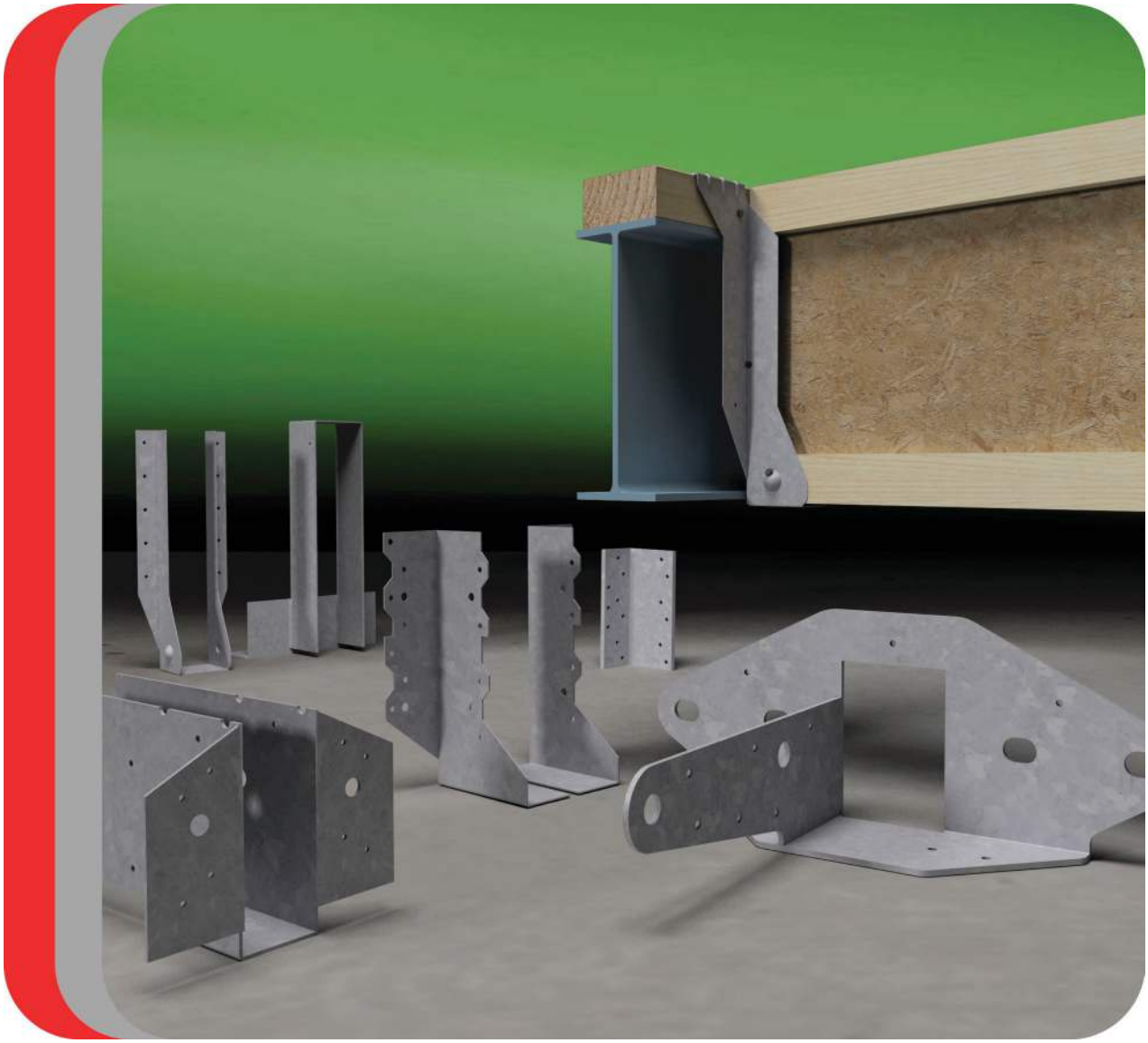
Pryda Timber Connectors

Hangers & Truss Boot Guide

September 2016



A complete guide to the design, specifications and installation of Pryda Hangers and Truss Boots

ESSENTIAL NOTES – PRYDA PRODUCT GUIDES

INTRODUCTION

The information in this Product Guide is provided for use in Australia by architects, engineers, building designers, builders and others. It is based upon the following criteria:

1. **No Substitution**: The products covered by or recommended in this guide must not be substituted with other products.

2. **Design Capacity Basis**: See Codes & Standards following.

3. **Supporting Constructions**: Constructions using Pryda products must be built in accordance with the NCC (BCA) or an appropriate Australian Standard. *Note: This includes appropriate corrosion protection- See Corrosion Protection following.*

4. **Correct Installation**: Installation of Pryda products must be strictly in accordance with the instructions in this guide.

5. **Current Guide Version Used**: The current version of this guide, including any amendments or additions, must be used. Users are advised to check the Pryda website, www.pryda.com.au, on a regular basis for the most current design guides.

CODES & STANDARDS

Product design capacities in this guide have been derived from:

(a) Results of laboratory tests carried out by or for Pryda Australia

(b) Engineering computations in accordance with the relevant Australian Standards, ie:

- AS1720.1-2010 Timber Structures. Part 1: Design Methods.
- AS/NZS1170 series Structural Design Actions.
- AS4055-2006 Wind Loads for Housing.

Design capacities tabulated in this guide apply directly for **Category 1** joints. For all other joints, reduce design capacities by using the factors as specified in *General Notes* (if applicable). Design capacities are related to the **Joint Group** of the timber as defined in AS1720 and AS1684. If the Joint Group of timber members joined together varies, the lower group must be assumed for design, for example, JD5 is lower than JD4.

DEFINITIONS

Special terms used in this guide are as defined in Australian Standards, including:

Design Capacity: The maximum Limit State Design load (aka "action") which the product can safely support under the specified load condition, eg, 1.2G + 1.5Q (dead+roof live). *See General Notes for details (if applicable).*

Joint Group: Classification of a timber according to its fastener-holding capacity. *See General Notes for details (if applicable)*

CORROSION PROTECTION

Most Pryda products are manufactured using Z275 light-gauge steel, having zinc coating of 275 gsm (total weight). This protection is adequate only for INTERNAL applications in most corrosive environments, except areas that are classified as heavy industrial or those subject to high humidity (eg, enclosed swimming pools). Under these circumstances, seek advice from experts as special protection will be required. *Note: INTERNAL areas are those within the building envelope that are kept permanently dry*.

AS1684.2-2010 and AS1684.3-2010, *Australian Standards for Residential Timber Frame Construction* stipulate a minimum Z275 steel for all sheet metal products used in an internal environment.

In areas outside the building envelope that are exposed to repeated wetting (EXTERNAL areas), Pryda's stainless steel products or equivalent should be considered. Some alternatives include hot dip galvanised or powder coated steel, which are not supplied by Pryda. For more detailed information, read Pryda's Technical Update on *Corrosion Resistance of Pryda Products* or contact a Pryda office.

PRODUCT CERTIFICATION

Pryda Australia warrants:

- Products in this guide are free from defects in the material and manufacturing
- Design capacities are in accordance with test results or current, relevant Australian Standards and the Building Code of Australia.
- Pryda products are structurally adequate provided they are designed, installed and used completely in accordance with this guide.

This warranty applies only to:

- Products in this guide.
- Products used in the specified applications and not damaged after manufacture and supply.
- Joints free from wood splitting, decay or other timber defects at the joint or within 150 mm of the joint.

INSTRUCTIONS FOR INSTALLATION

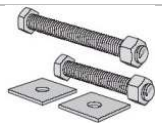
These notes are provided to ensure proper installation.

1. All fasteners used must be manufactured by reputable companies and be of structural quality.
2. Connectors must not be installed on timber which is split before or during installation. If the timber is likely to split as fasteners are driven, fastener holes must be pre-drilled.
3. Do not overload the joints during construction or in service.
4. Hole diameter for bolts in seasoned timber must not be more than 1.0 mm larger than the bolt diameter to achieve a snug-tight connection. Specified washers must be installed against the timber face.
5. Use proper safety equipment and due care in installing these connectors.
6. Any gaps in joints between the timber members must not exceed 3 mm.
7. Do not over-tighten screws.

Copyright: © Pryda Australia - A Division of ITW Australia – ABN 63 004 235 063 - 2016

Pryda Hangers & Truss Boots Guide

TABLE OF CONTENTS

	GENERAL NOTES Useful Notes and Definitions for effective reading of this guide	4
	BEAM HANGERS Heavy brackets for large size beams	5
	I-JOIST HANGERS Top mount and face mount hangers for timber I-joists	9
	LVSIA – Angle brackets Brackets used as either angle cleat or angle seat	14
	FRAMING BRACKETS Brackets for beam to beam connections	15
	JOIST HANGERS (HEAVY DUTY) Brackets for heavy beam to beam or beam connections **Joist Hangers- Split**	18 19
	TRUSS BOOTS – MULTI FIX For Truss to Truss Connections with option for fixing with bolts and screws	20
	TRUSS BOOTS – HEAVY DUTY Bolted Steel Brackets for Heavy Roof Truss to Truss Connections	25
	**BOLTS KITS FOR TRUSS BOOTS** Kits of bolts, nuts and washers for fixing truss boots	29
	HIP SUPPORT BRACKETS Brackets to connect hip trusses to girders	30

Product Information Updates
Information contained in this product guide is subject to change.
The latest updates are available from www.pryda.com.au.

GENERAL NOTES

Timber Joint Groups

Joint groups for some common timber are tabulated below.

For further information refer Table H2.3 and H2.4 in Australian Standards AS1720.1:2010 — Timber Structures Part 1.

Timbers	Strength Group		Joint Group	
	Dry	Green	Dry	Green
Oregon (Douglas fir) – America	SD5	S5	JD4	J4
Oregon from elsewhere	SD6	S6	JD5	J5
Radiata pine, heart-excluded	SD6	NA	JD4	NA
Radiata pine, heart-in	SD6	NA	JD5	NA
Slash pine	SD5	S5	JD3	J3
Ash type hardwoods from Vic, NSW highlands & Tas	SD4	S4	JD3	J3
Non-Ash type hardwoods from Qld & NSW	SD3	S3	JD2	J2

Note on **Engineered Timbers**: Most standard LVLs are assigned a JD4 joint group (SD6 strength group), and some JD3. Seek advice from the relevant LVL manufacturer for confirmation

Material Thickness

All material thicknesses referred to in this guide are the total coated thickness. This includes the zinc coating thickness, which is typically around 0.04mm for Z275 steel.

Design Load Cases

Following is a description of the combined load cases adopted in this design guide. These load cases are in compliance with AS/NZS1170.0:2002 – Structural design actions Part 0:General principles

Load Case	Description
1.35G	Permanent Action (*or Dead Load*) only
1.2G+1.5Qr	Permanent and Roof Imposed Actions (*or Dead & Roof Live*)
1.2G+1.5Qf	Permanent and Floor Imposed Actions (*or Dead & Floor Live*)
1.2G+Wd	Permanent and Wind down Actions (*or Dead & Wind down*)
Wind Uplift (0.9G – Wup)	Permanent and Wind Up Actions (*or Dead & Wind up*)

Design Loads & Capacities

The tabulated capacities are for Category 1 joints. For all other joints, reduce design capacities by using the following factors:

- Category 2 Joints: **0.94**
- Category 3 Joints: **0.88**

Note: Category 1 joints are defined in Table 2.2 AS1720.1:2010 as structural joints for houses for which failure would be unlikely to affect an area of 25 sqm.

Fastener Usage Summary

Following is a summary of the common nails, screws and bolts used in hangers and truss boot fixing. Read the relevant page in this guide for a detailed specification for the respective hanger or truss boot.

	Pryda Timber Connector Nails (35 x 3.15 dia)	Pryda Timber Connector Nails (40 x 3.75 dia)	Pryda WTF12-35 screws (Note 2)	M12 Bolts with washers (Note 3)	M16 Bolts with washers (Note 4)
I joist Hangers		**Y**	**Y** (Note 1)		
Framing Brackets	**Y**		**Y**		
HD Joist Hangers	**Y**		**Y**		
LVSIA and HSB			**Y**		
Truss Boots			**Y**	**Y**	**Y**
HD Truss Boots			**Y** (Note 1)		**Y**

Notes:

(1) Permitted for use only in face mounted (LF) i-joist hangers as an alternative to nails. Also used for fixing TBHD75/T or TBHD75 heavy duty truss boots.

(2) Screws may be either WTF12-35 or WTF12-65.

(3) M12 bolts refer to OBS12/65 or OBS12/100 set screws or OBM12/150 or OBM12/180 hex-head bolts used in conjunction with OW12/56S washers.

(4) M16 bolts refer to OBS16/110 set screws or OBM16/150 or OBM16/180 hex-head bolts used in conjunction with OW16/63S washers. Refer page 30 for bolt specification and information on bolt kits.

Machine Driven Nail Use

For Framing Brackets and HD joist hangers, 50 x 2.87mm Paslode Impulse nails may be used in lieu of hand hammered Pryda Connector nails (35 x 3.15 dia), provided the nails are fixed in to a minimum 50mm timber. No capacity reduction is required.

However, extreme care must be taken when locating these nails, to ensure the hole pattern is followed. Given the prevailing installation practices, machine driven nails must be avoided if the right tool or the right operator skill-set is not available. Refer related pages for more details.

For i-joist hangers, use of machine driven nails would result in a loss of design capacity and therefore best avoided. Contact Pryda office for advice.

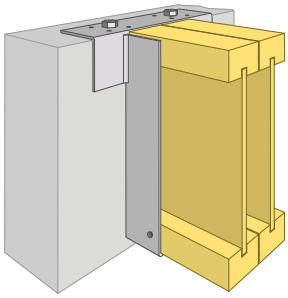
Fixing into steel supporting structure

Pryda products can be fixed into steel using Buildex Teks™ screws or similar. Design capacities can be obtained at request from a Pryda Design Office.

BEAM HANGERS

Heavy Brackets for Large Size Beams & double I-joists or floor trusses

Beam Hanger for Beams



Beam Hanger for I-Joists

Description

Pryda Beam Hangers are heavy duty welded hangers for connection of large size beams or I-joists, available in three thicknesses of 77, 125 and 180 mm, to wide timber beams (min. 75 mm thick) or masonry walls. Refer page 7 for information on the 125mm hanger, developed to allow skew connection of beams between 30 and 60 deg.

Features

Pryda Beam Hangers are:

- **easy to install** with a small number of coach screws or nails onto timber or with masonry anchors onto masonry or concrete
- an **economical** means of forming these connections
- ideal for supporting heavily loaded beams on fire rated brick walls, eliminating the need for a girder truss or false wall to support the beams
- 180mm wide hangers support double I-joists or double 90mm floor/rafter trusses.

Supporting member

The supporting beam, timber, masonry or concrete wall must be assessed for adequacy before use.

Timber Supports - The supporting beam or wall plate must be a min. 75mm thick. Single or multiple of 35/45 mm laminates are not suitable as it would result in coach screws being too close to the edge. If a timber framed wall is used, the top plates must be double laminated to ensure adequate penetration of coach screws.

Masonry Supports - The crushing strength of the masonry must be assessed by an engineer prior to use.

Supply

Beam Hangers are supplied individually.

Specifications

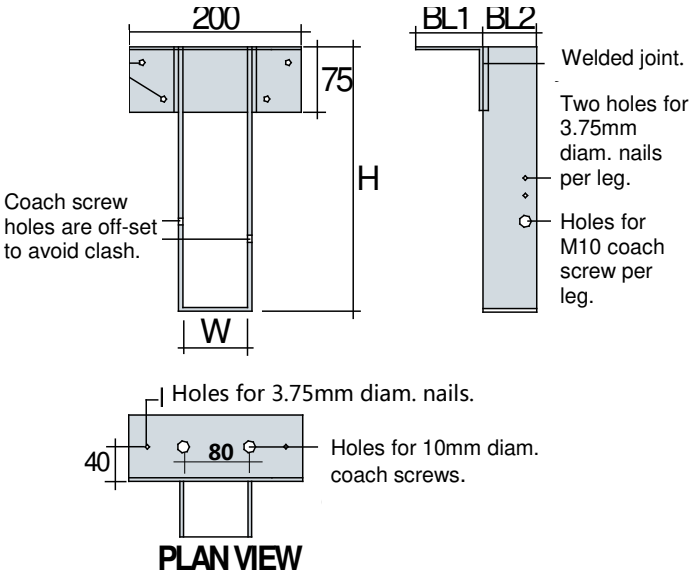
Pryda Beam Hangers are manufactured out of G250, 3mm thick steel and are hot dipped galvanized to a minimum 300 gsm.

