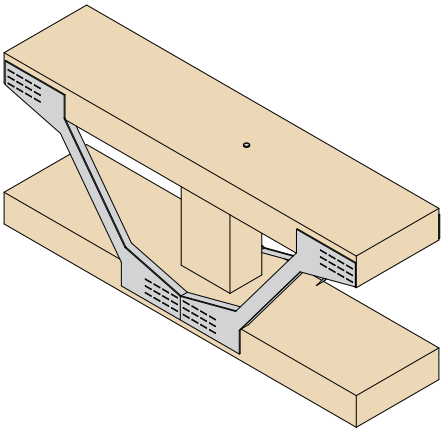


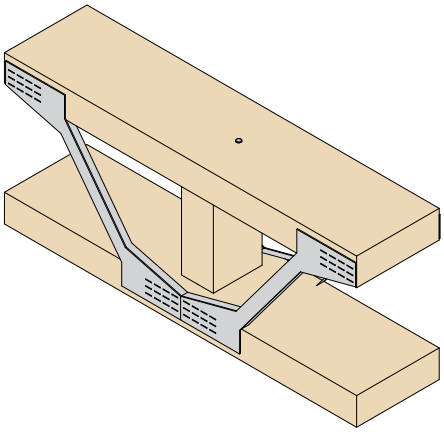
Nail top tabs into top chord of joist – Min 2No 3.4 x 35mm square twist nails into rear ply and 1No 3.4 x 35mm square twist nail into front ply per leg.

HUH (Open Web Applications)

Heavy Universal Hanger

Standard Installation With Blocking Instructions – Open Web Header

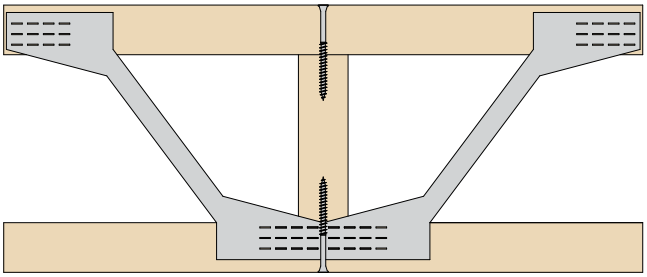




Applying a high load to the top flange of an open web joist can lead to failure of the joist itself (i.e metal webs buckling)

Adding a vertical blocking piece to the open web joist prevents buckling and helps transfer the load, therefore allowing the hanger to perform to a greater capacity.

Stage 1

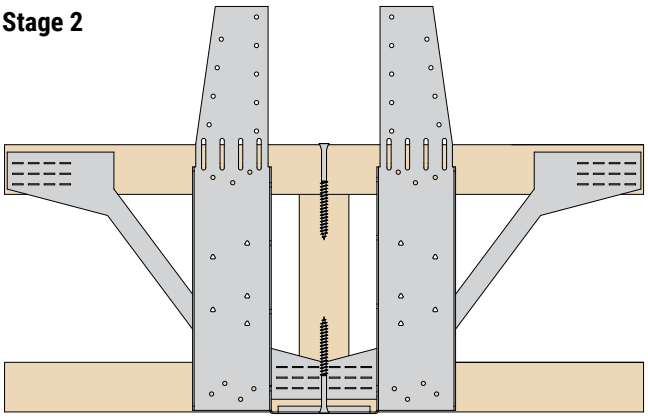


Vertical blocking piece to be built into Open Web Joist, centred on incoming hanger position.

Vertical blocking piece to be minimum 47 x 72mm C16 timber.

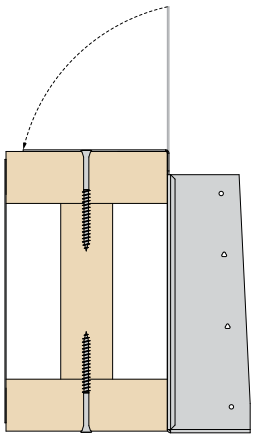
Fixed using Paslode 3.1 x 90mm annular ring shank nails.

Stage 2



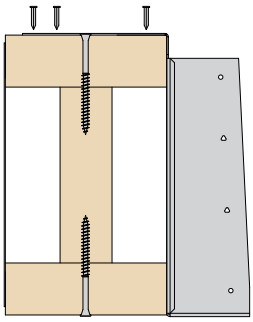
Position hanger against face of Open Web Joist with locating tab tight to underside of joist.

Stage 3



Wipe over top tabs to give a flush fit to the joist.

Stage 4



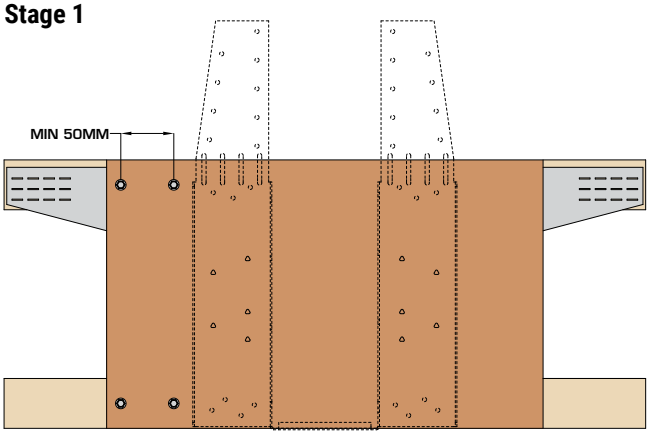
Nail top tabs into top chord of joist – Min 2No 3.4 x 35mm square twist nails into rear ply and 1No 3.4 x 35mm square twist nail into front ply per leg.

HUH (Open Web Applications)

Heavy Universal Hanger

Open Web Header With Plywood Gusset Instructions

Stage 1

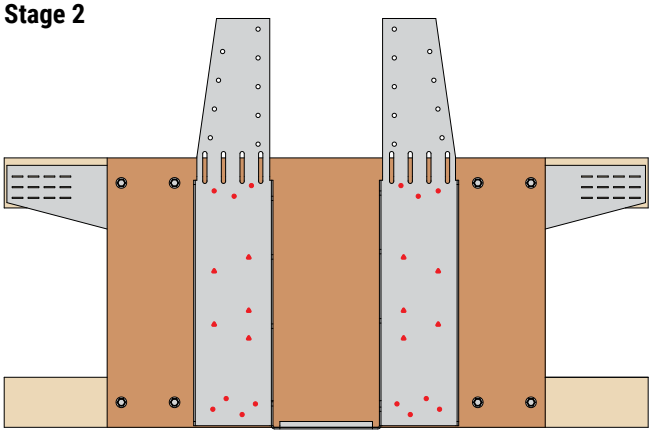


18mm plywood should be fixed to the face of the open web joist with 4No PSTS 6.5mm into the top chord and 4No PSTS 6.5mm into the bottom chord.

Plywood should be the full depth of the open web and of a width to give the screws the appropriate edge distance.

Paslode Structural Timber Screws should be used to fix the plywood to the open web joist. The screw length is dependant on the joist thickness.

Stage 2



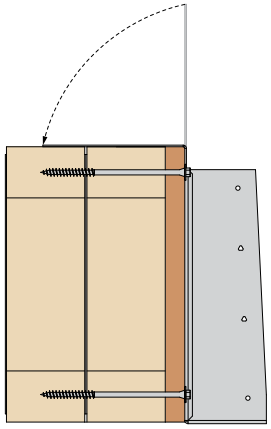
Position hanger flush with underside of joist.

Circular nail holes filled from bottom to top ensuring hanger side flanges are plumb.

All fixings are 3.4 x 35mm square twist nails.

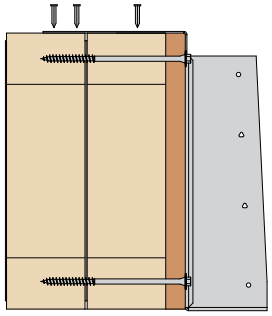
Triangular nail holes should also be filled.

Stage 3



Wipe over top tabs to give a flush fit to the joist.

Stage 4



Nail top tabs into top chord of joist – Min 2No 3.4 x 35mm square twist nails into rear ply and 1No 3.4 x 35mm square twist nail into front ply per leg.

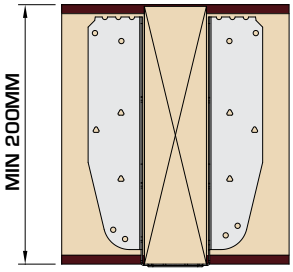
Screw Specification

Header Joist Thickness	Fixing Ref	Product Code	Box Qty
Single 72mm	PSTS6.5X65	551105	100
Single 97mm	PSTS6.5X100	551106	100
Single 122mm	PSTS6.5X100	551106	100
Single 147mm	PSTS6.5X115	551102	100
Double 72mm	PSTS6.5X150	551107	100
Double 97mm	PSTS6.5X200	551108	100
Double 122mm	PSTS6.5X200	551108	100
Double 147mm	PSTS6.5X250	551109	100

Steel Connections

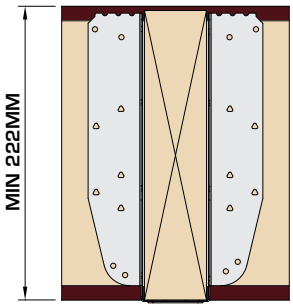
FACE FIXED ONLY TO PACKER WITHIN STEEL – JOIST/TRUSS LINING THROUGH WITH BOTTOM OF STEEL

PARTIAL FIXING CAPACITY



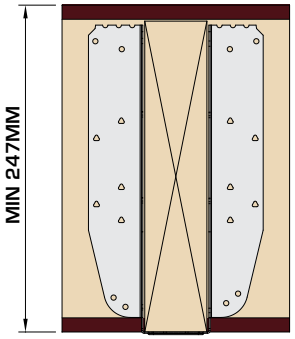
UH OR HUH – 195MM DEEP
(195–202mm deep joists)

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
10	2	1.98	12.40



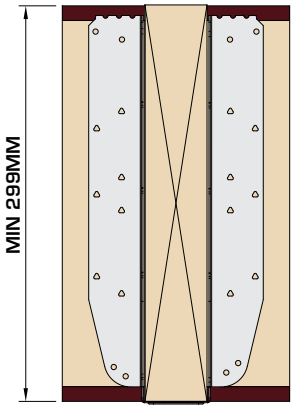
UH OR HUH – 220MM DEEP
(219–225mm deep joists)

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
14	2	1.98	13.20



UH OR HUH – 235MM DEEP
(235–254mm deep joists)

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
18	2	1.98	15.20



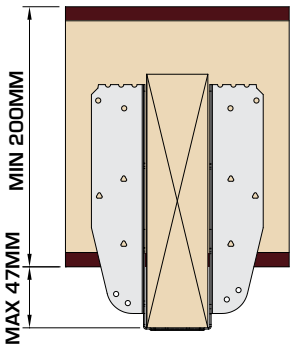
UH OR HUH – 300MM DEEP
(300–304mm deep joists)

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
18	2	1.98	15.20

Timber packer to be securely fixed to web of steel beam, packer to be fixed tightly to bottom flange of steelwork. Timber packer to be a minimum of C16 grade timber. Fixing of timber packer to steelwork by Building Designer.

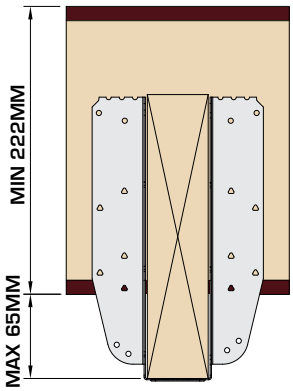
FACE FIXED TO PACKER WITHIN STEEL – JOIST/TRUSS DROPPED BELOW BOTTOM OF STEEL

PARTIAL FIXING CAPACITY



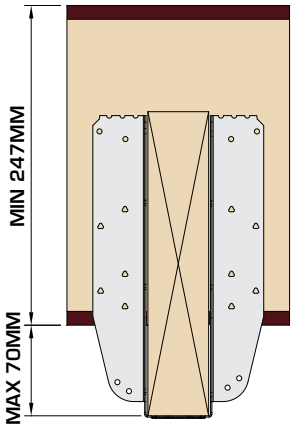
UH OR HUH – 195MM DEEP

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
10	2	1.98	12.40



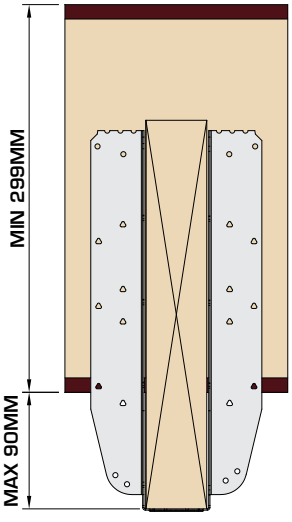
UH OR HUH – 220MM DEEP

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
10	2	1.98	12.40



UH OR HUH – 235MM DEEP

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
10	2	1.98	12.40



UH OR HUH – 300MM DEEP

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
14	2	1.98	13.20

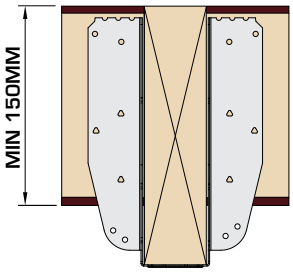
Timber packer to be securely fixed to web of steel beam, packer to be fixed tightly to bottom flange of steelwork. Timber packer to be a minimum of C16 grade timber. Fixing of timber packer to steelwork by Building Designer.

FOR CONNECTIONS OUTWITH THIS SCOPE PLEASE CONTACT TECHNICAL SUPPORT FOR GUIDANCE

Steel Connections

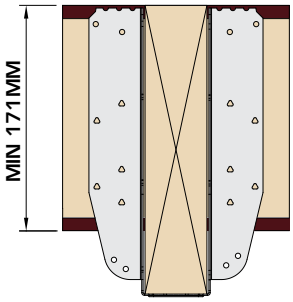
FACE FIXED ONLY TO PACKER WITHIN STEEL – JOIST/TRUSS LINING THROUGH WITH TOP OF STEEL

PARTIAL FIXING CAPACITY



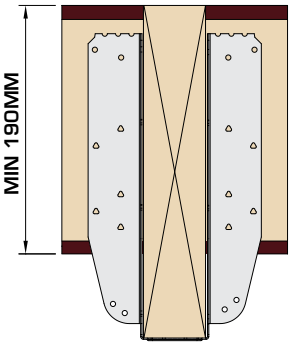
UH OR HUH – 195MM DEEP
(195–202mm deep joists)

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
10	2	1.98	12.40



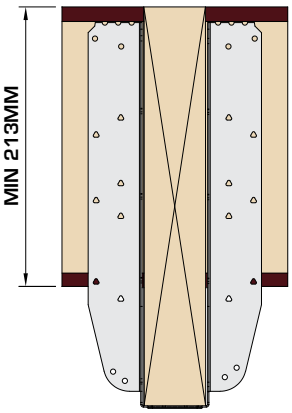
UH OR HUH – 220MM DEEP
(219–225mm deep joists)

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
14	2	1.98	13.20



UH OR HUH – 235MM DEEP
(235–254mm deep joists)

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
14	2	1.98	13.20

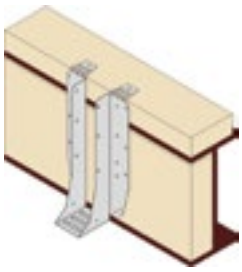


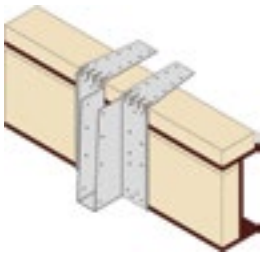
UH OR HUH – 300MM DEEP
(300–304mm deep joists)

Fixings (3.4 x 35mm Square Twist Nails)		Characteristic Capacity (kN)	
Face	Incoming	Uplift	C16 Timber
14	2	1.98	13.20

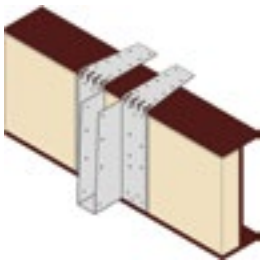
Timber packer to be securely fixed to web of steel beam, packer to be fixed tightly to bottom flange of steelwork. Timber packer to be a minimum of C16 grade timber. Fixing of timber packer to steelwork by Building Designer.

FACE FIXED TO PACKER WITHIN STEEL & FIXED TO TOP – JOIST LINING THROUGH WITH TOP FULLY FIXED TO STEEL





Hanger fixed to timber packer secured to top flange and web of steel beam using 3.4 x 35mm square twist nails. Timber packer fixed to web of beam (as per Building Designers instructions) to prevent hanger rotation. Timber packers must be a minimum of 35 x 72mm C16 grade timber.



Hanger fixed directly to top flange of steel beam using 4no. Spit Spitfire P370 Cartridge tool using SC9 nails or equivalent, into the hanger flanges. Hanger fixed to timber packer secured to web of steel beam using 3.4 x 35mm square twist nails. Timber packer fixed to web of beam (as per Building Designers instructions) to prevent hanger rotation. Timber packers must be a minimum of 35 x 72mm C16 grade timber.

Product Code	Hanger Width (mm)	Hanger Depth (mm)	Fixings			Characteristic Capacity (kN)	
			Face	Top	Incoming	Uplift	Down
UH	39–100	195	14	2	2	1.98	12.40
		220	18			3.97	13.20
		235	18				15.20
		300	22				15.20
HUH	39–300	195	24	6	4	3.97	23.30
		220–235					
		300					

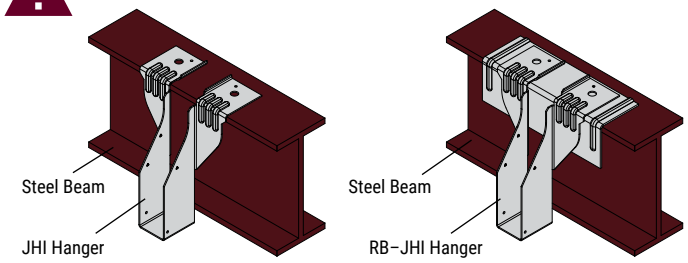
FOR CONNECTIONS OUTWITH THIS SCOPE PLEASE CONTACT TECHNICAL SUPPORT FOR GUIDANCE

Steel Connections

TOP FIXED TO STEEL WITH OR WITHOUT MASONRY ABOVE

PARTIAL FIXING CAPACITY

MASONRY HANGERS MUST BE USED WHEN MASONRY BEING CONSTRUCTED ABOVE STEEL FLANGE

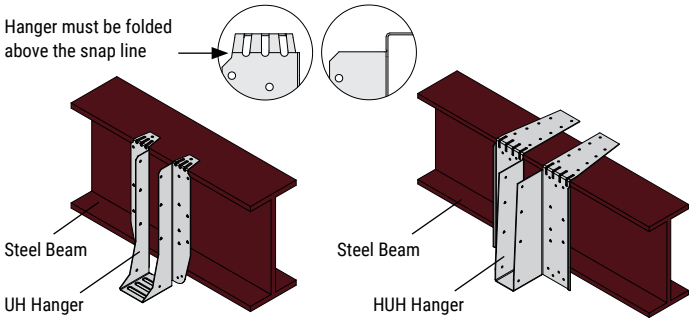


Hanger Type	Hanger Width (mm)	Hanger Depth (mm)	Top	Incoming	Characteristic Capacity (kN)	
					Uplift	Down
JHI	39–100	All depths	4	2	2.00	23.04
JHI	122–198	All depths	4	2	2.00	13.97
RB–JHI	39–250	All depths	4	2	2.00	28.31

Hanger shot fired to steel beam with SC9 nails or equivalent per leg using SPIT P370 Cartridge Tool.

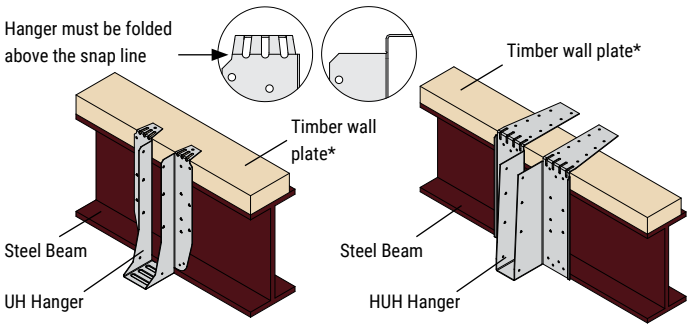
TOP FIXED TO STEEL WITH NO MASONRY ABOVE

PARTIAL FIXING CAPACITY



Hanger Type	Hanger Width (mm)	Hanger Depth (mm)	Top	Incoming	Characteristic Capacity (kN)	
					Uplift	Down
UH	39–100	195	2	2	1.98	10.80
		220/235/300	2	4	3.97	10.80
HUH	39–300	All depths	6	4	3.97	13.20

Hanger shot fired to steel beam with SC9 nails or equivalent per leg using SPIT P370 Cartridge Tool.

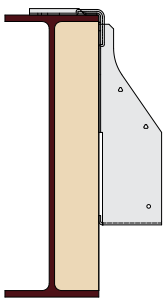


Hanger Type	Hanger Width (mm)	Hanger Depth (mm)	Face	Top	Incoming	Characteristic Capacity (kN)	
						Uplift	Down
UH	39–100	195	4	2	2	1.98	10.80
		220/235/300	4	2	4	3.97	10.80
HUH	39–300	All depths	6	6	4	3.97	13.20

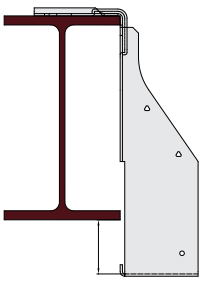
*Min 35x72 C16 fixed to steel as per Building Designer's specification.

Hanger nailed to timber packer with 3.4x35mm Square Twist Nails.

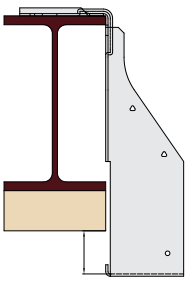
PREVENTING HANGER ROTATION FOR TIMBER & MASONRY HANGERS



Where hanger does not extend past/or rest on the bottom of the steel flange a timber packer is required to prevent rotation.



Where hanger extends past bottom of steel flange the drop must not exceed 30% of the hanger depth to prevent rotation.

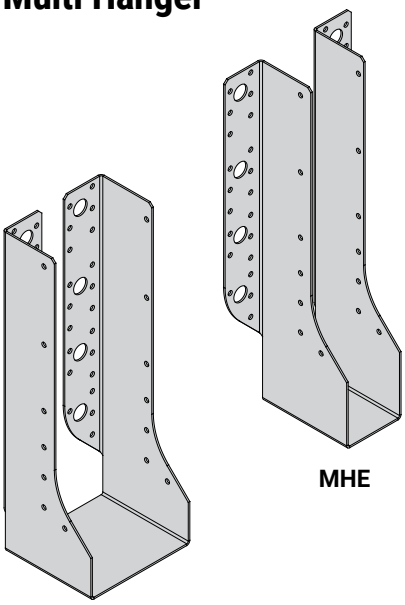


Where hanger extends past bottom of steel flange and drops >30% of the hanger depth a timber packer fixed as per building designers details can be used to reduce drop depth to <30%.

FOR CONNECTIONS OUTWITH THIS SCOPE PLEASE CONTACT TECHNICAL SUPPORT FOR GUIDANCE

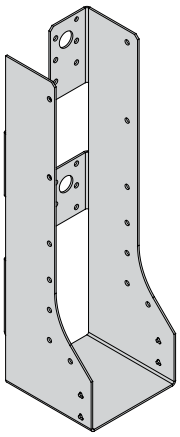
MH RANGE

Multi Hanger



MHI

MHE



MHIC

The MH hanger range is designed to support timber to timber connections in medium to high load situations.

Features & Benefits

- External and internal flange options allow for multifunctional use
- Range of sizes and potential fixing options allows for greater design flexibility
- Partial fixing options available on request. Contact Technical Support.

Material Specification

- Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500
See page 10	M12 Bolts	Each

*For use with Paslode PPN35Ci

Available Sizes

Hanger Width (W) (mm)	MHE380	MHI/MHIC380	MHE490	MHI/MHIC490	MHE620	MHI/MHIC620
39	MHE380–39–170	MHIC380–39–170	MHE490–39–225	MHIC490–39–225	–	MHIC620–39–290
46	MHE380–46–167	MHIC380–46–167	MHE490–46–222	MHIC490–46–222	MHE620–46–287	MHIC620–46–287
50	MHE380–50–165	MHIC380–50–165	MHE490–50–220	MHIC490–50–220	MHE620–50–285	MHIC620–50–285
55	–	–	–	MHIC490–55–217	–	–
61	–	–	–	MHIC490–61–214	–	MHIC620–61–279
65	–	–	–	MHIC490–65–212	–	MHIC620–65–277
72	–	–	–	MHIC490–72–209	–	MHIC620–72–274
75	MHE380–75–152	MHIC380–75–152	MHE490–75–207	MHIC490–75–207	MHE620–75–272	MHIC620–75–272
78	–	–	MHE490–78–206	MHIC490–78–206	MHE620–78–271	–
92	MHE380–92–144	MHI380–92–144	MHE490–92–199	MHI490–92–199	MHE620–92–264	MHI620–92–264
100	MHE380–100–140	MHI380–100–140	MHE490–100–195	MHI490–100–195	MHE620–100–260	MHI620–100–260
110	–	–	MHE490–110–190	–	–	–
118	–	–	MHE490–118–186	–	–	–
122	–	–	MHE490–122–184	–	MHE620–122–249	–
125	–	–	MHE490–125–182	MHI490–125–182	MHE620–125–247	MHI620–125–247
130	–	–	–	–	MHE620–130–245	–
135	–	–	MHE490–135–177	MHI490–135–177	–	–
138	–	–	MHE490–138–176	MHI490–138–176	MHE620–138–241	MHI620–138–241
144	–	–	–	MHI490–144–173	MHE620–144–238	–
150	MHE380–150–115	MHI380–150–115	MHE490–150–170	MHI490–150–170	MHE620–150–235	MHI620–150–235

Hanger Width (W) (mm)	MHE620	MHI620	MHE670	MHE720
183	MHE620–183–218	MHI620–183–218	–	–
198	MHE620–198–211	MHI620–198–211	–	–
210	–	–	MHE670–210–230	–
225	–	–	MHE670–225–222	–
230	–	–	MHE670–230–220	–
250	–	–	MHE670–250–210	–
300	–	–	–	MHE720–300–210

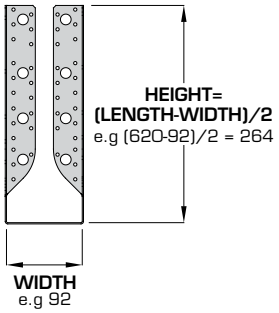
Example: **MHIC620–50–285**
L W H
L = length W = width H = height

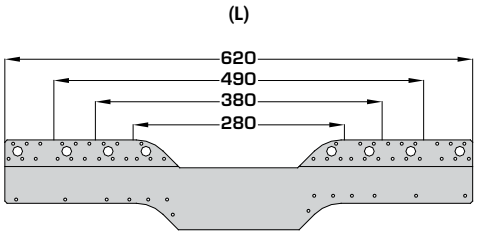
The hanger depth must be at least 60% of the carried member depth to prevent rotation.

MH RANGE

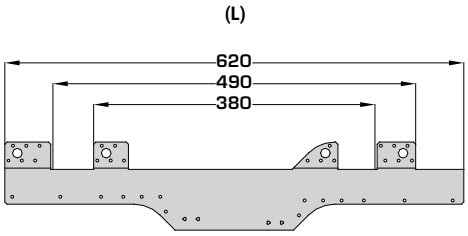
Multi Hanger

Hanger Coding

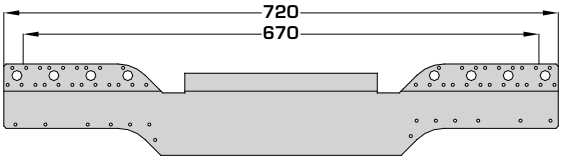




MHE/MHI FLAT BLANK
(280 – 620)



MHIC FLAT BLANK

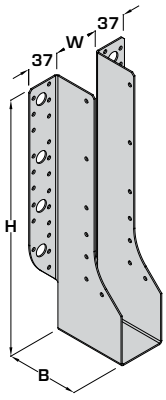


MHE/MHI FLAT BLANK
(670 – 720)

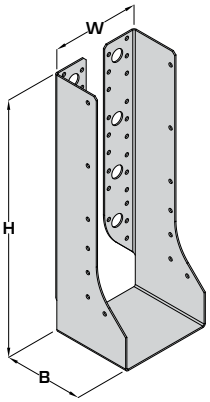
Example: **MHI620–92–264**
L W H
L = length W = width H = height

Dimensions (mm)

MHE

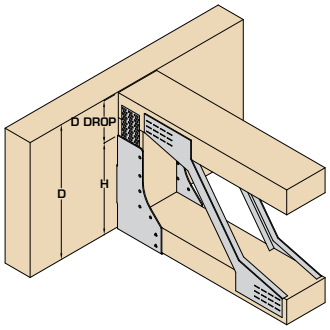


MHI/MHIC



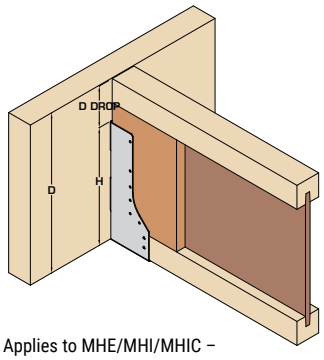
In Situ

MHI Installed onto Solid Header with Open Web incoming



Applies to MHE/MHI/MHIC –
Hanger height (H) must be minimum 60% of joist depth (D).
Where hanger drop (D DROP) exceeds 32mm a solid end block is required with max 25mm horn.

MHI Installed onto Solid Header with I–Joist incoming



Applies to MHE/MHI/MHIC –
Hanger height (H) must be minimum 60% of joist depth (D).
Where hanger drop (D DROP) exceeds values below web stiffeners are required.

Load Data

Product Code	Dimensions (mm)			Fixings (3.4 x 35mm)		Characteristic Capacity (kN)			
	W		B	Header	Incoming	Uplift	I–Joist Header With Backer Block (Solid/LVL Flange)	Open Web Header With Plywood Gusset	Solid Timber Header (Min TR26/C27)
	Min	Max							
MHIC380	39	78	82	9	10	8.49	10.55	10.55	10.55
MHE/MHI380	39	150	85	18	10	8.49	20.07	20.07	20.07
MHIC490	39	78	82	16	12	14.72	16.76	16.76	16.76
MHE/MHI490	39	150	85	30	12	14.72	25.66	25.66	25.66
MHIC620	39	78	82	21	14	14.72	21.26	21.26	21.26
MHE/MHI620	39	100	85	42	14	14.72	32.77	29.50	32.77
MHE/MHI620	122	150	85	42	14	14.72	25.92	25.92	25.92
MHE/MHI620	183	198	85	42	14	14.72	32.77	29.50	32.77
MHE670	210	250	85	42	14	14.72	32.77	29.50	32.77
MHE720	300	300	85	42	14	14.72	32.77	29.50	32.77

Flange Depth (mm)	D Drop (mm)
36	26
39	29
45	35

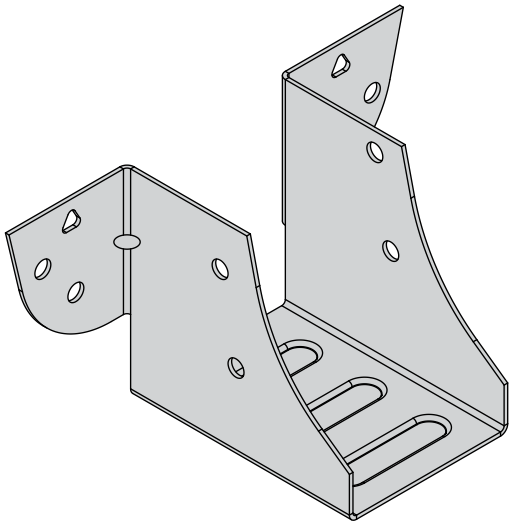
Where full uplift capacities are not required a minimum of 2No fixings are required into the incoming joist.

Fixings (3.4 x 35mm)	Characteristic Capacity (kN)
Incoming	Uplift
2	1.98

See Page 73 for plywood fixing details. See Page 115 for MHE bolted values to solid timber.

KM

Mini Hanger



The KM hanger is used to support joists where a compact economical connector is required.