Dimensions

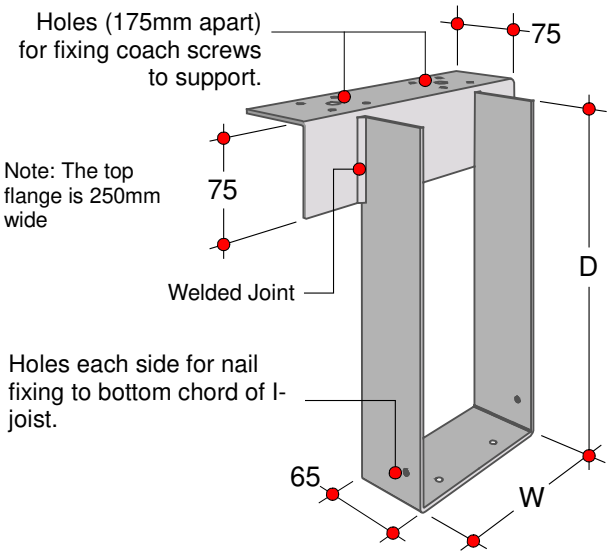
Dimensions of **Pryda Beam Hangers** are shown below.

Hanger Code	Dimensions (mm)			
	D	W	BL1	BL2
BB180	186	77	75	65
BB300	306	77	75	65
BBT180240	240	180	75	65
BBT180300	300	180	75	65

Note; Refer page 7 for detailed information on BBT125240.



Details of BB180 and BB300



Details of BBT180240 and BBT180300

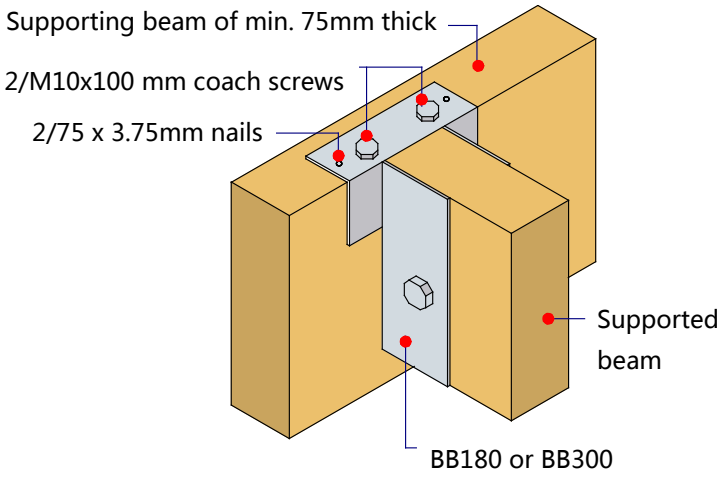
Installation

Fixing to Supporting Member

Before use, the minimum requirements of the supporting member must be assessed as described in the previous page.

Timber supports:
Use **M10x100 mm coach screws** and 75x3.75 mm galvanised flat head nails or a combination of both types of fasteners.

Concrete or masonry supports:
Use M10 Heavy Duty anchor, Ramset Chemical Anchors or Ramset Anchorscrews.
Consult RamsetReid for further information.



Installation on Timber Support Beam

Fixing to Supported Member

The supported member must be placed as tightly as possible against the face of the supporting beam. A maximum gap of 3mm is permitted without impeding on the design capacities. A larger gap would result in a rotation of the supported beam under downward loads and also could compromise on end distance requirements of nails resulting in reduced uplift capacities. Seek advice from a Pryda Engineer regarding treatment of large gaps.

BB Series Hangers
Fix BB series hangers to supported timber beams with one **M10x50 mm coach screw** each side. As an alternative in low wind demand applications, drive two 40x3.75 mm **Pryda Timber Connector nails** from each side.

BBT Series Hangers
Fix BBT series hangers to timber I-joists or trusses with 35x3.15 mm **Pryda Timber Connector Nails,** one each side and one underneath each of the two i-joists or trusses, ie: four nails per hanger

Design Capacities: Downward loads

Design **Permanent** load capacities (1.35G) for Pryda Beam Hangers are tabulated below:

Beam Thickness (mm)	Strength Group Capacity for 1.35G load case	
	SD6	SD4
75	22.0	25.0
180	25.0	25.0

Notes:

1. SD6 (applicable to MGP and LVL) is the strength group used in most common applications. Refer General Notes in page 3 for information on strength groups of sawn and engineered timber
2. For live loads, increase the above values by 20% for floors (1.2G+1.5Qf) and 35% for roofs (1.2G+1.5Qr).
3. The maximum recommended hanger capacity is given as 25.0 kN (permanent load), restricted by non-availability of test data for higher values.

Design Capacities: Wind Uplift

The uplift capacity is limited by the lower of two M10x100 coach screws in withdrawal (supporting beam) and two M10x50 coach screws or four nails in shear (supported beam or joist).

Below uplift capacities apply **only to BB180 and BB300** hangers. For BBT hangers, a nominal uplift capacity of 1.5 kN can be achieved from the nail fixed into the bottom chord of each truss (2/90) or bottom flange of each i-joist.

Coach screw fixing to supported beam

Beam (mm)	Fixing to supported beam	Joint Group			
		JD5	JD4	JD3	JD2
75 Min.	2/M10x50 mm coach screws	8.2	11.1	14.5	15.4

Nail fixing to supported beam

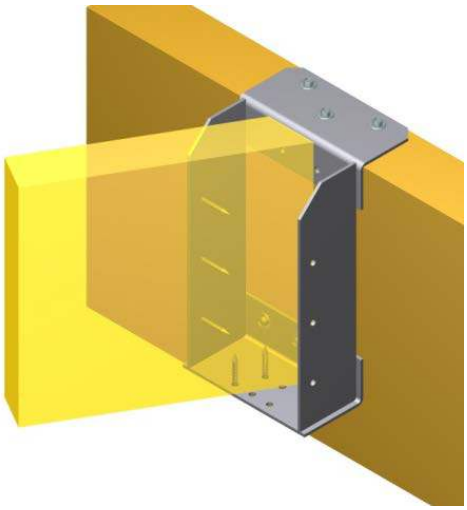
Beam (mm)	Fixing to supported beam	Joint Group			
		JD5	JD4	JD3	JD2
75 min	4/40x3.75 mm nails	4.3	5.2	7.2	9.2

Notes:

1. The values in the above tables apply directly for Category 1 joints. Refer general Notes in page 4 for advice on reduced values for Category 2 and Category 3 joints.
2. For bearing and uplift capacities of concrete or masonry walls, consult a structural engineer. The adequacy of these walls must be assessed before use.

BBT125240 BEAM HANGERS

Heavy Brackets for Large Strutting Beams



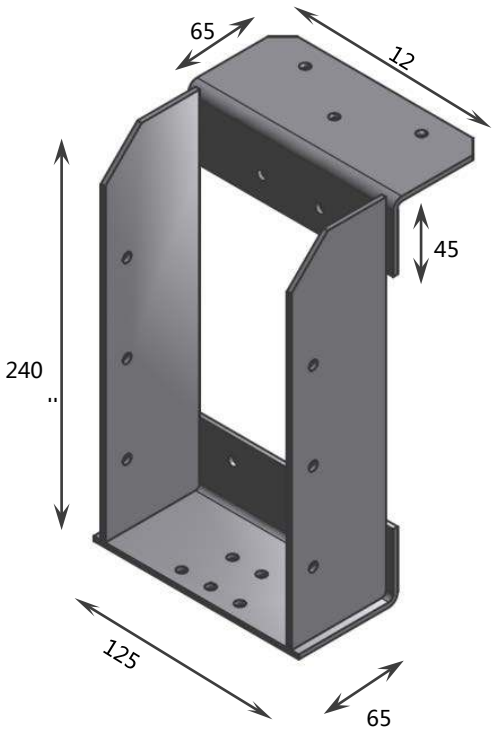
BBT125240
Beam Hanger

Description

Pryda BBT125240 Beam Hanger is a heavy duty welded hanger for connection of large sized strutting beams placed at angles between 30 and 60 deg, to timber beams or masonry walls. This bracket is commonly adopted in Western Australia.

Specifications

This Beam Hanger is manufactured from G300, 3mm thick steel and are hot dipped galvanized to a min. 300 gsm.



Features

Pryda BBT125240 Beam Hanger is:

- **easy to install** with Type 17 screws
- an **economical** means of forming these connections
- provides superior uplift resistance compared to other conventional fixings
- suitable to use with a large range of beam sizes and connection angles (splays)

Supply

Code:	BBT125240
Brackets per carton:	8
Screws per Bracket:	14
Screw Type:	Pryda WTF12-35 screws (No. 12 X 35 Type 17) hex-head

Dimensions

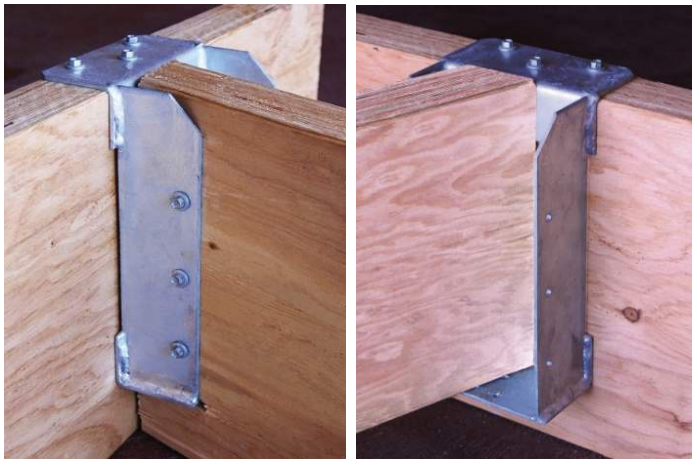
Dimensions of this Beam Hanger is shown below

Design Capacities

The following capacity assumes that a minimum JD4 joint group is available at the connection.

Load Direction	Capacity (kN)
DOWNWARD	**15.0**
UPLIFT (light fixing)	**4.0**
UPLIFT (medium fixing)	**10.0**
UPLIFT (heavy fixing)	**20.0**

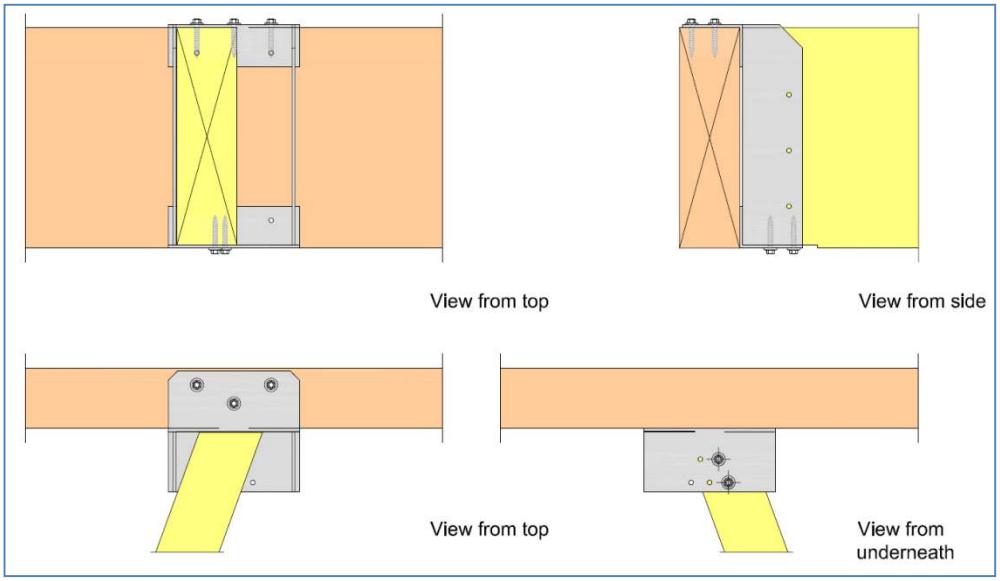
Note: refer next page for details of different fixing methods



In application

BBT125240 BEAM HANGERS ….

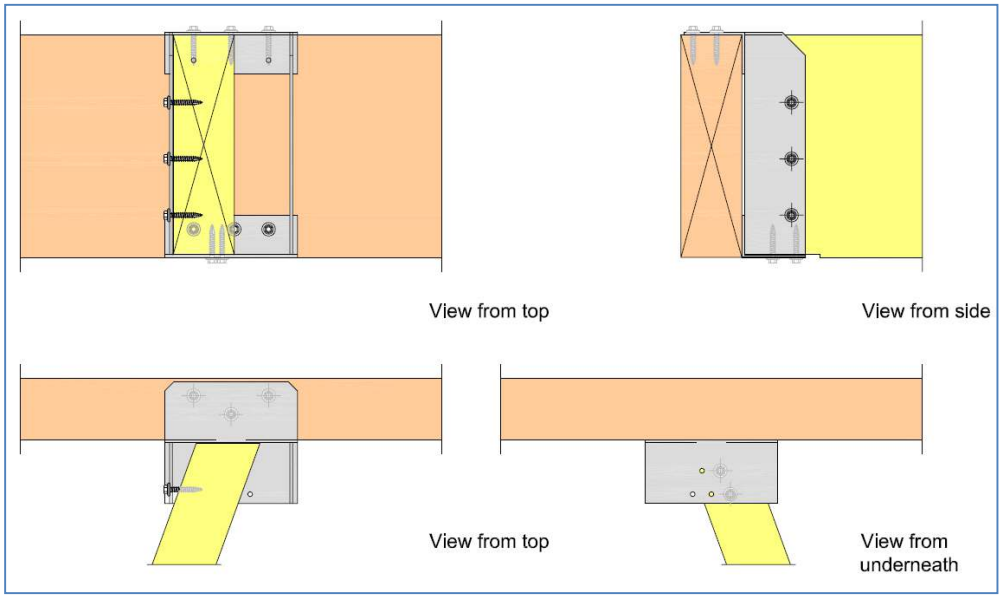
Fixing Methods



Light Fixing:

Supporting Beam:
3 screws on top

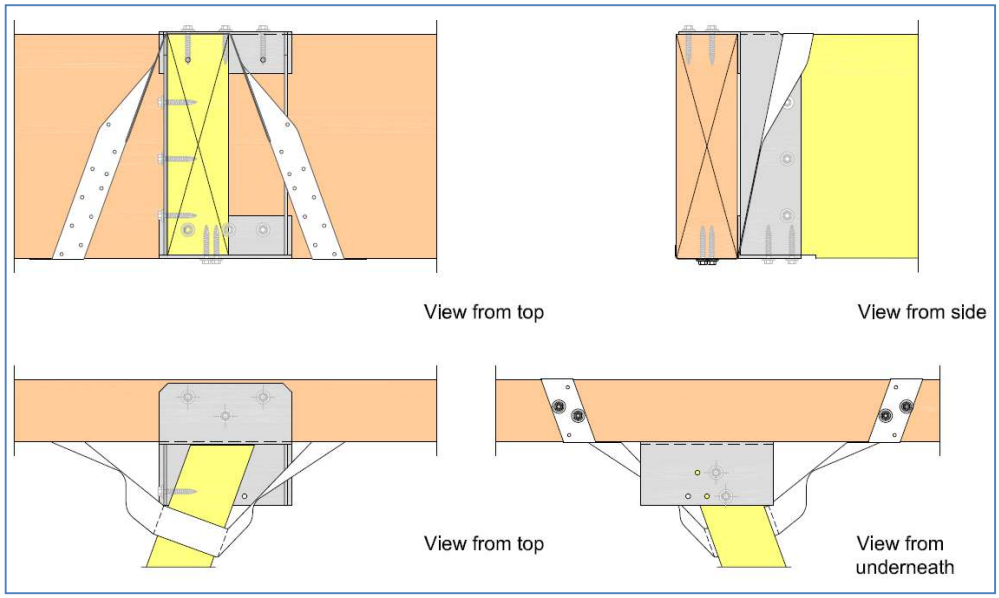
Supported Beam:
2 screws from bottom



Medium Fixing:

Supporting Beam:
3 screws on top and
3 screws from side

Supported Beam:
3 screws from side
2 screws from bottom



Heavy Fixing:

Medium Fixing in combination with a Cyclonic Strap.

I-JOIST HANGERS

Face mount and top mount hangers for timber I-joists

Pryda I-Joist Hangers have features as follows:

- Ideally suited to support **modern timber I-Joists**.
- Use of full depth hangers provides torsional restraint to the I-joist.
- There is provision for a screw through the hanger into the bottom of the bottom flange to minimize squeaking. A hole towards the bottom of each side flange is also available for fixing into bottom flange to further reduce the effect of squeaking.

Description

LT and LF types hangers are specifically designed for use with proprietary I-Joists such as Carter Holt Harvey hyJOIST, Tillings SmartFrame I-joist, Wesbeam e-joist and LP I joist. Refer guide on page 11.

LT type are for top fixing and LF for face fixing. LFVS are variable slope and skew. LFSL and LFSR are 45° degree skewed, left and right respectively. LVSIA type is a variable skew angle.

Specification

Dimensions are tabulated on the next page. All hangers are manufactured from G300 Z275 galvanised steel in **1.2 mm thickness**, except for:

LFSL/SR	- 2.0 mm
LF220/105, LF300/105, LT240/105	- 1.6 mm
LT300/105, LT356/121	- 2.6 mm
LVSIA (G250, hot dip galv)	- 5 mm

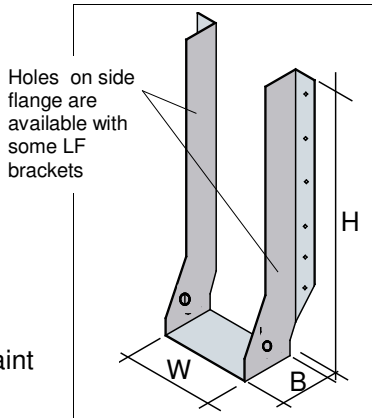
Packaging

All products are packaged in quantities of 25 per carton except for some of the largest hangers and LVSIA which are sold 10 per carton. See the **Price List** for details.