Features & Benefits

- New and improved design achieves higher load carrying capacities
- Additional side fixings allow for increased uplift capacity
- Optional triangular holes for increased performanceon solid headers
- Rear location tab to assist with installation

Material Specification

- Galvanised mild steel – Z275

Approvals

- Meets NHBC Technical Requirements

Fixings

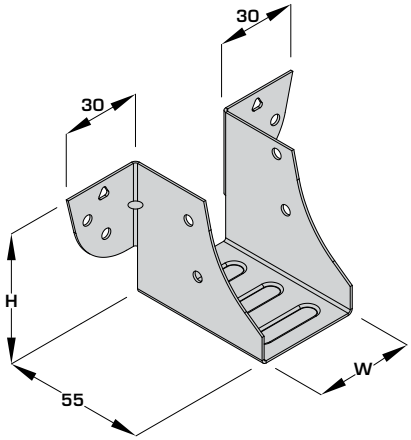
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

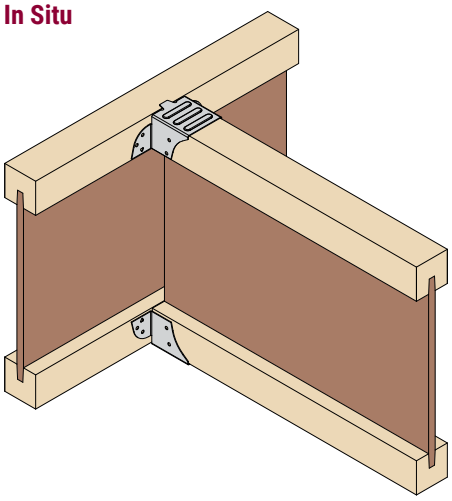
Available Sizes

Product Code	Hanger Width (W) (mm)	Hanger Depth (H) (mm)
KM–50	50	43

Dimensions (mm)



In Situ



Load Data

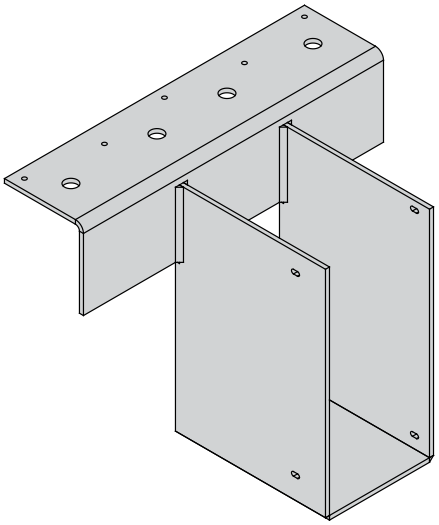
Product Code	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)**	
	Header	Incoming	Uplift	I–Joist (LVL/Solid Flange)
KM–50	4	4	5.16	5.16

**Values obtained from tests carried out by ITW Construction Products Offsite and calculated in accordance with ETAG 015

Values apply to new design only. Please contact Technical Support for further information if required.

FTHI

Flexible Timber Hanger



The FTHI hanger is designed to support joists, trussed rafters and solid timber members in a top fix only application for high load situations.

Features & Benefits

- Increased top flange to allow for greater load distribution
- Options available for skewed, offset, dropped and straddle connections

Material Specification

- 4mm mild steel with zinc phosphate undercoat with an organic bituminous top coat to BS EN845–1:2013+A1:2016

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

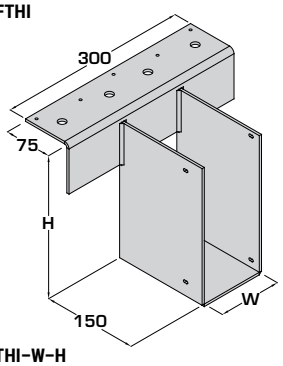
Hanger Widths (mm):

39, 46, 50, 61, 65, 72, 75, 78, 92, 100, 122, 125, 130, 138, 144, 150, 183, 198, 222, 225, 250, 300

Hanger Depths (mm):

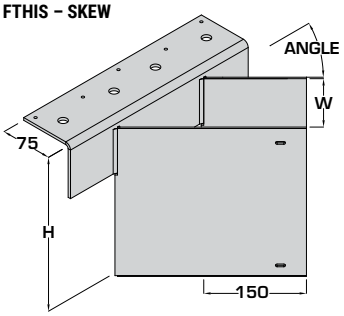
140, 165, 195, 200, 210, 220, 225, 230, 235, 241, 245, 253, 280, 302, 350, 356, 380, 393, 400, 418, 450

FTHI



FTHI–W–H
Example:
FTHI–100–245

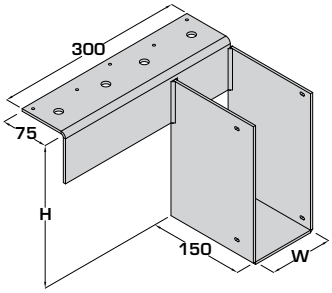
FTHIS – SKEW



FTHIS–W–H–OFFSET DIRECTIONAL–ANGLE
Example:
FTHIS–100–245–L–45

(skews from 30–87.5° in 2.5° increments, with 5mm automatically added to ordered width to allow for tolerance)

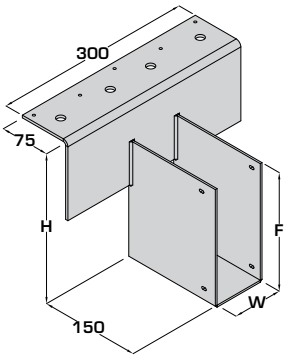
FTHIO – OFFSET



Left hand version shown

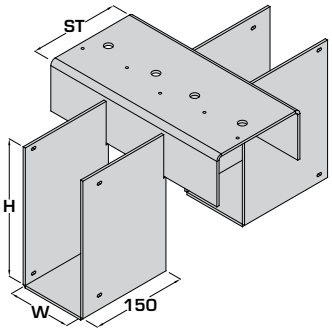
FTHIO–W–H–OFFSET DIRECTION
Example:
FTHIO–100–245–L / FTHIO–100–245–R

FTHID – DROPPED



FTHID–W–H–F
Example:
FTHID–100–245–220

FTHIST – STRADDLE



FTHIST–W–H–ST
Example:
FTHIST–100–245–140

Load Data

Product Code	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
	Header	Incoming	Uplift	LVL or GL (Min GL28)
FTHI	5	2	2.00	42.00

Hanger can be used when supported on an open web header given solid blocking is provided in the joist. I–Joist members require backer blocks

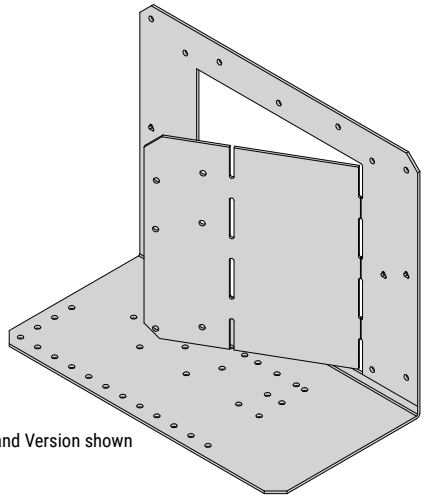
12mm diameter holes to top–plate do not require fixings for this application

VS

Variable Skewed Timber Hanger

UKTA–21/0010

ETA–20/1073



Right Hand Version shown

The VS hanger is used to support joists and trusses up to 97mm wide from solid timber members in skewed applications between 30 – 90º.

Features & Benefits

- Unique hanger design provides a variable skew angle between 30 – 90º
- No need to mitre cut joists
- Angle scale on base to ease adjustment

Material Specification

- Galvanised mild steel – Z275

Fixings

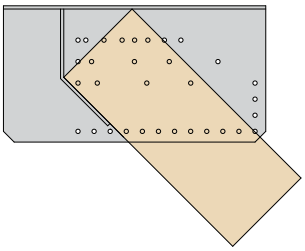
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

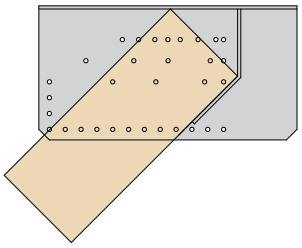
Available Sizes

Min Joist Width (mm)	Max Joist Width (mm)	Handing	Hanger Depth (mm)			
			195	220	240	300
38	97	Right	VS–195–R	VS–220–R	VS–240–R	VS–300–R
38	97	Left	VS–195–L	VS–220–L	VS–240–L	VS–300–L
>97		See FTHIS on page 85				

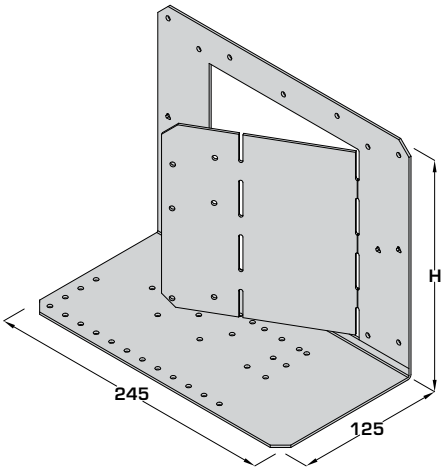
Left Hand



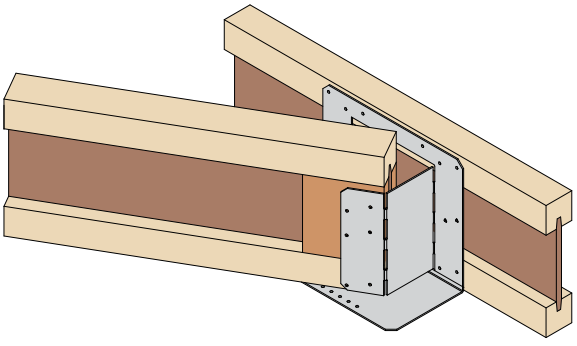
Right Hand



Dimensions (mm)

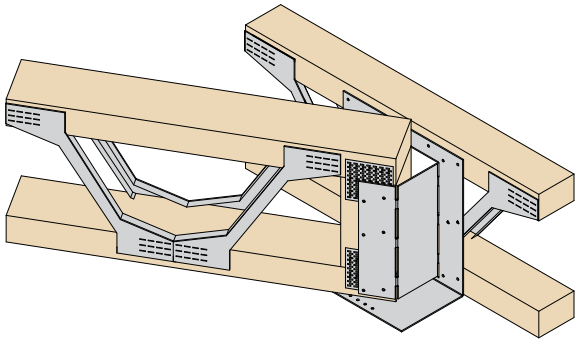


In Situ



- Web stiffeners required for incoming I–Joist
- Backer blocks only required for enhanced capacity

Joist Depth (mm)	Hanger Depth (mm)
195/200	195
220/235	220
240/245	240
300	300



- Adequate end blocking required to allow fixings into incoming Open Web Joist

Joist Depth (mm)	Hanger Depth (mm)
195/202	195
219/225	220
253/254	240
304	300

VS

Variable Skewed Timber Hanger

Load Data

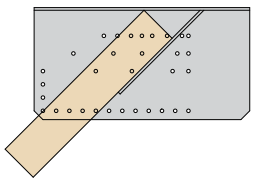
Hanger Depth (mm)	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)		
	Header	Incoming	Uplift	I–Joist Header (all flanges)	Open Web Header
195/220/240	11	6	3.75	5.90	5.90
300	11	6	3.75	6.39	6.39
				I–Joist Header With Backer	Glulam (Min GL28)/LVL* Header
195/220/240/300	15	6	3.75	6.37	7.23 (7.28*)

Installation Instructions

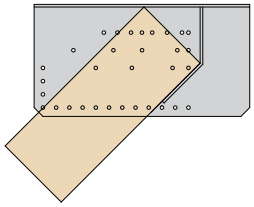
Stage 1

Adjust side plate to approximate angle between 30° and 90° using scale on base of hanger, bending only once. Please refer to the angle table below to determine if one or two bends are required.

Single Bend



Double Bend

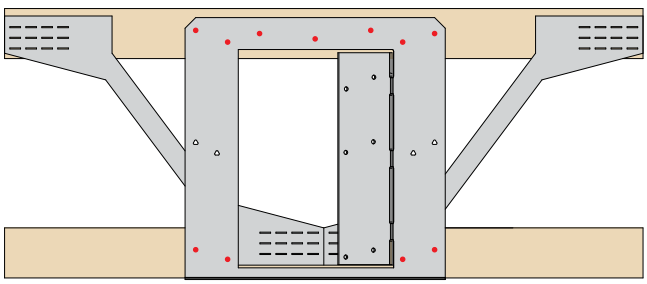


Joist Width (mm)	Double Bend	Single Bend
35	30–90°	n/a
38	30–90°	n/a
44	30–90°	n/a
45	30–90°	n/a
47	30–90°	n/a
51	>32–90°	30–32°
53	>32–90°	30–32°
58	>34–90°	30–34°
59	>34–90°	30–34°
60	>35–90°	30–34°
63	>37–90°	30–37°
70	>39–90°	30–39°
72	>40–90°	30–40°
76	>42–90°	30–42°
88	>46–90°	30–46°
89	>46–90°	30–46°
90	>46–90°	30–46°
94	>48–90°	30–48°
97	>49–90°	30–49°

Stage 2

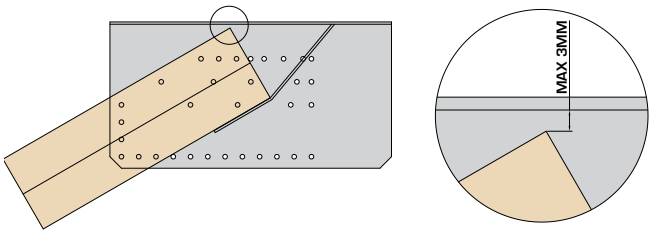
Position hanger against face of joist/truss and face nail using 11(15*)No nails in total.

*For solid headers



Stage 3

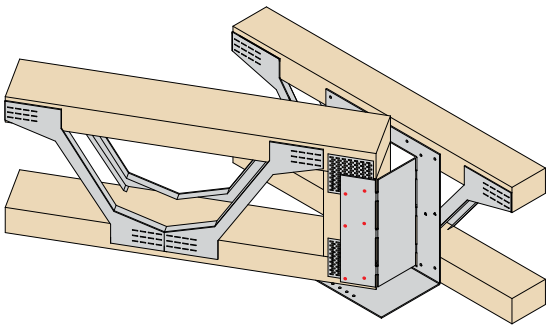
Locate incoming member and adjust side plate to correct angle, ensuring maximum gap between incoming joist/truss and back plate is no greater than 3mm.



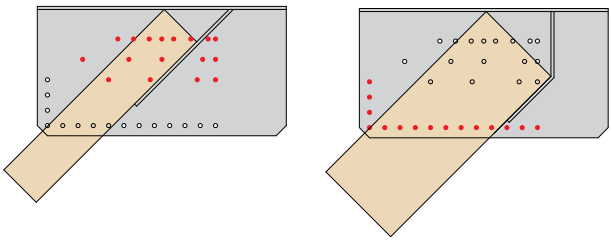
Max – 3mm gap at any given time

Stage 4

Fix to incoming member using 6No 3.4 x 35mm square twist nails. Where incoming member is an I–Joist, web stiffeners must be fixed as per the I–Joist manufacturer's guidelines.



Please ensure that 1No inner nail hole (indicated in red) and 1No outer nail hole (indicated in red) are filled on the underside with 3.4 x 35mm square twist nails.

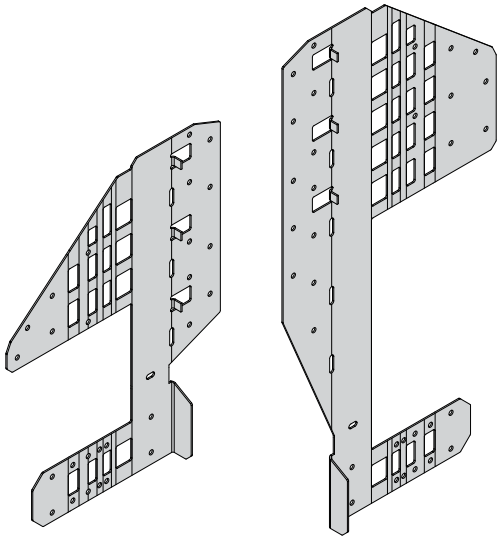


VRC

Variable Ridge Connector

UKTA–21/0010

ETA–20/1073



VRC–195–L VRC–350–R

The VRC connects solid timber and I–Joist rafters to ridge beams.

Features & Benefits

– Innovative design allows the part to be flexible for slopes between –35° and +45° and skews between 30° and 90°

Material Specification

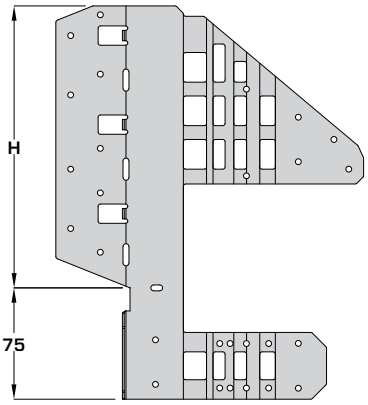
– Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

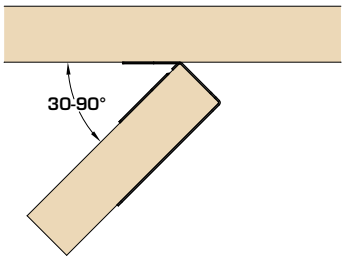
*For use with Paslode PPN35Ci

Dimensions (mm)

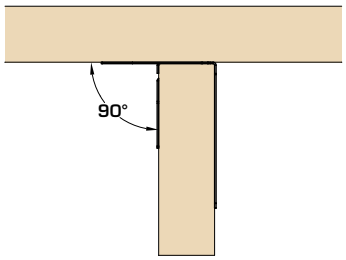


Available Sizes

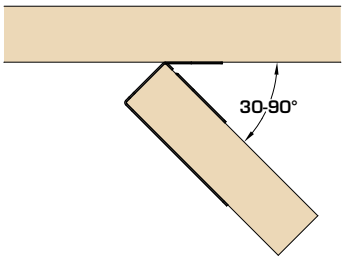
Min Joist Width (mm)	Max Joist Width (mm)	Handing	Timber Depth (mm)	
			195 – 300	350 – 450
38	97	Right	VRC–195–R	VRC–350–R
38	97	Left	VRC–195–L	VRC–350–L
>97		–	Contact Cullen Technical	



Right hand skew
(skews between 30–90°)



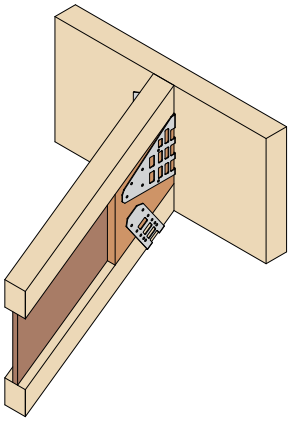
90 degrees
(left or right hand can be specified)



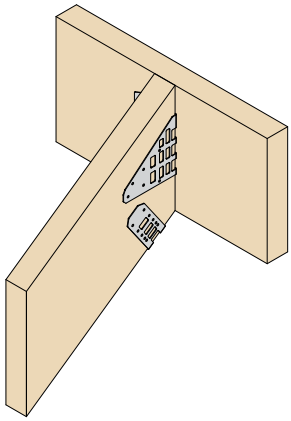
Left hand skew
(skews between 30–90°)

In Situ

I–Joist incoming (with web stiffener)



Solid timber incoming (min TR26, GL28)



VRC

Variable Ridge Connector

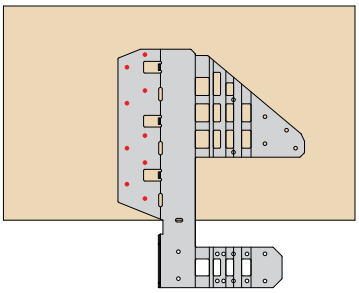
Load Data

Hanger Depth (mm)	Dimensions (mm)	Fixings (3.4x35mm)		Angles		Characteristic Capacity (kN)	
						Uplift	Header Specification
(Depth Dependant Only)	H	Header	Incoming	Slope	Skew		Solid Timber (Min TR26), Glulam (Min GL28), LVL & I–Joist(1)
195	190	9	8	0°	n/a (90°)	2.59	6.85
				0°	30° to 87.5°	2.59	6.40
				(–35° to +45°)	n/a (90°)	2.59	10.20
				(–35° to +45°)	30° to 87.5°	2.59	8.54
350	345	12	8	0°	n/a (90°)	2.59	6.85
				0°	30° to 87.5°	2.59	6.40
				(–35° to +45°)	n/a (90°)	2.59	10.20
				(–35° to +45°)	30° to 87.5°	2.59	8.54

(1) I–Joist headers require backer blocks to be installed as per joist manufacturer's instructions.

Installation Instructions

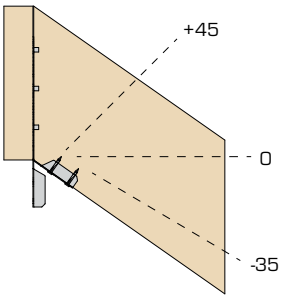
Stage 1



Face fix VRC to solid header using 9No 3.4 x 35mm square twist nails.

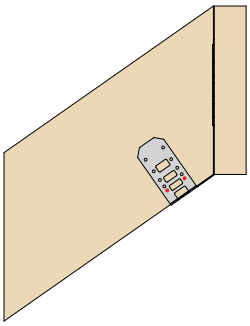
Adjust angle of base plate if slope is required.

Stage 2



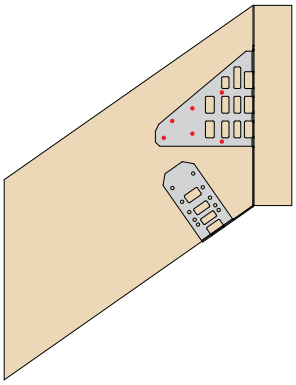
Offer incoming member and fix using 2No 3.4 x 35mm square twist nails to the underside of the incoming member.

Stage 3



Wipe up the bottom side flange at the appropriate crease line and fill the 2No nail holes closest to the bend line with 3.4 x 35mm square twist nails.

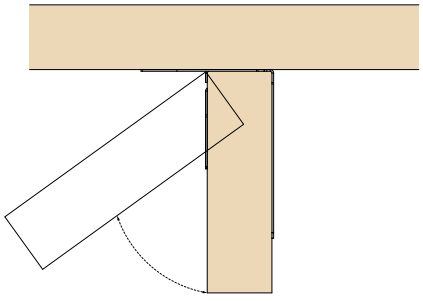
Stage 4



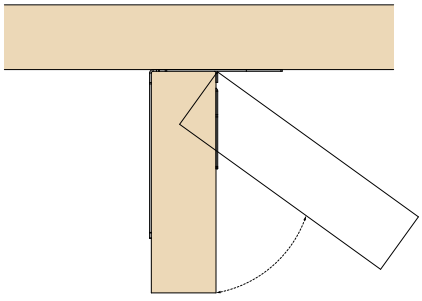
Wipe round the top side flange at the appropriate crease line and fill all the nail holes into the incoming joist. Minimum 4No 3.4 x 35mm square twist nails.

Stage 5 (For skewed applications only)

Right hand version



Left hand version

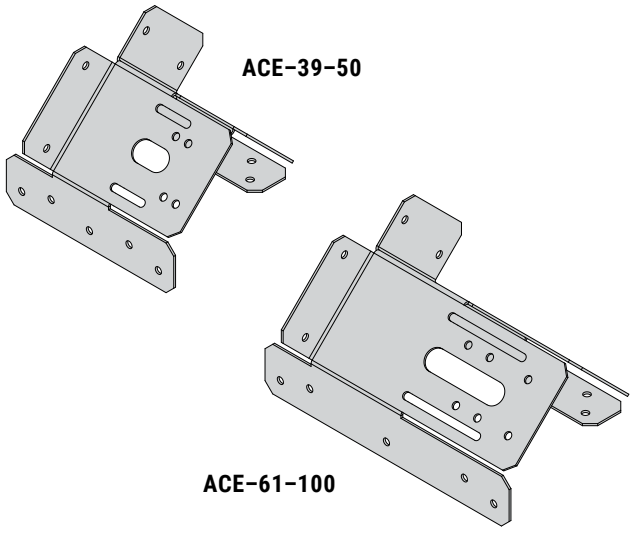


Rotate hanger to angle required. Correct hand must be used.

Please ensure the correct hanger has been selected prior to installing.

ACE

Adjustable Connector Eaves



The ACE is used to provide a secure connection between the EWP rafter and the wall plate at the eaves.

Features & Benefits

- Eliminates the need for a bevelled wall plate
- Unique part design allows 2 parts to accommodate rafter widths between 38 – 97mm wide

Material Specification

- Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

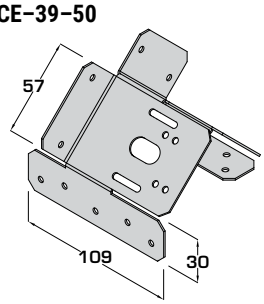
*For use with Paslode PPN35Ci

Available Sizes

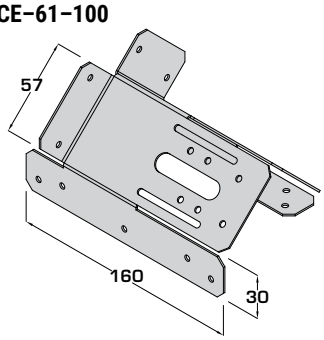
Product Code	Min Rafter Width (mm)	Max Rafter Width (mm)
ACE–39–50	38	47
ACE–61–100	58	97

Dimensions (mm)

ACE–39–50



ACE–61–100



Load Data

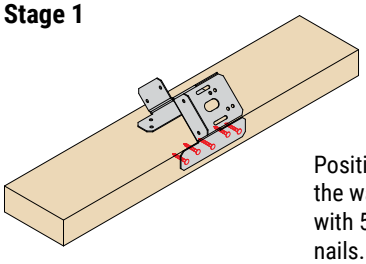
Product Code	Fixings (3.4 x 35mm)		Load Direction	Characteristic Capacity (kN)**
	Wallplate	Supported		Solid Timber Header (Min C16)
ACE–39–50	9	4	1	2.92
			2	5.64
			3	2.72
			4	2.78
ACE–61–100	9	4	1	2.92
			2	6.10
			3	2.72
			4	2.78

**Values obtained from tests carried out by ITW Construction Products Offsite and calculated in accordance with ETAG 015.

When pitch is less than 30 degrees a 140mm wall plate will be required. 100mm wall plate suitable for pitches greater than 30 degrees.

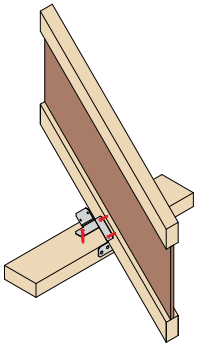
Installation Instructions

Stage 1



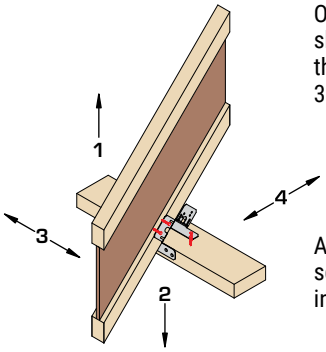
Position the ACE to the outside of the wall plate and nail to the face with 5No 3.4 x 35mm square twist nails.

Stage 2



Position the I–Joist rafter and fix into the bottom flange with 2No 3.4 x 35mm square twist nails. On the same side fix into the top of the wall plate with 2No 3.4 x 35mm square twist nails.

Stage 3



On the opposite side the ACE should be wiped up and nailed into the bottom flange with 2No 3.4 x 35mm square twist nails.

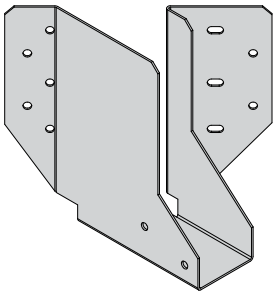
An additional 2No 3.4 x 35mm square twist nails should be fixed into the top of the wall plate.

45L/R

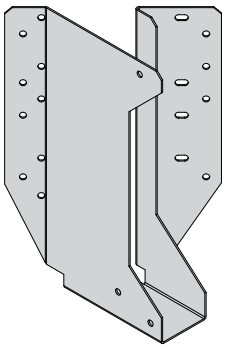
Face Fix 45º Hanger

UKTA–21/0009

ETA–20/1000



170MM DEEP



220 – 300MM DEEP

Left hand version shown

The 45L/R is a pre–skewed 45 degree hanger for timber to timber connections.

Features & Benefits

– Economical solution provides set angle for ease of installation

Material Specification

– Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

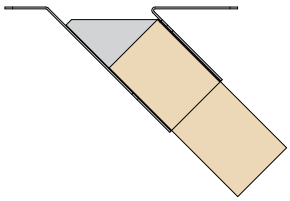
*For use with Paslode PPN35Ci

Available Sizes

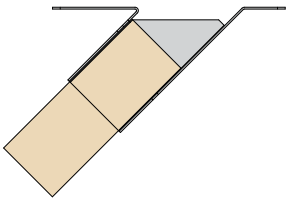
Hanger Width (W) (mm)	Hanger Depth (H) (mm)			
	220		300	
	Left	Right	Left	Right
39	45–L–39–220	45–R–39–220	45–L–39–300	45–R–39–300
46	45–L–46–220	45–R–46–220	45–L–46–300	45–R–46–300
50	45–L–50–220	45–R–50–220	45–L–50–300	45–R–50–300
61	45–L–61–220	45–R–61–220	–	–
65	–	–	–	–
72	–	–	–	–
75	45–L–75–220	45–R–75–220	45–L–75–300	45–R–75–300
92	45–L–92–220	45–R–92–220	45–L–92–300	45–R–92–300

See VS (pages 81 – 82) or VRC (pages 83 – 84) for skews outwith 45º

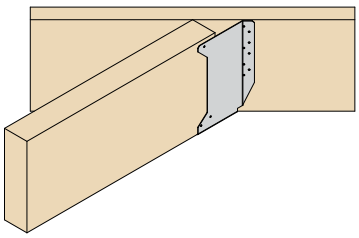
Left Hand:



Right Hand:

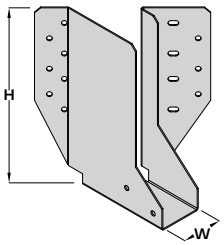


In Situ

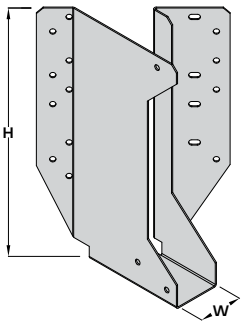


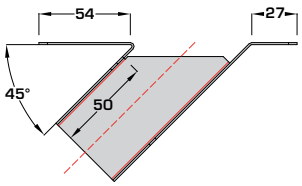
Dimensions (mm)

170mm Deep



220–300mm Deep



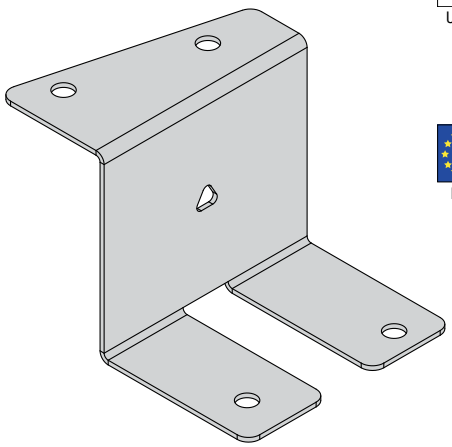


Load Data

Hanger Depth (H) (mm)	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)			
(Depth Dependant Only)	Header	Incoming	Uplift	I–Joist Header With Backer Block (Solid/LVL Flange)	GL (Min GL28)	LVL
170	14	2	0.99	14.92	15.48	15.48
220	17	3	0.99	14.92	15.48	15.48
300	21	3	0.99	17.54	16.31	16.31

UZ CLIP

Noggin Support



UKTA–21/0008

ETA–20/0999

The UZ Clip is a multifunctional connector for supporting solid timber and I–Joist noggins.