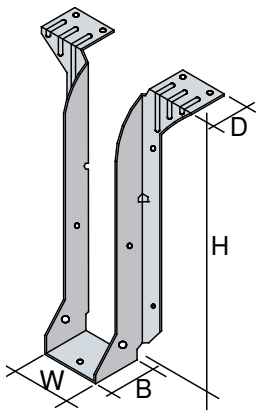
Details of the available range of **Pryda I-Joist Hangers** are tabulated in the following. 'Double' I-Joist Hangers are for support of two I-Joists, side by side or a single 90 or 120 mm wide I-Joist.

Bracket Types:

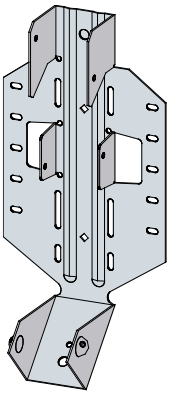
Pryda I-Joist Hanger types are illustrated below:



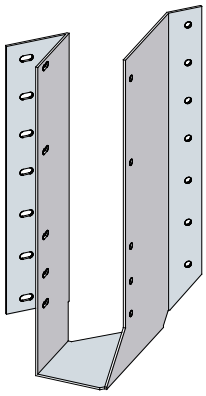
LF Type
Face Mount



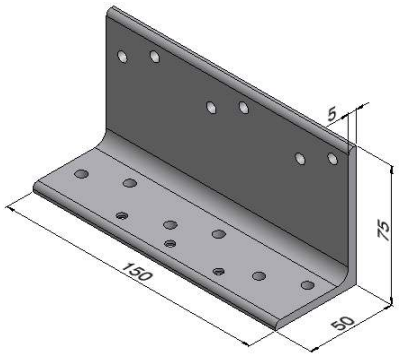
LT Type
Top Mount



LFVS Type
Variable Slope & Skew



LFSL/SR Type
45 deg Skewed Hanger



LVSIA Type
Angle Bracket

Dimensions H, B and W are tabulated in the **Dimension** tables following.

Note: Some LF hangers have holes on the side flanges as well. For example: LF235/90 (3 holes each), LF 290/90 (4 holes each) and LF350/90 (5 holes on each side flange).

Hanger range and Dimensions

Illustrations in previous page give reference to dimensions H, W, B and D.

Face Mount

Product Code	H (mm)	W (mm)	B (mm)	Face Nail Holes
LF235/40	237	41	50	10
LF297/40	296	41	50	12
LF190/45	189	46	50	8
LF240/45	235	46	50	10
LF300/45	296	46	50	12
LF235/50	231	52	50	10
LF297/50	297	52	50	12
LF340/60	342	60	50	14
LF200/65	200	65	50	8
LF235/65	235	65	50	10
LF290/65	290	65	50	12
LF340/65	340	65	50	14
LF235/70	232	70	50	10
LF290/70	288	70	50	12
LF400/70	400	70	50	16
LF235/90	235	90	50	10
LF290/90	290	90	50	12
LF350/90	350	90	50	14
LF220/105	220	105	50	8
LF235/120	235	120	50	10
LF290/130	290	130	50	12
LF235/140	235	140	50	10
LF290/140	235	140	50	12
LF235/180	235	180	50	10

Top Mount

Product Code	H mm	W mm	B mm	D mm	Face Nail Holes	Top Nail Holes
LT240/40	240	40	50	40	4	6
LT300/40	300	40	50	40	4	6
LT300/47	300	47	50	40	4	6
LT200/50	200	50	50	40	4	6
LT240/50	241	50	50	40	4	6
LT240/52	240	52	50	40	4	6
LT300/52	302	52	50	40	4	6
LT360/60	246	60	50	40	4	6
LT240/65	240	65	50	40	4	6
LT245/65	245	63	50	40	4	6
LT302/65	302	65	50	40	4	6
LT360/65	356	65	50	40	4	6
LT240/70	240	70	50	40	4	6
LT300/70	300	70	50	40	4	6
LT240/90	240	90	50	40	4	6
LT300/90	300	90	50	40	4	6
LT360/90	360	90	50	40	4	6
LT400/90	400	90	50	40	4	6
LT240/105	240	105	50	40	4	6
LT300/105	300	105	50	40	4	6
LT240/140	240	140	50	40	4	6
LT300/140	300	140	50	40	4	6

Variable Slope & Skew, Face Mount

Product Code	H (mm)	W (mm)	B (mm)	Face Nail Holes
LF275/60SL	275	60	64	16
LF275/60SR	275	60	64	16
LF224/90VS	224	90	70	14

Fixing Requirement

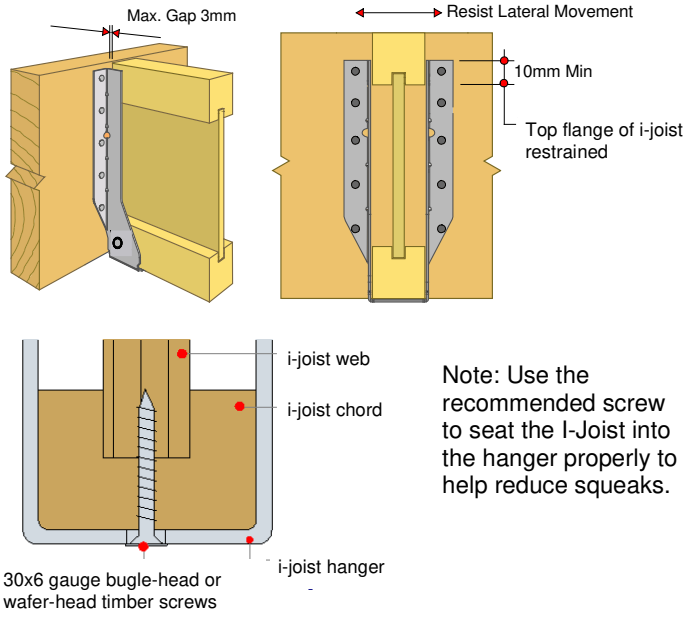
1. Use only 40x3.75 mm galvanised **Pryda Timber Connector Nails**, Pryda product code OSNIB/1 or OSNIB/5.
2. For fixing the joist to the hanger seat, use No. 6 x 30 mm bugle-head or wafer-head timber screws.
3. All nail holes are to be filled with the specified nails to achieve published hanger capacity.

Installation

To achieve the specified design loads, **Pryda I-Joist Hangers** must be correctly installed as specified in the following sections:

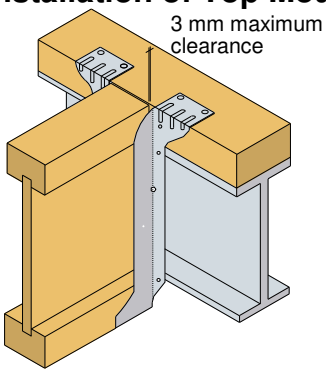
Refer to I-joist manufacturers' instruction manuals for span table selection and other details for on-site installation of their respective systems.

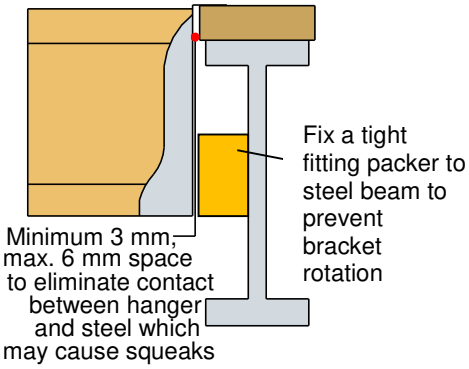
Installation of Face Mount Hangers

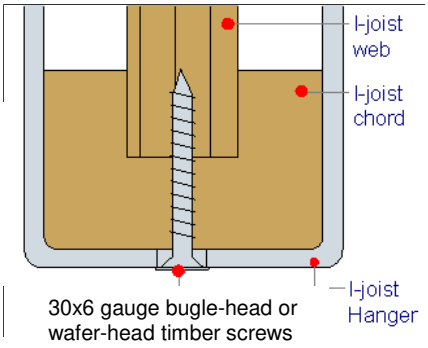


Note: Use the recommended screw to seat the I-Joist into the hanger properly to help reduce squeaks.

Installation of Top Mount Hangers

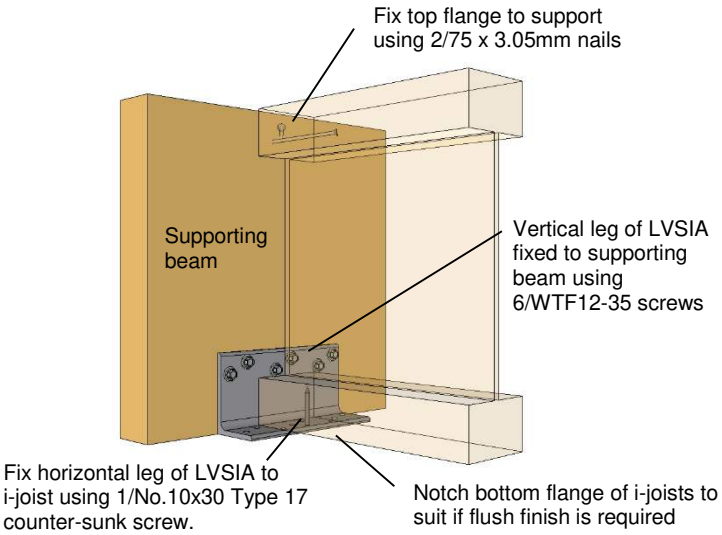






Note: Use the recommended screw to seat the I-Joist into the hanger properly to help minimize squeaks. Alternatively, if nails are used from sides (holes available with some LT brackets), ensure they are adopted to avoid squeaks from nails coming in contact with the hanger's seat. Packers will be required as noted if the hanger is shorter than the supporting beam.

Installation – LVSIA



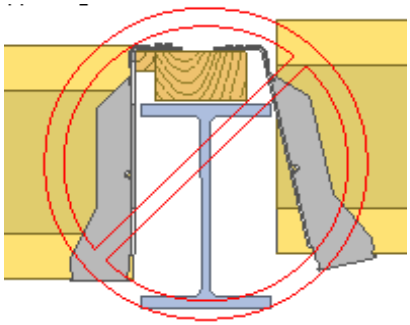
Installation- Variable Skew Angles

LVSIA variable skew angles are installed as shown in the following diagram, ie:

1. Notch the I-joist at ends (if necessary) to achieve flush fitting the LVSIA.
2. Locate the angle with the 75 mm leg vertical and its mid-length at the middle of the required end location of the I-joist. Fix the angle to the supporting beam, waling plate or ledger with 6/ **Pryda WTF12-35** screws (No. 12x35 mm Type 17 hex head). *Design capacities and other product information are given in page 15.*
3. Locate the I-joist on the angle and fix it up through the bottom of angle with 1/ No. 10 x 30 mm countersunk or bugle head Type 17 screw.
4. Nail the I-joist top chord to the support with 2/75x3.05 mm nails.

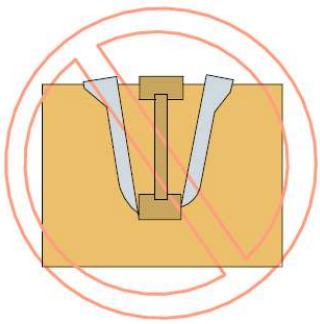
Installation – Common Problems

Poor or incorrect installation can lead to serious problems. Common problems are illustrated opposite:

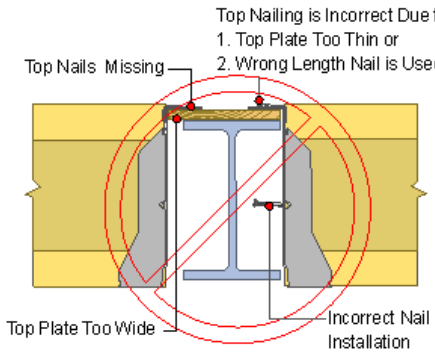


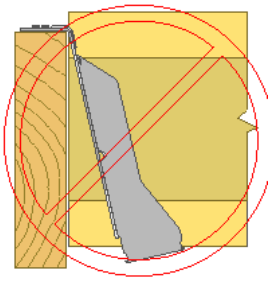
If the top plate is too narrow it may cause:

1. Hanger Deformation.
2. Nail pull-out or shear.
3. Supporting beam deformation



Spreading hanger legs will push the joist up which may cause un-even floors, squeaky floors and joist rotation.





Joist is not seated properly in to the hanger. This may cause nail pull-out.

Design Capacities

Tabulated below are design capacities for Pryda I-joist Hangers based on the specified number of nails shown. "Face nails" are driven into the face of the supporting beam, "Top nails" into the top of the supporting beams and "Joist nails" into the supported member.

General Notes

1. For joints on primary beams in structures other than houses, see General Notes on page 4 for information.

2. Use only Pryda 40x3.75mm or 35x3.75 mm galvanised **Pryda Timber Connector Nails**, for all LF and LT brackets. **Pryda WTF12-35** screws (No.12x35 mm Type 17 hex head) may be used as an alternative for LF brackets only.

Face Mounted Hangers

With a minimum of eight face nails, these hangers can carry the design residential floor loads (1.5 kPa live) for joists up to 5.9 m span at 600 mm spacing or 7.9 m span at 450 mm spacing, provided that the timber supporting beams has a joint group of JD4 or better.

Hanger Codes	Face Nails (screws) see Note 2	1.2G + 1.5Qf (Dead & Floor Live) Design Capacity, ΦN_j (kN) for Supporting Beam with Joint Group (see Note 1)		
		JD5	JD4	JD3
All LF190/.. and LF220/..	8 (6)	5.2	6.2	8.7
LF 235/.., LF240/..	10 (6)	6.4	7.8	10.9
All LF290/.. LF297/.. LF300/..	12 (8)	7.7	9.3	13.1
All LF340/.. LF350/.., LF356/..	14 (8)	8.8	10.9	14.2
LF400/70	16 (10)	10.4	12.4	17.4

Notes:

(1) Where these hangers are fixed to a 35 mm thick supporting beam, use 35x3.75 mm nails and multiply design capacities by 0.88.

(2) The minimum no. of Pryda WTF12-35 screws required as an alternative fixing is given in brackets.

Top Mounted Hangers

Based on the below design capacities, top mounted brackets are suitable for joist spans of max. 5.6m (JD5), 6.6m (JD4) or 7.0m (JD3) in domestic floor applications (1.5kPa @ 600 spacing)

Hanger Code	Top Nails (incl. both top mount tab)	1.2G + 1.5Qf (Dead & Floor Live) Design Capacity, ΦN_j (kN), for Supporting Beam with Joint Group		
		JD5	JD4	JD3
All LT series	6	4.8	5.7	6.1

Note: 4 nail (2 nails on each tab) fixing may be used at reduced capacities of 4.0 (JD5), 4.7 (JD4), 5.1 (JD3).

Variable Slope & Skew Hangers

Typically used to support I-joists used as roof rafters.

Hanger Code	Face Nails	Joist Nails	Design Capacity, ΦN_j (kN), for Supporting Beam with JD5 or higher Joint Group for Load Case		
			1.35G	1.2G+1.5Qr	Wind Uplift
LF224/90VS	14	12	4.0	6.4	4.5

Notes:

1. Most of these brackets are suitable for applications where the supported member (eg: rafter) is placed at angles between 45 deg and 90 deg to the supporting member (eg: roof beam). However, LF224/90VS is only suitable for angles of 22.5 deg from either side of the perpendicular.
2. These brackets are not suitable for floor joists.
3. Where these hangers are fixed to a 35 mm thick supporting member, use the 35x3.75 mm nails and multiply design capacities by 0.88.

Skewed Hangers

Typically used to support I-joists used in floors at 45° to the supporting beam.

Hanger Code	Face Nails	Joist Nails	Design Capacity, ΦN_j (kN), for Supporting Beam with JD5 or higher Joint Group for Load Case
			1.2G+1.5Qf (Dead & Floor Live)
LF215/90SL/R LF275/60SL/R	16	10	5.4

Note: Where these hangers are fixed to a 35 mm thick supporting member, use the 35x3.75 mm nails and multiply design capacities by 0.88.

Variable Skew Angles

Used to support I-joists at an angle other than 90° to the support, LVSIA design capacities are:

Fixing in to supporting member using Pryda WTF12-35 screws	Screw Length (mm)	1.2G + 1.5Qf (Dead & Floor live) Design Capacity, ΦN_j (kN), for Supporting Beam with Joint Group		
		JD5	JD4	JD3
4 screws	35	3.9	5.5	7.8
6 screws	35	5.8	8.2	11.5

Notes:

- For joints on primary beams in structures other than houses, see General Notes on page 4 for information.
- Capacities of LVSIA in other applications are given in page 14.
- Fixing into joist - An additional No.10x30 Type 17 counter-sunk screw is required on horizontal leg.
- The capacities may be increased by 15% if 40mm screw lengths are used in to 45mm or thicker supporting beam.