Features & Benefits

- Suitable for supporting noggins in various applications
- Adjacent noggins can be aligned without clashing

Material Specification

- Galvanised mild steel – Z275

Fixings

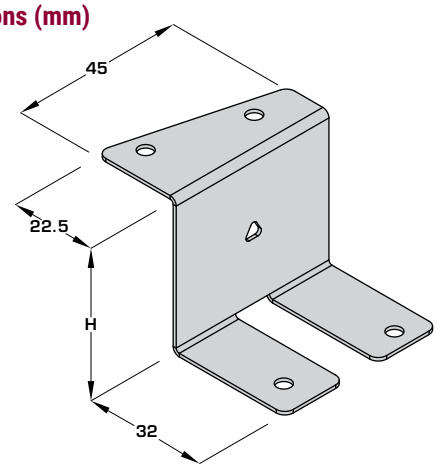
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

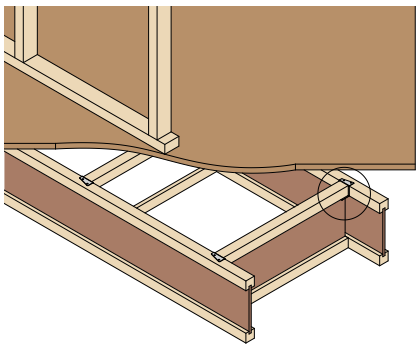
Available Sizes

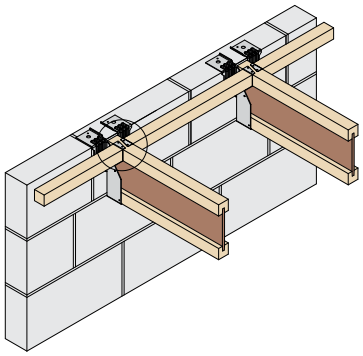
Product Code	Height (H) (mm)
UZ–35	35
UZ–38	38
UZ–45	45
UZ–47	47

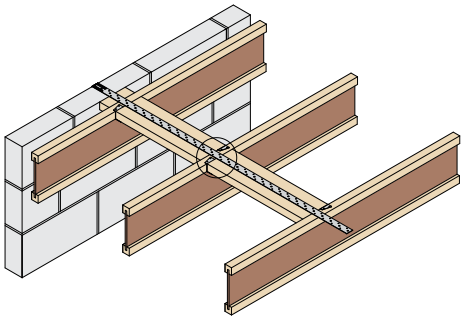
Dimensions (mm)

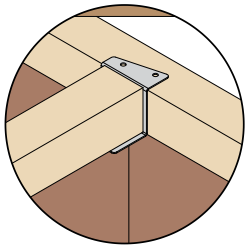


In Situ



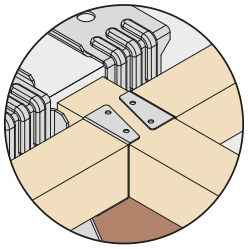






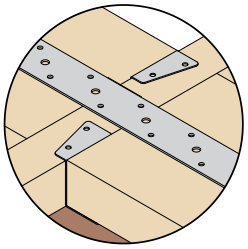
PARTITION NOGGINS

I–Joists / Open Webs Supporting Lightweight Partitions



PERIMETER NOGGINS

Support for decking and plasterboard



RESTRAINT STRAP NOGGINS

Fixing for perpendicular restraint straps

Refer to manufacturer's guidelines and NHBC Standards for noggin requirements

UZ CLIP

Noggin Support

Load Data

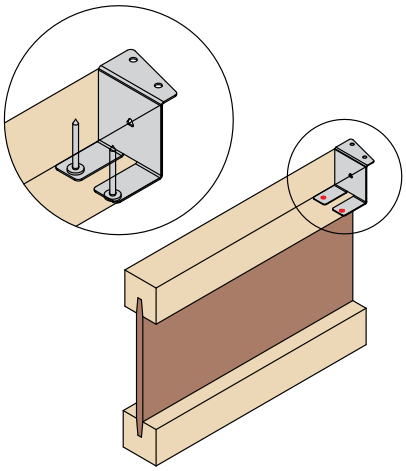
Noggin Type	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)
	Header	Incoming	
Solid Timber	2	3	2.28
I–Joist	2	2	2.73

Installation Instructions

Stage 1

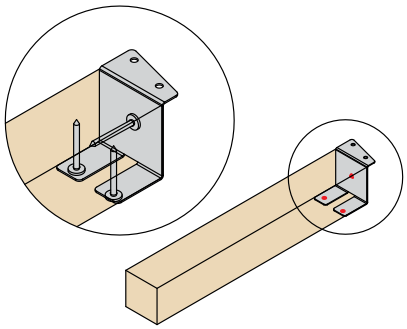
I–Joist Noggin

Fix UZ Clip to underside of I–Joist top flange with 2No 3.4 x 35mm square twist nails.



Solid Timber Noggin <50mm Wide

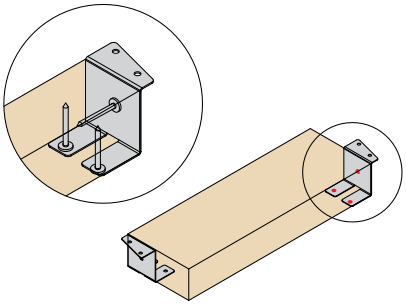
Fix UZ Clip to underside of noggin with 2No 3.4 x 35mm square twist nails. An additional 1No 3.4 x 35mm square twist nail is required in the timber end.



Solid Timber Noggin >50mm Wide

Fix UZ Clip to underside of noggin with 2No 3.4 x 35mm square twist nails. An additional 1No 3.4 x 35mm square twist nail is required in the timber end.

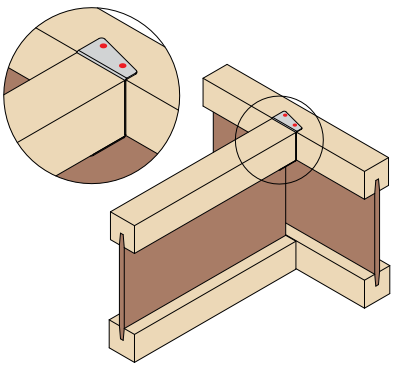
UZ Clips should be staggered.



Stage 2

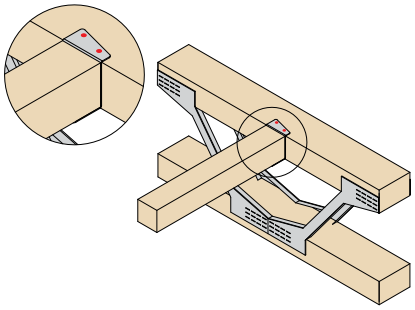
I–Joist Noggin

Nail the UZ Clip to the top of the header joist with 2No 3.4 x 35mm square twist nails.



Solid Timber Noggin <50mm Wide

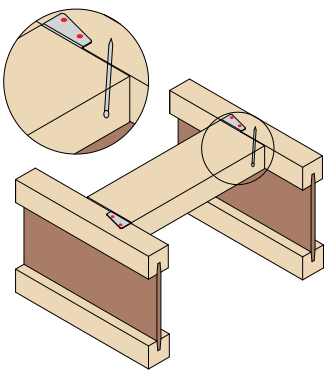
Nail the UZ Clip to the top of the header joist with 2No 3.4 x 35mm square twist nails.



Solid Timber Noggin >50mm Wide

Nail the UZ Clip to the top of the header joist with 2No 3.4 x 35mm square twist nails.

A skew nail fixing will be required on the opposite side (approx. 75mm long).



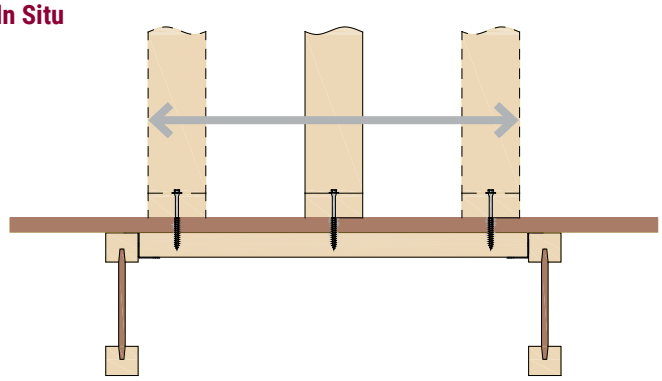
UZ CLIP

Noggin Support with Buttress Wall

NEW

Additional Application

In Situ

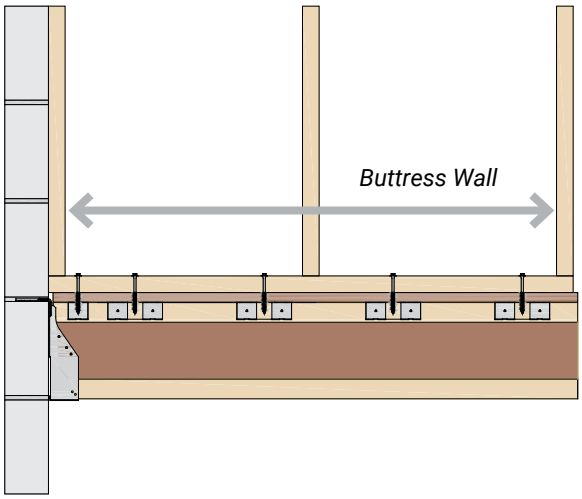


Noggin Size (mm)	No. of UZ Clips	Characteristic Value (kN) (Horizontal Direction)
38 × 63 to 38 × 89	2	1.5
38 × 120	4	2.5

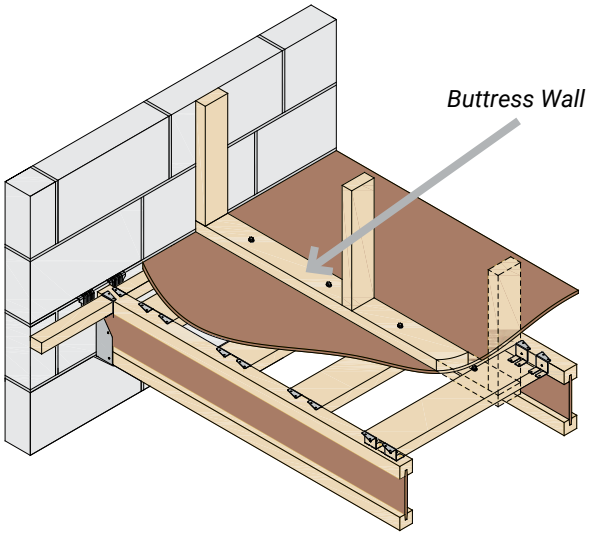
*Values are of partition positioned anywhere on the noggin.

Buttress Wall to Noggin

Bottom rail is secured to the noggin through the floorboard using a PSTS–8x85mm screw.



Noggins are evenly spaced between the joists (excluding perimeter noggin) and installed using UZ clips.



Buttress wall can be positioned off–centre on the noggins.

Example Calculation

1no. Noggin minimum **38×63mm** fixed with 2no.UZ–clips (1 each end)

Instantaneous design value (Wind kmod 1.1) for noggin (centre or end)

= 1.269kN

Instantaneous design value (Wind kmod 1.1) for Screw fixing PSTS8x85mm (assume panel has 38mm bottom member

= 1.684kN

Buttress wall with 4 noggins maximum loading

1.269* × 4 = 5.076kN

1no. Noggin minimum **38×120mm** fixed with 4no.UZ–clips (2 each end)

Instantaneous design value (Wind kmod 1.1) for noggin (centre or end)

= 2.115kN

Instantaneous design value (Wind kmod 1.1) for Screw fixing PSTS8x85mm (assume panel has 38mm bottom member

= 1.684kN

Buttress wall with 4 noggins maximum loading

1.684* × 4 = 6.736kN

*Lowest Value of clip/screw used for calculation

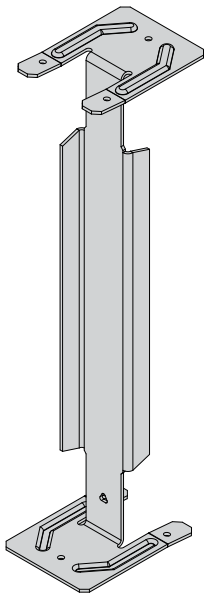
I–CLIP

Multiple I–Joist Connector

GB Patent: 2411216

UKTA–21/0010

ETA–20/1073



The I–Clip is a single piece connector for joining 2 ply I–Joists together eliminating the need for filler blocks.

Features & Benefits

- Quick and simple to install with flared end for ease of install
- Safely joins joists together allowing them to act as a single unit
- Visible connections to ensure compliance

Material Specification

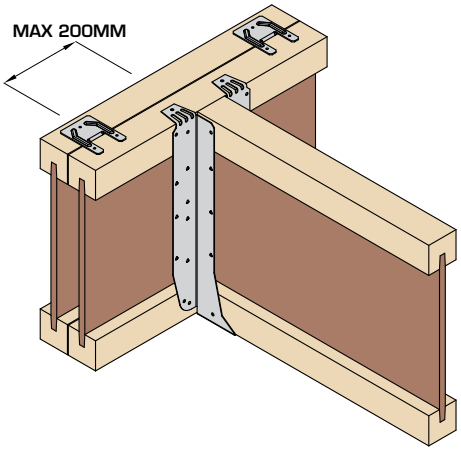
- Galvanised mild steel – Z275

Fixings

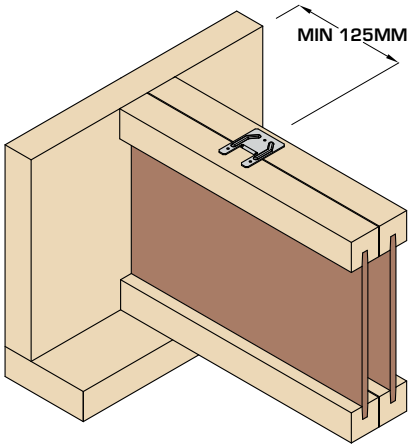
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

In Situ

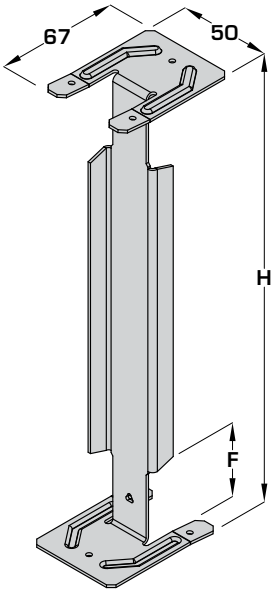


Installation either side of incoming point load to be maximum 200mm from joist edge.



Installation on joist end to be minimum 125mm away from the end of the joist to allow adequate space for fixing.

Dimensions (mm)



Available Sizes

Joist Manufacturer	Flange Depth (F) (mm)	Joist Depth (H) (mm)										
		195	200	220	235	240/241	245	300/302	350	356	360	400
James Jones (JJI)	45	–	–	I–220–46	I–235–46	–	I–245–46	I–301–46	I–350–46	–	–	–
Metsawood (FJI)	36 & 39	–	I–200–38	1–220–38	–	I–241–38	–	I–301–38	–	–	I–360–38	I–400–38
Steico (SJI)	39	–	I–200–38	I–220–38	–	I–241–38	–	I–301–38	–	–	I–360–38	I–400–38
Masonite/Staircraft	47	–	–	I–220–47	–	I–241–47	–	I–301–47	–	–	–	–

Part is not width dependent

I–CLIP

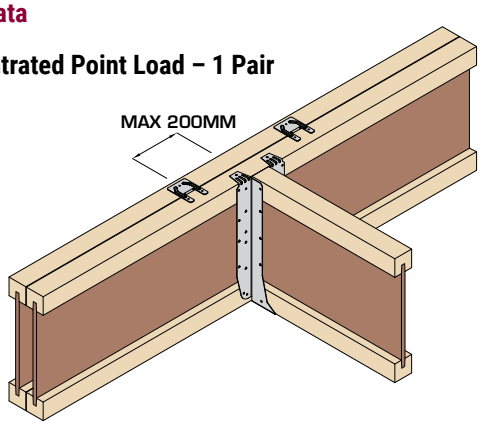
Multiple I–Joist Connector

GB Patent: 2411216

Load Data

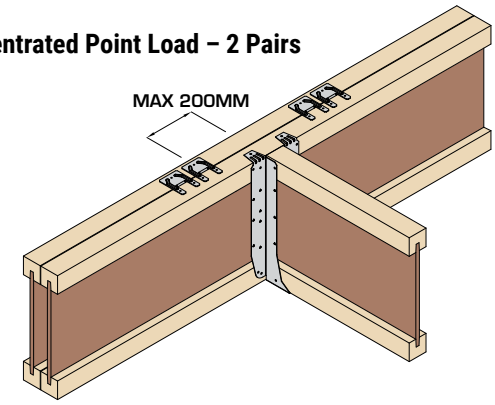
TO BE USED WITH 2 PLY JOISTS ONLY

Concentrated Point Load – 1 Pair



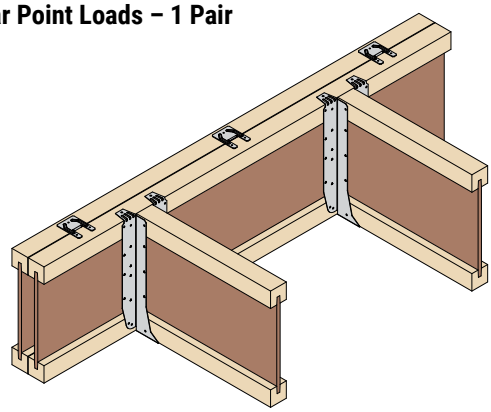
Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
Header (per anchor)	Supported (per anchor)	LVL Flange I–Joist	Solid Timber Flange I–Joist
3	3	18.08	14.84

Concentrated Point Load – 2 Pairs



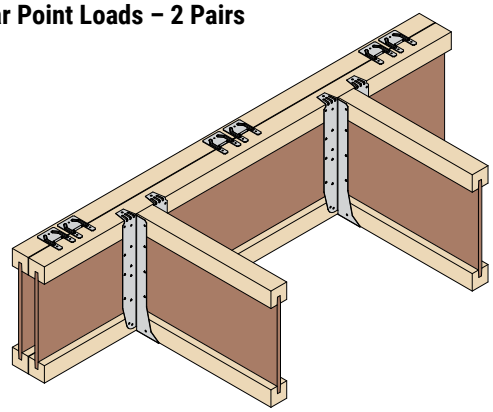
Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
Header (per anchor)	Supported (per anchor)	LVL Flange I–Joist	Solid Timber Flange I–Joist
3	3	27.12	22.26

Regular Point Loads – 1 Pair



Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
Header (per anchor)	Supported (per anchor)	LVL Flange I–Joist	Solid Timber Flange I–Joist
3	3	9.04	7.42

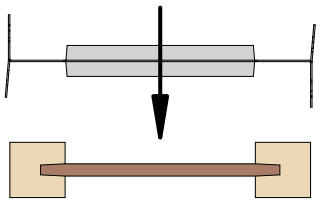
Regular Point Loads – 2 Pairs



Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
Header (per anchor)	Supported (per anchor)	LVL Flange I–Joist	Solid Timber Flange I–Joist
3	3	13.56	11.13

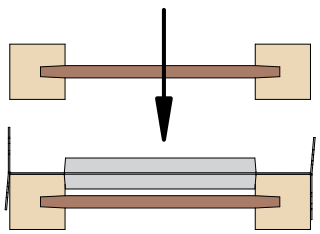
Installation Instructions

Stage 1



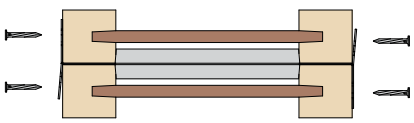
Lay I–Joist flat and mark location of I–Clips, press clips into position on top face of I–Joist.

Stage 2



Position second ply of multiple joist on top of I–Clips and tap together with a hammer to ensure a tight fit.

Stage 3

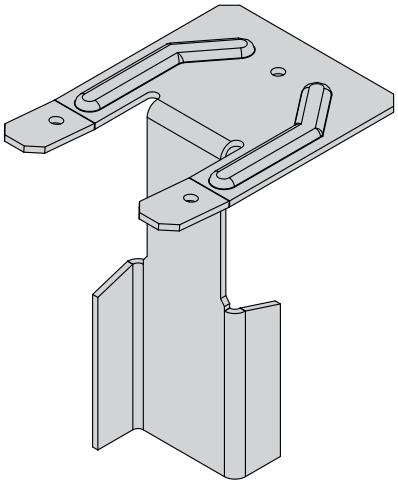


Fix I–Clips to top and bottom flanges of multiple I–Joist using 6No 3.4 x 35mm square twist nails ensuring that I–Joists are fitted tightly together.

OW–CLIP

Multiple Joist Connector

European Community Registered Design



UKTA–21/0008

ETA–20/0999

The OW–Clip enables the connection of 2 ply joists allowing them to act as a single unit.

Features & Benefits

- One part can be used for all joist depths and widths
- Flared end for ease of install
- Visible connections to verify compliance

Material Specification

- Galvanised mild steel – Z275

Fixings

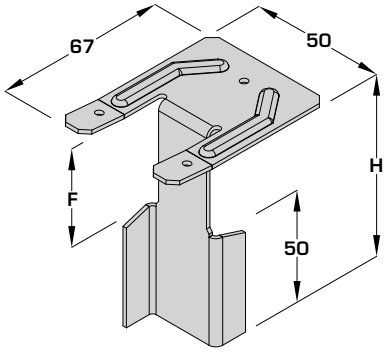
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

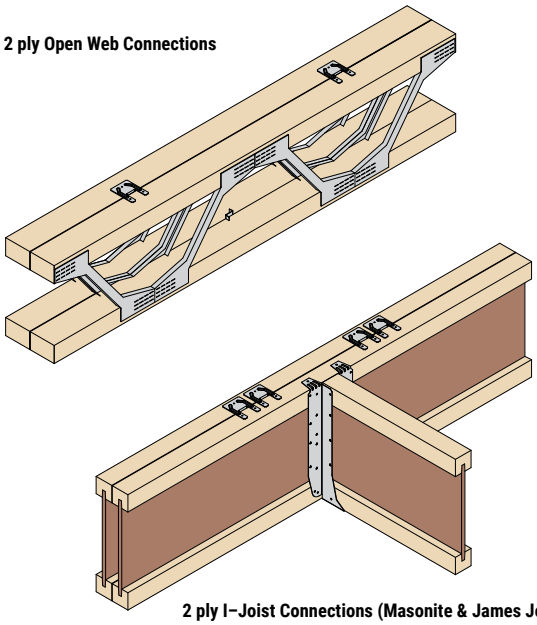
Product Code	Flange Depth (F) (mm)
OW–Clip–47	47

Dimensions (mm)



In Situ

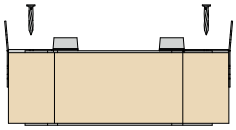
2 ply Open Web Connections



2 ply I–Joist Connections (Masonite & James Jones I–Joists)

Installation Instructions

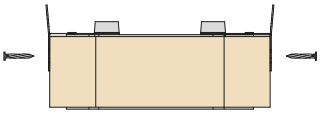
Stage 1



Lay joist flat and mark location of OW–Clips, press clips into position.

Fix clips to the face of the joist using 1No 3.4 x 35mm square twist nail per clip.

Stage 2



Fix clips to the top of the joist using 1No 3.4 x 35mm square twist nail per clip.

Stage 3

Position second ply of multiple joist on top of the OW–Clips and tap together with a hammer to ensure a tight fit.

Stage 4

Fix OW–Clips to top and bottom chords of the multiple joist using 2No 3.4 x 35mm square twist nails per clip, ensuring that joists are fitted tightly together.

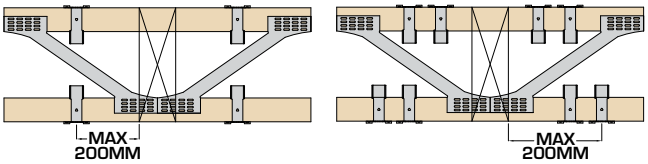
OW–CLIP

Multiple Joist Connector

TO BE USED WITH 2 PLY JOISTS ONLY

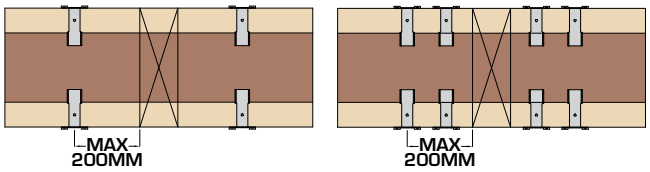
Load Data

Concentrated Point Load (Open Web Joists)



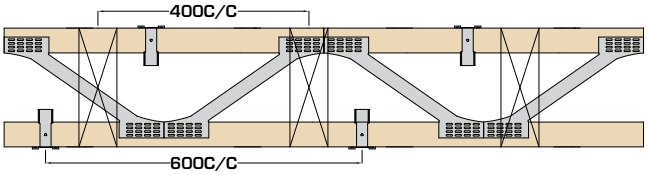
No of OW– Clips	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
	Header (per anchor)	Supported (per anchor)	195 – 280mm Deep Joists	304 – 424mm Deep Joists
4	2	2	15.60	18.90
8	2	2	23.40	28.40

Concentrated Point Load (Masonite I–Joists)



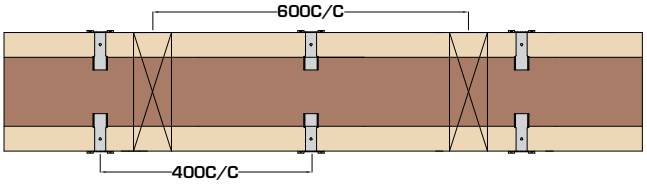
No of OW– Clips	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)
	Header (per anchor)	Supported (per anchor)	
4	2	2	12.36
8	2	2	18.54

Regular Point Loads / UDL (Open Web Joists)
(Incoming Joists @400C/C, Clips @600C/C)



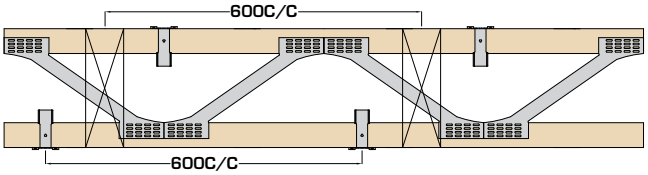
Fixings (3.4 x 35mm)		Characteristic Capacity (kN)			
Header (per anchor)	Supported (per anchor)	195 – 280mm Deep Joists		304 – 424mm Deep Joists	
		Max Point Load (kN)	Max UDL (kN/m)	Max Point Load (kN)	Max UDL (kN/m)
2	2	5.20	13.00	6.32	15.80

Regular Point Loads / UDL (Masonite I–Joists)
(Incoming Joists @400C/C, Clips @600C/C)



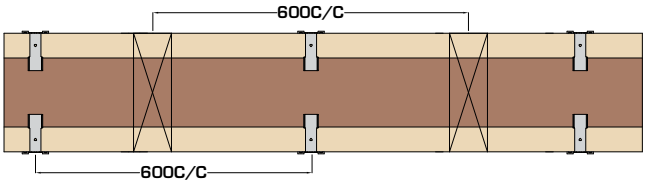
Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
Header (per anchor)	Supported (per anchor)	Max Point Load (kN)	Max UDL (kN)
2	2	6.18	15.45

Regular Point Loads / UDL (Open Web Joists)
(Incoming Joists @600C/C, Clips @600C/C)



Fixings (3.4 x 35mm)		Characteristic Capacity (kN)			
Header (per anchor)	Supported (per anchor)	195 – 280mm Deep Joists		304 – 424mm Deep Joists	
		Max Point Load (kN)	Max UDL (kN/m)	Max Point Load (kN)	Max UDL (kN/m)
2	2	7.80	13.00	9.48	15.80

Regular Point Loads / UDL (Masonite I–Joists)
(Incoming Joists @600C/C, Clips @600C/C)



Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
Header (per anchor)	Supported (per anchor)	Max Point Load (kN)	Max UDL (kN)
2	2	6.18	10.30

PSTS

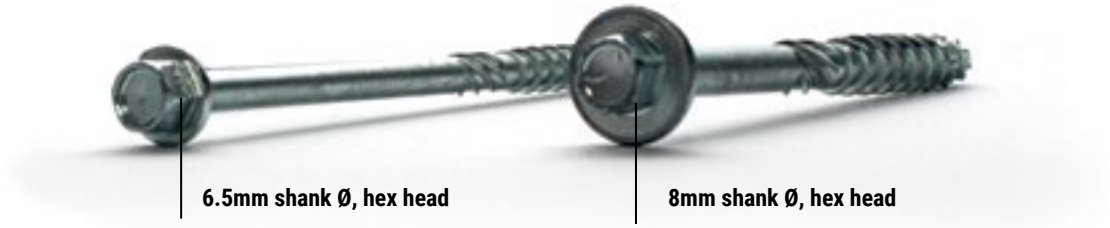
Multiple Connections

CE UK CA
EN 14592

The Paslode Structural Screws are for use in various applications in timber frame where multiple members are required; typically trimmer joists, multiple floor joists, lintels and multiple girders.

Features & Benefits

- Requires no pre–drilling
- Quick and easy to install
- Higher lateral load capacity than nails or screws of similar diameter
- Upgraded to improve withdrawal and shear loadcapabilities, increase speed of installation and to meet the design requirements of Eurocode 5
- Large diameter flanges under heads ensure very high resistance to pull–through loads



Available Sizes

Product Code	Reference	Length (L) (mm)	Box Qty*
551124	PSTS6.5x35	35	100
551105	PSTS6.5x65	65	100
551106	PSTS6.5x100	100	100
551102	PSTS6.5x115	115	100
551107	PSTS6.5x150	150	100
551108	PSTS6.5x200	200	100
551109	PSTS6.5x250	250	100

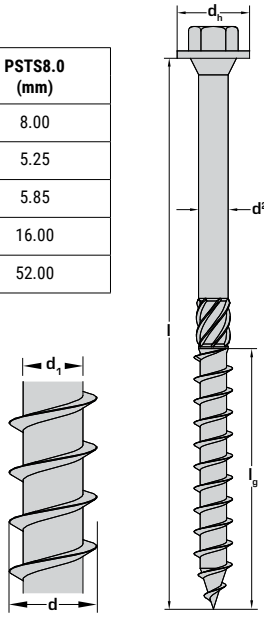
Product Code	Reference	Length (L) (mm)	Box Qty*
551110	PSTS8x65	65	100
551103	PSTS8x85	85	100
551111	PSTS8x100	100	100
551112	PSTS8x135	135	100

*A driver bit is supplied in every box

Dimensions (mm)

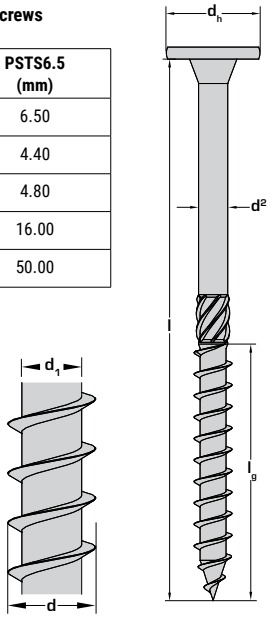
Hex Head Screws

	PSTS6.5 (mm)		PSTS8.0 (mm)
	35 – 65	100 – 250	
d	6.50		8.00
d_1	4.40		5.25
d^2	4.80		5.85
d_h	11.50		16.00
l_g	30.00	50.00	52.00



Flat Head Screws

	PSTS6.5 (mm)
d	6.50
d_1	4.40
d^2	4.80
d_h	16.00
l_g	50.00



PSTS

Multiple Connections

Characteristic Parameters For Calculation To Eurocode 5

	PSTS 6.5mm	PSTS 8.0mm
Characteristic yield moment (My,k)	14.74 kN/mm	18.60 kN/mm
Characteristic withdrawal parameter (fax,k)	16.20 N/mm^2	15.40 N/mm^2
Characteristic head pull through parameter (fhead,k)	8.80 N/mm^2	14.40 N/mm^2

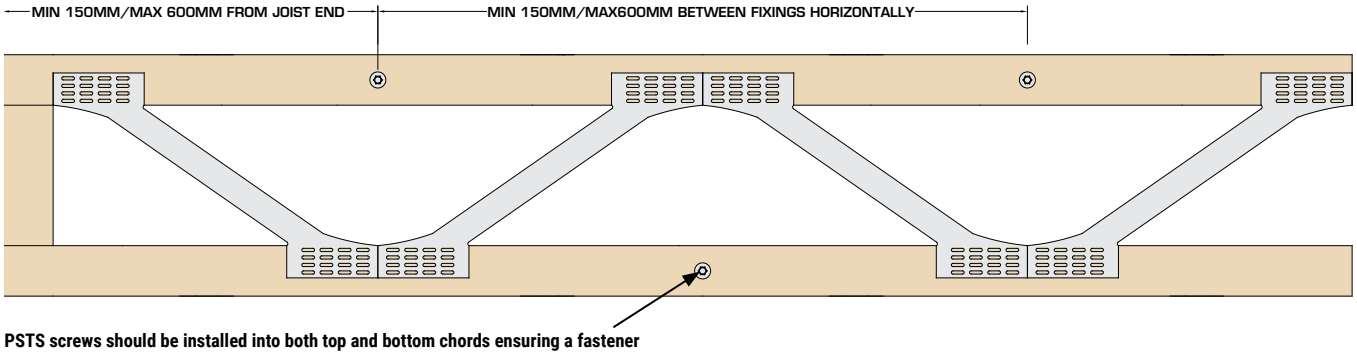
1. All data included is based on tests in accordance with EN14592.
2. Paslode Structural Tests are CE marked in accordance with EN14592 following testing at TRADA Technology. For applications outside the scope of those specified please contact our Technical Department.