I-Joist Hanger Cross Reference Guide

The recommended size of **Pryda I-Joist Hangers** for support of proprietary I-joists in house floors is as follows:

I-joist Code	I-joist Size (mm)	Face Mount Hanger Code	Top Mount Hanger Code	Variable Slope & Skew Rafter Hanger Code	Variable Skew Hanger Left Code	Variable Skew Hanger Right Code	Double I-joist Hanger Code Face Mount	Double I-joist Hanger Code Top Mount
Carter Holt Harvey hyJOIST								
HJ200-45	200x45	LF190/45	LT200/45		LVSIA	LVSIA	JHH100*	N/A
HJ240-45	240x45	LF240/45	LT240/45		LVSIA	LVSIA	JHH100*	N/A
HJ300-45	300x45	LF300/45	LT300/47		LVSIA	LVSIA	LF220/105*	N/A
HJ240-63	240x63	LF235/65	LT240/65		LVSIA	LVSIA	N/A	N/A
HJ300-63	300x63	LF290/65	LT302/65		LVSIA	LVSIA	LF290/130	N/A
HJ360-63	360x63	LF340/65	LT360/65		LVSIA	LVSIA	LF290/130*	N/A
HJ240-90	240x90	LF235/90	LT240/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180	BBT180240
HJ300-90	300x90	LF290/90	LT300/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180*	BBT180300
HJ360-90	360x90	LF350/90	LT360/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180*	BBT180360
HJ400-90	400x90	LF350/90	LT400/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180*	N/A
Tillings SmartFrame Joist								
SJ24040	240x40	LF235/40	LT240/40	N/A	LVSIA	LVSIA	N/A	N/A
SJ30040	300x40	LF297/40	LT300/40	N/A	LVSIA	LVSIA	N/A	N/A
SJ20044	200x44	LF190/45	LT200/45		LVSIA	LVSIA	LF190/90	NA
SJ24051	240x51	LF235/50	LT240/52	N/A	LVSIA	LVSIA	LF220/105	LT240/105
SJ30051	300x50	LF297/50	LT300/52	N/A	LVSIA	LVSIA	LF220/105*	LT300/105
SJ36058	360x58	LF340/60	LT360/60		LF275/60SL*	LF275/60SR*	LF235/120*	LT356/121
SJ24070	240x70	LF235/70	LT240/70	N/A	LVSIA	LVSIA	LF235/140	LT240/140
SJ30070	300x70	LF290/70	LT300/70	N/A	LVSIA	LVSIA	LF290/140	LT300/140
SJ24090	240x90	LF235/90	LT240/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180	BBT180240
SJ30090	300x90	LF290/90	LT300/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180*	BBT180300
SJ36090	360x90	LF350/90	LT360/90*	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180*	BBT180360
SJ40090	400x90	LF350/90*	LT400/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180*	NA
Wesbeam e-joist								
EJ20045	200x45	LF190/45	LT200/45		LVSIA	LVSIA	JHH100*	NA
EJ24045	240x45	LF240/45	LT240/45		LVSIA	LVSIA	JHH100*	NA
EJ24545	245x45	LF240/45			LVSIA	LVSIA	JHH100*	NA
EJ24051	240x51	LF235/50	LT240/52	N/A	LVSIA	LVSIA	LF220/105	LT240/105
EJ24090	240x90	LF235/90	LT240/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180	BBT180240
EJ30045	300x45	LF300/45	LT300/47		LVSIA	LVSIA	LF220/105*	NA
EJ30051	300x51	LF297/50	LT300/52	N/A	LVSIA	LVSIA	LF220/105*	LT300/105
EJ30090	300x90	LF290/90	LT300/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	BBT180/300	BBT180300
EJ24563	245x63	LF235/65	LT245/65		LVSIA	LVSIA	N/A	N/A
EJ36063	360x63	LF340/65	LT360/65		LVSIA	LVSIA	LF290/130*	N/A
EJ36090	360x90	LF350/90	LT360/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180*	BBT180360
EJ40090	400x90	LF350/90 *	LT400/90	LF224/90VS*	LF215/90SL*	LF215/90SR*	LF235/180*	N/A
LP I Joist								
LPI 241x70	241x70	LF235/70	LT240/70	N/A	LVSIA	LVSIA	LF235/140	LT240/140
LPI 302x70	302x70	LF290/70	LT300/70	N/A	LVSIA	LVSIA	LF290/140	LT300/140
LPI 406x70	406x70	LF400/70	N/A	N/A	LVSIA	LVSIA	N/A	N/A

Notes: 1. For hangers marked *, web stiffeners must be installed in accordance with the I-joist manufacturers' specification.

2. JHH100 are **Heavy Duty Joist Hangers.**

LVSIA ANGLE BRACKET

Applications

LVSIA is a versatile bracket that can be used in a 'horizontal' direction as an angle SEAT to support beams or trusses coming in at any direction. This angle bracket can also be used in a 'vertical' direction as an angle CLEAT for beam to beam connections especially in situations where normal joist hangers cannot be used.

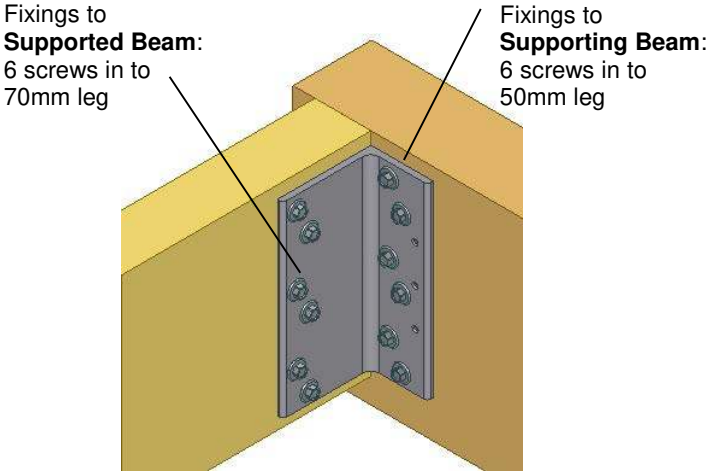
Specifications

LVSIA bracket is a 150mm long x 5.0mm thick un-equal angle of size 75 x 50 x 5.0 using G300 galvanized steel.

Design Capacities

(A) 'Vertical' Application as an angle CLEAT– Bracket fixed only on one face

Fixings – 6/Pryda WTF12-35 screws on each leg.



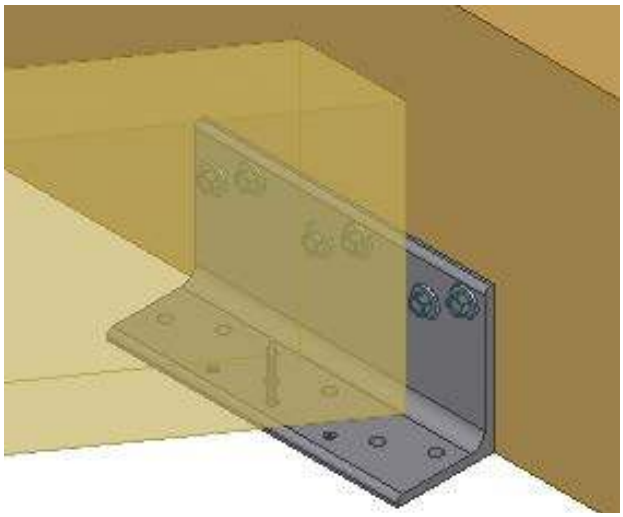
Installation: 50mm leg fixed to supporting beam

JOINT GROUP	Single LVSIA as an angle cleat for given Load Cases			
	1.35G	1.2G+1.5Qf	1.2G+1.5Qr	Wind Uplift
JD4	4.8	5.8	6.4	8.6
JD3 (1)	6.7	8.0	9.0	13.3

Notes:
(1) Provide 2/No.14 x 90 Type 17 screws from the back of supporting beam in to end-grain of supported beam to resist twisting of supporting beam. Use longer screw lengths if required to ensure a minimum 35mm penetration.
(2) When the supported member used is prone to splitting (like hardwoods-JD3), additional precautions should be taken. These can be in the form of prebored holes or provision of anti-split nailplates at ends of the supported beam.
(3) Screws with longer lengths are required when LVSIA brackets are fixed into multiple laminated beams. For double laminates, use 65 long screws per flange.
(4) Increase capacities by 15% for 40mm long screws.
(5) If the bracket is used as a PAIR, the given capacities shall be increased by a factor of 2.5. Ensure the screws on supporting beam are at least 30mm from end grain.

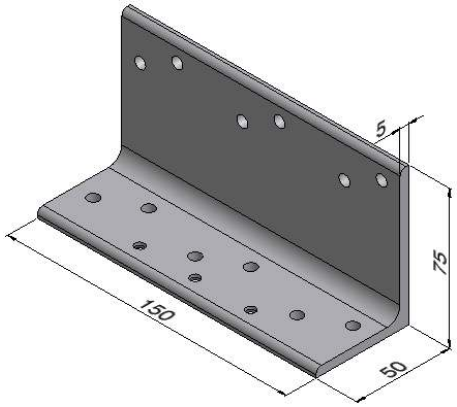
(B) 'Horizontal' Application as an angle SEAT

Fixings – 6/Pryda WTF12-35 screws on vertical leg and 1/No.10x30 Type 17 counter-sunk screw on horizontal leg.



JOINT GROUP	LOAD CAPACITIES(kN) for LVSIA as an angle seat for given Load Cases			
	1.35G	1.2G+1.5Qf	1.2G+1.5Qr	Wind Uplift
JD5	4.8	5.8	6.5	1.0
JD4	6.7	8.2	9.1	1.4
JD3	9.5	11.5	12.9	1.8

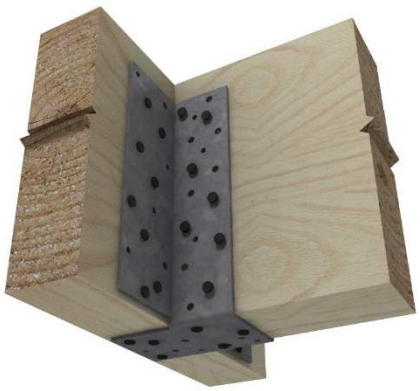
Notes:
1. The above table values may be increased by 15% if 40mm screw lengths are used.
2. The support beam must be lateral tied to prevent rotation.



FRAMING BRACKETS AND HEAVY DUTY JOIST HANGERS

Brackets for Beam to Beam or Beam to Brickwork/Concrete Connections

Framing Bracket for beam to beam Connections



Heavy Duty Joist Hanger for Large Sizes, Heavy Loads

Split Joist Hanger for Heavy Loads

General Description

Pryda Framing Brackets, **Split Joist Hangers** and **Heavy Duty Joist Hangers** have been preferred and used in Australia and overseas for more than 30 years. They are strong, easy to install, cost effective, well designed connectors for many timber beam to beam and beam to concrete or masonry joints.

The wide range of these brackets provides for all common timber sizes and for glued laminated timber beams. These brackets have been designed to achieve high design loads at low cost through incorporating Pryda's extensive design expertise and taking account of the results of laboratory testing at Monash University in Melbourne.

Advantages

In addition to being well designed and laboratory tested, **Pryda Framing Brackets** (formerly called Pryda Joist Hangers) are:

- **cost effective**, eliminating the need for costly on-site skilled labour to make special housing for joints etc.
- **easily fixed into position** with **Pryda Timber Connector Nails**, or self-drilling screws. These hangers have wide flanges for ease of nailing and screwing.

Framing Bracket Size Selection

To establish a suitable Framing Bracket size, determine:

1. **Joint groups** are specified in AS1720.1 SAA Timber Structures Code and in Pryda Timber Data. Groups for some timbers commonly used in Australia are:

Timbers	Joint Group	
	Dry	Green
North American Oregon, western Hemlock	JD4	J4
Heart-excluded Radiata pine and other softwoods	JD4	J4
Pine as above – heart-in	JD5	
Slash pine	JD3	J3
Ash type hardwoods from Victoria, NSW highlands and Tasmania	JD3	J3
Non-Ash type hardwoods from Queensland and NSW	JD2	J2

Note: The moisture content of "dry" timber must not exceed 15%. Where beams of different joint groups are to be joined together, apply the lower group to both. Also read General Notes.

2. **Applied loads** are to be calculated in accordance with appropriate standards. These loads (reactions) can also be obtained from **Pryda Build** software.
3. **Thickness of beam, truss or joist** to be supported and **supporting beam thickness**. Ensure 1 or 2 mm tolerance is considered when selecting the appropriate Bracket/Hanger for the given beam or truss thickness. The internal dimensions (thickness) of the bracket or hanger are provided in this guide.
4. **Fixing method**: nails or screws, but not both combined.
5. **Bracket/Hanger size** to be selected from the design capacity tables in this guide based on the above data.

PRYDA TIMBER CONNECTORS
Hangers & Truss Boots Guide

Description
This section covers properties of **Pryda Framing Brackets**, formerly known as Joist Hangers.

Features
Pryda Framing Brackets are suitable for many joints including:

- joist to beam
- jack to TG truss
- ceiling joist to hanger
- floor truss to beam
- pergola rafters to fascia
- beams to masonry

Installation
Fix Framing Brackets to supporting beams using either nails or screws, not both types of fasteners.
Suitable fasteners are:

Nails: Use only 35 x 3.15 mm, galvanised Pryda Timber Connector Nails or 50x2.87 mm Paslode Impulse galvanized screw hardened D head nails (Code: B20573V) driven through the metal- not into the holes. Note: The use of 50x2.87 nails should be restricted to timber thicknesses of 50mm or more. Extreme care must be taken when using machine driven nails (read General Notes in page 4 for more details)

Screws: **Pryda WTF12-35** (No. 12x35 mm Type 17 hex head screws)

See the Design Capacities table on the following page for the maximum number of nails or screws for each Framing Bracket.

Specification
Dimensions (sizes) are as shown here. All framing brackets are manufactured from G300 Z275 galvanised steel in 1.0 mm thickness.

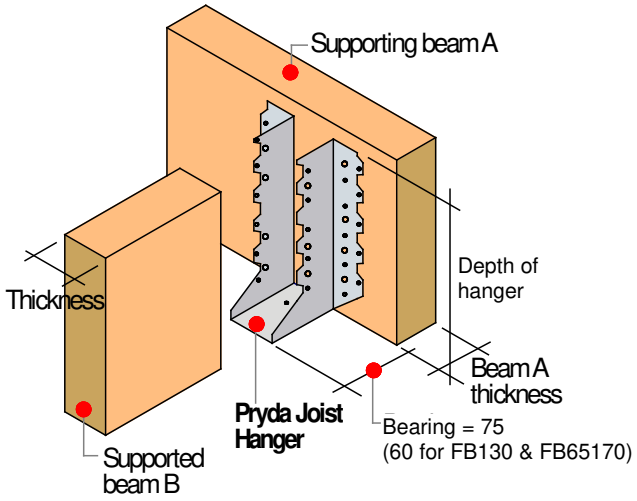
Packing
Framing Brackets are supplied in cartons as follows:

Product Codes	Carton Number
FB: 3860^, 5060^, 3590*, 3890*, 4290, 4590*, 5090^, 35120*, 38120^, 42120, 45120*, 50120^, 58120	45
FB: 35140^, 38140^, 45140*, 50140^	40
FB: 35180, 38180^, 45180*, 42170, 50180^, 58170	30
FB: 60130, 65170, 70200, 84200, 90200, 72163, 94152	25
FB: 42220, 45220, 50220^, 58220	15

Notes:

1. * Means also available as an individually barcoded **Merchant Pack**, with code starting "MPFB"
2. ^ Only available as an individually barcoded **Merchant Pack**. with code starting "MPFB".
3. Available in stainless steel are: FB3590, FB3890, FB4590 and FB5090- sold by piece.

Dimensions



Code	Thickness**	Depth
FB3860	39	60
FB3890	39	80
FB3590	36	82
FB35120	36	116
FB35180	36	182
FB4290	43	78
FB42120	43	112
FB42170	43	170
FB42220	43	218
FB4590	46	77
FB45120	46	110
FB45140	46	134
FB45180	46	176
FB45220	46	216
FB58120	59	104
FB58170	59	170
FB58220	59	210
FB65170	65	167
FB70200	71	194
FB72163	72	163
FB84200	85	197
FB90200	91	194
FB94152	94	152

Note: FB70200, FB72163, FB90200 and FB94152 are suited to support of **Pryda Longreach** or **Pryda Span floor trusses**.