Connecting Multiple Open Web Joists With PSTS 6.5mm Ø

- Screws must be installed precisely at the vertical centre of the chord.
- Washer head should meet flush with the face of the timber.
- All load values assume TR26 timber.

TO BE USED WITH 2 PLY JOISTS ONLY WITH A MINIMUM CORD DEPTH OF 47mm

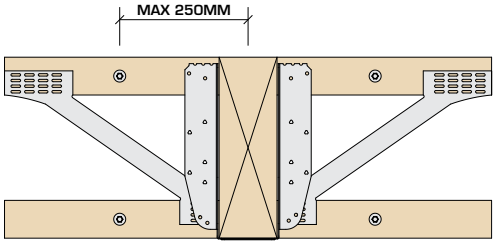
Regular Points Loads / UDL

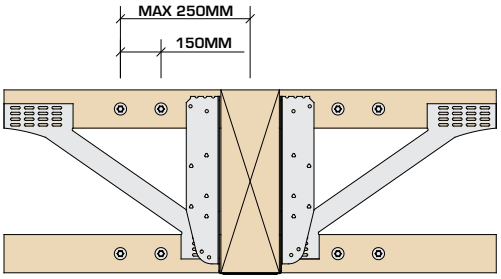


PSTS screws should be installed into both top and bottom chords ensuring a fastener is located within each V section.

Open Web Connection – Fasteners to Top & Bottom Chords*	Length of Paslode STS 6.5mm	Long–Term Permissable Lateral Load–Carrying Capacity (kN) Per Fixing	Characteristic Capacity (kN) Per Fixing
2–ply 72mm wide Open Web Joists	115	0.75	2.28
2–ply 97mm wide Open Web Joists	150	0.75	2.28
2–ply 122mm wide Open Web Joists	200	0.60	1.65
2–ply 147mm wide Open Web Joists	250	0.60	1.65

Concentrated Point Load



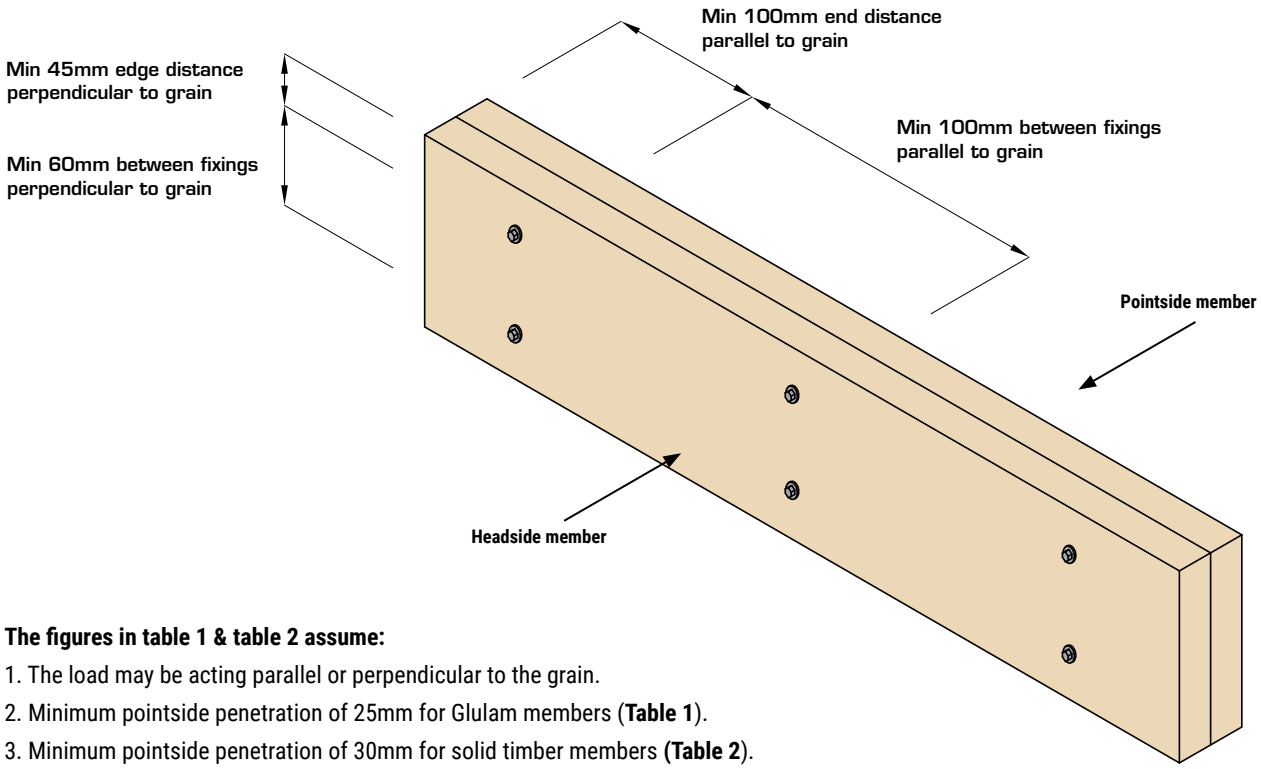


Open Web Connection – Fasteners to Top & Bottom Chords	Length of Paslode STS 6.5mm	Characteristic Capacity (kN)	
		4 screws	8 screws
2–ply 72mm wide Open Web Joists	115	18.24	36.48
2–ply 97mm wide Open Web Joists	150	18.24	36.48
2–ply 122mm wide Open Web Joists	200	13.20	26.40

PSTS

Multiple Connections

Connecting Multiple Glulam & Solid Timber Members With PSTS 8mm Ø



The figures in table 1 & table 2 assume:

1. The load may be acting parallel or perpendicular to the grain.
2. Minimum pointside penetration of 25mm for Glulam members (**Table 1**).
3. Minimum pointside penetration of 30mm for solid timber members **(Table 2**).

PSTS 8.0mm – Lateral Load–carrying Capacities – Glulam (Table 1)

Long–term permissable lateral load for a single Paslode STS 8.0mm for common combinations of 2 member joints in Glulam (GL28).

Thickness of Headside Member (mm)	Thickness of Pointside Member (mm)	Length of Paslode STS 8.0mm	Long–Term Permissable Lateral Load–Carrying Capacity (kN) Per Fixing Safe Working Load	Long–Term Permissable Lateral Load–Carrying Capacity (kN) Per Fixing Characteristic Capacity
38	38	65	0.90	2.18
45	45	85	1.21	2.92
38	75	100	1.24	2.99
75	75	135	1.46	3.51

PSTS 8.0mm – Lateral Load–carrying Capacities – Solid Timber (Table 2)

Long–term permissable lateral load for a single Paslode STS 8.0mm for common combinations of 2 member joints in solid timber (TR26).

Thickness of Headside Member (mm)	Thickness of Pointside Member (mm)	Length of Paslode STS 8.0mm	Long–Term Permissable Lateral Load–Carrying Capacity (kN) Per Fixing Safe Working Load	Long–Term Permissable Lateral Load–Carrying Capacity (kN) Per Fixing Characteristic Capacity
35	35	65	0.86	2.07
45	45	85	1.13	2.72
47	47	85	1.12	2.69
75	75	135	1.38	3.32

PSTS

Multiple Connections

PSTS Procedure For Designing Connections of Multiple Girder Roof Trusses

Maximum Return Spans of Incoming Trusses For A Range of PSTS 8.0mm Spacings

Table 1 – Maximum Return Spans of Trusses Spanning Onto 2–Ply Girder Trusses

Size of Bottom Chord Members of Girder Truss (mm)	Length of Paslode STS 8.0mm	Maximum Return Spans (m) of Incoming Trusses for Paslode STS 8.0mm Spacings (S) of:					
		100mm	150mm	200mm	300mm	400mm	600mm
35 x 72, 35 x 84	65mm	N/A	7.1	5.1	3.2	2.2	N/A
35 x 97	65mm	N/A	9.1	6.6	4.2	2.9	1.7
35 x 122, 35 x 147, 35 x 172	65mm	11.0	9.1	6.6	4.2	2.9	1.7
47 x 72, 47 x 84	85mm	N/A	11.6	8.5	5.4	3.9	2.3
47 x 97	85mm	N/A	14.7	10.8	7.0	5.0	3.1
47 x 122, 47 x 147, 47 x 172, 47 x 197, 47 x 220	85mm	15.0	14.7	10.8	7.0	5.0	3.1

Table 2 – Maximum Return Spans of Trusses Spanning Onto 3–Ply Girder Trusses

Size of Bottom Chord Members of Girder Truss (mm)	Length of Paslode STS 8.0mm	Maximum Return Spans (m) of Incoming Trusses for Paslode STS 8.0mm Spacings (S) of:					
		100mm	150mm	200mm	300mm	400mm	600mm
35 x 72, 35 x 84	100mm	N/A	5.1	3.7	2.2	1.5	N/A
35 x 97	100mm	N/A	6.1	4.8	2.9	2.0	N/A
35 x 122, 35 x 147, 35 x 172	100mm	10.3	6.6	4.8	2.9	2.0	N/A
47 x 72, 47 x 84	135mm	N/A	18.5	6.2	3.9	2.7	1.6
47 x 97	135mm	N/A	10.8	7.9	5.0	3.6	2.1
47 x 122, 47 x 147, 47 x 172, 47 x 197, 47 x 220	135mm	15.0	10.8	7.9	5.0	3.6	2.1

Notes

- The return spans of tables 1 & 2 presume that the bottom chords of the girder trusses are strength class TR26 timber
- The return spans of tables 1 & 2 presume that the Paslode STS 8.0mm are inserted into the girder trusses in accordance with the fastener layouts of Figures 1–4
- For 44mm thick timbers the tabulated return spans given for 47mm thick timbers may be used
- Where plain concrete tiles (maximum top chord deal load of 0.88kN/m² on slope) are used instead of interlocking concrete tiles, then tabulated return spans should be multiplied by 0.9

Design Assumptions

The connection details given are applicable to trusses with pitches between 15º and 45º and supporting the following loadings:

Top Chord Dead Load (kN/m² on slope)		0.685
Top Chord Imposed (snow) Load (kN/m² plan)	**For Pitches ≤30º**	0.75
	For Pitches >30º	0.75 [(960 – pitch) / 30]
Bottom Chord Dead Load (kN/m²)		0.25
Bottom Chord Imposed (storage) Load (kN/m2) – Water Tank Loads as BS5268–3		0.25

PSTS

Multiple Connections

Layout of Paslode STS 8.0mm In Bottom Chords

Figure 1 – Bottom Chords Depths of 72mm, 84mm or 97mm

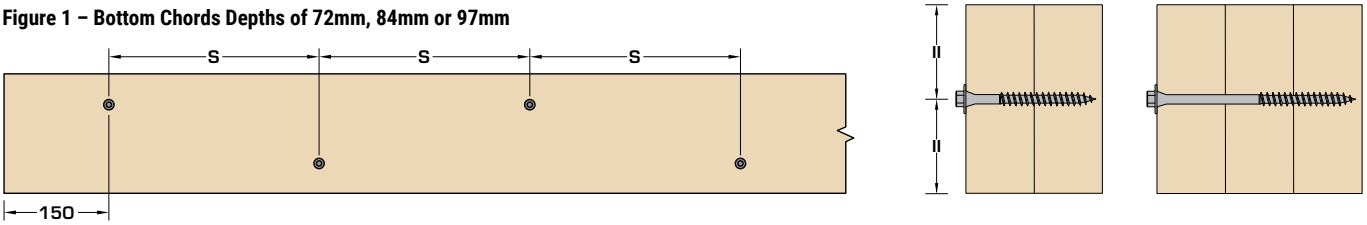
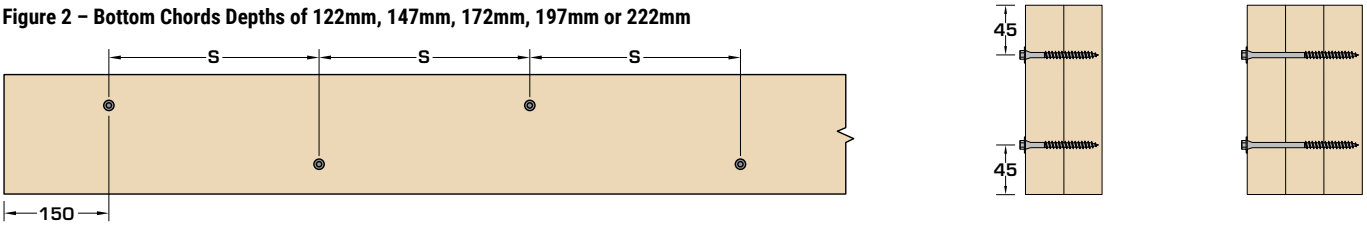


Figure 2 – Bottom Chords Depths of 122mm, 147mm, 172mm, 197mm or 222mm



Layout of Paslode STS 8.0mm In Webs & Top Chords

Figure 3 – Top Chords/Webs of Depths 72mm, 84mm or 97mm

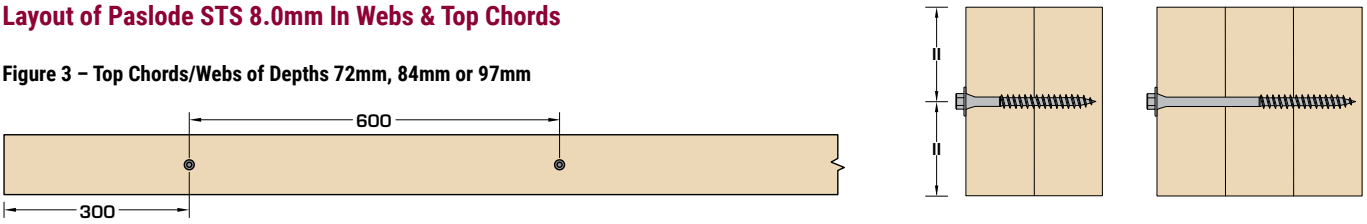
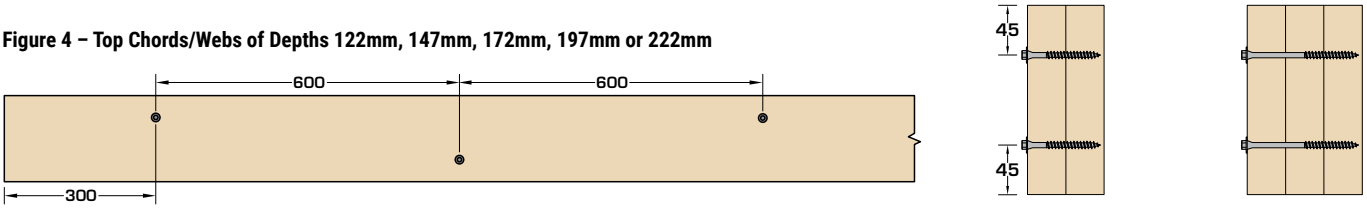


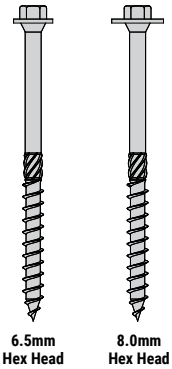
Figure 4 – Top Chords/Webs of Depths 122mm, 147mm, 172mm, 197mm or 222mm



FASTENERS CAN BE INSTALLED FROM ONE SIDE OF GIRDER TRUSS
Except when connecting 4–ply, which must be connected from both sides.
For further information please contact Technical Support.

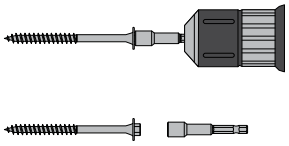
Installation Instructions

Stage 1



Select the correct fastener type and size.

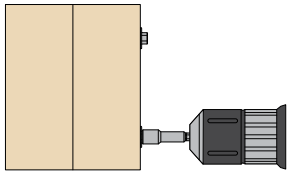
Stage 2



Install using an impact driver.

(One hex driver bit is included in every box)

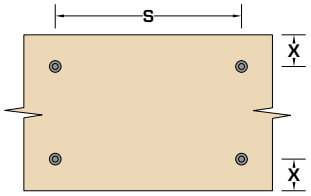
Stage 3



Bring the underside of the washer head flush with the timber surface.

Do not countersink or overdrive.

Stage 4



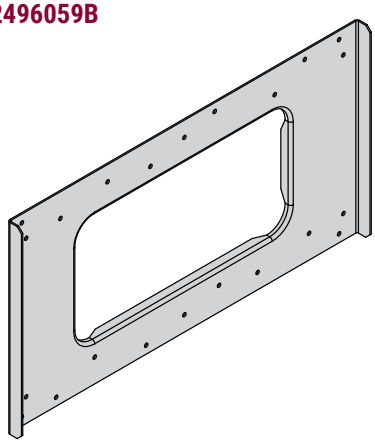
Always maintain the required minimum edge distance and spacing.

These values vary – please refer to relevant details.

SHI

Service Hole I–Joist

GB Patent: 2496059B



The SHI plate is a reinforcement plate that allows large apertures to be cut into an I–Joist web to accommodate service runs.

Features & Benefits

- Allows larger apertures to be cut into I–Joist web whilst providing additional strength and stiffness to the I–Joist
- Potential remedial solution for damaged webs (Contact your system provider for further information)

Material Specification

- Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

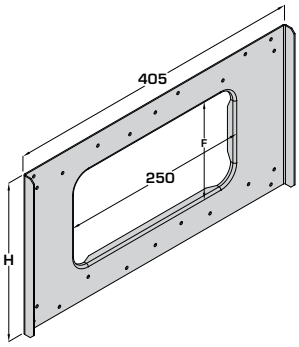
Product Code	Product Description	I–Joist Depth (mm)	Dimensions (mm)	
			H	F
548377	SHI–220–1	220	215	127
548380	SHI–240–1	240/245	240	152
548381	SHI–300–1	300	300	207

Suitable for use with JJI (45mm flange), SJI (39mm flange) and FJI (39mm flange). Contact Technical Support for use with multiple ply members.

The use of SHI plates must be assessed for suitability by a qualified design professional.

Please contact your system provider for further information on assessing joist suitability.

Dimensions (mm)



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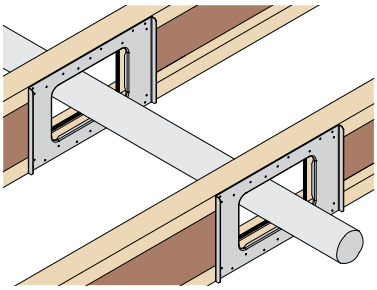
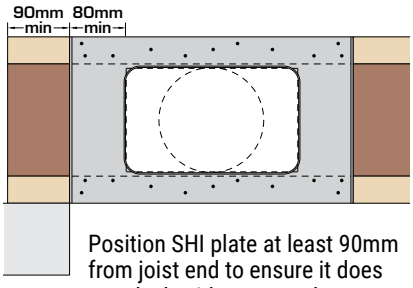


Plate required each side of aperture.

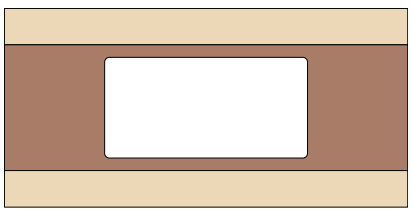


Position SHI plate at least 90mm from joist end to ensure it does not clash with masonry hanger or end seal (suitable for use with Hi–Vis Gripper).

Please ensure the SHI plates are not installed within the masonry wall/mortar

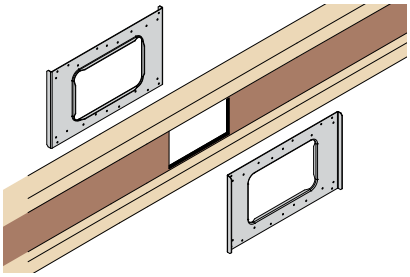
Installation Instructions

Stage 1



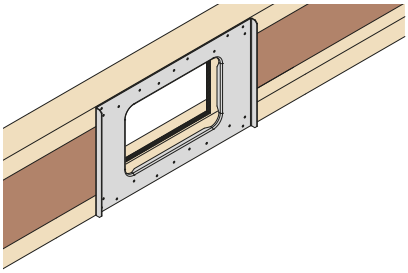
Using the SHI plate as a template, drill 4No holes and cut inner aperture to suit.

Stage 2



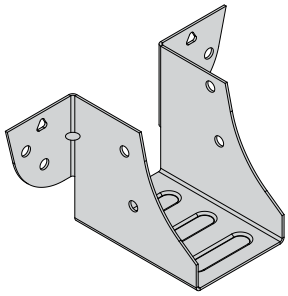
Place 1No SHI plate either side of the aperture.

Stage 3



Fix the SHI plates to the I–Joist with 22No 3.4 x 35mm square twist nails per plate.

Solid Timber/Roof Truss Overview



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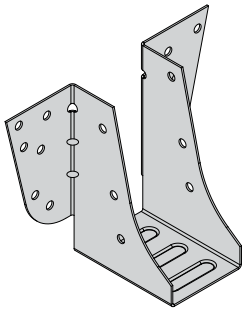

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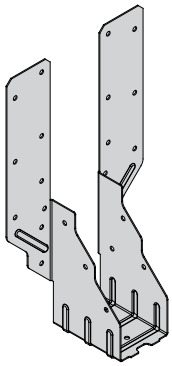
COMPACT SOLUTIONS



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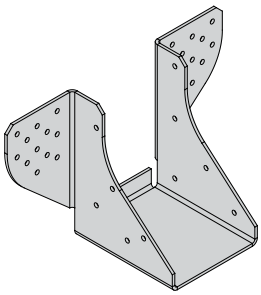

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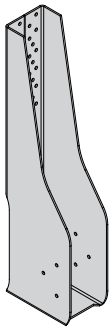

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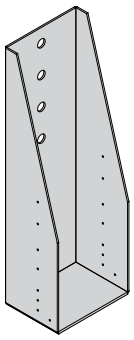

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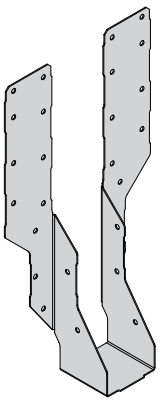
STANDARD TRUSS

HIGH LOAD TRUSS

VERY HIGH LOAD TRUSS



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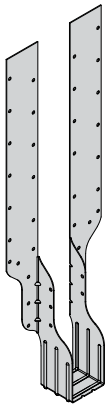

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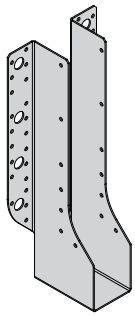
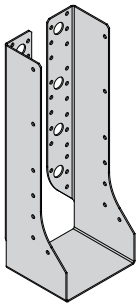
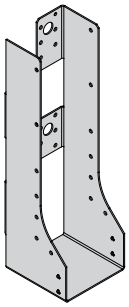
KWIKI



MHE
Pages 110 – 111

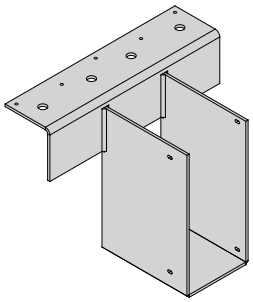


MHI
Pages 110 – 111



MHIC
Pages 110 – 111

FACE FIX



FTHI
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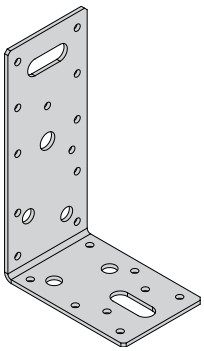
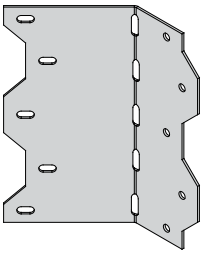
HIGH LOAD TRUSS

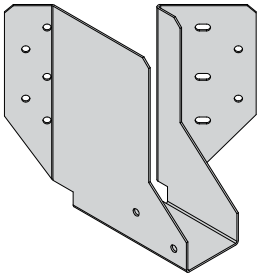


LAB
Page 113

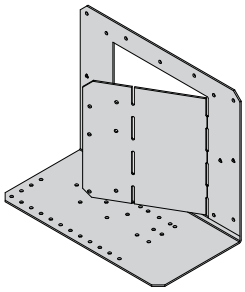
ANGLE BRACKETS



SA–45
Page 114

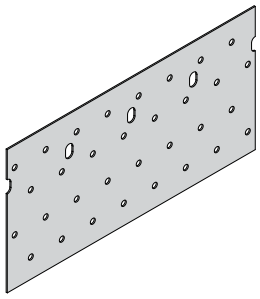


45L/R
Page 115

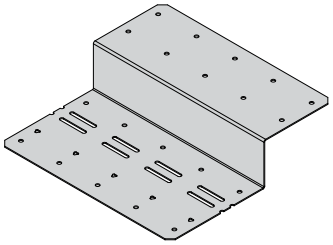


VS
Pages 116 – 117

SKEWED



NP
Page 118



SB
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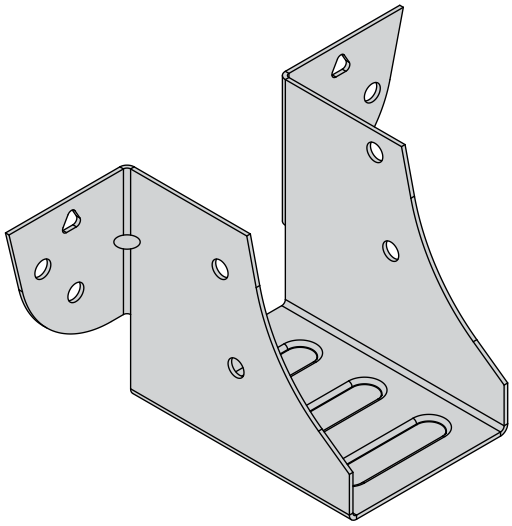
ANCILLARY

KM

Mini Hanger



The KM hanger is used to support joists and trusses where a compact economical connector is required.

Features & Benefits

- New and improved design achieves higher load carrying capacities
- Additional side fixings allow for increased uplift capacity
- Optional triangular holes for increased performance on solid headers
- Rear location tab to assist with installation

Material Specification

- Galvanised mild steel – Z275

Fixings

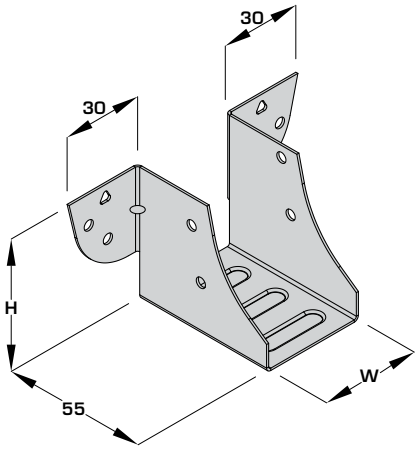
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

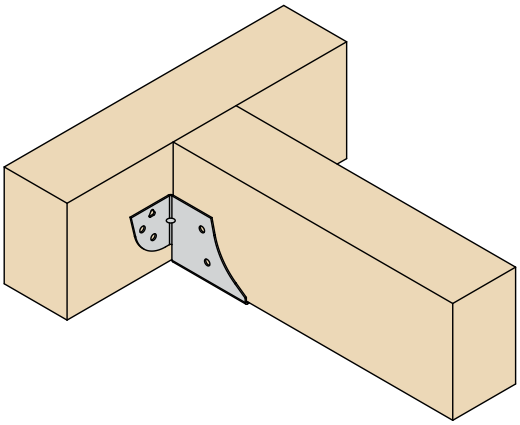
Available Sizes

Product Code	Hanger Width (W) (mm)	Hanger Depth (H) (mm)
KM–38	38	49
KM–44	44	46
KM–50	50	43

Dimensions (mm)



In Situ



Load Data

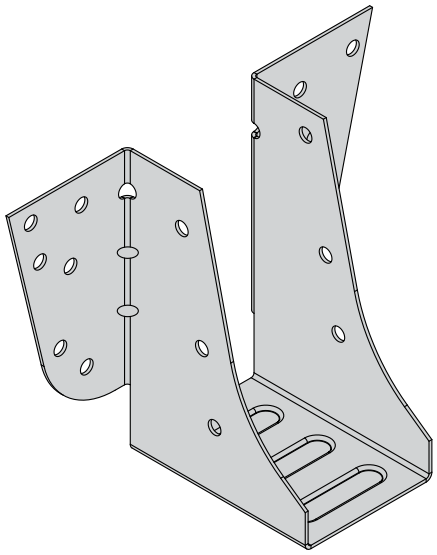
Product Code	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)**		Minimum Supporting Depth (mm)	Minimum Supported Depth (mm) to achieve Full Uplift Capacity
	Header	Incoming	Uplift	Solid Timber Header (Min TR26/C27)		
KM–38	6	4	2.20	3.41	49	49
KM–44					46	46
KM–50					43	43

**Values obtained from tests carried out by ITW Construction Products Offsite and calculated in accordance with ETAG 015.

Values apply to new design only. Please contact Technical Support for further information if required.

TM

Midi Shoe



The TM hanger is used to support trusses in lower load applications from bottom chord depths 97mm and above.

Features & Benefits

- New and improved design achieves higher load carrying capacities
- Additional side fixings allow for increased uplift capacity
- Rear location tab to assist with installation
- Economical solution for lower load applications

Material Specification

- Galvanised mild steel – Z275

Fixings

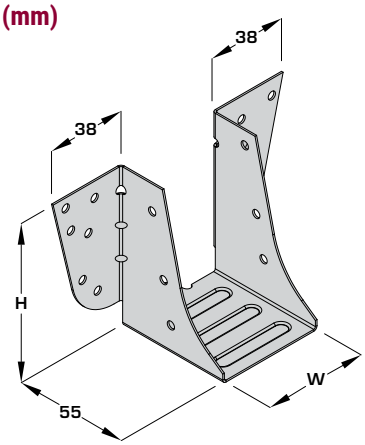
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

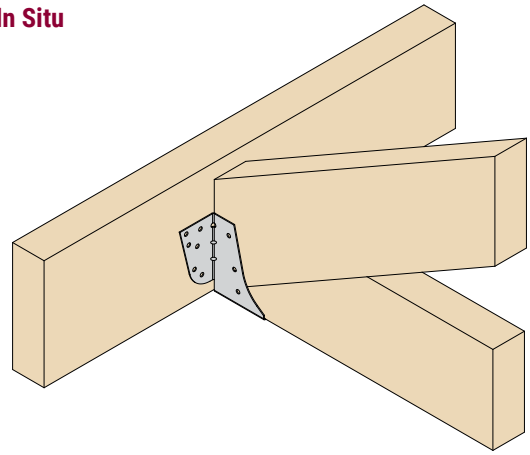
Available Sizes

Product Code	Hanger Width (W) (mm)	Hanger Depth (H) (mm)
TM–38	38	81
TM–44	44	78
TM–50	50	75

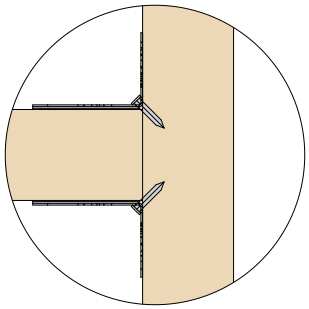
Dimensions (mm)



In Situ



(plates omitted for clarity)



New 45 degree skew nailing
(other nails omitted for clarity)

Load Data

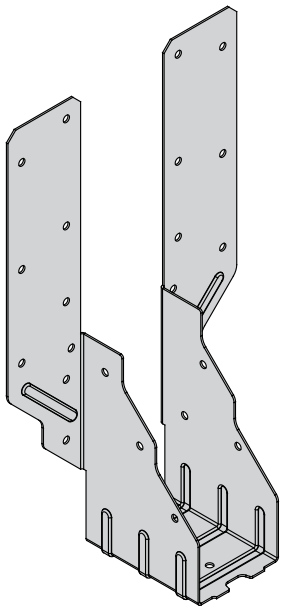
Product Code	Fixings (3.4 x 35mm)			Characteristic Capacity (kN)**		Minimum Supporting Depth (mm)	Minimum Supported Depth (mm) to achieve Full Uplift Capacity
	Header	Skew Nails	Incoming	Uplift	Solid Timber Header (Min C16)		
TM–38	12	2	6	3.32	9.54	81	81
TM–44						78	78
TM–50						75	75

**Values obtained from tests carried out by ITW Construction Products Offsite and calculated in accordance with ETAG 015.

Values apply to new design only. Please contact Technical Support for further information if required.

TS

Truss Shoe



UKTA–21/0009

ETA–20/1000

The TS hanger is designed to support trussed rafters from primary girders.

Features & Benefits

- 4 sizes available to suit standard single or double trussed rafters
- Allows design loading to be effectively transferred without local over stressing
- The high performance nail configuration minimises any direct deflection or rotation caused by the incoming truss not abutting the primary girder

Material Specification

- Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

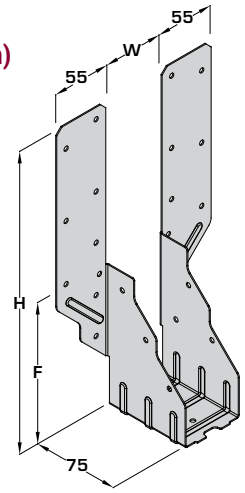
Available Sizes

Product Code	Minimum Header Depth* (mm)	Dimensions (mm)		
		(W)	(H)	(F)
TS–38	120	38	256	120
TS–50	120	50	250	114
TS–75	120	75	237	101
TS–100	89	100	225	89

**When timber depth is shallower than 'F' dimension a timber packer is required.

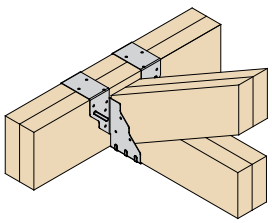
Nail packer to truss with 3No fixings into front ply, 3No fixings into rear ply using Paslode annular ring shank 2.8 x 63mm.

Dimensions (mm)



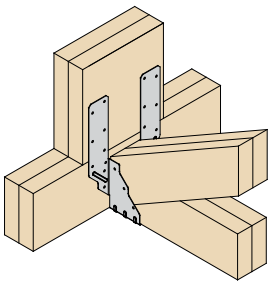
In Situ

Standard Installation:

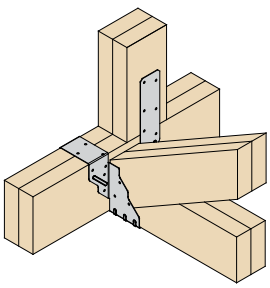


Timber depth greater than 'F' dimension

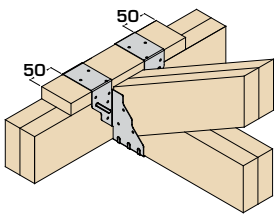
Face Fix Installation:



Single Leg Face Fix Installation:



With Packer Installation:**



Load Data

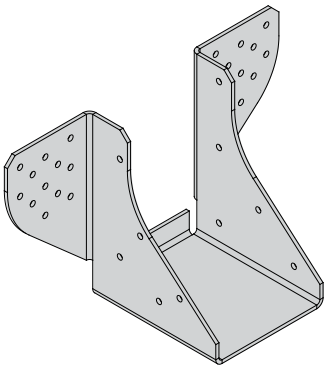
Product Code	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
	Header	Incoming	Uplift	Solid Timber Header (Min C20)
TS–38, TS–50, TS–75, TS–100	18	6	5.62	15.52

HMH

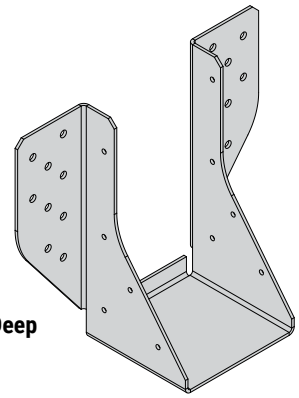
Heavy Multi Hanger

UKTA–21/0008

ETA–20/0999



122 & 147mm Deep



197mm Deep

The HMH hanger is designed to support multiple trusses connecting to girders in medium to high load situations.

Features & Benefits

- High load capacity can be achieved with fixings into the bottom chord only
- A variety of fixing details allows increased performance

Material Specification

- Galvanised mild steel – Z275

Fixings

All fixings supplied with hanger

Depth	Description
122mm	3.35 x 50mm Annular Ring Shank Nails
147mm	3.35 x 50mm Annular Ring Shank Nails
197mm	Paslode PSTS 6.5 x 65mm

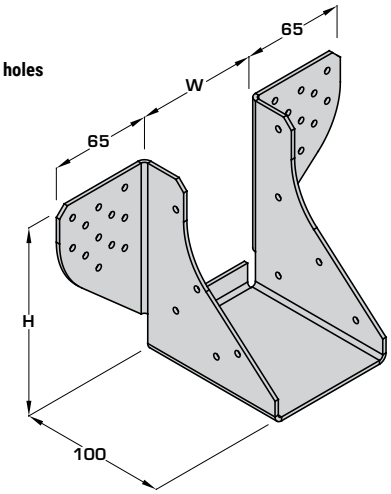
Available Sizes

Hanger Width (W) (mm)	Hanger Depth (mm)		
	122	147	197
80	HMH–80–122	HMH–80–147	HMH–80–197
102	HMH–102–122	HMH–102–147	HMH–102–197
118	–	HMH–118–147	HMH–118–197
153	–	HMH–153–147	HMH–153–197
198	–	–	HMH–198–197

Dimensions (mm)

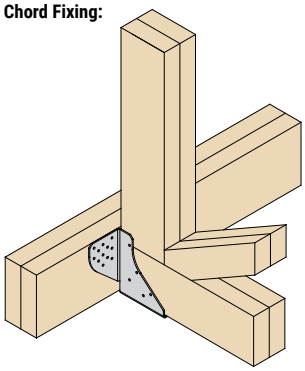
122 & 147mm deep – 4mm Ø holes

197mm deep – 6mm Ø holes

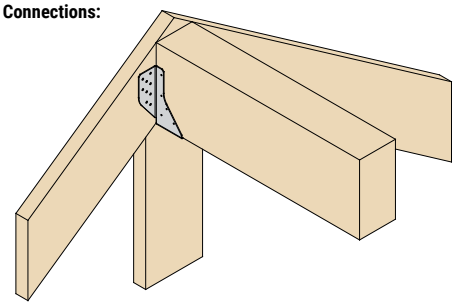


In Situ

Bottom Chord Fixing:



Ridge Connections:



Please discuss suitability with Technical Support

Load Data

Hanger Depth (mm)	Dimensions (mm)	Fixings		Characteristic Capacity (kN)	
	H	Header (3.35 x 50mm)	Incoming (3.4 x 35mm)	Uplift**	Solid Timber Header (Min TR26)
122	122	24	10	9.83	26.08
147	145	34	10	9.83	32.45
		Header (PSTS 6.5 x 65mm)	Incoming (3.4 x 35mm)		
197	195	18	10	9.83	39.49

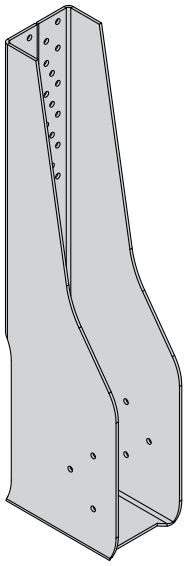
**Supported timber must be at least hanger height to achieve full uplift capacity. For reduced fixing capacity please contact Cullen Technical.
Incoming trusses must be connected together to act as a single unit.

HGG

Heavy Girder To Girder

UKTA–21/0008

ETA–20/0999



The HGG hanger is designed to support multiple ply girder trusses from a vertical web in high load situations.

Features & Benefits

- New and improved design using PSTS screws simplifies the installation
- Allows fixings into vertical web only
- Additional side fixings allows for greater uplift capacity

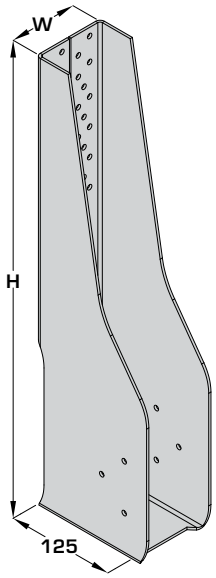
Material Specification

- Galvanised mild steel – Z275

Fixings

40No Paslode PSTS 6.5 x 65mm supplied with hanger

Dimensions (mm)

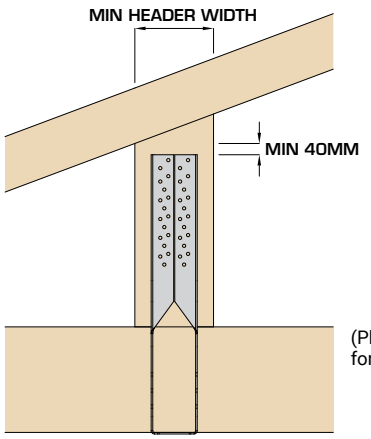


Available Sizes

Product Code	Incoming Truss Width	Minimum Header Width (mm)	Hanger Width (W) (mm)	Hanger Depth (H) (mm)
HGG–80	2No 35	97	80	519
HGG–102	2No 47	122	102	508
HGG–153	3No 47	147	153	542
HGG–200	4No 47	197	200	519

Incoming and header trusses must be connected together to act as a single unit

In Situ



(Plates omitted for clarity)

- Minimum edge distances must be met to achieve full capacity.
- Please ensure vertical end members are stepped back to allow room for screw heads.
- Supported member should be positioned to the back of the hanger.
- Maximum allowable gap of 3mm.

Load Data

Product Code	Fixings		Characteristic Capacity (kN)	
	PSTS 6.5 x 65mm		Uplift	Solid Timber Header (Min TR26)
	Header	Incoming		
HGG–80, HGG–102, HGG–153, HGG–200	34	6	11.40*	64.60

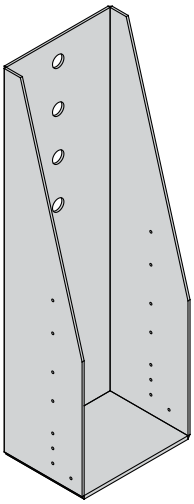
*Minimum 122mm deep bottom chord required to achieve the full uplift capacity

VHGG

Very Heavy Girder To Girder

UKTA–21/0008

ETA–20/0999



The VHGG hanger is designed to support multiple ply girder trusses from a vertical web in very high load situations.

Features & Benefits

- Fixings into vertical web only therefore no requirement for increased bottom chord depths
- Additional side fixings allows for greater uplift capacity

Material Specification

- Zinc undercoated

Fixings

4No M20 Bolts – 180mm long fully threaded (inc nut, round washer, form G washer) supplied with part**

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

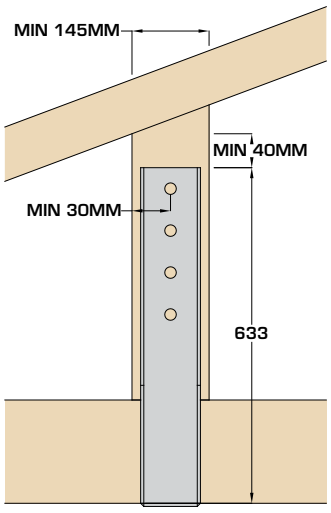
*For use with Paslode PPN35Ci
**Please specify 240mm long bolts when connecting to 4 ply 47mm header members

Available Sizes

Product Code	Incoming Truss Width	Hanger Width (W) (mm)
VHGG–80	2No 35[2]	80
VHGG–102	2No 47[2]	102
VHGG–118	3No 35[3]	118
VHGG–153	3No 47[3]	153
VHGG–200	4No 47[4]	200

[2][3][4]Trusses must be connected together to act as a single unit

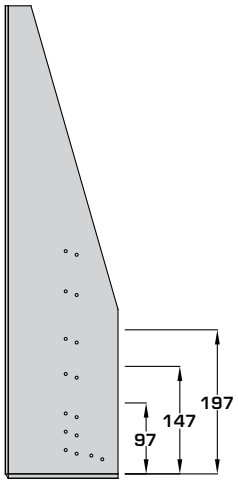
In Situ



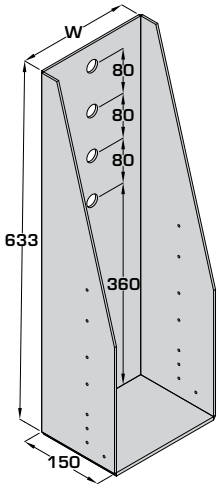
(Plates omitted for clarity)

- Minimum edge distances must be met to achieve full capacity.
- Please ensure vertical end members are stepped back to allow room for bolt heads.
- Supported member should be positioned to the back of the hanger.
- Maximum allowable gap of 3mm.

Enhanced Uplift



Dimensions (mm)



Minimum Truss Bottom Chord Depth (mm)	Fixing (3.4 x 35mm)	Characteristic Capacity (kN)
	Incoming	Uplift
97	8	4.67
147	10	8.49
197	12	14.72
Vertical	12	14.72

Load Data

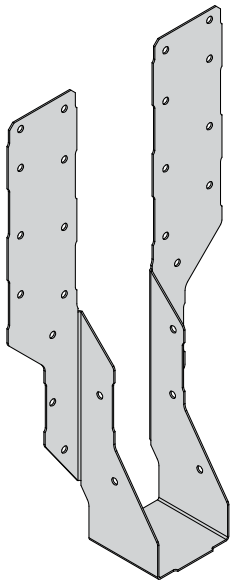
Product Code	Fixings		Characteristic Capacity (kN)		
	Header	Incoming	Uplift	Solid Timber Header (Min TR26)	
	Bolts M20	Nails (3.4 x 35mm)		Min 2 Ply 35mm Header	Min 2 Ply 47mm Header
VHGG–80, VHGG–102, VHGG–118, VHGG–153, VHGG–200	4	8	4.67	66.50	80.20

KH

Kwiki Hanger Standard Leg

UKTA–21/0009

ETA–20/1000



The KH hanger is designed for simple solid timber to timber connections.

Features & Benefits

- Adjustable leg length accommodates varying timber depths
- Light gauge steel eliminates the need for notching timber

Material Specification

Galvanised mild steel – Z275

Fixings

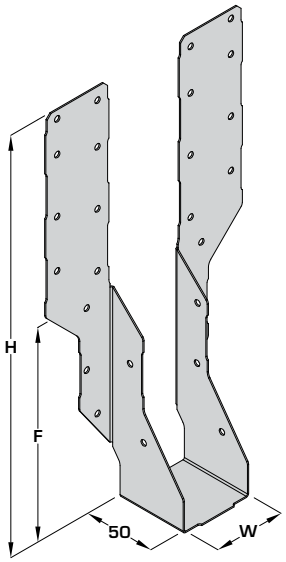
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

Product Code	Minimum Header Depth (mm)	Hanger Width (W) (mm)	Hanger Depth (H) (mm)	Stirrup Height (F) (mm)
KH–38	140	38	271	140
KH–44	140	44	268	137
KH–47	140	47	267	135
KH–50	140	50	265	134
KH–63	140	63	258	128
KH–75	140	75	277	122
KH–92	120	92	269	111
KH–100	120	100	265	109
KH–150	89	150	250	84

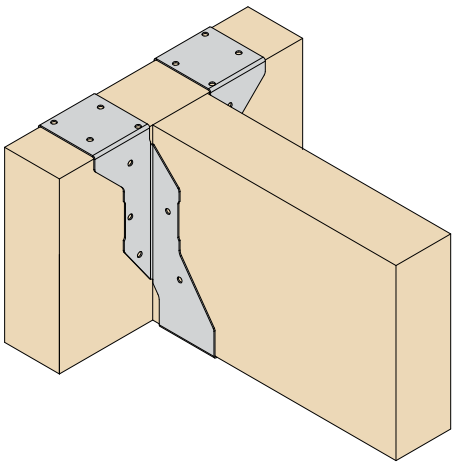
Dimensions (mm)



Product not suitable for use with I–Joists or Open Web Joists.

'F' dimension does not support 60% of the joist depth.

In Situ



Load Data

Product Code	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
	Header	Incoming	Uplift**	Solid Timber Header (Min TR26/C27)
KH–38, KH–44, KH–47, KH–50, KH–63, KH–75, KH–92, KH–100, KH–125, KH–150	24	5	4.64	12.48

**Supported timber must be at least stirrup height to achieve full uplift capacity. For reduced fixing capacity please contact Cullen Technical.

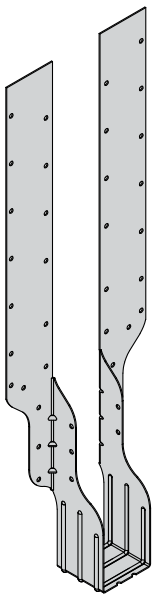
KHL

Kwiki Hanger Long Leg

UKTA–21/0009

ETA–20/1000

European Community Registered Design



The KHL hanger is a long leg hanger designed for simple solid timber to timber connections.

Features & Benefits

- Adjustable leg length accommodates varying timber depths
- Solution for dropped/underslung applications

Material Specification

- Galvanised mild steel – Z275

Fixings

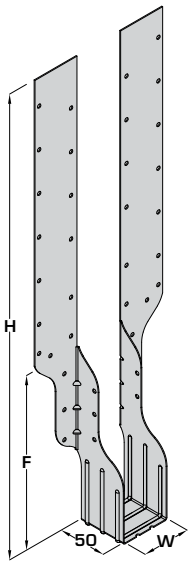
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

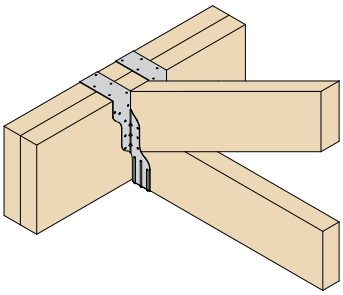
Product Code	Minimum Header Depth (mm)	Hanger Width (W) (mm)	Hanger Depth (H) (mm)	Stirrup Height (F) (mm)
KHL–39	190	38	481	182
KHL–47	190	47	476	177
KHL–50	190	50	475	176
KHL–75	170	75	462	163
KHL–92	170	92	454	156
KHL–100	170	100	450	151
KHL–125	140	125	437	138
KHL–150	140	150	425	126

Dimensions (mm)



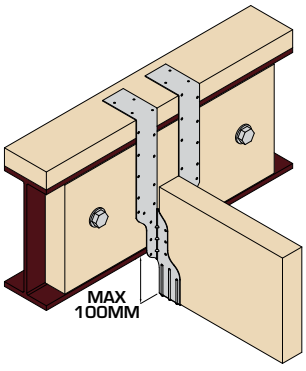
In Situ

Standard Installation



(plates omitted for clarity)

Dropped Installation



Product not suitable for use with I–Joists.

When supporting open web joists the side flanges (F) must support at least 60% of the joist depth.

Contact Technical Support for further information.

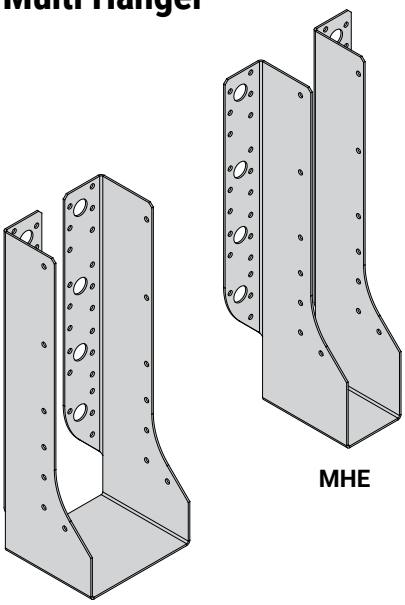
Load Data

Product Code	Fixings (3.4 x 35mm)		Safe Working Loads (kN)			Characteristic Capacity (kN)	
	Incoming	Header	Uplift Short Term	Solid Timber Header (Min C16)		Uplift**	Solid Timber Header (Min TR26/C27)
				Long Term	Medium Term		
KHL–39, KHL–44, KHL–47, KHL–50, KHL–63, KHL–75, KHL–92, KHL–100	34	5	2.50	11.49	11.49	4.64	18.00
KHL–125, KHL–150	34	5	2.50	11.49	11.49	4.64	15.04

**Supported timber must be at least stirrup height to achieve full uplift capacity. For reduced fixing capacity please contact Cullen Technical.

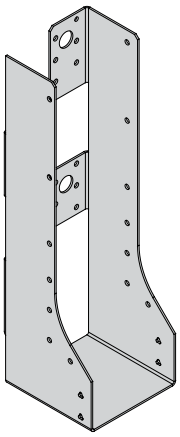
MH RANGE

Multi Hanger



MHE

MHI



MHIC

The MH hanger range is designed to support timber to timber connections in medium to high load situations.

Features & Benefits

- External and internal flange options allow for multifunctional use
- Range of sizes and potential fixing options allows for greater design flexibility
- Partial fixing options available on request. Contact Technical Support.

Material Specification

- Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500
See page 10	M12 Bolts	Each

*For use with Paslode PPN35Ci

Available Sizes

Hanger Width (W) (mm)	MHE280	MHE380	MHI/MHIC380	MHE490	MHI/MHIC490	MHE620	MHI/MHIC620
39	MHE280–39–120	MHE380–39–170	MHIC380–39–170	MHE490–39–225	MHIC490–39–225	–	MHIC620–39–290
46	MHE280–46–117	MHE380–46–167	MHIC380–46–167	MHE490–46–222	MHIC490–46–222	MHE620–46–287	MHIC620–46–287
50	MHE280–50–115	MHE380–50–165	MHIC380–50–165	MHE490–50–220	MHIC490–50–220	MHE620–50–285	MHIC620–50–285
55	–	–	–	–	MHIC490–55–217	–	–
61	–	–	–	–	MHIC490–61–214	–	MHIC620–61–279
65	–	–	–	–	MHIC490–65–212	–	MHIC620–65–277
72	–	–	–	–	MHIC490–72–209	–	MHIC620–72–274
75	MHE280–75–102	MHE380–75–152	MHIC380–75–152	MHE490–75–207	MHIC490–75–207	MHE620–75–272	MHIC620–75–272
78	–	–	–	MHE490–78–206	MHIC490–78–206	MHE620–78–271	–
92	–	MHE380–92–144	MHI380–92–144	MHE490–92–199	MHI490–92–199	MHE620–92–264	MHI620–92–264
100	MHE280–100–90	MHE380–100–140	MHI380–100–140	MHE490–100–195	MHI490–100–195	MHE620–100–260	MHI620–100–260
110	–	–	–	MHE490–110–190	–	–	–
118	–	–	–	MHE490–118–186	–	–	–
122	–	–	–	MHE490–122–184	–	MHE620–122–249	–
125	–	–	–	MHE490–125–182	MHI490–125–182	MHE620–125–247	MHI620–125–247
130	–	–	–	–	–	MHE620–130–245	–
135	–	–	–	MHE490–135–177	MHI490–135–177	–	–
138	–	–	–	MHE490–138–176	MHI490–138–176	MHE620–138–241	MHI620–138–241
144	–	–	–	–	MHI490–144–173	MHE620–144–238	–
150	–	MHE380–150–115	MHI380–150–115	MHE490–150–170	MHI490–150–170	MHE620–150–235	MHI620–150–235

Hanger Width (W) (mm)	MHE620	MHI620	MHE670	MHE720
183	MHE620–183–218	MHI620–183–218	–	–
198	MHE620–198–211	MHI620–198–211	–	–
210	–	–	MHE670–210–230	–
225	–	–	MHE670–225–222	–
230	–	–	MHE670–230–220	–
250	–	–	MHE670–250–210	–
300	–	–	–	MHE720–300–210

Example: **MHIC620–50–285**

L W H

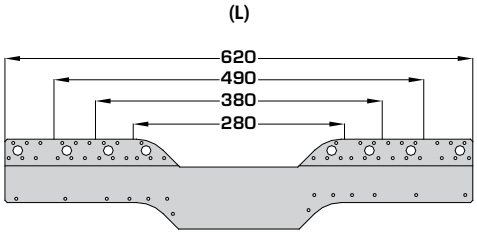
L = length W = width H = height

The hanger depth must be at least 60% of the carried member depth to prevent rotation in a floor or flat/non braced roof structure

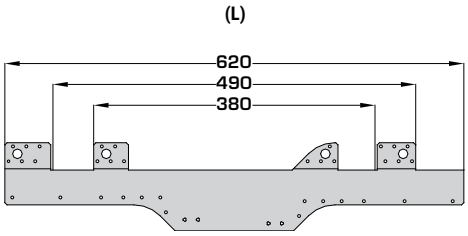
MH RANGE

Multi Hanger

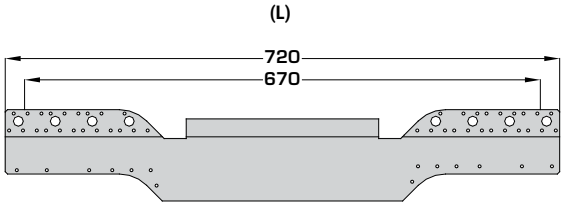
Hanger Coding



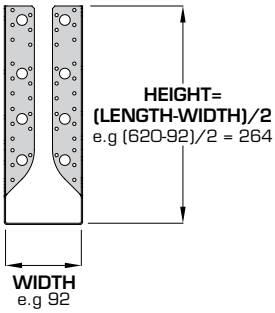
MHE/MHI FLAT BLANK
(280 – 620)



MHIC FLAT BLANK



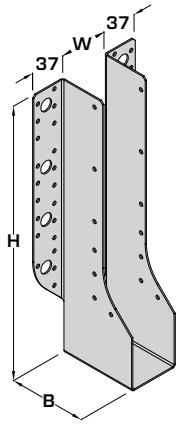
MHE/MHI FLAT BLANK
(670 – 720)



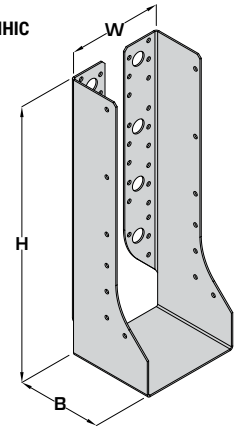
Example: **MHI620–92–264**
L W H
L = length W = width H = height

Dimensions (mm)

MHE

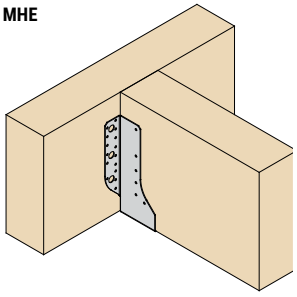


MHI/MHIC

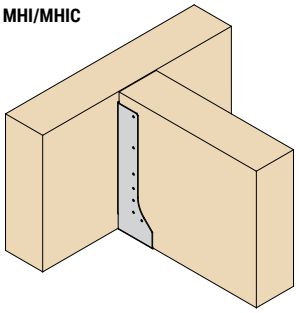


In Situ

MHE



MHI/MHIC



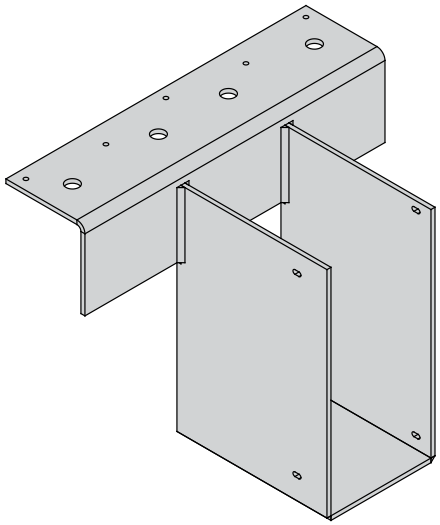
(Incoming member must be notched to accommodate bolts heads when bolting)

Load Data

Product Code	Dimensions (mm)			Fixings			Characteristic Capacity (kN)	
				Header		Incoming		
	W		B	Nails (3.4 x 35mm)	Bolts (M12)	Nails (3.4 x 35mm)	Uplift	Solid Timber Header (Min TR26 / C27)
	Min	Max						
MHE/MHI280	39	100	85	8	0	6	4.67	10.12
				0	2	6		10.33
MHE/MHI380	39	150	85	18	0	10	8.49	20.07
				0	4	10		17.13
MHE/MHI490	39	100	85	30	0	12	14.72	25.66
				0	6	12		33.21
MHE/MHI490	110	150	85	30	0	12	14.72	25.66
				0	6	12		27.65
MHE/MHI620	39	100	85	42	0	14	14.72	32.77
				0	8	14		35.12
MHE/MHI620	122	150	85	42	0	14	14.72	25.92
				0	8	14		35.12
MHE/MHI620	183	198	85	42	0	14	14.72	32.77
				0	8	14		35.12
MHE/MHI670	210	250	85	42	0	14	14.72	32.77
				0	8	14		35.12
MHE/MHI720	300	300	85	42	0	14	14.72	32.77
				0	8	14		35.12
MHIC380	39	78	82	9	0	10	8.49	10.55
MHIC490	39	78	82	16	0	12	14.72	16.76
MHIC620	39	78	82	21	0	14	14.72	21.26

FTHI

Flexible Timber Hanger



The FTHI hanger is designed to support joists, trussed rafters and solid timber members in a top fix only application for high load situations.

Features & Benefits

- Increased top flange to allow for greater load distribution
- Options available for skewed, offset, dropped and straddle connections

Material Specification

- 4mm mild steel with zinc phosphate undercoat with an organic bituminous top coat to BS EN845–1:2013+A1:2016

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

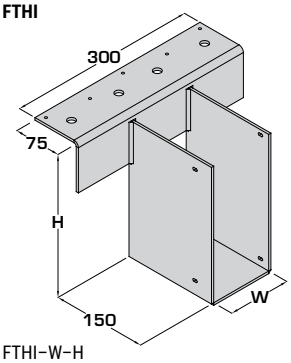
Hanger Widths (mm):

39, 46, 50, 61, 65, 72, 75, 78, 92, 100, 122, 125, 130, 138, 144, 150, 183, 198, 222, 225, 250, 300

Hanger Depths (mm):

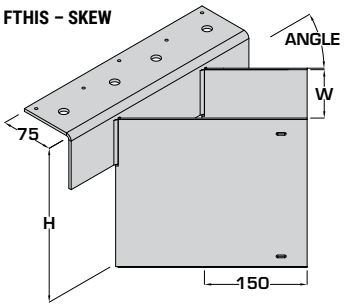
140, 165, 195, 200, 210, 220, 225, 230, 235, 241, 245, 253, 280, 302, 350, 356, 380, 393, 400, 418, 450

FTHI



FTHI–W–H
Example:
FTHI–100–245

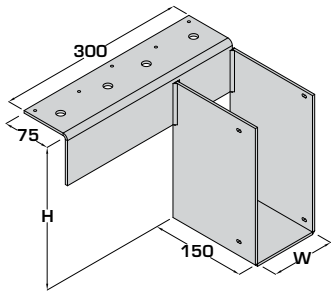
FTHIS – SKEW



FTHIS–W–H–OFFSET DIRECTIONAL–ANGLE
Example: FTHIS–100–245–L–45

(skews from 30–87.5° in 2.5° increments, with 5mm automatically added to ordered width to allow for tolerance)

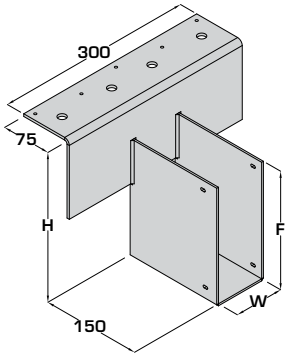
FTHIO – OFFSET



Left hand version shown

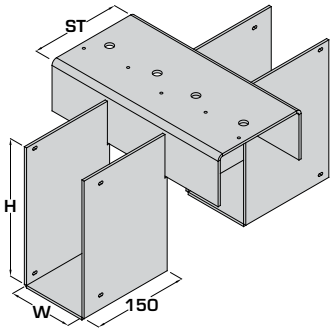
FTHIO–W–H–OFFSET DIRECTION
Example:
FTHIO–100–245–L
FTHIO–100–245–R

FTHID – DROPPED



FTHID–W–H–F
Example:
FTHID–100–245–220

FTHIST – STRADDLE



FTHIST–W–H–ST
Example:
FTHIST–100–245–140

Load Data

Product Code	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
	Header	Incoming	Uplift	LVL or GL (Min GL28)
FTHI	5	2	2.00	42.00

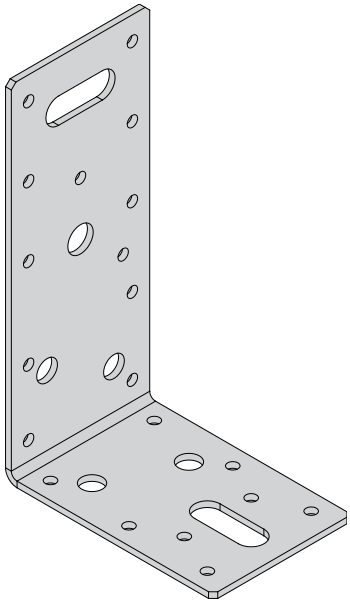
– 12mm diameter holes not required for this application

LAB

Angle Bracket

UKTA–21/0008

ETA–20/0999



The LAB is a 90° angle bracket to accommodate various timber to timber connections.