** Thickness here refers to the internal dimension of the bracket between flanges, facilitating beam thickness.

Design Capacities per Framing Bracket

Framing Bracket Code	Fixing to Supporting Beam (Beam A)	1.2G+1.5Qf (Dead +Floor Live Load) Design Capacity ϕN_j (kN) for Joint Group			Fixing to Supported Beam (Beam B) mm	Wind Uplift (k1 = 1.14) Design Capacity ϕN_j (kN) for Joint Group			
		JD5	JD4	JD3		JD5	JD4	JD3	Max.
FB3860	6 nails	2.9	3.4	4.8	3 nails	2.4	2.8	3.9	4.5
	2 screws	2.1	3.0	4.3	2 screws	3.5	5.0	5.0	5.0
FB3590, FB3890 FB4290, FB4590	8 nails	3.8	4.6	6.4	4 nails	3.2	3.7	5.3	6.0
	4 screws	4.3	6.1	8.5	2 screws	3.5	5.0	5.0	5.0
FB35120 FB42120, FB45120	12 nails	5.3	6.4	8.9	6 nails	4.7	5.7	7.9	9.0
	6 screws	6.4	9.1	12.8	4 screws	7.1	10.0	10.0	10.0
FB45140	16 nails	7.0	8.4	11.7	8 nails	6.1	7.3	10.0	10.0
	6 screws	6.4	9.1	12.8	4 screws	7.1	10.0	10.0	10.0
FB58120	6 screws	6.4	9.1	12.8	4 screws	7.1	10.0	10.0	10.0
FB35180 FB42170, FB45180	20 nails	8.6	10.3	14.4	10 nails	7.4	8.9	12.4	15.0*
	8 screws	8.6	12.1	15.0*	6 Screws	10.6	15.0*	15.0*	15.0*
FB42220, FB45220	26 nails	10.8	12.9	15.0*	12 nails	8.6	10.7	14.5	15.0*
	10 screws	10.1	14.2	15.0*	8 Screws	14.2	15.0*	15.0*	15.0*
FB84200	22 nails	9.2	11.0	15.0*	12 nails	8.6	10.7	14.5	15.0*
	8 screws	8.6	12.1	15.0*	8 screws	14.2	15.0*	15.0*	15.0*
FB58170 FB65170	18 nails	7.8	9.3	13.1	6 nails	4.7	5.7	7.9	9.0
	6 screws	6.4	9.1	12.8	11 nails	8.1	9.8	13.6	15.0*
					6 screws	10.6	15.0*	15.0*	15.0*
FB58220 FB70200	24 nails	10.0	11.9	15.0*	12 nails	8.6	10.7	14.5	15.0*
	10 screws	10.1	14.2	15.0*	7 screws	12.3	15.0*	15.0*	15.0*
FB58170 FB72163	18 nails	7.8	9.4	13.0	3 nails	2.4	2.8	3.9	4.5
	6 screws	6.4	9.1	12.8	10 nails	7.4	8.9	12.4	15.0*
					6 screws	10.6	15.0*	15.0*	15.0*
FB90200	26 nails	10.8	12.9	15.0*	13 nails	9.6	11.6	15.0*	15.0*
	10 screws	10.1	14.2	15.0*	8 screws	14.2	15.0*	15.0*	15.0*
FB94152	18 nails	7.8	9.3	13.1	3 nails	2.4	2.8	3.9	4.5
	6 screws	6.4	9.1	12.8	10 nails	7.4	8.9	12.4	15.0*
					6 screws	10.6	15.0*	15.0*	15.0*

Notes:

1. Beam A = Supporting, Beam B = Supported.
2. The above tabulated capacities are for a minimum Beam A thickness of 35 mm.
3. Framing Bracket capacity has been limited to 15.0 kN (shown '*').
4. The values in the table apply directly for Category 1 joints. Refer General Notes in page 4 for advice on how the values should be reduced for Category 2 and Category 3 joints.
5. For FB58170 and FB65170 brackets, wind uplift values have been reduced due to a shorter end distance on the supported beam compared to the other brackets.
6. For FB70200 to FB94152, the wind uplift 3 nails fixing option allows for fixing to the chords only of I-beams or trusses.
7. Unless the top of the supported beam is provided with additional lateral restraints, the bracket must cover at least 60% of the depth of the supported beam.
8. Multiple Laminated Supporting Beams: Fasteners with longer lengths are required when Joist Hangers are fixed into a multiple laminated supporting beam. For double laminates, use 65 long nails or screws. Alternatively, for double or triple laminated supporting beams, additional fixings may be provided at hanger locations to laminate plies. Seek advice from the Engineer.
9. Gap between Supported and Supporting Beams: A maximum gap of 3mm is permitted without impeding on the design capacities. A larger gap would result in a rotation of the supported beam under downward loads and also could compromise on end distance requirements of nails resulting in reduced uplift capacities. Seek advice from a Pryda Engineer regarding treatment of large gaps.
10. The framing bracket shall not hang more than 10mm below the underside of Beam A, if the above table values are to be maintained. Seek advice from a Pryda engineer.
11. Capacities for the 50mm merchant pack ("MPFB50") range are not available in the above table. Use the values for the corresponding FB45.

JOIST HANGERS – HEAVY DUTY

Heavy Duty Hanger for Large Sizes, Heavy Loads

JHH.. Hanger

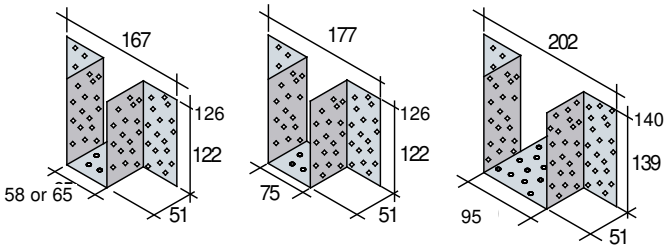
Features

Pryda Heavy Duty Joist Hangers are designed to support heavily loaded timber beams or two ply trusses on supporting timber beams or girder trusses. All have tongues for fixing to supports to resist twisting and rotation.

Specification

Steel:	1.2 mm Zincform® G300-Z275
Packing	10 per carton
Sizes:	As below:

Dimensions



JHH58 or JHH65 **JHH 75** **JHH100**

Note: The internal dimension of the JHH100 hanger is only 95mm, specially designed to cater for 2/45 thick beams, i-joists or trusses or 90mm thick floor trusses or equivalent.

JHH75 (internal dimension of 75mm) is suitable for 2/35 thick beams or trusses or 70mm thick floor trusses or equivalent.

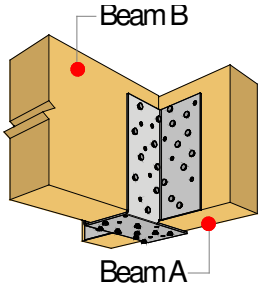
Installation

Correct installation of **Pryda Heavy Duty Joist Hangers** is essential to achieve the design capacities. Use only 35x3.15 mm galvanized **Pryda Timber Connector Nails** or 50x2.87 mm Paslode Impulse galvanized screw hardened D head nails (code B20573V). Extreme care must be taken when using machine driven nails, read note on page 4 for further details. Alternatively use **Pryda WTF12-35** screws (No. 12x35 mm Type 17 hex head)

Do not nail or screw within 30 mm of the ends of the timber beams or within 6 mm of beam edges.

Fix the tongue to the underside of supporting beam A with:

- minimum 4 nails for single laminate Beam A
- minimum 3 nails into each laminate for multi-laminate Beam A.



Design Capacities

Design capacities per Heavy Duty Hanger are as follows:

Nail Fixing – 35 x 3.15mm Pryda Timber Connector nails

Load Case	Design Capacities (ΦN_j) in kN for varying hangers and Joint Groups					
	JHH58, JHH65, JHH75 30 nails to Beam A 18 nails* to Beam B			JHH100 34 nails to Beam A 22 nails* to Beam B		
	JD5	JD4	JD3	JD5	JD4	JD3
1.35G	10.7	12.7	17.8	12.1	14.4	20.2
1.2G + 1.5Qf	12.9	15.4	21.6	14.6	17.5	24.5
1.2G + 1.5Qr	14.4	17.2	24.1	16.3	19.5	27.3
1.2G + Wd	24.4	29.0	30.0	27.6	30.0	30.0
Wind Uplift	13.0	15.4	13.7*	16.1	19.2	17.1*

Screw Fixing – Pryda WTF12-35 screws

Load Case	Design Capacities (ΦN_j) in kN for varying screw configuration and Joint Groups					
	Option 1 12 screws to Beam A 8 screws to Beam B			Option 2 20 screws to Beam A 16 screws to Beam B		
	JD5	JD4	JD3	JD5	JD4	JD3
1.35G	10.0	14.0	20.0	15.9	22.5	30.0
1.2G + 1.5Qf	12.2	17.0	24.3	19.3	27.2	30.0
1.2G + 1.5Qr	13.6	19.0	27.1	21.5	30.0	30.0
1.2G + Wd	20.1	28.0	30.0	30.0	30.0	30.0
Wind Uplift	14.4	20.0	28.7	26.0	30.0	30.0

Notes:

1. Beam A = Supporting Beam, Beam B = Supported Beam.

2. Wind capacities –
   The JD3 capacities (marked *) are based on 11 nails for JHH65 and JHH75 and 14 nails for JHH100 to satisfy end distance requirements (also see Note 3). Limiting capacity of the hangers = 30.0 kN

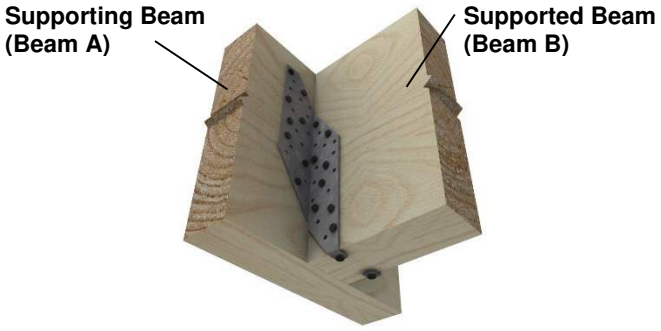
3. Supported Beam prone to Splitting - JHH brackets are not recommended to resist uplift loads for supported members using timbers that are prone to splitting (like hardwoods-JD3 joint group) unless additional precautions are taken. These can be in the form of pre-bored holes or provision of anti-split nailplates at ends of the supported beam.

4. Multiple Laminated Supporting Beams - Fasteners with longer lengths are required when JHH brackets are fixed into a multiple laminated supporting beam. For double laminates, use 65 long nails or screws. Alternatively, for double or triple laminated supporting beams, additional fixings may be provided at hanger locations to laminate plies. Seek advice from the Engineer.

5. The values in the table apply directly for Category 1 joints. Refer general Notes in page 4 for advice on how the values should be reduced for Category 2 and Category 3 joints.

6. **Beams must be at least 140mm deep**. For beams of lesser depths, the tabulated capacities may be adjusted by a factor equal to the ratio of the number of effective fasteners by the number of fasteners tabulated above. Unless the top of the supported beam is provided with additional lateral restraints, the bracket must cover at least 60% of the depth of the supported beam.

SPLIT JOIST HANGERS



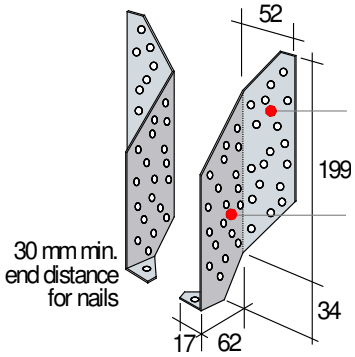
Features

Pryda Split Joist Hangers are:

- suitable for any practical thickness of timber beam.
- manufactured from heavy duty (1.6 mm) steel.

Specification

Steel:	1.6 mm Zincform® G300-Z275
Packing per carton	Supplied in cartons of 10, ie. 5 right hand and 5 left hand.
Code & Size:	Product code is JHHS. Size as below



Nail fixing, drive 16 nails per hanger into the supporting beam and 16 nails per hanger into the supported beam.

Screw fixing, refer below illustrations

Do not nail or screw within 30 mm of the ends of the timber beams

Installation

Use only 35 x 3.15 mm galvanized **Pryda Timber Connector Nails** or 50x2.87 mm Paslode Impulse galvanized screw hardened D head nails (code B20573V) driven though the metal, not through the holes, to fix these connectors. **Read note on machine driven nails in page 4.**

As an alternative, use **Pryda WTF12-35** (No. 12x35 mm Type 17 hex head screws). Refer below for the required number of screws and the associated design capacities.

Design Capacities

Design capacities for **a pair of Pryda Split Joist Hangers** in houses are:

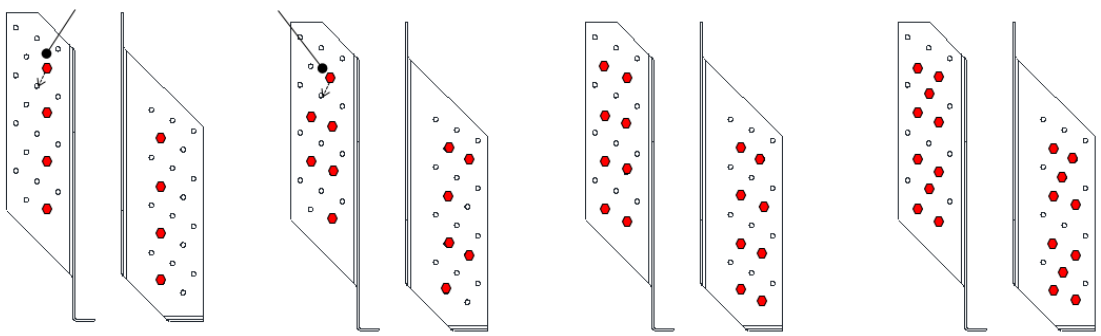
Load Case	Design Capacities (ΦN_j) in kN per PAIR of JHHS for Fasteners and Joint Group					
	35x3.15 mm Nails 16 nails per hanger per beam			Pryda WTF12-35 Screws 6 screws per hanger per beam (see Note 6 for options)		
	JD5	JD4	JD3	JD5	JD4	JD3
1.35G	10.4	12.4	13.3	9.9	14.0	19.8
1.2G + 1.5Qf	12.6	15.0	16.1	12.0	17.0	24.0
1.2G + 1.5Qr	14.1	16.8	17.9	13.4	19.0	26.8
1.2G + Wd or Wind uplift	23.8	28.3	29.8	19.9	28.1	39.6

Notes:

1. Beam A (Supporting Beam) and Beam B (Supported Beam) must be a minimum 240mm deep to achieve above nail capacities or 200mm to achieve screw capacities. See Note 6 for further screw options.
2. Wind capacities : The JD3 capacities are based on a reduced number of fasteners (for nails only) to satisfy end distance requirements (also see Note 3).
3. Supported Beam prone to Splitting: JHHS brackets are not recommended for supported members that are prone to splitting (like hardwoods-JD3 joint group) unless additional precautions are taken. These can be in the form of pre-bored holes or provision of anti-split nailplates at ends of the supported beam.
4. Multiple Laminated Supporting Beams - Fasteners with longer lengths are required when JHHS brackets are fixed into a multiple laminated supporting beam. For double laminates, use 65 long nails or screws. Alternatively, for double or triple laminated supporting beams, additional fixings may be provided at hanger locations to laminate plies. Seek advice from the Engineer.
5. The values in the table apply directly for Category 1 joints. Refer General Notes in page 4 for advice on how the values should be reduced for Category 2 and Category 3 joints.
6. Screw Fixing Options- Further to capacities given above using 6 screws per hanger per beam, different screw configurations may be used as illustrated below. Adjust capacities accordingly, by using a factor (n/6) where n = number of screws used per hanger per beam. **Limit maximum capacity to 40.0 kN irrespective of load case.**
7. Gap between Supported and Supporting Beams: A maximum gap of 3mm is permitted without impeding on the design capacities. Seek advice from a Pryda engineer for treatment of larger gaps.

SCREW FIXING OPTIONS

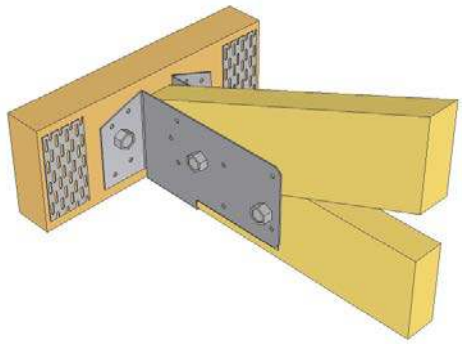
For supporting beam depths between 200 and 240mm, this screw must be relocated.



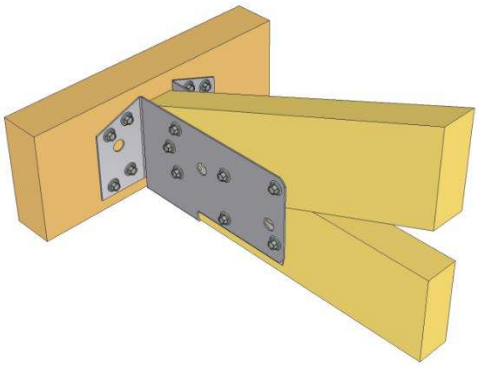
		4 screws	6 screws	8 screws	10 screws
Fixing per hanger per beam	-	**4 screws**	**6 screws**	**8 screws**	**10 screws**
Modified Capacity	-	Table Value x 0.67	Use Table Value	Table Value x 1.33	Table Value x 1.67
Min. Beam Depth	-	200mm	200mm	240mm	240mm

TRUSS BOOTS- MULTI-FIX

Metal brackets for truss to truss connections



Bolted Truss Boots



Screw Fixed Truss Boots

Application & Features

Pryda Multi-Fix Truss Boots are used to connect roof trusses or other roof members to supporting "girder" trusses and they comprise:

- **Joist Boots** –used for:
  - * End support of joists and beams
  - * Support of lightly loaded trusses from girder trusses
- **Truss Boots** – used for support of standard trusses.