Features & Benefits

– Multiple holes to accommodate nail, screw and bolt fixings

Material Specification

– Galvanised mild steel – Z275

Fixings

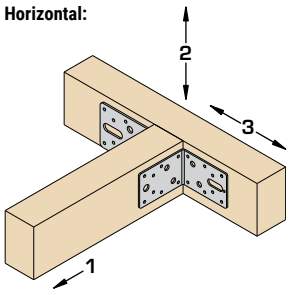
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

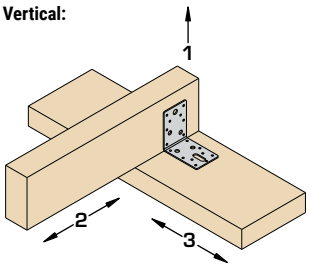
3.35 x 50mm sheradised ringshank nails – supplied by others
3.5 x 30mm wood screws – supplied by others

In Situ

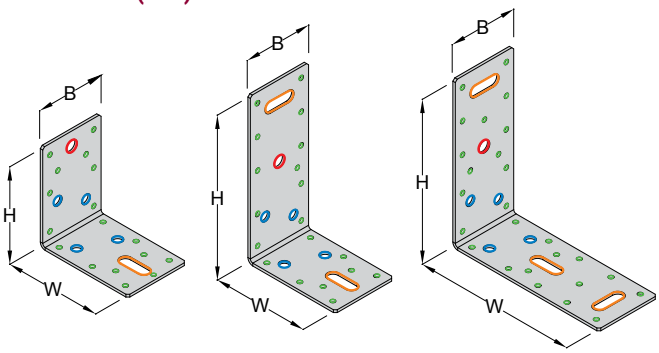
Horizontal:



Vertical:



Dimensions (mm)



LAB–180 LAB–240 LAB–300

Ø 4.0 Ø 9.0 Ø 11.0 R5.5 x 30.0

Load Data (all loads are per pair of angle brackets)

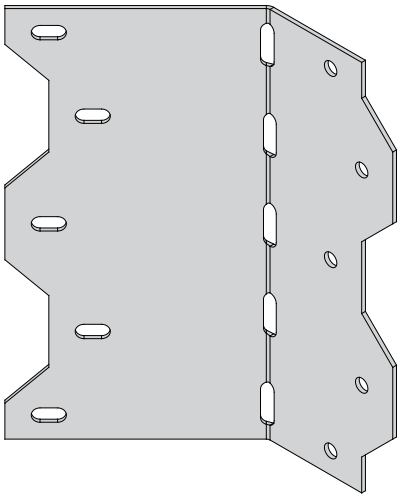
Product Code	Dimensions (mm)			Fixings (3.4 x 35mm Square Twist Nails)		Load Direction	Characteristic Capacity (kN)
	W	H	B	Header	Incoming		Solid Timber Header (Min C24)
LAB–180	90	90	60	12	16	1	3.32
						2	9.62
						3	10.12
LAB–240	150	90	60	22	16	1	4.16
						2	12.39
						3	10.12
LAB–300	150	150	60	22	26	1	4.16
						2	12.39
						3	13.50
				Fixings (3.35 x 50mm Ring Shank)			
				Header	Incoming		
LAB–180	90	90	60	12	16	1	7.27
LAB–240	150	90	60	22	16	1	7.97
LAB–300	150	150	60	22	26	1	7.97
				Fixings (3.35 x 30mm Wood Screw)			
				Header	Incoming		
LAB–180	90	90	60	12	16	1	6.40
LAB–240	150	90	60	22	16	1	6.40
LAB–300	150	150	60	22	26	1	6.40

SA–45

Skewed Angle 45° Hanger

UKTA–21/0008

ETA–20/0999



The SA–45 is a 45 degree pre–bent angle bracket for light load timber to timber connections.

Features & Benefits

- Adjustable between 45 – 90 degrees for angles 45 – 135 degrees (to be bent once)

Material Specification

- Galvanised mild steel – Z275

Fixings

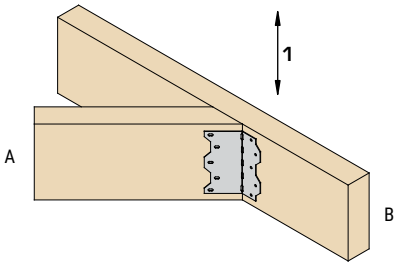
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

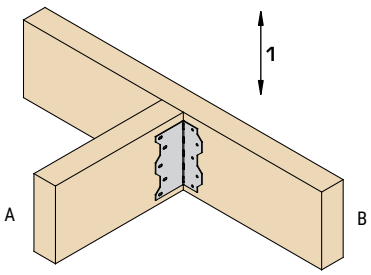
3.75 x 75mm round wire nails – for enhanced installation

In Situ

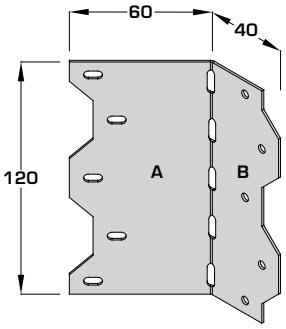
Standard 45°



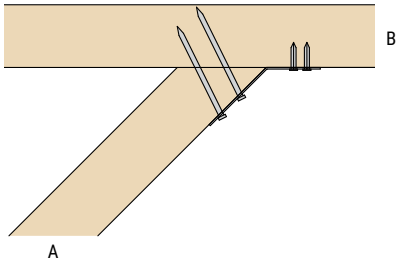
Standard 90°



Dimensions (mm)

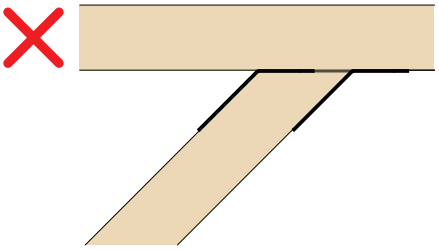


Enhanced 45°

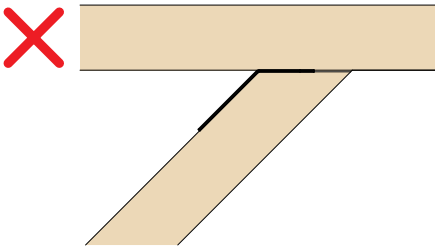


Joist A – 3.75 x 75mm round wire nails
Joist B – 3.4 x 35mm square twist nails

Incorrect Installation



Do not use more than one bracket per connection.



Do not install bracket on the acute side of the angle.

Load Data

	Angle	Load Direction	Fixings		Characteristic Capacity (kN)
			Joist (A)	Joist (B)	Solid Timber Header (Min TR26)
STANDARD INSTALL	45°	1	5No 3.4 x 35mm	5No 3.4 x 35mm	4.02
	90°	1	5No 3.4 x 35mm	5No 3.4 x 35mm	3.49
ENHANCED INSTALL	45°	1	5No 3.75 x 75mm	5No 3.4 x 35mm	5.84

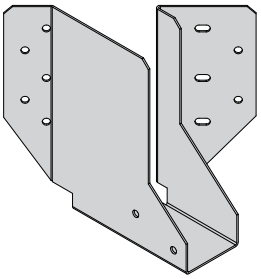
Contact Technical Support for angles outwith 45° and 90°

45L/R

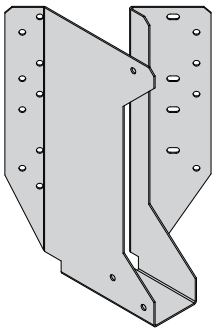
Face Fix 45º Hanger

UKTA–21/0009

ETA–20/1000



85 – 170mm Deep



220 – 300mm Deep

Left hand version shown

The 45L/R is a pre–skewed 45 degree hanger for timber to timber connections.

Features & Benefits

– Economical solution provides set angle for ease of installation

Material Specification

– Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

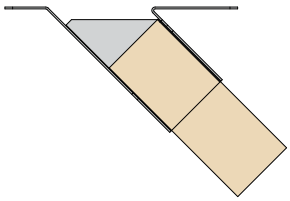
*For use with Paslode PPN35Ci

Available Sizes

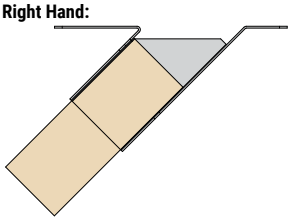
Hanger Width (W) (mm)	Hanger Depth (H) (mm)							
	85		135		220		300	
	Left	Right	Left	Right	Left	Right	Left	Right
39	45–L–39–85	45–R–39–85	45–L–39–135	45–R–39–135	45–L–39–220	45–R–39–220	45–L–39–300	45–R–39–300
46	–	–	–	–	45–L–46–220	45–R–46–220	45–L–46–300	45–R–46–300
50	–	–	–	–	45–L–50–220	45–R–50–220	45–L–50–300	45–R–50–300
75	–	–	–	–	45–L–75–220	45–R–75–220	45–L–75–300	45–R–75–300
92	–	–	–	–	45–L–92–220	45–R–92–220	–	–

See VS (pages 116 – 117) or VRC (pages 83 – 84) for skews outwith 45º

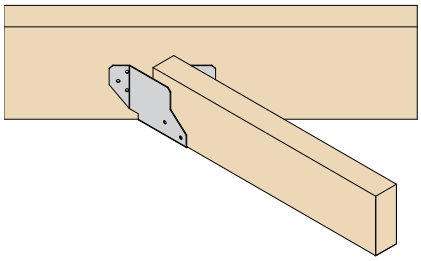
Left Hand:



Right Hand:

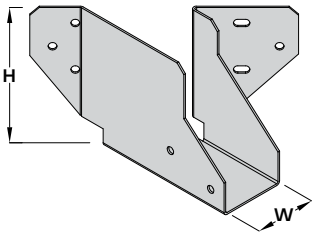


In Situ

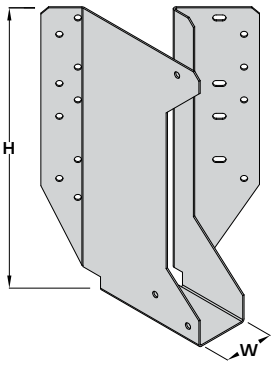


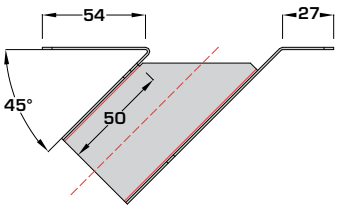
Dimensions (mm)

85–170mm Deep



220–300mm Deep





Load Data

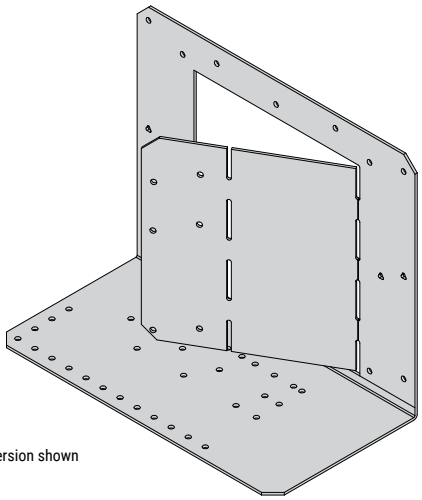
Hanger Depth (H) (mm)	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
(Depth Dependant Only)	Header	Incoming	Uplift	Solid Timber Header (Min C20)
85	6	2	0.99	5.71
135	10	2	0.99	9.36
220	17	3	0.99	14.73
300	21	3	0.99	17.54

VS

Variable Skewed Timber Hanger

UKTA–21/0010

ETA–20/1073



Right hand version shown

The VS hanger is used to support joists and trusses up to 97mm wide from solid timber members in skewed applications between 30–90º.

Features & Benefits

- Unique hanger design provides a variable skew angle between 30–90º
- No need to mitre cut joists
- Angle scale on base to ease adjustment

Material Specification

- Galvanised mild steel – Z275

Fixings

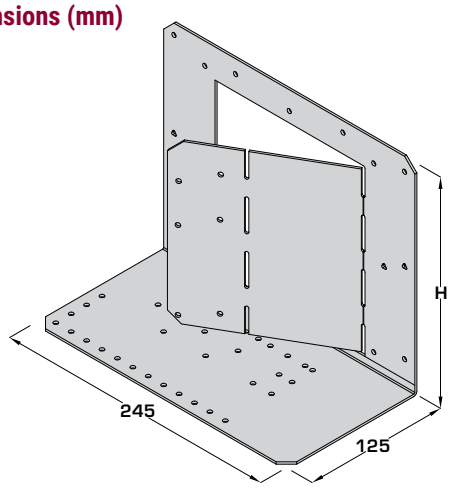
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

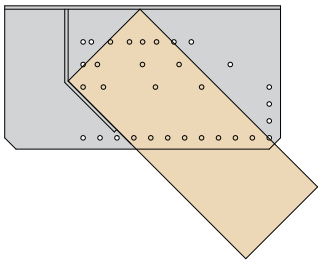
Available Sizes

Min Joist Width (mm)	Max Joist Width (mm)	Handing	Hanger Depth (mm)			
			135	175	195	220
38	97	Right	VS–135–R	VS–175–R	VS–195–R	VS–220–R
38	97	Left	VS–135–L	VS–175–L	VS–195–L	VS–220–L
>97			See FTHIS on page 116			

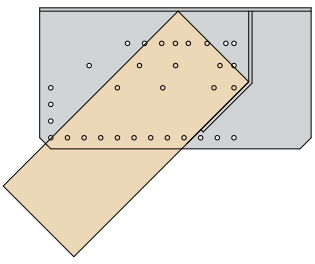
Dimensions (mm)



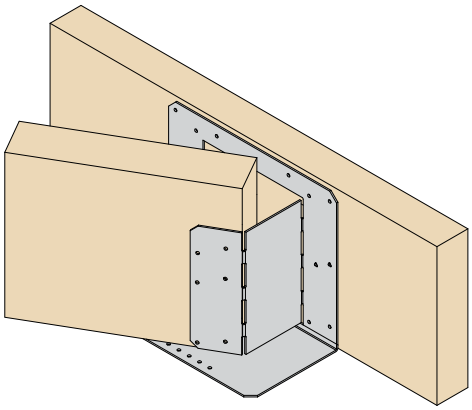
Left Hand



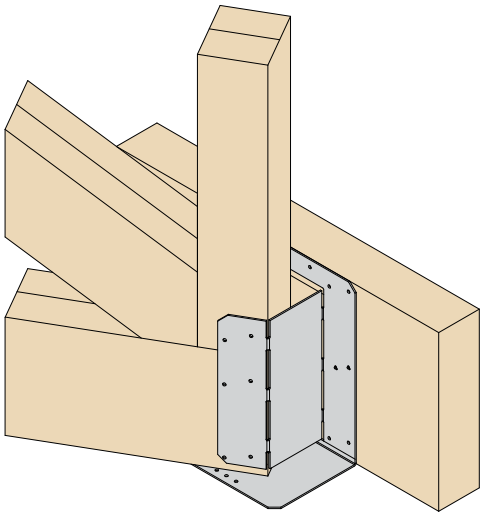
Right Hand



In Situ



Solid timber joists must be full depth of hanger



Bottom chord must be deeper than hanger or vertical required for trusses

VS

Variable Skewed Timber Hanger

Load Data

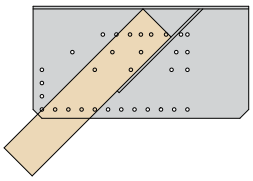
Hanger Depth (mm)	Fixings (3.4 x 35mm)		Characteristic Capacity (kN)	
			Uplift	Solid Timber Header (Min TR26)
(Depth Dependant Only)	Header	Incoming		
135	11	4	2.50	4.30
175, 195, 220	11	6	3.75	5.51

Installation Instructions

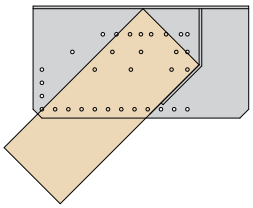
Stage 1

Adjust side plate to approximate angle between 30° and 90° using scale on base of hanger, bending only once. Please refer to the angle table below to determine if one or two bends are required.

Single Bend



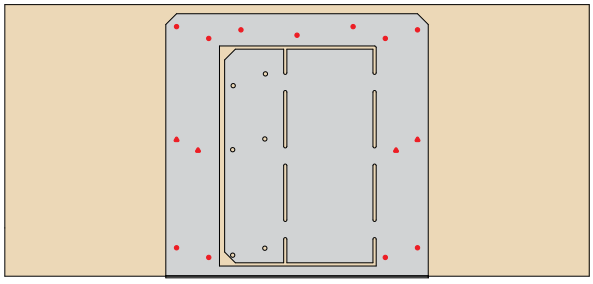
Double Bend



Joist Width (mm)	Double Bend	Single Bend
35	30–90°	n/a
38	30–90°	n/a
44	30–90°	n/a
45	30–90°	n/a
47	30–90°	n/a
51	>32–90°	30–32°
53	>32–90°	30–32°
58	>34–90°	30–34°
59	>34–90°	30–34°
60	>35–90°	30–34°
63	>37–90°	30–37°
70	>39–90°	30–39°
72	>40–90°	30–40°
76	>42–90°	30–42°
88	>46–90°	30–46°
89	>46–90°	30–46°
90	>46–90°	30–46°
94	>48–90°	30–48°
97	>49–90°	30–49°

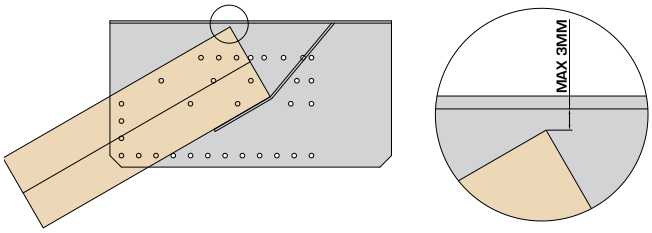
Stage 2

Position hanger against face of joist/truss and nail using 11No 3.4 x 35mm square twist nails.



Stage 3

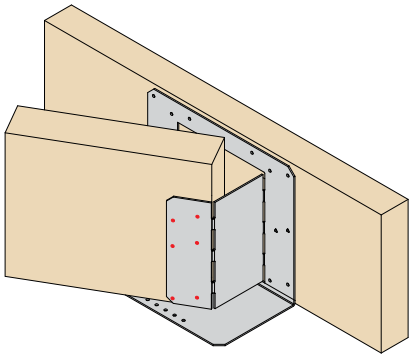
Locate incoming member and adjust side plate to correct angle, ensuring maximum gap between incoming joist/truss and back plate is no greater than 3mm.



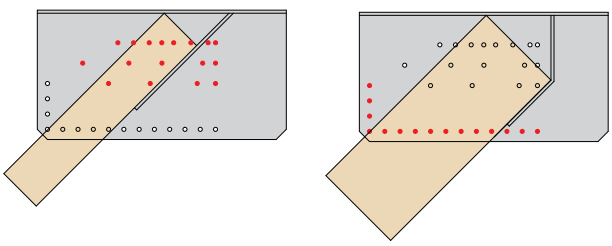
Max – 3mm gap at any given time

Stage 4

Fix to incoming member using 6No 3.4 x 35mm square twist nails (4No for VS–135).

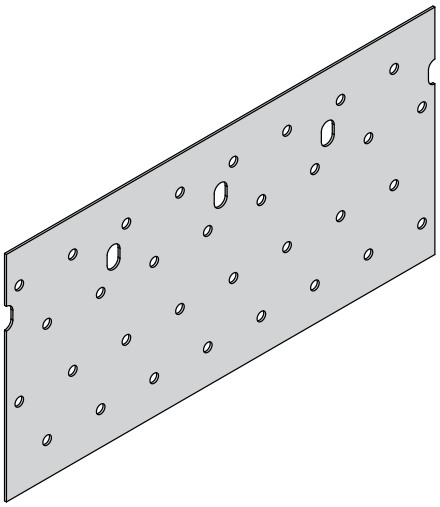


Please ensure that 1No inner nail hole (indicated in red) and 1No outer nail hole (indicated in red) are filled on the underside with 3.4 x 35mm square twist nails.



NP

Nail Plate



The NP nail plate allows the connection of two or more timber members.

Features & Benefits

- Part can be hand nailed on site for truss remedials

Material Specification

- Galvanised mild steel – Z275 – 0.9mm thick

Fixings

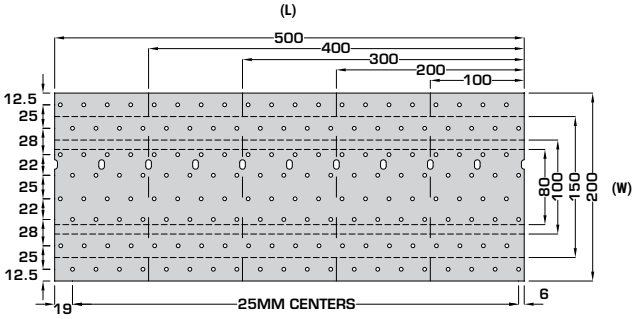
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

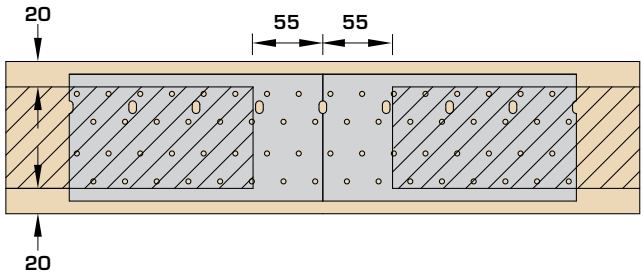
Nail Plate Length (L) (mm)	Nail Plate Width (W) (mm)			
	80	100	150	200
100	–	NP–100–100	NP–150–100	–
200	NP–80–200	NP–100–200	–	NP–200–200
300	NP–80–300	NP–100–300	–	NP–200–300
400	–	NP–100–400	–	–
500	NP–80–500	–	–	–

Dimensions (mm)

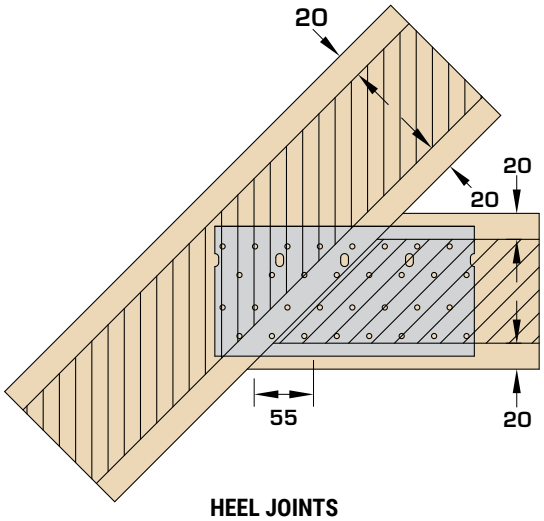


In Situ

- Timber to timber joints for use in trussed rafter roofs must be designed in accordance with EN1995–1–1:2004+A2:2014
- Nails must meet edge distance requirements to have load carrying capacity
- A nail plate should be positioned on each side of the joint. Care should be taken to ensure there are equal nails fixed from each side and no nail clashes



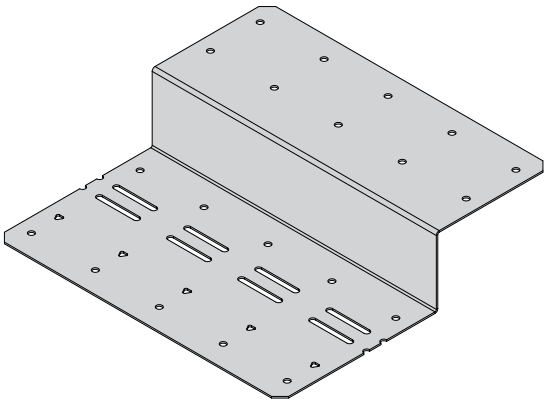
BUTT JOINTS



HEEL JOINTS

SB

Support Bracket



The SB support bracket is used to form a connection between timber bracing shelves and the adjacent trussed rafters.

Features & Benefits

- Unique design allows one part to accommodate any rafter width
- Can be connected to timber shelf at ground floor level to ease with installation

Material Specification

- Galvanised mild steel – Z275

Fixings

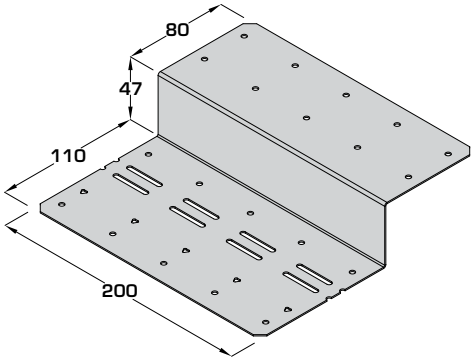
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

Product Code	Min Truss Width (mm)	Max Truss Width (mm)
SB	35	188

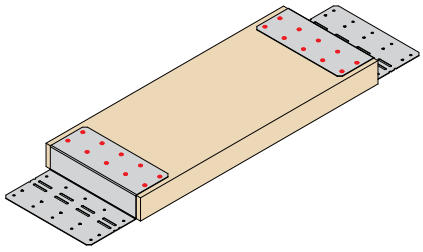
Dimensions (mm)



Installation Instructions

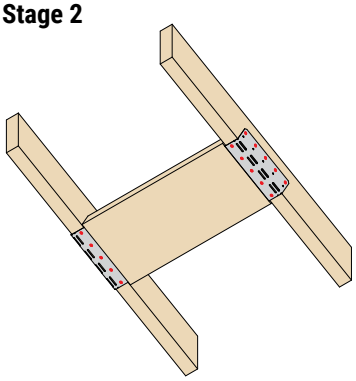
- PD 6693–1:2019 states that standard bracing details, suitable for fulfilling the functions of both roof and wall stability for spans up to 17m should conform to Annex E.
- PD 6693–1:2019 Annex E states that a 1mm thick steel bracket should be fixed to both rafter and timber shelf using 10No fixings to conform with detail C3.

Stage 1



Nail support bracket to timber bracing shelf (min C16 grade) with 10No fixings per bracket (3.4 x 35mm square twist nails).

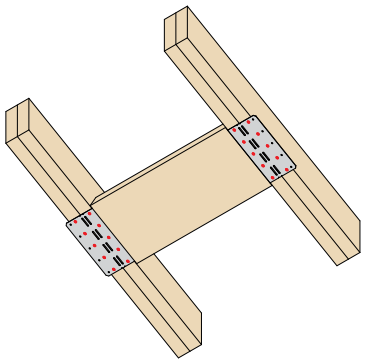
Stage 2



Single Rafter

Position timber bracing shelf in–between rafters and nail to underside with 5No fixings per bracket (3.4 x 35mm square twist nails).

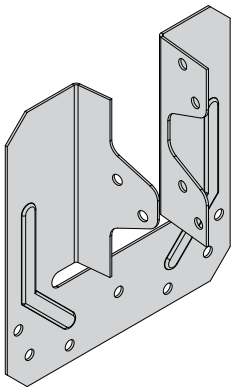
Wipe the support bracket round the rafter and nail into the side of the rafter with 5No fixings per bracket (3.4 x 35mm square twist nails).



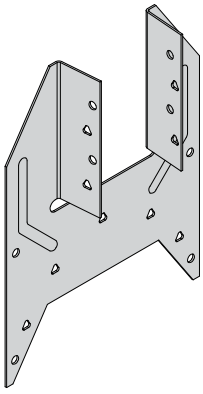
Multiple Rafters

Position timber bracing shelf in–between rafters and nail to underside with 10No fixings per bracket (3.4 x 35mm square twist nails).

Wallplate Connection Overview

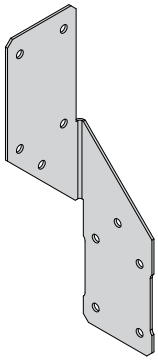


TC
Page 121

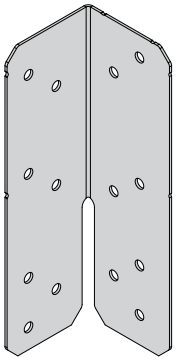


TA
Page 122 – 123

SINGLE 35 & 47MM WIDE TRUSSES

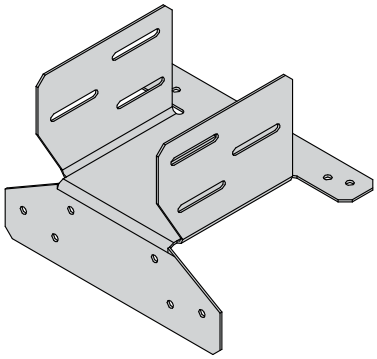


TA–1
Page 124



FAS
Page 125

NON WIDTH DEPENDANT

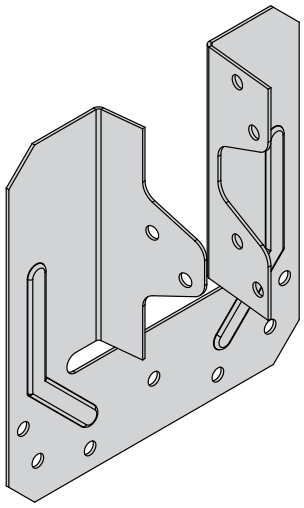


SS
Page 126

RAISED TIE / SCISSOR TRUSSES

TC

Truss Clip



UKTA–21/0009

ETA–20/1000

The TC is our standard truss clip for securing trussed rafters to single wall plates.

Features & Benefits

– Eliminates damage from skew nailing into the wall plate

Material Specification

– Galvanised mild steel – Z275

Fixings

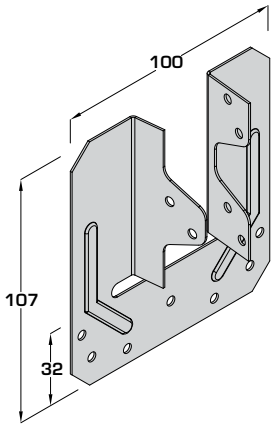
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

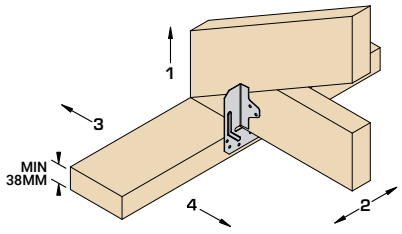
Product Code	Truss Width (mm)
TC–38	35
TC–50	44–47

Dimensions (mm)



In Situ

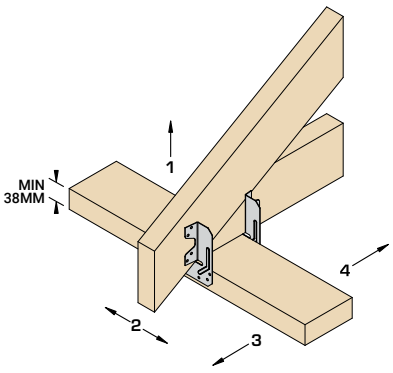
1No truss clip***



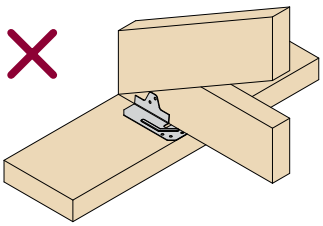
***Also suitable to fix to the outside of the wall plate depending on truss heel detail.

(Plates omitted for clarity)

2No truss clips***



Incorrect Installation



Do not install truss clips horizontally onto the wall plate.

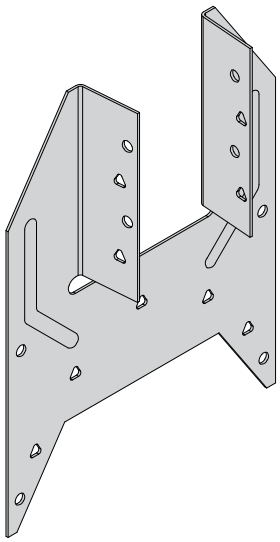
Load Data

Product Code	Fixings (3.4 x 35mm)		Load Direction	Characteristic Capacity (kN)
	Header	Incoming		Solid Timber Header (Min C16)
TC–38/TC–50	6	6	1	5.13 (10.26**)
			2	2.00 (4.00**)
			3	0.70 (2.37**)
			4	1.67 (2.37**)

**Values for 2No truss clips.

TA

Truss Anchor



UKTA–21/0009

ETA–20/1000

The TA secures trussed rafters to 2 ply wall plates or head binders whilst providing a positive fixing on two planes.

Features & Benefits

- Eliminates damage from skew nailing into the wall plate
- "Push on" fit allows truss anchor to be retained in position prior to nailing
- Optional triangular nail holes for enhanced performance

Material Specification

- Galvanised mild steel – Z275

Fixings

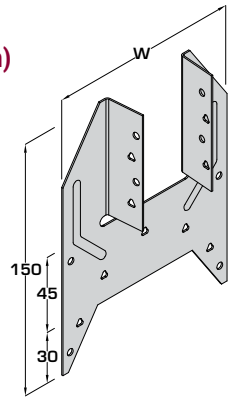
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

Product Code	Truss Width (mm)	W (mm)
TA–38	35	100
TA–50	47	113

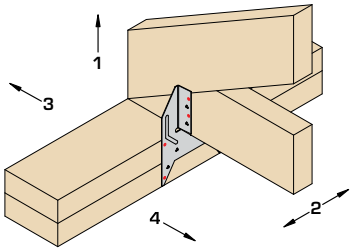
Dimensions (mm)



In Situ

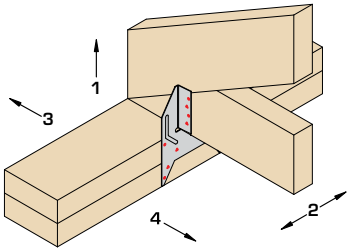
Double wall plate required for all installations (min 75mm) unless using in a timber frame application where the framing anchor can be fitted to the head binder.