See also **Pryda Heavy Duty Truss Boots**.

"Multi-fix" means that these connectors can be fixed with bolts or screws, or bolts and screws together.

Specification

Type	Product Code	Timber Thick.	Bolt Diam.	Application-Support of:
	TBJ35	35	12	eg: at hip ends
	TBJ35/T	35	12	Lightly loaded
	TBJ45	45	12	trusses
	TBJ70	70	12	
Truss Boot	TB35/12	35	12	Standard
	TB35/16	35	16/12	trusses
	TB45/16	45	16/12	

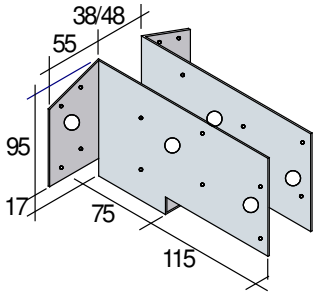
Steel	TBS – 1.2 mm G300 –Z275 Galvanized TBJ & TB – 1.6 mm G300 –Z275 Galvanized
Packing	10 per carton
Size	See dimensions following

Note: The TBJ35/T has a tongue to tie the supported truss to the girder.

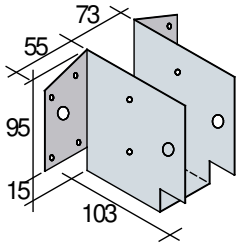
Dimensions

Dimensions of **Pryda Joist Boots** and **Truss Boots** are:

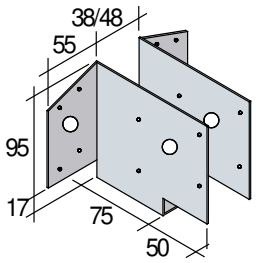
TBJ35, TBJ35/T, TBJ45



TB35, TB45



TBJ70



Installation

Fix **Pryda Multi-Fix Truss Boots** with fasteners as tabulated below:

Boot Type	To Supporting (Girder) Truss	To Supported Truss
TBJ35/45, TBJ70	2 M12 Bolts, or 8 Screws or Bolts + Screws	1 M12 Bolt or 8 Screws or Bolts + Screws
TB35/12	2 M12 Bolts, or 8 Screws or Bolts + Screws	2 M12 Bolts or 12 Screws or Bolts + Screws
TB35/16, TB45/16	2 M16 Bolts, or 8 Screws or Bolts + Screws	2 M12 Bolts or 12 Screws or Bolts + Screws

Notes:

1. M12 or ½ inch diameter must be fitted with nuts and 55 mm diameter or **50x50 mm square by 3 mm thick washers**. M16 or 5/8 inch diameter bolts must be fitted with nuts and 65 mm diameter or 57x57 mm square by 4 mm thick washers. See Pryda **Bolt Kits**
2. Screws are **Pryda WTF12-35** (No. 12x35 mm Type 17 hex head screws)

Installation of Pryda Multi-Fix Truss Boots

Bolts Only Installation:

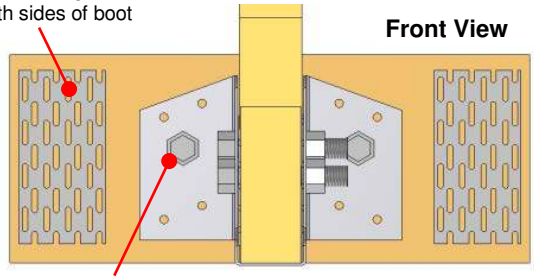
1. Fit the Boot flush with the bottom of the girder bottom chord and tack fix with two nails or screws. Drill the bolt hole and fit the bolt with the nut and washer on the face opposite to the boot. Ensure correct bolt length and specification is used, see page 30 for information.
2. Sit the incoming member into the boot and fix it in place. The clearance between the end of the incoming member and the face of the girder truss chord should not exceed 5 mm, preferably tight fitting. Drill the bolt hole (TBJ and TB types only) and fit the bolt(s) and nut(s).
3. Hammer apply anti-split Claw nailplates on the girder truss chord on both faces and both sides of the Boot, ie: 4 nailplates of:

Chord width (mm)	90	120,140	170,190
Anti-split Plate Size	3C2	4C2	6C2

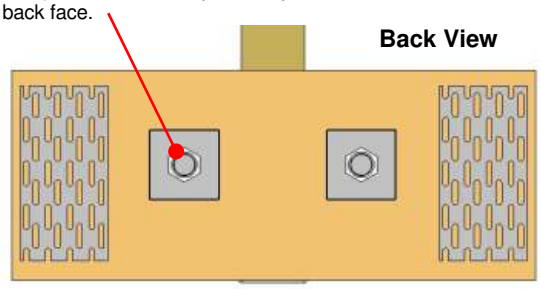
Note: Anti-split Claw nailplates are NOT required for boots fixed with M12 bolts into timbers that are not prone to splitting.

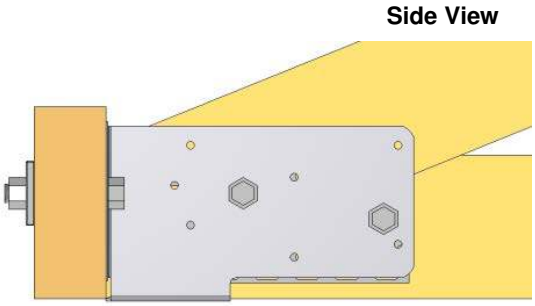
4. Important: The roof cladding (tiles, sheet steel etc) must be installed only after the truss boots are fully fixed into both the girder and supported truss, with all bolts and washers in place.

Anti-split nailplates (if necessary) on both faces of girder and both sides of boot



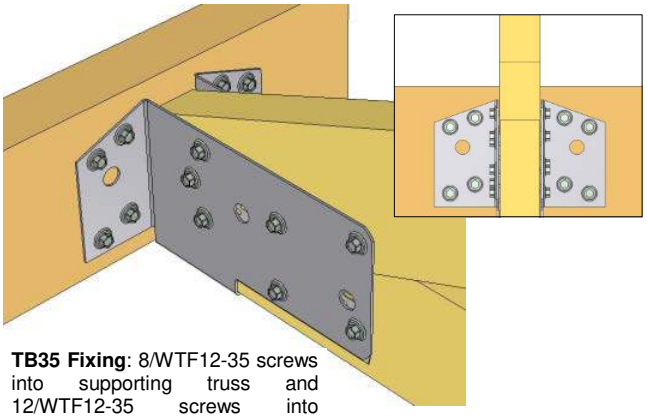
M12 (with 50x50 square washers) or M16 (with 65 diam or 57x57 square washers). Washers are required only on the back face.





Screws Only Installation:

1. If the girder truss is comprised of two or more laminates (ie: a "double" or "triple" girder), the laminates must be fixed together using one of the details specified in **Fixing Details For Double or Triple Girders** opposite.
2. Fit the Boot flush with the bottom of the girder bottom chord and tack fix with two screws. Drive the remaining screws.
3. Sit the incoming member into the boot and fix it in place. The clearance between the end of the incoming member and the face of the girder truss chord should not exceed 5 mm, preferably 0 mm. Drive screws into all holes.



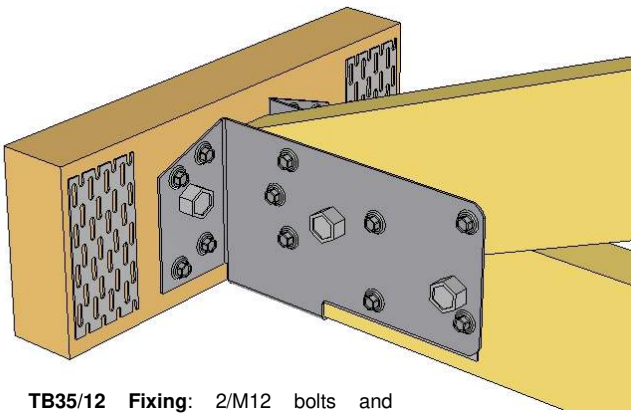
TB35 Fixing: 8/WTF12-35 screws into supporting truss and 12/WTF12-35 screws into supported truss.

Note: that anti-split nailplates are not required for Screws Only fixing.

Bolts & Screws Installation:

1. Install the Truss Boot and supported truss as per the Bolts Only method.
2. Drive the screws into all screw holes.

Important: The roof cladding (tiles, sheet steel etc) must be installed only after the truss boots are fully fixed into both the girder and supported truss.

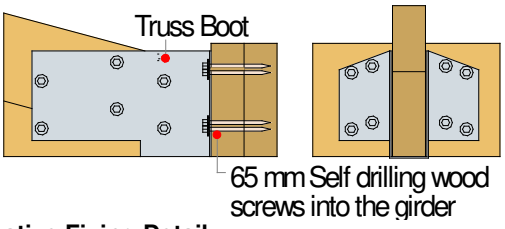


TB35/12 Fixing: 2/M12 bolts and 8/WTF12-35 screws into supporting truss and 2/M12 bolts 12/WTF12-35 screws into supported truss.

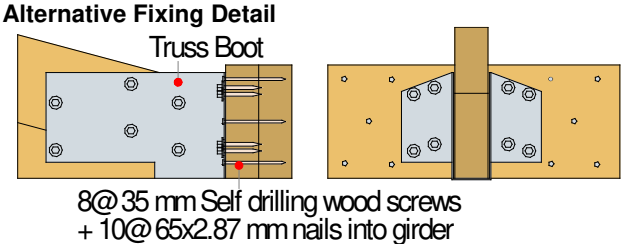
Fixing Details For Double & Triple Girders- Screws Only Fixing Option

DOUBLE GIRDERS

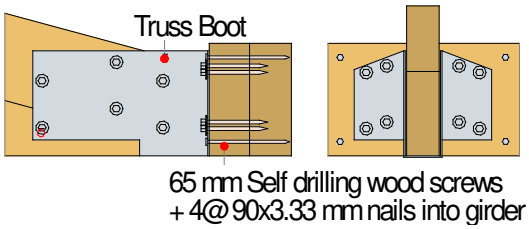
2@ 35 Girder Laminations – Preferred Fixing Detail



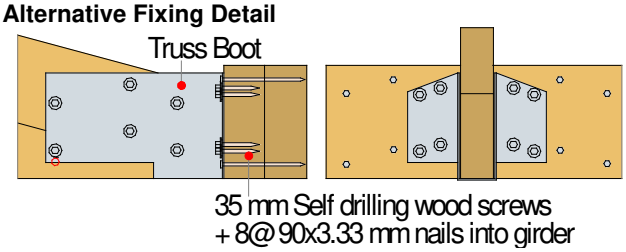
Alternative Fixing Detail



2@ 45 Girder Laminations – Preferred Fixing Detail

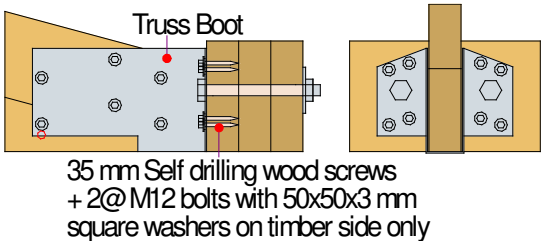


Alternative Fixing Detail

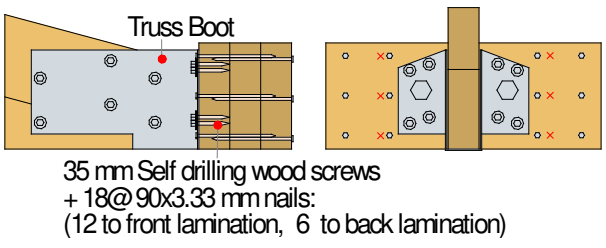


TRIPLE GIRDERS

3@ 35 or 3@ 45 mm Laminations – Preferred Fixing



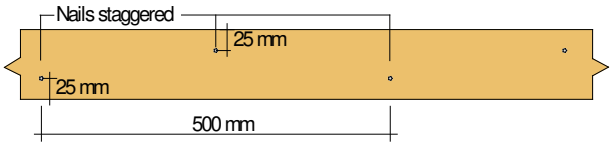
Alternative Fixing Detail



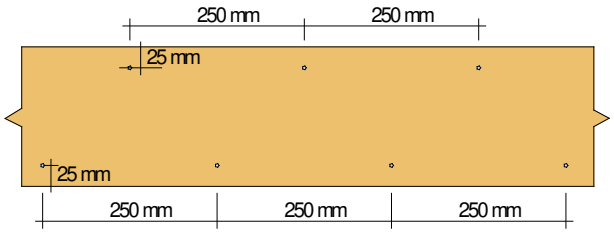
Notes:

1. Nails at the Truss Boot are to be spaced 70mm (min) apart along the grain and 40 mm (min) apart across the grain. They should be as close to the Truss Boot as practical, but not further away than the depth of the member.
2. Use the details for 35 mm laminates for timber thickness between 35 and 40 mm, and the 45 mm details for timber thickness between 41 and 50 mm.
3. All screws are to be **Pryda WTF12-35** (No. 12x35 mm Type 17 hex head screws) or **Pryda WTF12-65**.
4. For all double and triple girder trusses, the chords (top and bottom) and webs are to be nailed at:

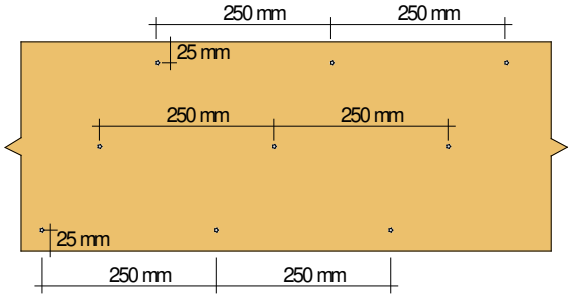
Timber Width	Nail Rows & Maximum Spacing
Up to 100 mm	2 rows (staggered) at 500 mm
101 - 200 mm	2 rows (staggered) at 250 mm
201 - 300 mm	3 rows (staggered) at 250 mm



Timber Up to 100 mm Chords or Webs



101 - 200 mm Chords or Webs



201 -300 mm Chords or Webs

Design Capacities for Pryda Truss Boots

Determine Truss Boot capacities in the following manner:

For downward loads: design capacity is the lesser of the values in Table TB1 (at Girder truss) and Table TB2 (at supported truss) for the corresponding load case.

For wind uplift: design capacity is the lesser of the G-Wu values in Table TB1 (at Girder truss) and Table TB3 (at supported truss)

Table TB1: Girder Truss Capacity
(Downward and Uplift – due to fasteners)

Boot Code	Load Case	Design Capacity ΦNj (kN) - Joint Group:					
		JD3			JD4		
		Minimum Girder Thickness (mm)					
		35	45	70	35	45	70
Bolts Only							
TBJ35, TBJ35/T TBJ45 TB35/12 TBJ70	G	6.9	8.9	10.3	5.1	6.5	8.6
	G + Qr	9.4	12.0	13.9	6.9	8.8	11.6
	G + Wd G-Wu	13.8	17.6+	17.6+	10.2	13.1	17.1
TB35/16 TB45/16	G	9.2	11.9	14.0	6.8	8.7	12.2
	G + Qr	12.5	16.0	21.1	9.2	11.8	16.5
	G + Wd	18.5	23.4+	23.4+	13.6	17.4	23.4+
	G-Wu	18.5	20.0*	20.0*	13.6	17.4	20.0*
Screws Only							
All other truss Boots	G	14.1	14.1	14.1	10.0	10.0	10.0
	G + Qr	19.1	19.1	19.1	13.5	13.5	13.5
	G + Wd	24.0+	24.0+	24.0+	20.1	20.1	20.1
	G-Wu	20.0*	20.0*	20.0*	20.0*	20.0*	20.0*
Bolts & Screws							
TBJ35 TBJ35/T TBJ45 TB35/12 TBJ70	G	20.2	22.0	25.0*	15.5	17.0	19.0
	G + Qr	25.0*	25.0*	25.0*	21.0	22.5	25.0*
	G + Wd	25.0*	25.0*	25.0*	25.0*	25.0*	25.0*
	G-Wu	20.0*	20.0*	20.0*	20.0*	20.0*	20.0*
TB35/16 TB45/16	G	22.2	25.0*	25.0*	15.5	17.0	19.0
	G + Qr	25.0*	25.0*	25.0*	21.0	22.5	25.0*
	G + Wd	25.0*	25.0*	25.0*	25.0*	25.0*	25.0*
	G - Wu	20.0*	20.0*	20.0*	20.0*	20.0*	20.0*

Note: "Screws Only" capacities for 70 mm girder trusses (double girders), the laminates of the girder truss must be fixed together in accordance with the Fixing Details for Double & Triple Girders requirements on pages 17 and 18.

Table TB2: Supported Truss Capacity
(Downward – due to Bearing + Fasteners)

Truss Boot Code	Load Case	Design Capacity ΦNj (kN) - Joint Group:					
		JD3			JD4		
		Fixing Option:					
		Bolts only	Screws only	Bolts + Screws	Bolts only	Screws only	Bolts + Screws
TBJ70	G	25.0*	25.0*	25.0*	21.0	25.0*	25.0*
	G + Qr	25.0*	25.0*	25.0*	25.0*	25.0*	25.0*
	G + Wd	25.0*	25.0*	25.0*	25.0*	25.0*	25.0*
TBJ35 TBJ35/T	G	13.6	21.8	24.9	9.4	15.1	17.4
	G + Qr	21.5	25.0*	25.0*	14.8	22.5	25.0*
	G + Wd	25.0*	25.0*	25.0*	17.0	25.0*	25.0*
TBJ45	G	17.6	25.0*	25.0*	12.1	17.3	20.2
	G + Qr	25.0*	25.0*	25.0*	19.2	25.0*	25.0*
	G + Wd	25.0*	25.0*	25.0*	25.0	25.0*	25.0*
TB35/12	G	16.0	25.0*	25.0*	11.2	18.4	22.4
	G + Qr	24.8	25.0*	25.0*	17.2	25.0*	25.0*
	G + Wd	25.0	25.0*	25.0*	20.6	25.0*	25.0*
TB35/16	G	17.9	25.0*	25.0*	12.5	18.4	23.8
	G + Qr	25.0*	25.0*	25.0*	19.0	25.0*	25.0*
	G + Wd	25.0*	25.0*	25.0*	23.3	25.0*	25.0*
TB45/16	G	23.1	25.0*	25.0*	16.2	20.5	25.0*
	G + Qr	25.0*	25.0*	25.0*	25.0*	25.0*	25.0*
	G + Wd	25.0*	25.0*	25.0*	25.0*	25.0*	25.0*

Notes:

1. Load case symbols are: (refer page 4 for descriptions)
   G = 1.35G G+Qr = 1.2G+1.5Qr
   G+Wd = 1.2G+Wd G-Wu = Wind uplift
2. Girder timber thicknesses are minimums. Supported truss thicknesses are minimums for bolt capacity and maximums (3 mm tolerance for two nailplates) for fitting the timber into the boot. 70 mm thickness can be made from 2@ 35 mm trusses, nail or bolt laminated together as specified by the truss designer.
3. Bearing + fasteners capacities above apply to standard heel joints with a 10 mm minimum square cut or non-heel ends of cut-off and mono trusses.
4. **The values in the table apply directly for Category 1 joints.** Refer General Notes in page 4 for advice on how the values should be reduced for Category 2 and Category 3 joints.
5. For other design conditions, contact a Pryda design office.
6. The capacities with an asterisks (*) are governed by steel strength of the truss boot.
7. The capacities with a plus sign (+) are governed by steel strength screw or bolt bearing on steel.
8. Use appropriate bolt lengths:
   - Min. 100mm bolts for up to 2/35 trusses (use Pryda OBS12/100 or Pryda OBS16/110).
   - Min. 120mm bolts for up to 2/45 trusses.
   - Min. 140mm bolts for up to 3/35 trusses.

Table TB3: Supported Truss Capacity

(Uplift– due to fasteners)

Boot Code	Thick-ness (mm)	Fixing Method	Des.Cap. ΦNj (kN) Wind Uplift (G-Wu) k_1 = 1.14	
			JD3	JD4
TBJ35 TBJ35/T	35	8 screws	20.0*	18.0
		1/M12 bolt	5.5	4.1
		Bolt + screws	20.0*	20.0*
TBJ45	45	8 screws	20.0	18.0
		1/M12 bolt	7.1	5.2
		Bolt + screws	20.0*	20.0*
TBJ70	70	6 screws	18.0	13.5
		1/M12 bolt	11.0	8.1
		Bolt + screws	20.0*	20.0*
TB35/12 TB35/16	35	12 screws	20.0*	20.0*
		2/M12 bolts	11.1	8.1
		Bolts + screws	20.0*	20.0*
TB45/16	45	12 screws	20.0*	20.0*
		2/M12 bolts	14.2	10.5
		Bolts + screws	20.0*	20.0*

Notes:

1. For wind uplift, take the lower of the capacities for the supported truss and girder, ie: look up both tables.

2. **The values in the table apply directly for Category 1 joints.** Refer General Notes in page 4 for advice on how the values should be reduced for Category 2 and Category 3 joints.

3. The capacities with '*' are governed by steel strength of the truss boot.

Examples

Below are examples of selecting a suitable Pryda Truss Boot based on the Design Capacities tables.

Example 1:

Design data:

Supported truss thickness	35 mm
Supported truss timber	MGP12 dry pine (JD4)
Girder truss thickness	45 mm
Girder truss timber	F17 dry hardwood (JD3)
Preferred fixing method	Screws

Design Loads:

Load case	1.35G	G + Qr	G + Wd	G – Wu
Load (kN)	3.5	6.8	5.4	1.6

Try TBS35: - which suits the 35 mm supported truss:

Looking up tables: TB1(JD3, 45) and TB2(JD4) for: Screws only -

Load Case	TB1	TB2	Design	Load	Suit
G =	14.1	15.1	14.1	3.5	OK
G + Qr =	19.1	20.0	19.1	6.8	OK
G + Wd =	20.0	20.0	20.0	5.4	OK

Uplift:

Looking up Table TB3 for JD4 – Screws Only:

Load Case	TB1	TB3	Design	Load	Suit
G - Wu	15.0	13.5	13.5	1.6	OK

Therefore, a TBS35 is suitable.

Example 2:

Design data:

Supported truss thickness	35 mm
Supported truss timber	MGP12 dry pine (JD4)
Girder truss thickness	70 mm
Girder truss timber	F17 dry hardwood (JD3)
Preferred fixing method	Bolts
Design Loads:	
1.35G	1.5 kN
1.2G+1.5Qr	4.8 kN
1.2G+Wd	7.3 kN
0.9G-Wu (Wind uplift)	-11.9 kN

Try TBJ35: - which suits the 35 mm supported truss:

Looking up tables TB1(JD3, 70) and TB2 (JD4) for TBJ35, Bolts only:

Load Case	TB1	TB2	Design	Load	Suit
G =	9.1	9.4	9.1	1.5	OK
G + Qr =	12.2	14.8	12.2	4.8	OK
G + Wd =	17.6	17.0	17.0	7.3	OK

Uplift:

Looking up Table TB3 for TBJ35, JD4 – Bolt Only and TB1, TBJ35, JD3, Bolts only

Load Case	TB1	TB3	Design	Load	Suit
G - Wu	17.6	3.6	4.1	11.9	NS

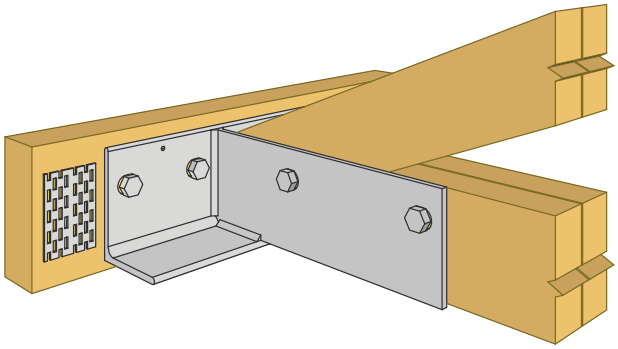
Try screws only – for wind uplift:

Load Case	TB1	TB3	Design	Load	Suit
G - Wu	20.0	18.0	18.0	11.9	OK

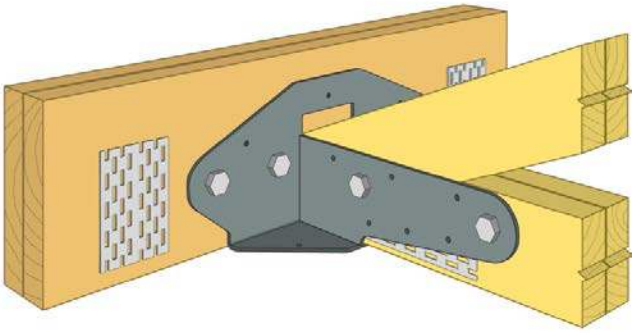
Therefore, a TBJ35 is suitable with screw fixing of supported truss.

TRUSS BOOTS – HEAVY DUTY

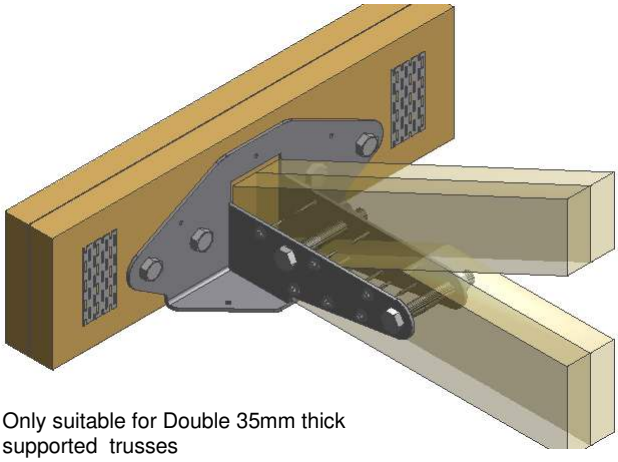
Steel Brackets for Heavy Roof Truss to Truss Connections



TB80 Truss Boot



TBHD75 Truss Boot



Only suitable for Double 35mm thick supported trusses

TBHD75/T Truss Boot with Twin Fin

Features

The long anti-rotation fin and heavy duty steel of **Pryda Heavy Duty Truss Boots**, combined with the inherent high stiffness of the carried truss, prevents twisting of the bottom chord of the girder. Consequently, anti-rotation bars are not necessary. Useful variations of this product have welded hinges to allow for any angle (TB80V).

The **TBHD75 and TBHD75/T** Truss Boots have further benefits which include:

- Special shape to reduce weight, and rounded edges for easier handling
- Improved bearing capacity for supported truss.
- A unique slot in the back of the boot to eliminate the need to cut 6-10mm from the heel of the supported truss.
- Additional screw fixings into supported trusses to improve uplift capacity, if required.
- Nail holes in the back flange to allow the boot to be easily located on the girder truss prior to drilling for bolts.
- Holes in the base to allow screw to hold any incoming angled member at ceiling level (such as a hip truss) in position. These holes are countersunk to allow flush finish if required.
- The twin-fin of TBHD75/T has been specially developed to enhance uplift capacities and meet the demands of girder to girder connections in cyclonic regions. Note: Screws are required in combination with bolts to achieve the desired uplift capacities.

Installation

Pryda Heavy Duty Truss Boots are installed with 6/ M16 bolts and with **63x4 mm square washers** on all surfaces where the bolt head or nut bears directly on the timber. Anti-split **Claw nailplates** are to be installed central to the bolt line on both faces of the girder and on both sides of the truss boot at approx. 80mm away from the centre of the outside bolts. Refer to bolt specification in page 30 for further information.

Screws used on the TBHD75/T Truss Boot are to be **Pryda WTF12-35** (No. 12x35 mm Type 17 hex head screws)

Specification

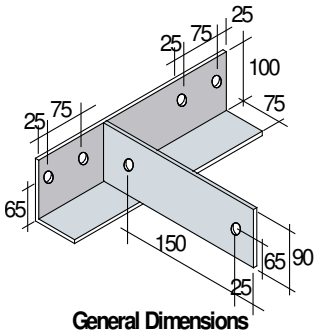
Pryda Heavy Duty Truss Boots are made to the following specification:

Sizes:	See Dimensions next page
Steel:	Mild steel, hot dipped galvanized- thickness: - 5 mm for TB80 range - 4 mm for TBHD75, TBHD75/T
Product Codes:	TB80C, TB80V, TBHD75, TBHD75/T C denotes anti-rotation fin located centrally V denotes variable angle (hinged)
Packing	TBHD75 - 4 per bundle TBHD75/T - sold as singles TB80C, TB80V - sold as singles

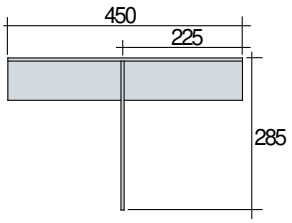
Important: The roof cladding (tiles, sheet steel etc) must be installed only after the truss boots are fully fixed into both the girder and supported truss, with all bolts and washers in place.

Dimensions

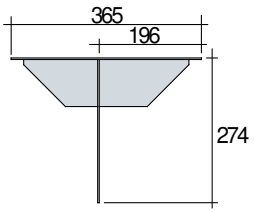
The dimensions of **Heavy Duty Truss Boots** are :



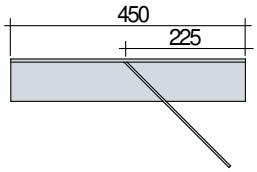
General Dimensions



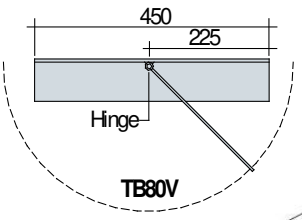
TB80C



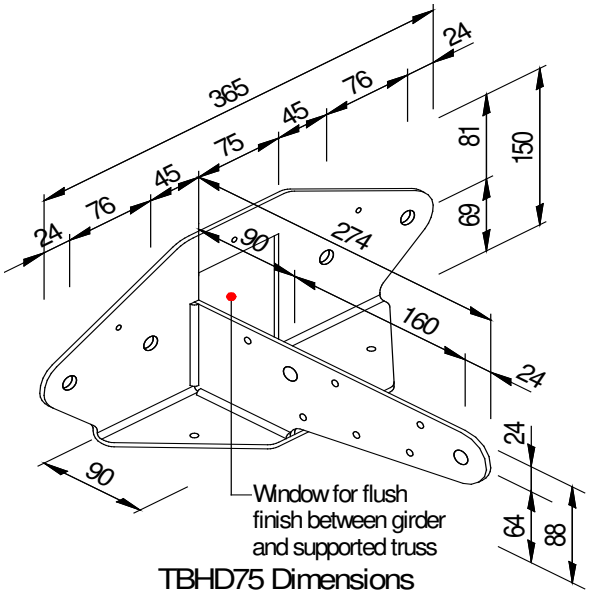
TBHD75



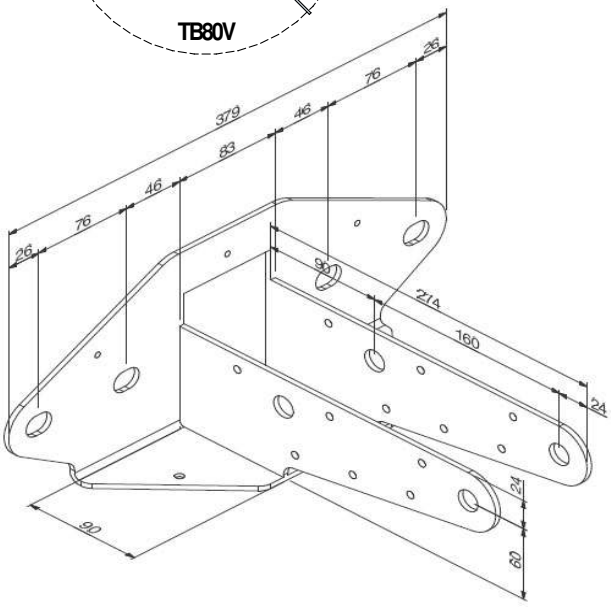
TB80C45/R



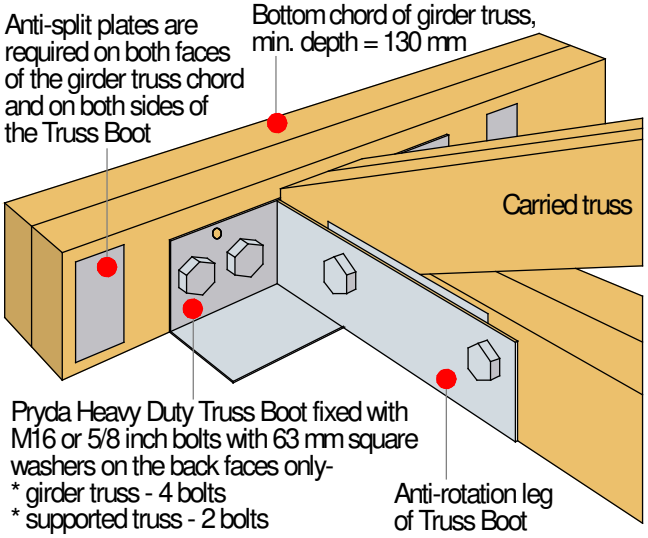
TB80V



TBHD75 Dimensions

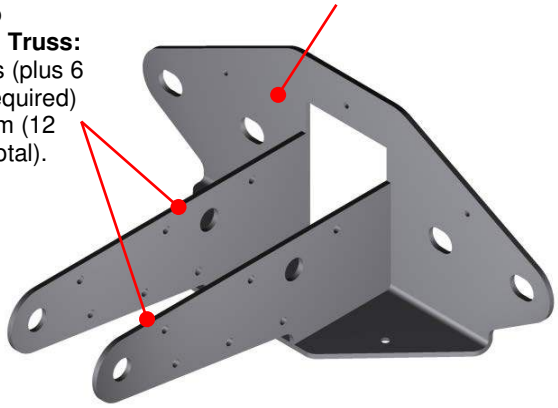


Applications



Fixing into Girder Truss:
4/M16 bolts + washers

Fixing into Supported Truss:
2/M16 bolts (plus 6 screws if required) on each arm (12 screws in total).