Standard Installation
(Fill all circular nail holes)

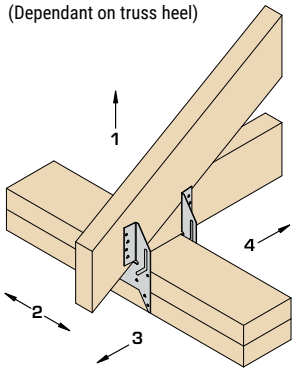


(Plates omitted for clarity)

Enhanced Installation
(Fill all nail holes)



2No Truss Anchors
(Dependant on truss heel)



Load Data

Product Code	Installation	Fixings (3.4 x 35mm)		Load Direction	Characteristic Capacity (kN)
		Header	Incoming		Solid Timber Header (Min C16)
TA–38, TA–50	STANDARD INSTALL	4	4	1	3.48 (6.96**)
				2	3.39 (6.78**)
				3	0.78 (1.35**)
				4	0.57 (1.35**)
TA–38, TA–50	ENHANCED INSTALL	9	8	1	7.54 (15.08**)
				2	4.17 (8.34**)
				3	2.10 (4.29**)
				4	2.19 (4.29**)

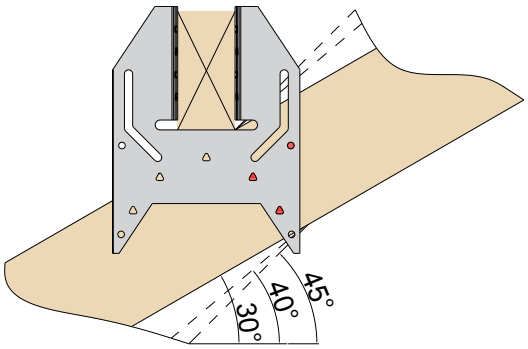
**Values for 2No truss anchors

TA

Truss Anchor (Valley Truss)

NEW

In Situ



Additional Application

The TA can be used in valley truss applications, to connect a valley truss to the supporting truss below.

Features and Benefits

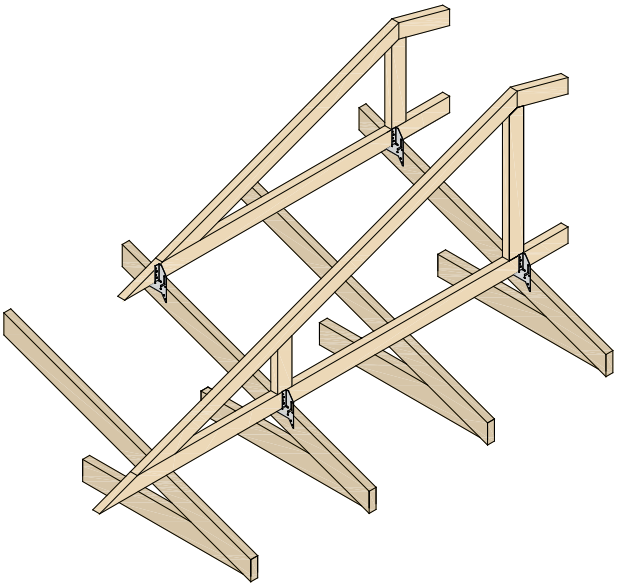
- 'Push-on' fit allows truss anchor to be retained in position prior to nailing
- Eliminates the need for a pre-cut angle barer to support the valley truss or pre-cut angle to valley truss

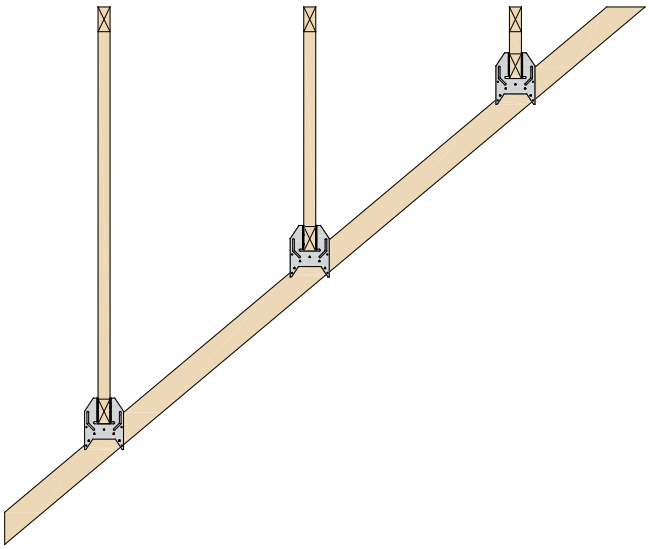
Material specification

- Galvanised Mild–Steel–Z275

Installation Instructions

The TA can be used in conditions where the supporting truss is a maximum 45° slope. Fill the 3 nail holes highlighted above to the supporting truss (dependant on TA orientation) and fill all nail holes for the incoming truss for correct installation.





Minimum of 2 TA per valley truss with a maximum spacing of 1200mm centres.

Load Data

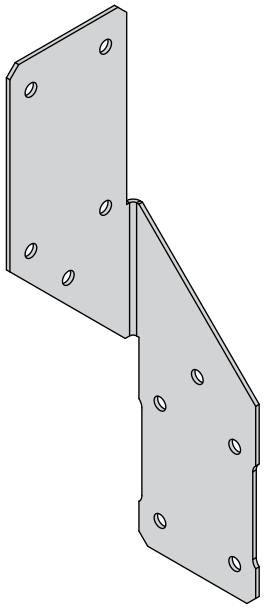
		Fixings (3.4 × 35mm)		Characteristic Value (kN)
Product Code	Installation	Header	Incoming	Solid Timber Header (Min C16)
TA–38, TA–50	Valley Truss	3	4	4.5 (per clip)

TA–1

Framing Anchor

UKTA–21/0009

ETA–20/1000



The TA–1 provides a positive connection on two planes without encroaching into the internal space.

Features & Benefits

- Eliminates damage from skew nailing
- Single anchor means the part is not width dependant

Material Specification

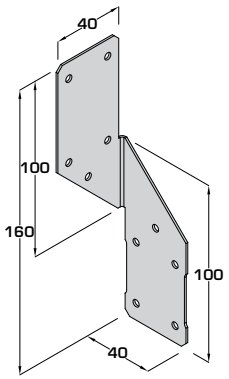
- Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

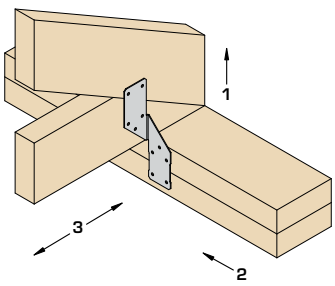
Dimensions (mm)



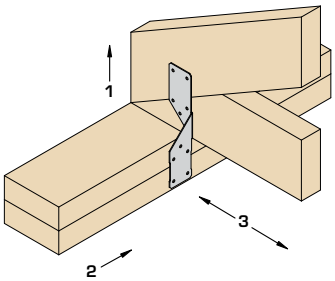
In Situ

Double wall plate required for all installations (min 75mm) unless using in a timber frame application where the framing anchor can be fitted to the head binder.

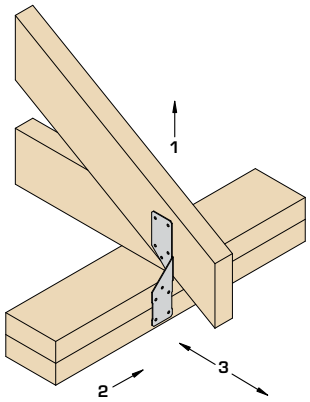
1No TA–1 standard installation**



1No TA–1 installed to opposite side**



1No TA–1 installed to outer face**



**Also suitable to fix to the outside of the wall plate depending on truss heel detail.

(Plates omitted for clarity)

Load Data

Product Code	Fixings (3.4 x 35mm)		Load Direction	Characteristic Capacity (kN)
	Header	Incoming		Solid Timber Header (Min C20)
TA–1	5	5	1	3.12
			2	1.55
			3	1.84

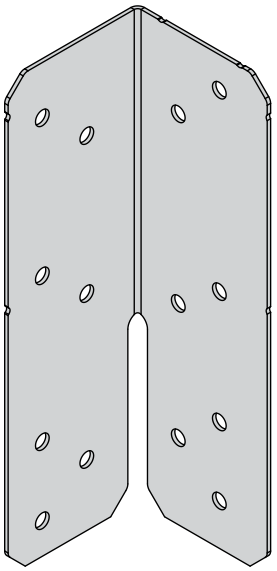
All values are per anchor.

FAS

Framing Anchor

UKTA–21/0009

ETA–20/1000



The FAS is an adjustable connector for providing a positive fixing on two planes.

Features & Benefits

- Eliminates damage from skew nailing
- Adjustable bend to accommodate various applications

Material Specification

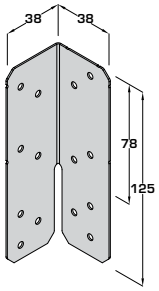
- Galvanised mild steel – Z275

Fixings

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

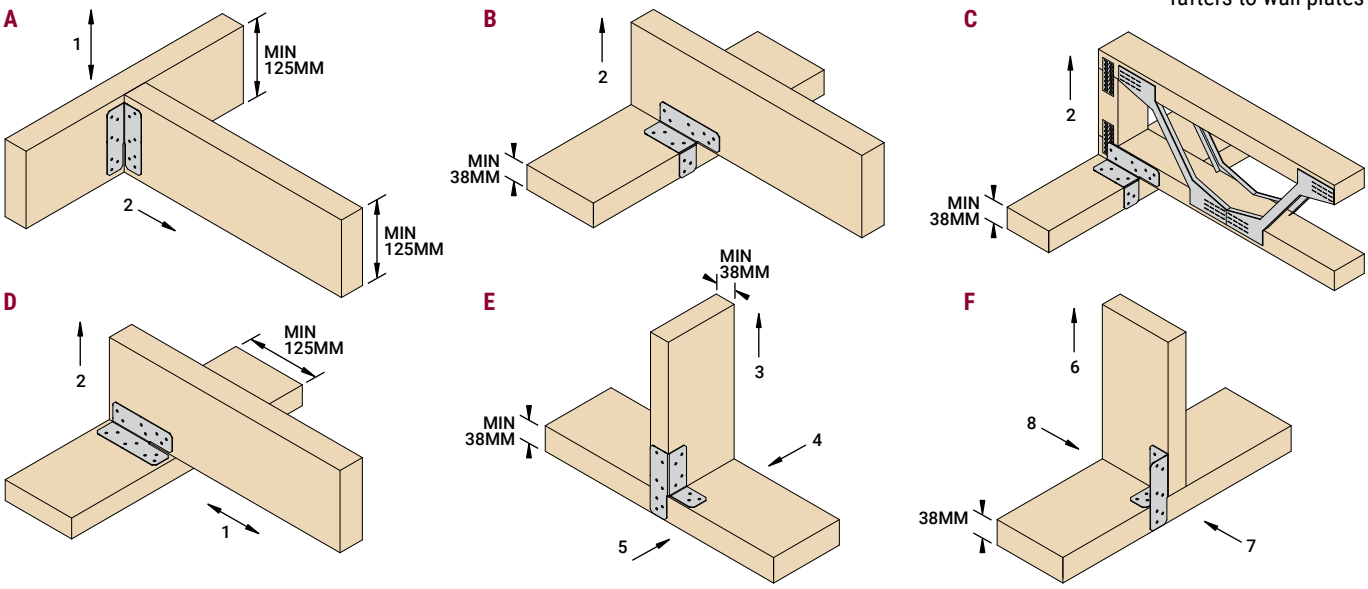
*For use with Paslode PPN35Ci

Dimensions (mm)



In Situ

Suitable for fixing Open Web / I–Joist flat rafters to wall plates



Load Data

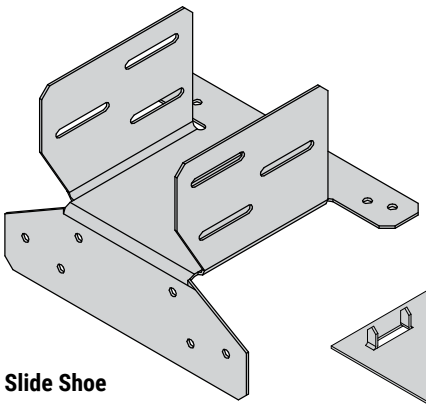
Product Code	Fixings (3.4 x 35mm)		Load Direction	Characteristic Capacity (kN) – Per Pair of Anchors
	Header	Incoming		Solid Timber Header (Min TR26)
FAS	7	7	1	5.83
			2	3.40
	6	8	3	8.10
			4	3.35
			5	1.44
	6	4	6	8.10
			7	1.16
			8	0.89

SS

Slide Shoe

UKTA–21/0009

ETA–20/1000



Slide Shoe

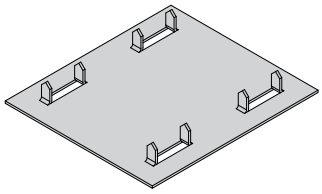


Plate (Supplied with SS)

The SS allows for a secure fixing and horizontal movement between raised tie/scissor trusses and the wallplate.

Features & Benefits

– Provides a maximum of 26mm lateral movement without compromising its resistance to uplift

Material Specification

– Galvanised mild steel – Z275

Fixings

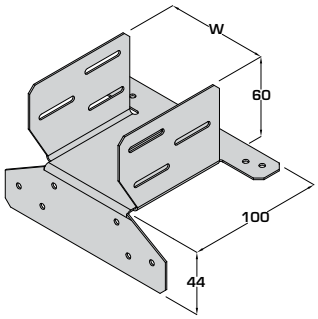
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

Product Code	Truss Width (mm)	Hanger Width (W) (mm)
SS–38	35	38
SS–50	47	50
SS–75	70 (2 ply 35)	75
SS–100	94 (2 ply 47)	100
SS–150	141 (3 ply 47)	150
SS–200	188 (4 ply 47)	200

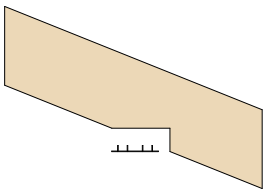
Dimensions (mm)



Installation Instructions

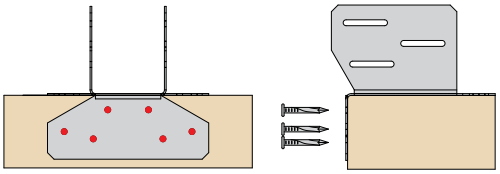
Typically used on one or both ends of the truss as determined by the Truss Designer.

Stage 1



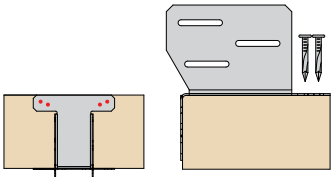
Tap bearing plate into position on underside of truss bearing area

Stage 2



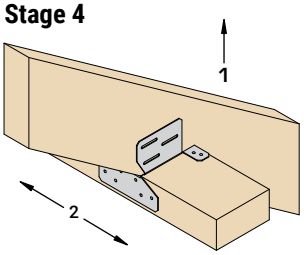
Position the slide shoe on the wall plate and nail to either face with 6No 3.4x35mm square twist nails

Stage 3



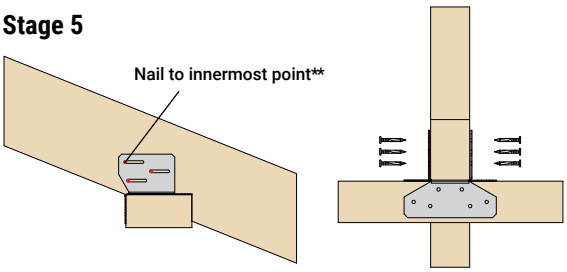
Nail to the top of the wall plate with 4No 3.4x35mm square twist nails

Stage 4



Locate truss in position

Stage 5



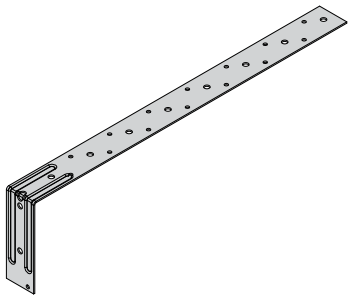
Nail through side flanges into the rafter with 6No 3.4x35mm square twist nails

**Allows the rafter to deflect and therefore there is no horizontal thrust transferred into the wall head

Load Data

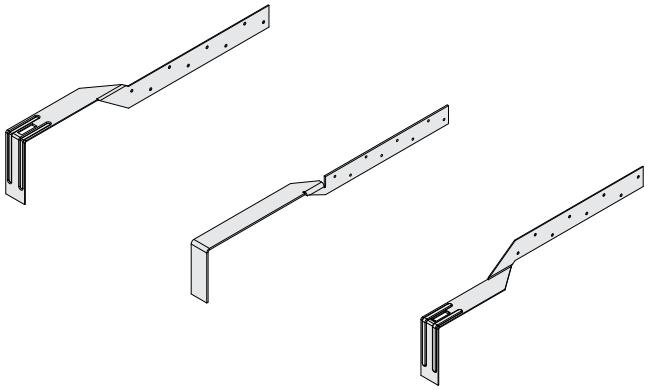
Product Code	Fixings (3.4 x 35mm)		Load direction	Characteristic Capacity (kN)
	Header	Incoming		Solid Timber Header (Min TR26)
SS–38, SS–50, SS–75, SS–100, SS–150, SS–200	10	6	1	4.10
			2	2.60

Restraint Overview



PFS
Page 138

LATERAL RESTRAINT PERPENDICULAR – FLOORS & ROOFS

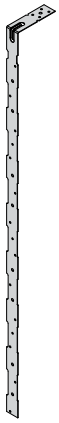


PST
Page 139

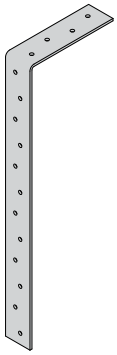
PSC
Page 139

PSB
Page 139

LATERAL RESTRAINT PARALLEL – FLOORS



VRS
Page 136



LDGS
Page 137

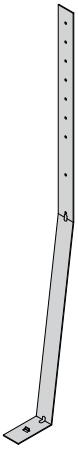
VERTICAL RESTRAINT

RST–1
Page 135

RST–2
Page 135

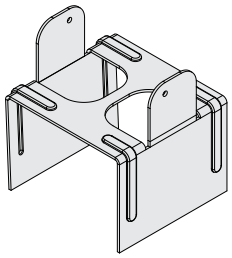
RST–3
Page 135

UPLIFT RESISTANCE



ST–PFS
Page 31

STAINLESS STEEL

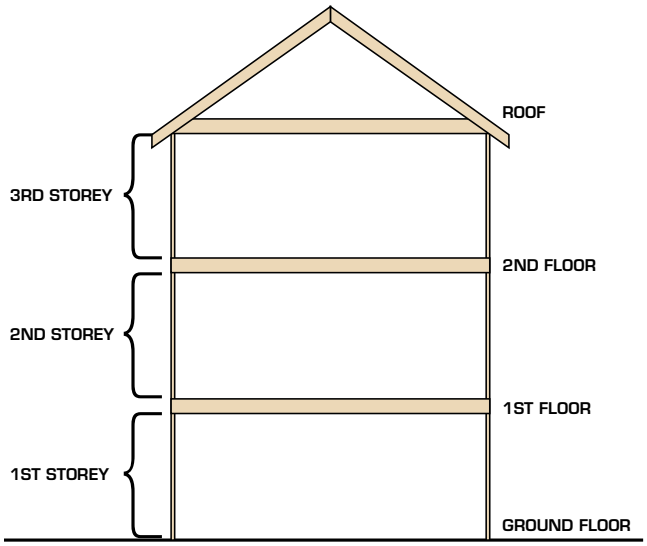


GRB
Page 134

GABLE RESTRAINT

MISC

Restraint Straps (Domestic Floors)



3 STOREY HOUSE

Lateral restraint of the walls can be provided by the floor, the restraint must be provided parallel and perpendicular to the floor joists.

The type of restraint straps required and the centres at which they are placed depend on the joist end detail and region in which the house is built.

The information we provide has been compiled using the minimum requirement from Building Regulations 2010 approved document A, Scottish Building regulation domestic, NHBC standards and British Standard BS 5628–1;2005 Annex D.

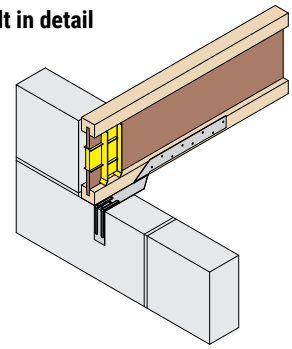
These have been issued as guidance only, the overall responsibility lies with the Building Designer.

For 3rd floor and above please refer to the building standards or building designer for guidance.

All straps require a full storey of block work above to achieve the full 8kN declared load capacity.

Parallel Restraint

PSB strap with built in detail

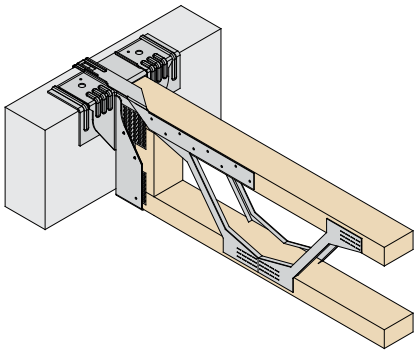


– The strap should be nailed with a minimum of 8No 3.4x35mm Square Twist Nails into the joist top flange/chord

Detail	Region	Floor Level		
		Ground Floor	1st Floor	2nd Floor
Built in	England & Wales	Where joists have a minimum bearing of 90mm no additional restraint is required (additional PSB straps required each side of opening where openings exceed 600mm)		PSB straps required at 2m max centres
	Scotland			

Please refer to page 139 for further information on PSB straps

PST strap with non–restraint hanger

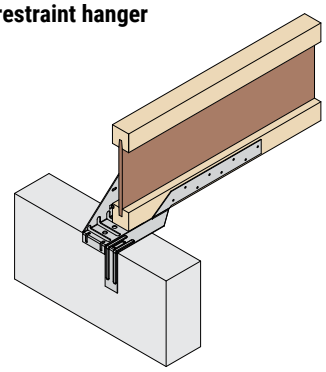


– The strap should be nailed with a minimum of 8No 3.4x35mm Square Twist Nails into the joist top flange/chord

Detail	Region	Floor Level		
		Ground Floor	1st Floor	2nd Floor
Non–Restraint Hangers (JHI/JHIR/ RB–JHI/RB–JHIR)	England & Wales	PST or PSC required at 2m max centres		
	Scotland	PST or PSC required at 2m max centres		PST or PSC required at 1.25m max centres

Please refer to page 139 for further information on PST/PSC straps

PSB strap with restraint hanger



– The strap should be nailed with a minimum of 8No 3.4x35mm Square Twist Nails into the joist bottom flange/chord

Detail	Region	Floor Level		
		Ground Floor	1st Floor	2nd Floor
Restraint Hangers (RA/HRAD/ RADS)	England & Wales	No additional restraint is required (additional PSB straps required each side of opening where openings exceed 600mm)		PSB required at 2m max centres
	Scotland			PSB required at 1.25m max centres

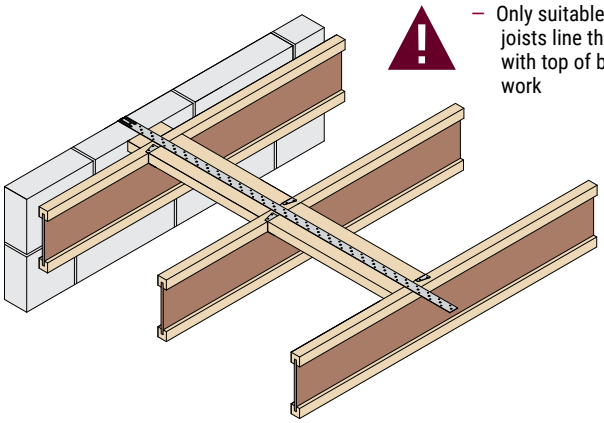
Please refer to page 139 for further information on PSB straps

Restraint Straps (Domestic Floors)

Perpendicular Restraint

Detail	Region	Floor Level		
		Ground Floor	1st Floor	2nd Floor
Perpendicular	England & Wales	PFS or HDGS required at 2m max centres		
	Scotland	PFS or HDGS required at 2m max centres		PFS or HDGS required at 1.25m max centres

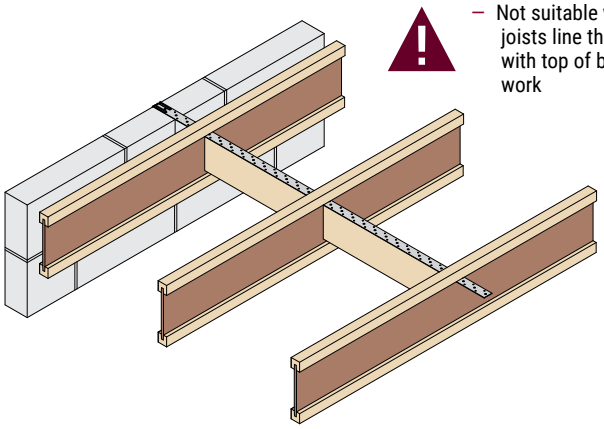
PFS surface fixed to I–Joist



– Only suitable when joists line through with top of block work

- Noggins to be installed between the I-Joists with 2No UZ-Clips staggered either side (Noggins to be minimum width of half the I-Joist depth, to a maximum of 150mm x minimum depth 38mm - min C16 grade timber)
- Once nailed into position a skew nail is placed in the opposite corner to secure connection
- After fitting all noggins the PFS strap can then be located tight to the block work and centred on the noggins
- The strap should be nailed with a minimum of 8No 3.4 x 35mm square twist nails evenly spaced and into at least every joist
- Strap must extend over a minimum 3No joists

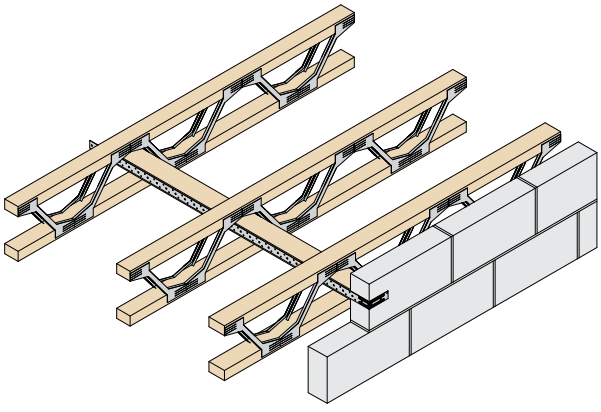
PFS through web of I–Joist



– Not suitable when joists line through with top of block work

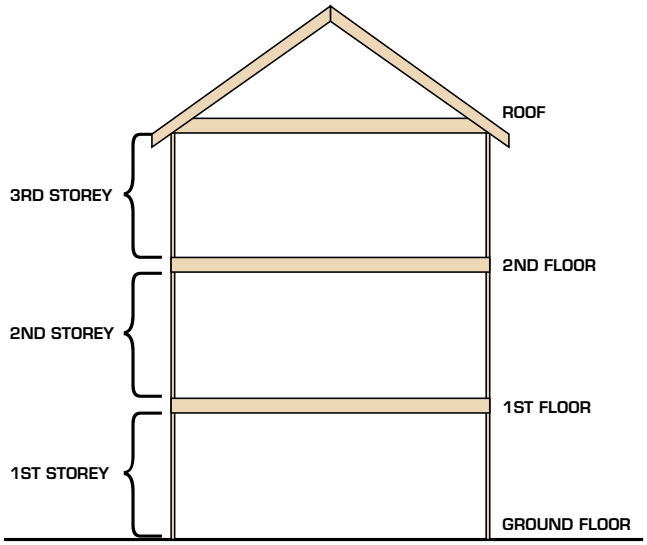
- Cut a small slot in the I–Joist web, just under the top flange
- Slide the PFS through the slots and position tight against the block work
- To provide a fixing for the PFS, noggins must be installed between the I-Joists (Noggins to be minimum depth of half the I-Joist depth, to a maximum of 150mm x minimum width 38mm - min C16 grade timber)
- Each noggin should be nailed in place through the I–Joist web
- The strap should be nailed with a minimum of 8No 3.4 x 35mm square twist nails evenly spaced into the noggins
- Strap must extend over a minimum 3No joists

PFS through web of Open Web Joist



- Strongback to be installed as per manufacturer's guidelines
- Position PFS tight to block work and centred on block
- The strap should be nailed with a minimum of 8No 3.4 x 35mm square twist nails evenly spaced into the noggins
- Strap must extend over a minimum 3No joists

Restraint Straps (Domestic Roofs)



3 STOREY HOUSE

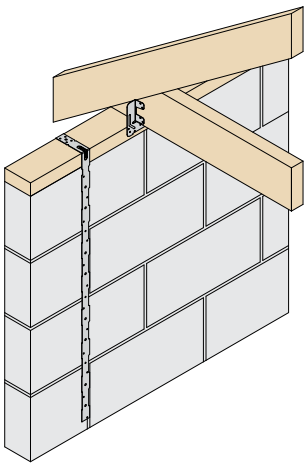
Lateral restraint of the walls can be provided by the roof, the restraint must be provided perpendicular to the roof trusses.

The information we provide has been compiled using the minimum requirement from Building Regulations 2010 approved document A, Scottish Building regulation domestic, NHBC standards and British Standard BS 5628–1;2005 Annex D.

These have been issued as guidance only, the overall responsibility lies with the Building Designer.

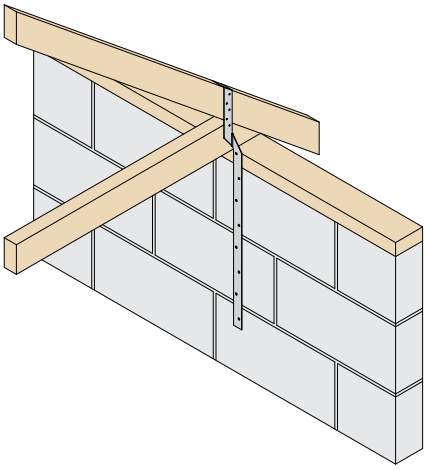
Vertical Restraint

Bent Strap To Wall Plate



Fix VRS or LDGS to the wall plate with 2No 3.4 x 35mm square twist nails. Fixings into masonry to be specified by building designer.

Twisted Strap To Truss



RST strap to be nailed to truss with 3.4 x 35mm square twist nails. Nail quantity dependant on uplift value. Fixings into masonry to be specified by building designer.

Horizontal Restraint (Masonry Gables)

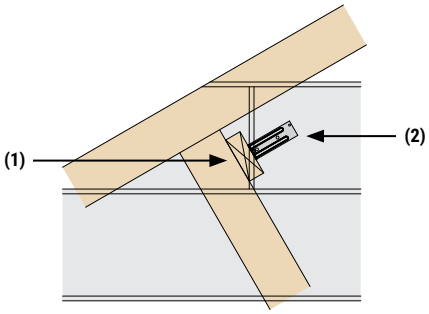
Detail	Region	Floor Level		
		Up to and including 2 storeys	3 storeys	4 storeys
Perpendicular	England & Wales	PFS required at 2m max centres		PFS required at 1.25m max centres
	Scotland	PFS required at 2m max centres	PFS required at 1.25m max centres	

- Straps to be installed at not more than 2m centres (or 1.25m where appropriate) along gable end.
- Strap to be of sufficient length to be fixed to a minimum of 3no. Trusses.
- Longitudinal bracing to be fixed to each truss with 2no. 3.35 x 65mm round wire nails (in all details 3.1 x 90mm long mechanically driven nails may be substituted for 3.35 x 65mm long wire nails).
- Where the position of the strap does not coincide with an existing longitudinal truss brace, then the strap may be fixed to an additional 25 x 100mm longitudinal binder (as shown in detail X). The binder to be fixed over a minimum of four trusses and fixed to each truss with 2no. 3.35 x 65mm round wire nails.
- Fix straps to longitudinal bracing with 8no. 3.4 x 35mm square twist nails, evenly spaced along the length of the strap (for NHBC warrantied buildings, in accordance with NHBC Standards 2017 section 7.2.8, 8no. 25 x 4mm steel screws shall be used instead of square twist nails).