TBHD75/T
Suitable for 2/35 supported trusses only, to achieve large tie-down capacities

Design Capacities for TBHD75 (also applicable for TB80C and TB80V)

Table- **JD4**

Girder Truss bottom Chord using JD4 Joint Group (eg: MGP12, MGP15, Hychord, E-beam etc) with a minimum 130mm depth.

Girder Truss Thickness (mm)	Supported Truss Thickness	Design Capacities (kN) for varying Load Cases and Supported Truss Joint Groups											
		Supported Truss = JD5				Supported Truss = JD4				Supported Truss = JD3			
		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift	
				Bolts Only	*Bolts+Screws*			*Bolts Only*	*Bolts+Screws*			*Bolts Only*	*Bolts+Screws*
35	35	13.6	18.3	7.8	15.8	12.0	16.2	10.9	22.2	13.6	18.3	14.8	24.0
	2/35	13.6	18.3	15.6	23.6	13.6	18.3	21.7	27.2	13.6	18.3	27.1	27.1
45	35	14.5 (1)	22.3 (1)	6.9	14.9	15.3	20.8	10.9	22.2	17.4	23.6	14.8	30.0 (2)
	2/35	17.4	23.6	15.6	23.6	17.4	23.6	21.7	30.0 (2)	17.4	23.6	29.5	30.0 (2)
2/35	35	14.5 (1)	22.3 (1)	6.9	14.9	17.3 (1)	28.3 (1)	10.9	22.2	24.3 (1)	33.0	14.8	29.0
	2/35	24.4	33.0	15.6	23.6	24.4	33.0	21.7	30.0 (2)	24.4	33.0	29.5	30.0 (2)
3/35	35	14.5 (1)	22.3 (1)	6.9	14.9	17.3 (1)	28.3 (1)	10.9	22.2	24.3 (1)	35.6	14.8	29.0
	2/35	26.4	35.6	15.6	23.6	26.4	35.6	21.7	30.0 (2)	26.4	35.6	29.5	30.0 (2)

Table- **JD3**

Girder Truss bottom Chord using JD3 Joint Group (eg: F17, e-beam+ etc) with a minimum 130mm depth.

Girder Truss Thickness (mm)	Supported Truss Thickness	Design Capacities (kN) for varying Load Cases and Supported Truss Joint Groups											
		Supported Truss = JD5				Supported Truss = JD4				Supported Truss = JD3			
		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift	
				Bolts Only	*Bolts+Screws*			*Bolts Only*	*Bolts+Screws*			*Bolts Only*	*Bolts+Screws*
35	35	14.5 (1)	22.3 (1)	7.8	15.8	17.3 (1)	28.3 (1)	10.9	20.9	18.5	24.9	14.8	30.0 (2)
	2/35	18.5	24.9	15.6	23.6	18.5	24.9	21.7	30.0 (2)	18.5	24.9	29.5	30.0 (2)
45	35	14.5 (1)	22.3 (1)	6.9	14.9	17.3 (1)	28.3 (1)	10.9	22.2	23.7	32.0	14.8	30.0 (2)
	2/35	23.7	32.0	15.6	23.6	23.7	32.0	21.7	30.0 (2)	23.7	32.0	29.5	30.0 (2)
2/35	35	14.5 (1)	22.3 (1)	6.9	14.9	17.3 (1)	28.3 (1)	10.9	22.2	24.3 (1)	40.0 (2)	14.8	29.0
	2/35	28.8	40.0 (2)	15.6	23.6	27.1 (1)	40.0 (2)	21.7	30.0 (2)	31.6	40.0 (2)	29.5	30.0 (2)
3/35	35	14.5 (1)	22.3 (1)	6.9	14.9	17.3 (1)	28.3 (1)	10.9	22.2	24.3 (1)	40.0 (2)	14.8	29.0
	2/35	28.8	40.0 (2)	15.6	23.6	27.1 (1)	40.0 (2)	21.7	30.0 (2)	31.6	40.0 (2)	29.5	30.0 (2)

Notes:

(1) The above capacities (except *Bolts+Screws*) are valid for TB80C and TB80V truss boots. See note (3) for steel limits.

(2) The values with a superscript (1) refers to the design capacities that are limited by bearing- i.e crushing of the supported truss against the seat of the truss boot.

(3) The values (30 kN) with a superscript (2) refers to the capacities that are limited by steel strength of TBHD75 in uplift. The limiting steel value for downward loading is 40 kN. The limiting steel value for TB80V equals 26 kN (downward loads) and 18.0 kN (uplift).

(4) 2/35 refers to 35mm thick double laminated truss and 3/35 refers to 35mm thick triple laminated truss.

(5) The values in the table apply directly for Category 1 joints. Refer General Notes in page 4 for advice on how the values should be reduced for Category 2 and Category 3 joints.

(6) The values related to **1.35G (Dead only)** load case should be checked against reactions arising from 1.35G load case. Similarly **1.2G+1.5Q (Dead + Roof Live)** capacities should be checked against factored reactions from 1.2G+1.5Q load case.

(7) A 120mm deep bottom chord for girder trusses may be used when supporting concrete tile roofs in low wind areas (up to N2 wind class) where wind uplift is not critical or when the truss boot is located at a panel point.

(8) It is important to use the specified washer (63 x 5 square) against the timber face to achieve full capacity of M16 bolts.

Design Capacities for the *Twin Fin* TBHD75/T (suitable only for double 35mm supported trusses)

Table: JD4

Girder Truss bottom Chord using JD4 Joint Group (eg: MGP12, MGP15, Hychord, E-beam etc) with a minimum

Girder Truss Thickness (mm)	Supported Truss Thickness	Design Capacities (kN) for varying Load Cases and Supported Truss Joint Groups											
		Supported Truss = JD5				Supported Truss = JD4				Supported Truss = JD3			
		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift	
				Bolts Only	*Bolts+Screws*			*Bolts Only*	*Bolts+Screws*			*Bolts Only*	*Bolts+Screws*
35	2/35	13.6	18.3	15.6	27.2 (3)	13.6	18.3	21.7	27.2 (3)	13.6	18.3	27.2 (3)	27.2 (3)
45	2/35	17.4	23.6	15.6	32.6	17.4	23.6	21.7	34.9 (3)	17.4	23.6	29.5	34.9 (3)
2/35	2/35	24.4	33.0	15.6	32.6	24.4	33.0	21.7	45.7	24.4	33.0	29.5	48.8 (3)
3/35	2/35	26.4	35.6	15.6	32.6	26.4	35.6	21.7	45.7	26.4	35.6	29.5	50.0 (2)

Table: JD3

Girder Truss bottom Chord using JD3 Joint Group (eg: F17, E-beam+ etc) with a minimum 130mm depth.

Girder Truss Thickness (mm)	Supported Truss Thickness	Design Capacities (kN) for varying Load Cases and Supported Truss Joint Groups											
		Supported Truss = JD5				Supported Truss = JD4				Supported Truss = JD3			
		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift		1.35G (Dead Only)	1.2G+1.5Q (Dead+Live)	Wind Uplift	
				Bolts Only	*Bolts+Screws*			*Bolts Only*	*Bolts+Screws*			*Bolts Only*	*Bolts+Screws*
35	2/35	18.5	24.9	15.6	32.6	18.5	24.9	21.7	36.9 (3)	18.5	24.9	29.5	36.9 (3)
45	2/35	23.7	32.0	15.6	32.6	23.7	32.0	21.7	45.7	23.7	32.0	29.5	47.4 (3)
2/35	2/35	28.8	42.7	15.6	32.6	28.8	42.7	21.7	45.7	28.8	42.7	29.5	50.0 (2)
3/35	2/35	28.8	42.7	15.6	32.6	28.8	42.7	21.7	45.7	28.8	42.7	29.5	50.0 (2)

Notes:

(1) 2/35 refers to 35mm thick double laminated truss and 3/35 refers to 35mm thick triple laminated truss.

(2) The values (50 kN) with a superscript (2) refers to the capacities that are limited by steel strength of TBHD75/T in uplift. The limiting steel value for "down-loading' is 50 kN.

(3) Uplift Capacities - The values with a superscript (3) are limited by 4/M16 bolt fixings in girder truss. U.N.O in Notes 2 and 3, fixing into supported truss governs for UPLIFT.

(4) The values in the table apply directly for Category 1 joints. Refer general Notes in page 4 for advice on how the values should be reduced for Category 2 and Category 3 joints.

(5) The values related to **1.35G (Dead only)** load case should be checked against reactions arising from 1.35G load case. Similarly **1.2G+1.5Q (Dead + Roof Live)** capacities should be checked against factored reactions from 1.2G+1.5Q load case.

(6) A 120mm deep bottom chord for girder trusses may be used when supporting concrete tile roofs in low wind areas (up to N2 wind class) where wind uplift is not critical or when the truss boot is located at a panel point.

(7) It is important to use the specified washer (63 x 5 square) against the timber face to achieve full capacity of M16 bolts. Required only against Girder truss when using TBHD75/T.

Heavy Duty Truss Boot Uplift Reinforcement

Where necessary, TB80 and TBHD75 truss boots can be reinforced to provide additional uplift resistance as follows:

Design Capacities:

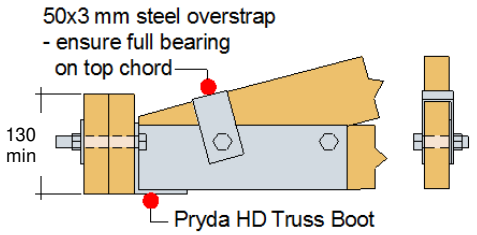
Uplift Capacity (kN) for Timber Joint Group & Strength Group:						
Supp. Thick.	**J4** (S6)	**J3** (S4)	**J2** (S3)	**JD5** (SD7)	**JD4** (SD6)	**JD3** (SD5)
35	11.5	18.3	25.2	13.9	18.3	25.2
70	20.6	31.4	35.0	21.4	26.7	35.0

Notes:

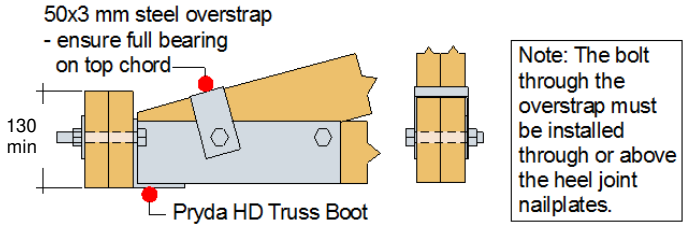
1. The capacities for details with the overstrap, are limited by either 4@ M16 bolts bearing on carrying truss or based on Details TD-06/TD-07 published by TRADAC (December 2000). For these tabulated capacities, the bolt through the over-strap must be installed through or above the heel joint nailplates.

2. The bottom chord of carrying (girder) truss shall be a minimum of 130 mm deep. A 120mm deep bottom chord for girder trusses may be used provided the truss boot is located at a panel point or when uplift capacity is not critical

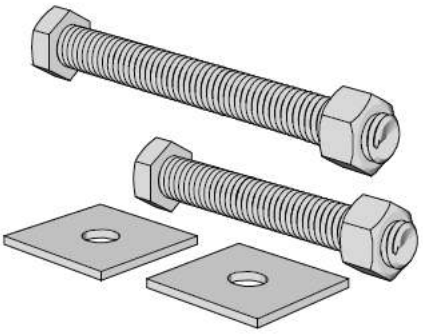
3. Fix the over-angle to the TB80 or TBHD75 with the M16 H.S bolt and nut used for fixing the Truss Boot to the supported truss. Install 63x5 mm square washers where the bolt or nut bears directly onto timber.



For 35 mm Supported Trusses



For 70 mm Supported Trusses



Bolt Kits for Truss Boots

Bolt Specifications

Hot dipped galvanised **Kits** of bolts, nuts and washers are available to suit all bolt fixed truss boots. Details are:

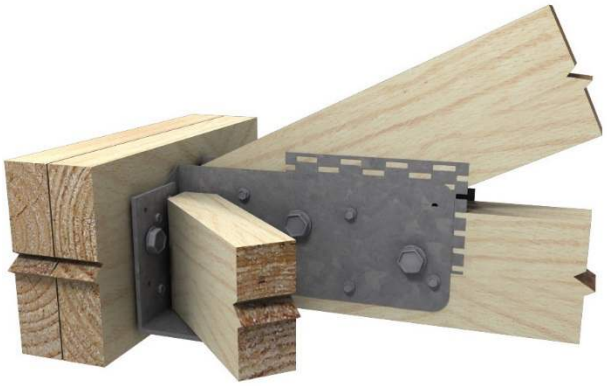
Product Code:	**OBK312**	**OBK316**	**OBK816**
To suit:	TBJ35/45/70 TB35/12	TB35/16, TB45/16	TB80, TBHD75
Packed:	80	80	60
Bolts (mm):	2/M12x65 into supported truss 2/M12x100 into supporting truss (up to 2/35mm thk)	2/M12x65 into supported truss 2/M16x110 into supporting truss (up to 2/35mm thk)	2/M16x110 into supported truss 4/M16x110 into supporting truss (up to 2/35mm thk)
Washers (square):	4/ 55x3	2/ 55x3 2/ 63x5	6/ 63x5

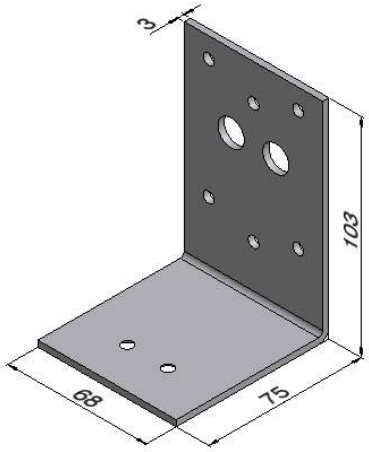
Note: Adopt the following bolt specification for supported truss thickness that are not included above. All bolts shall be commercial hex-head, Class 4.6 to AS 1111-2000 or high strength Class 8.8 to AS1252-1996. Cup-head bolts are not acceptable

- Min. 130mm long bolts for up to 2/45 trusses
- Min. 150mm long bolts for up to 3/35 trusses

HIP SUPPORT BRACKETS (HSB)

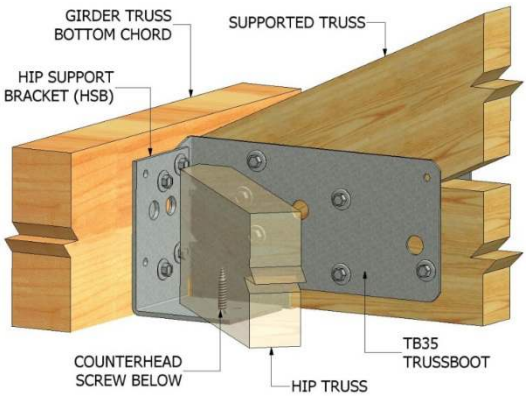
Supports hip trusses/rafters at girder truss junctions





Application & Features

Hip Support Brackets (HSB) are used to connect hip trusses or hip rafters to supporting "girder" trusses at a girder to girder junction.



Specifications

Steel	3.0 mm G300 – Galvanized
Packing	50 per carton
Size	75 x 68 x 103 x 3mm thick

Design Capacities

1. Table 1 – Downward Loads

Joint Group of Supporting Truss	HSB Capacity (kN) Fixing: 4/Pryda WTF12-35 screws into supporting truss		HSB+TB35 Capacity (kN) Fixing: 8/Pryda WTF12-35 screws into supporting truss	
	1.35G	1.2G + 1.5Qr	1.35G	1.2G + 1.5Qr
JD4	4.8	6.5	9.3	12.6
JD3	6.8	9.2	13.2	17.8

2. Table 2 -Uplift Loads

Minimum Joint Group	Uplift Capacity (kN)	
	HSB	HSB + TB35
JD5	1.5	13.2
JD4	2.0	18.7
JD3	2.5	20.0

Notes on Table 1

(i) The HSB+TB35 capacity in the above table is the same as the TB35 capacity by itself as it is based on the 8/Pryda WTF12-35 screws into the supporting truss. These values therefore relate to the maximum combined load that can be resisted (i.e. load from hip truss + supported girder)

(ii) Screws with longer lengths are required when HSBs are fixed into multiple laminated trusses. For double laminates, use 65mm long screws into supporting truss.

Notes on Table 2

(i) **T**he Uplift Capacity of HSB is based on 1/No.12 x 35mm Type 17 screw in withdrawal. This value relates to the maximum uplift reaction of the hip truss that can be resisted. The uplift capacity may be enhanced using alternative tie-down fixings like cyclone straps etc.

(ii) The HSB+TB35 capacity relates to the maximum combined uplift resisted, provided the hip reaction does not exceed the HSB capacity on its own.

Pryda Australia | A Division of ITW Australia Pty Ltd

153-187 Discovery Road, Dandenong South, Vic 3175
Offices in Melbourne, Sydney, Brisbane.
Representatives in all States.

Website: www.pryda.com.au
Email: info@pryda.com.au
Tel: 1800 810 741 Fax: (03) 9554 7000