Restraint Straps (Domestic Roofs)

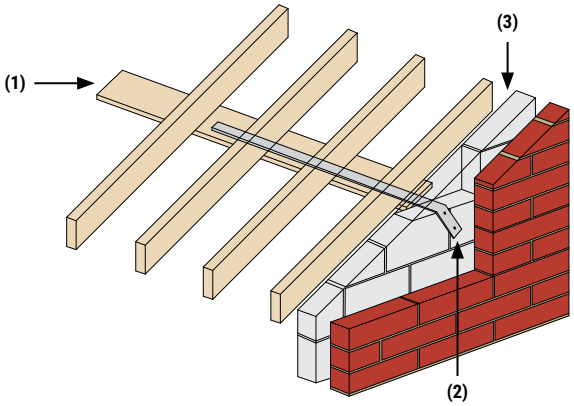
Horizontal Restraint (Masonry Gables)

Fixing to Longitudinal Truss Bracing (Fixed to Truss Web)



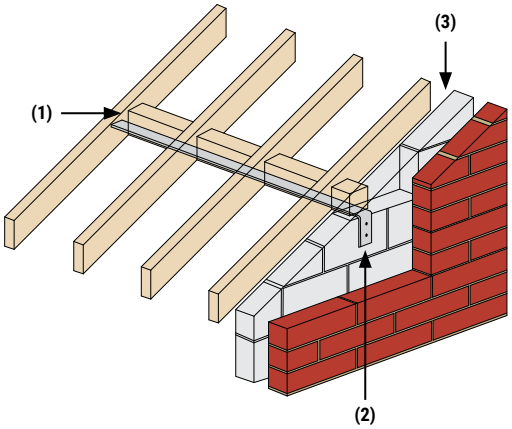
- Install PFS on the 25 x 100mm longitudinal truss bracing (1).
- Ensure the position of the longitudinal bracing and strap coincide with the blocks vertical joint.
- The 90deg bend of the strap is to be held tight against the cavity face of the inner leaf of blockwork (2), preferably located on the full block. Notch the blocks to accommodate the angle of the strap and ensure notch is fully mortared.

Fixing to Longitudinal Truss Bracing / Additional Longitudinal Binder (Fixed to Truss Web)



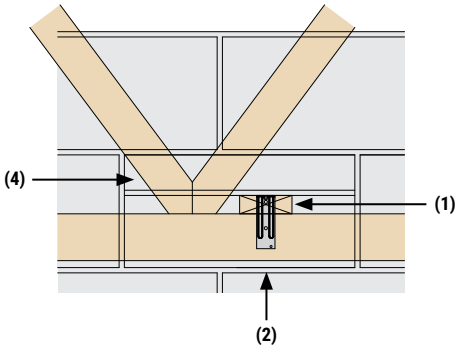
- Install PFS on the 25 x 100mm longitudinal truss bracing (1).
- Ensure the position of the longitudinal bracing and strap coincide with a horizontal blockwork joint.
- The 90deg bend of the strap is to be held tight against the cavity face of the inner leaf of blockwork (2), preferably located on a substantial piece of blockwork, i.e. over the centre of a full block, with a single cut block over the strap (3). Notch the blocks to accommodate the angle of the strap and ensure notch is fully mortared.

Fixing to Solid Noggins (Between Trusses)



- Ensure the position of the straps coincides with the horizontal blockwork joint.
- Install PFS to underside of solid noggins (1). Noggins to be fixed horizontally to avoid twisting of the restraint straps.
- The 90deg bend of the strap is to be held tight against the cavity face of the inner leaf of blockwork (2), preferably located on a substantial piece of blockwork, i.e. over the centre of a full block, with a single cut block over the strap (3). Notch the blocks to accommodate the angle of the strap and ensure notch is fully mortared.
- Fix straps to noggins/trusses with 8no. 3.4 x 35mm square twist nails, evenly spaced along the length of the strap (for NHBC warrantied buildings, in accordance with NHBC Standards 2017 section 7.2.8, 4no. 50 x 4mmsteel screws or 4no. 75 x 4mm round wire nails, with one fixing into the third rafter, shall be used instead of square twist nails).

Fixing to Longitudinal Truss Bracing / Additional Longitudinal Binder (Fixed to Truss Ceiling)



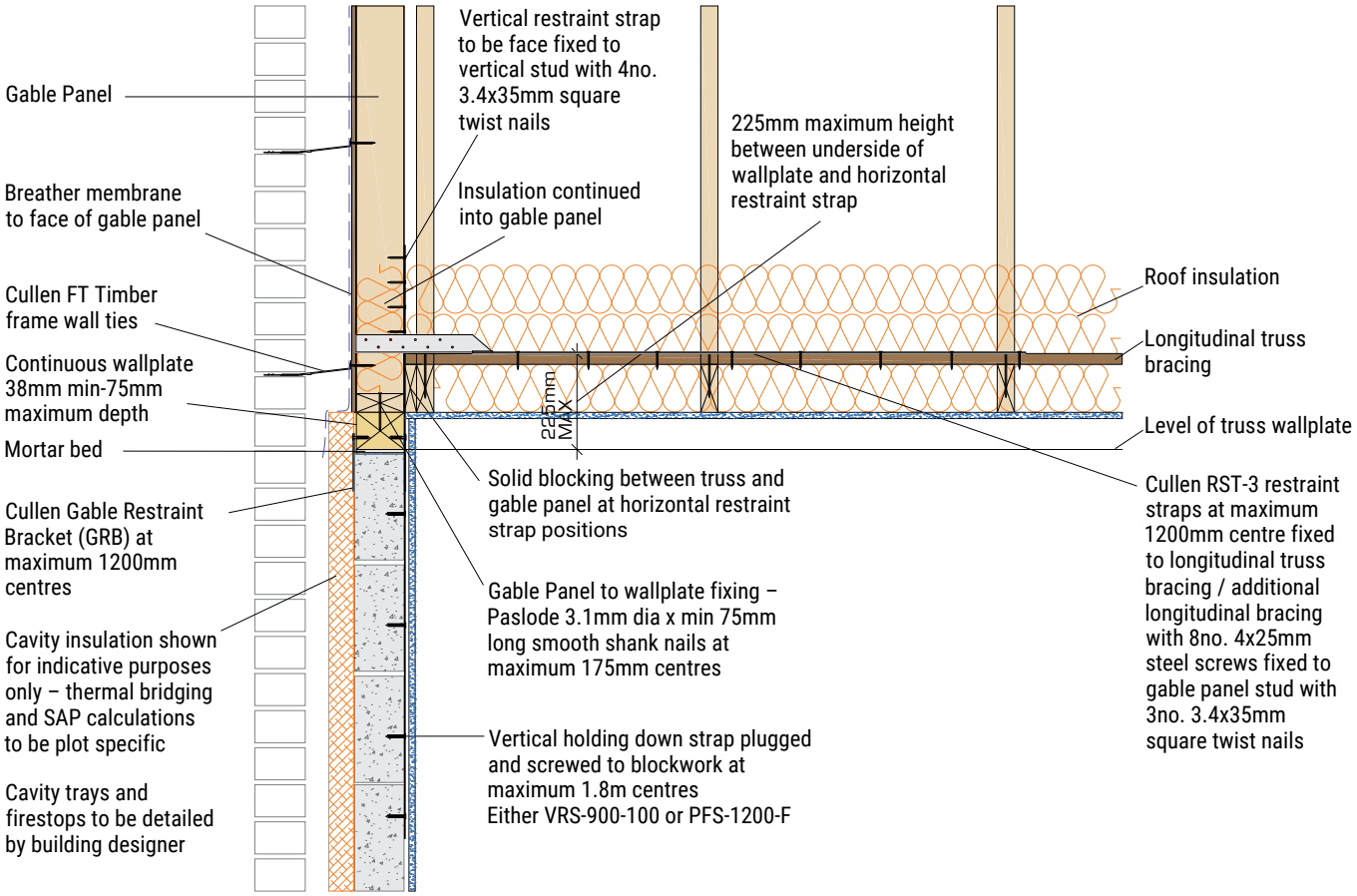
- Install PFS on the 25 x 100mm longitudinal truss bracing (1). Bracing to be fixed to each truss with 2no. 3.35 x 65mm round wire nails.
- Ensure the position of the longitudinal bracing and strap coincide with a horizontal blockwork joint, where this is not possible inserted a cut block to suit strap location (4).
- The 90deg bend of the strap is to be held tight against the cavity face of the inner leaf of blockwork (2), preferably located on a substantial piece of blockwork, i.e. over the centre of a full block.

Restraint Straps (Domestic Roofs)

Restraint (Timber Gables)

Class 1 Buildings/houses of single occupancy three storeys or less England & Wales and two storeys or less Scotland

Timber Gable to Masonry fixing detail to cold roofs – Continuous Wallplate

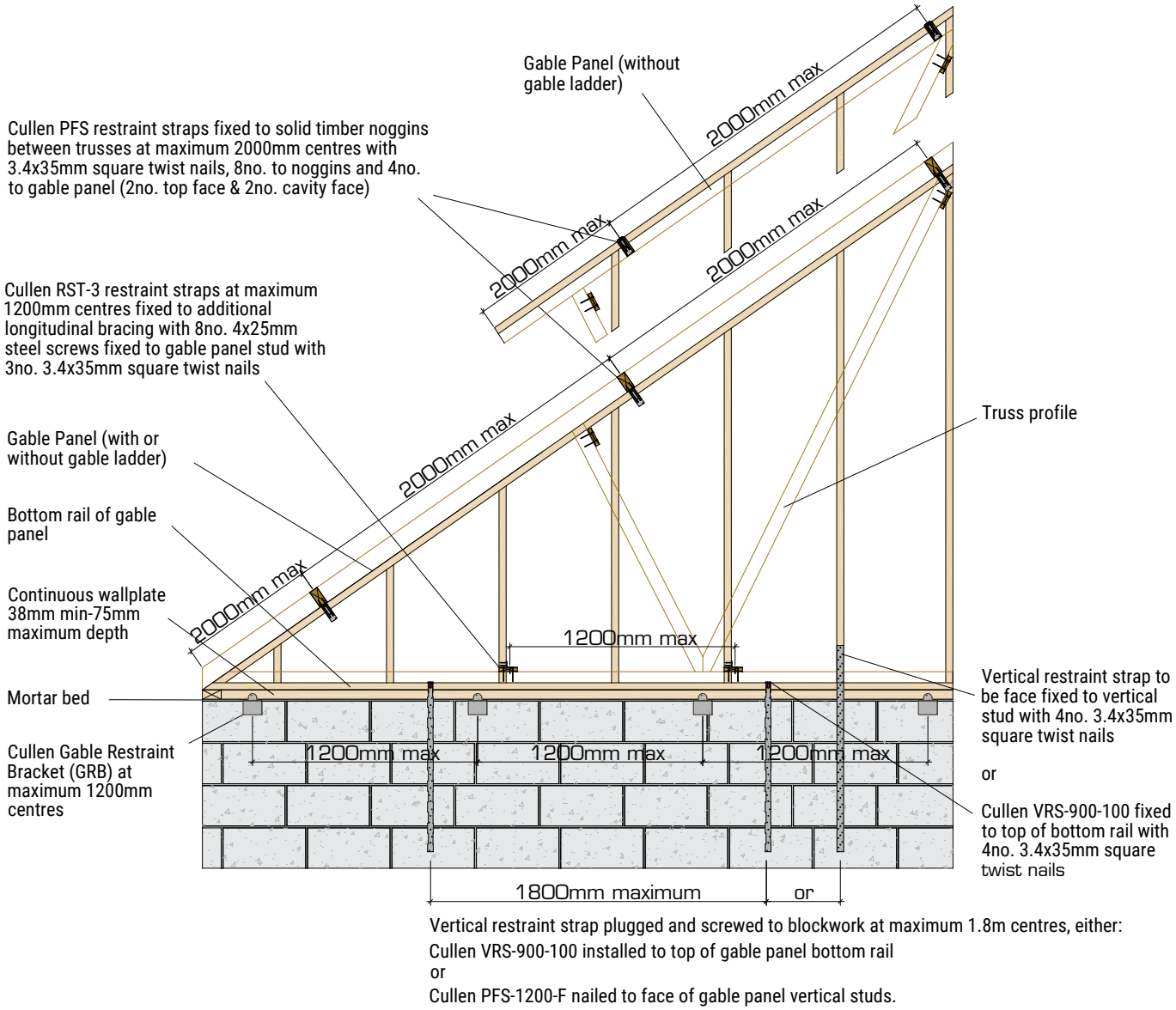


Details for a raised wall plate & Class 2A buildings can be found in our **Gable Restraint System Technical Guide**. **https://www.itwcp-offsite.co.uk/download/cullen-gable-restraint-system-technical-guide/?wpdmdl=6414**

Please contact our Technical department if you require further information.

Restraint Straps (Domestic Roofs)

Restraint (Timber Gables)

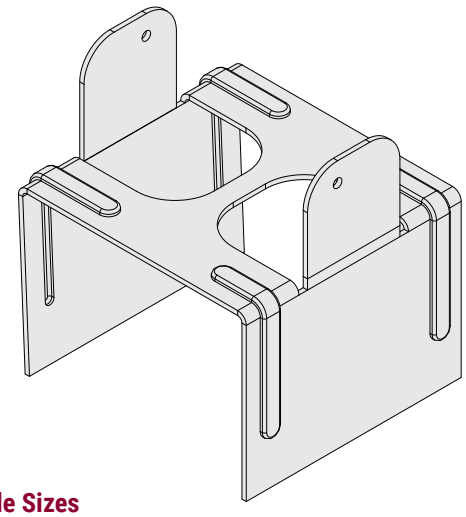


Vertical restraint strap plugged and screwed to blockwork at maximum 1.8m centres, either:
Cullen VRS-900-100 installed to top of gable panel bottom rail
or
Cullen PFS-1200-F nailed to face of gable panel vertical studs.

GRB

Gable Restraint Bracket

Patent Pending



The GRB is an engineered bracket that has been designed to provide a verified connection between a timber gable and masonry wall when used in conjunction with the Cullen Gable Restraint System*.

Features & Benefits

- Following the details from the system means no external engineering checks
- Safely transfers the loads into the roof diaphragm

Material Specification

- Galvanised mild steel – Z600

Approvals

- Meets NHBC Technical requirements*
- Designed to meet Class 1 & Class 2A buildings of Approved document A*

Fixings

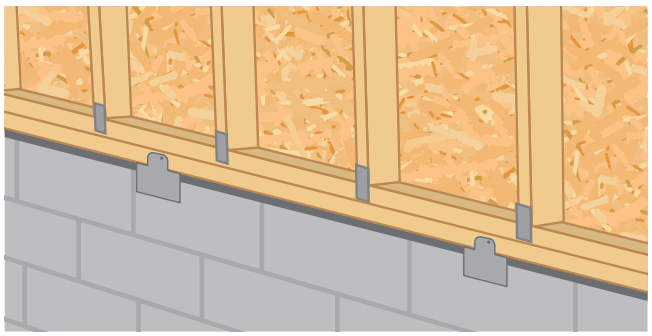
3.5 x 40mm Wood Screw – supplied by others

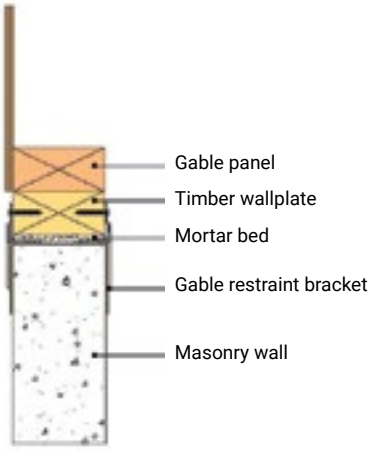
*Further details on the Cullen Gable System can be found on page 135

Available Sizes

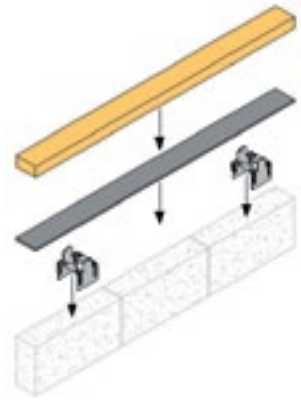
Product Code	Block Work Width (mm)	Wall Plate Width (mm)	
		Minimum	Maximum
GRB–100	100	38	75

In Situ





Installation Instructions



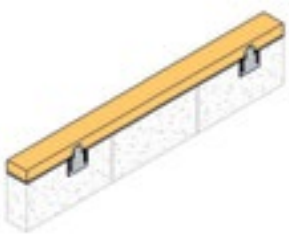
Components:

- Wallplate
- Mortar
- Gable Restraint Brackets
- Wall

Gable restraint brackets placed on wall at 1200mm** maximum centres (no fixings required).

**For buildings up to 3 storey England & Wales and 2 storey Scotland

10mm maximum mortar bed on wall prior to wallplate being fixed.



38–75mm wallplate bedded on mortar and fixed to gable restraint brackets with 3.5x40mm wood screws (2 no. per bracket).

RST

Restraint Strap Twist

RST–1

RST–2

RST–3

The RST is a high performance strap which can be used to resist uplift.

Features & Benefits

- Unique geometry allows a fixing on two planes without the clash issues of standard twist straps
- Suitable for timber frame and masonry walls
- Can be used independently or in addition to truss clips/framing anchors/hangers
- Also a suitable strap for providing lateral restraint to timber gables (see page 132)

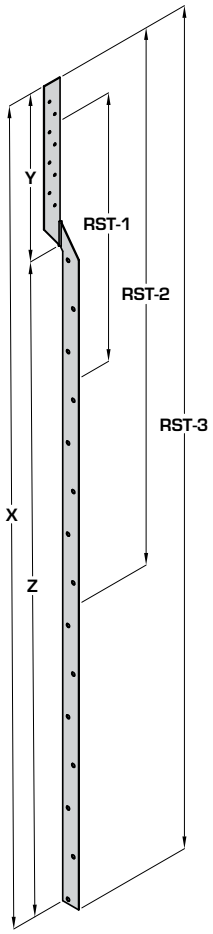
Material Specification

- 30 x 1.2mm Galvanised mild steel – Z275

Fixings

To be specified by building designer

Dimensions (mm)



Available Sizes

Product Code	Dimensions (mm)		
	X	Y	Z
RST–1	405	205	200
RST–2	848	275	573
RST–3	1350	275	1075

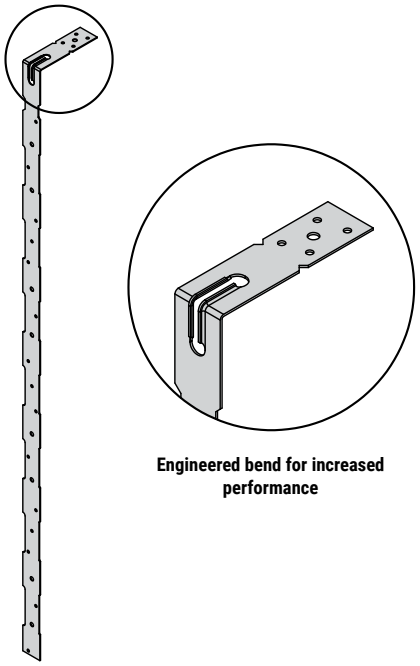
Product Code	Fixing Hole Qty	
	4mm Ø	6mm Ø
	Y	Z
RST–1	6	3
RST–2	8	8
RST–3	8	15

Load Data

Performance	Tensile Capacity (kN)	Characteristic Tensile Capacity (kN)
Strap only	7.50	11.80

VRS

Vertical Restraint Strap



Engineered bend for increased performance

The VRS is an engineered strap that has been designed to provide a convenient and secure method of fixing wall plates to timber and masonry walls.

Features & Benefits

- Designed to provide optimum performance
- Thinner profile than a standard tie–down strap withstrengthening ribs, achieving the same performance as a traditional 30 x 2.5mm strap

Material Specification

- 30 x 1.2mm Galvanised mild steel – Z600

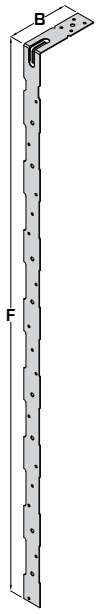
Approvals

- CE marked and tested in accordance with EN846–4
- Meets NHBC Technical requirements

Fixings

Dependant on application.

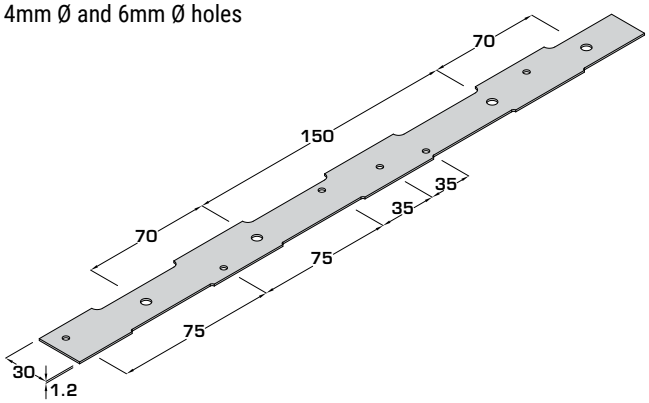
Available Sizes



Product Code	F (mm)	B (mm)
VRS–900–100	900	100

Dimensions (mm)

4mm Ø and 6mm Ø holes



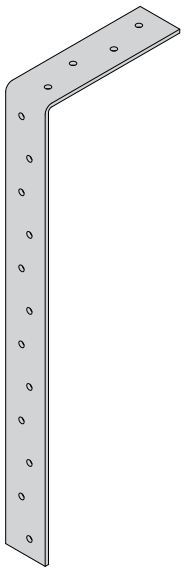
Load Data

Performance	Fixings (3.4 x 35mm)		Characteristic Tensile Capacity (kN)
	Wall Plate (3.4 x 35mm)	Timber Stud (3.4 x 35mm)	
Fixed to 3.5N/mm² block work & nailed to min C16 grade timber wall plate*	2	n/a	4.80
Nailed to timber stud & wall plate (min C16 grade)	2	8	4.80

*Fixings into masonry wall to be specified by building designer

LDGS

Light Duty Galvanised Strap



The LDGS is a light duty traditional strap.

Features & Benefits

– Typically used for vertical restraint

Material Specification

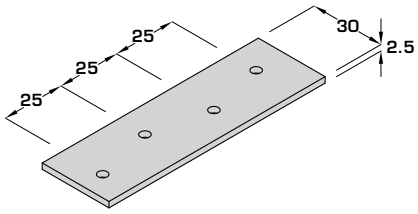
– 30 x 2.5mm Galvanised mild steel – Z275

Fixings

To be specified by building designer

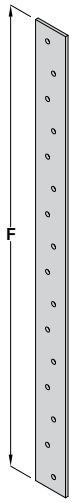
Dimensions (mm)

6mm Ø holes spaced at 25mm centres



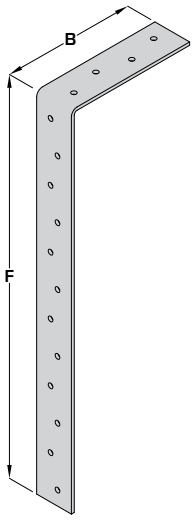
Available Sizes

FLAT STRAP



Product Code	F (mm)
LDGS–1000–F	1000
LDGS–1200–F	1200

BENT STRAP



Product Code	F (mm)	B (mm)
LDGS–900–100–B	900	100
LDGS–1100–100–B	1100	100

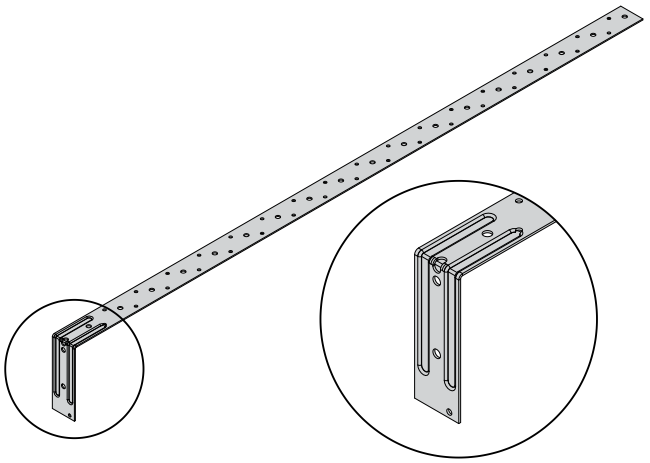
Load Data

Performance	Fixings (3.4 x 35mm)	Characteristic Tensile Capacity (kN)
Fixed timber wall plate (min C16 grade timber)*	2	2.80
Flat Strap	n/a	17.28

*Full storey of block work required above the strap to meet performance.

PFS

Pre Formed Strap



Engineered bend for increased performance

The PFS is an engineered strap that has been designed to provide enhanced performance and greater flexibility of use.

Features & Benefits

- Typically used for lateral restraint in floor and roof applications
- Exceeds performance of traditional 30 x 5mm strap

Material Specification

- 35 x 1.5mm Galvanised mild steel – Z600 or Z275 (with edge protection)

Approvals

- CE marked and tested in accordance with EN846–4
- Meets NHBC Technical requirements
- Meets Homebond technical requirements

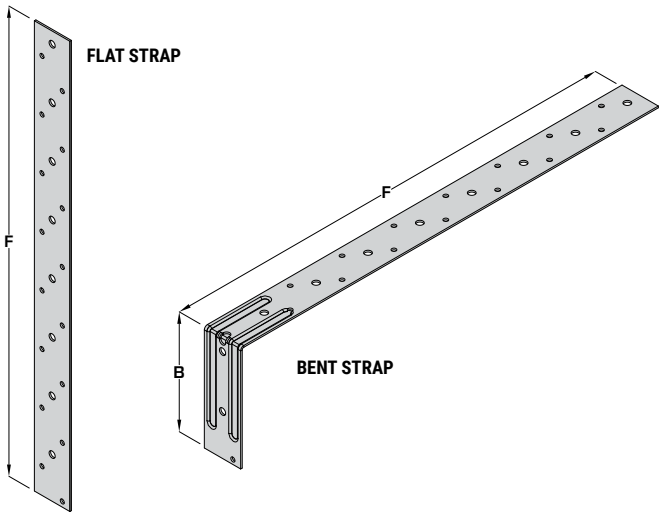
Fixings

- Dependant on application

Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

Available Sizes

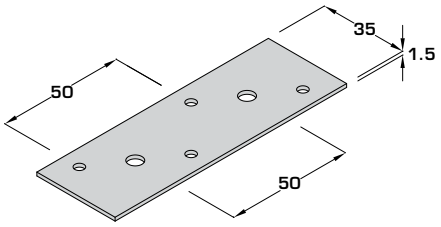


Product Code	F (mm)
PFS–1000–F	1000
PFS–1200–F	1200
PFS–1600–F	1600
PFS–2000–F	2000

Product Code	F (mm)	B (mm)
PFS–900–100–B	900	100
PFS–1100–100–B	1100	100
PFS–1500–100–B	1500	100
PFS–1900–100–B	1900	100

Dimensions (mm)

4mm Ø and 6mm Ø holes



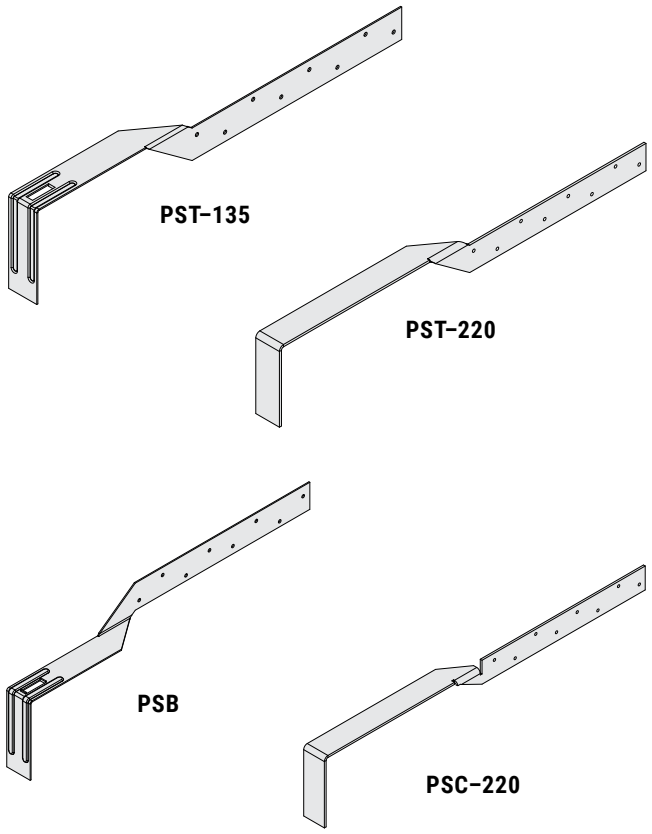
Load Data

Performance	Fixings (3.4 x 35mm)	Characteristic Tensile Capacity (kN)
Built into 3.5N/mm² block work & nailed to min C16 grade timber**	8No	8.80
Flat Strap	n/a	10.80

**Full storey of block work required above the strap to meet performance.

PS RANGE

Pre Formed Strap



The PS range provides required parallel restraint to block work for joist hangers and, where required, build–in details.

Features & Benefits

- Typically used for lateral restraint
- Straps suit various blockwork sizes

Approvals

- CE marked and tested in accordance with EN846–4
- Meets NHBC Technical requirements

Fixings

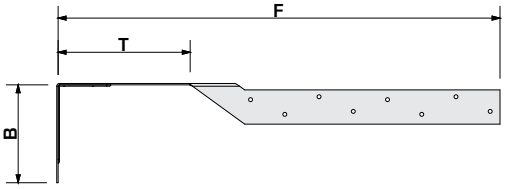
Code	Description	Box Qty
547389	3.4 x 35mm Square Twist Nails – LOOSE	500
141185	3.4 x 35mm Square Twist Nails – COLLATED*	2,500

*For use with Paslode PPN35Ci

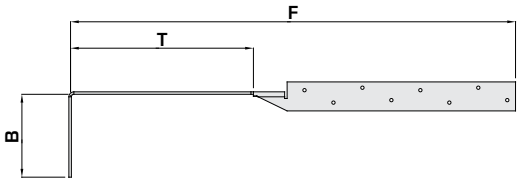
Dimensions (mm)

4mm Ø holes

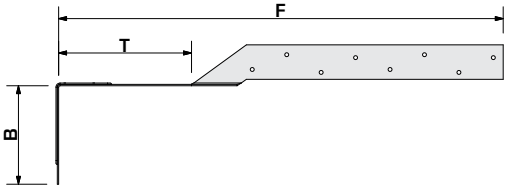
PST



PSC



PSB



Available Sizes

Product Code	Minimum Block Work Width (mm)	Maximum Block Work Width (mm)	B (mm)	F (mm)	T (mm)
PST–135	100	125	100	451.7	135
PST–220	140	215	100	536.7	230
PSC–220	100	215	100	536.7	220
PSB	n/a	n/a	100	451.7	135

Please refer to page 131 for guidance on strap requirement

Strap Selection

Hanger Depth	I–Joist Depth (mm)					
	195/200	220	240	300	350/360	400
195	PST					
225		PST	PSC			
240			PST			
250						
300				PST		
350					PST	
400						PST

Hanger Depth	Open Web Joist Depth (mm)					
	195/202	219/230	253/254	304	375/380	418/424
195	PST					
225		PST	PSC			
240			PST			
250			PST			
300				PST		
350					PSC	
400						PSC

Load Data

Performance	Fixings (3.4 x 35mm)	Characteristic Tensile Capacity (kN)
Built into 3.5N/mm² block work & nailed to min C16 grade timber**	8No	8.00

**Full storey of block work required above the strap to meet performance.

Brands for the Offsite Industry

About Cullen

Cullen Timber Engineering Connectors have been synonymous with innovation. Chosen for the highest quality and compliance, our range of timber engineering solutions will become a mainstay of your most valued business assets.

About Gang-Nail

Gang-Nail is re-defining offsite component productivity with its metal connecting systems and software raising industry standards for the manufacture of floor, roof and wall solutions.

The Gang-Nail brand of punched metal plate connectors; award-winning Gang-Nail Truss Frame, SpaceStud, and roof trusses along with our metal open web; SpaceJoist and SpaceRafter, is continuously chosen for its reliable quality and compliance.

About Paslode Gas

Paslode premium nails are manufactured to perfectly accompany your handheld Paslode tool, providing consistent optimised fixing performance, delivering a clean, flush finish even in the toughest materials and poor weather conditions.

The 360Xi and IM350+ Framing systems provide professional users with the best in class solutions for wood to wood fixings whilst the PPNXi is the 1st positive placement nailer on the market, providing an efficient and safe way of installing hangers, brackets and straps.

About Toolmatic

With our German engineered Toolmatic range you'll experience next level quality, productivity and service.

Known as the brand for the production of high-quality large-scale timber construction, Toolmatic automated fastenings maximises productivity, whilst eliminating the cost of unnecessary features.

Product Range Index

The information given in this document is believed to be current and accurate as at the date of publication.
As part of our continuous product development, we reserve the right to revise specifications without notice.

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*Subject to change at discretion
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