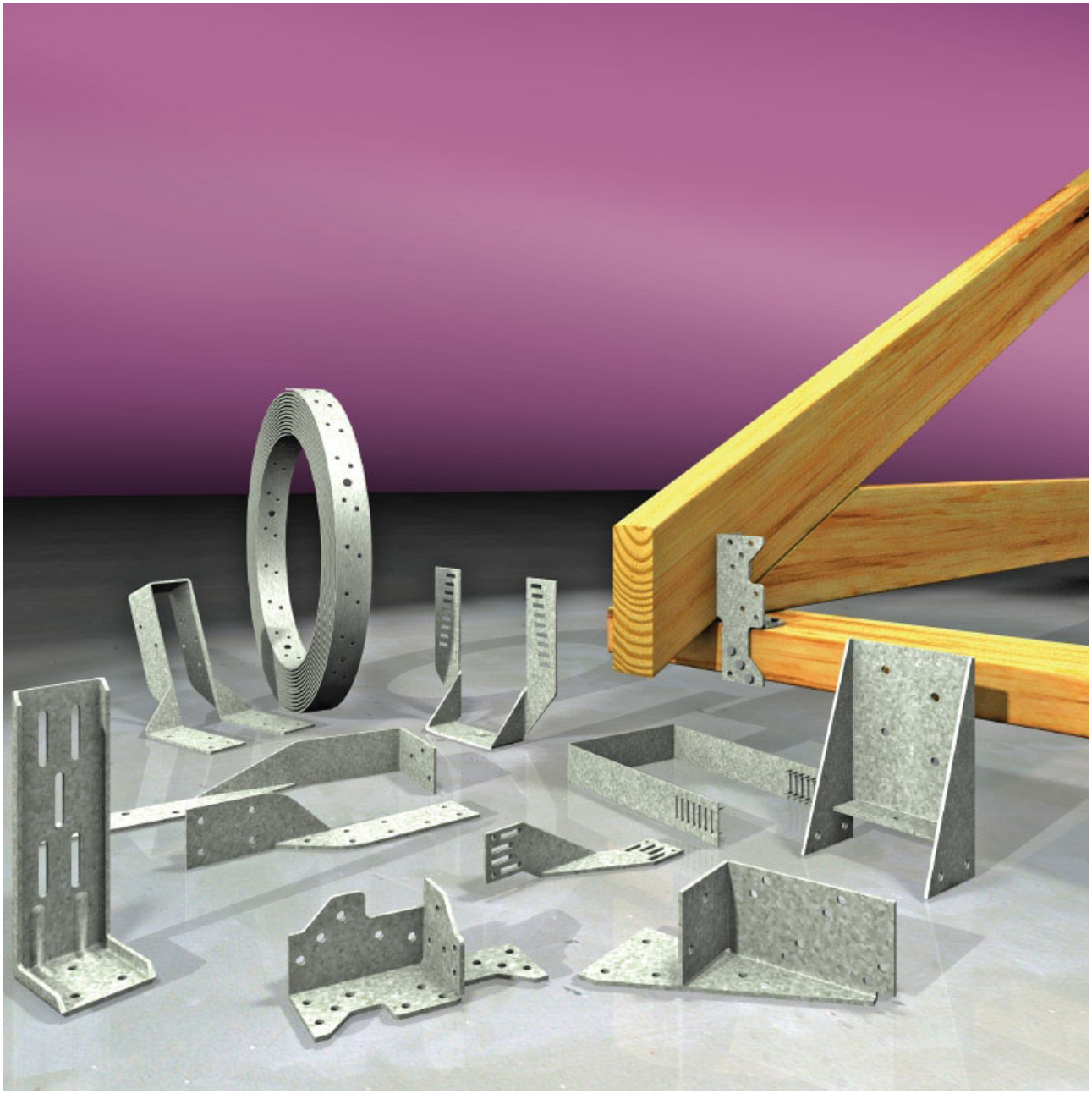
Pryda Timber Connectors

Connectors & Tie-Downs Guide



A complete guide to the design, specification and installation of Pryda Connectors & Tie-Downs

November 2010

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 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 with Pryda for updates at least every three months by telephone, the web site: www.pryda.com.au or by email to: info@pryda.com.au.

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:

* AS1720.1-1997 Timber Structures. Part 1: Design Methods
* AS/NZS1170:2002 Structural Design Principles
* AS4055 -2006 Wind Loads for Housing

Reference is also made to AS1684.1-1999 Residential Timber Framed Construction - Part 1: Design Criteria.

Design capacities tabulated in this guide apply directly for joints in houses and on secondary beams in other structures. For joints on primary beams in structures other than houses, reduce the capacity as specified in *page 4* (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, eg: JD5 is lower than JD4.

Load Duration Factor for Wind

Wind Uplift capacities are based on the AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code

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 page 4 for details (if applicable)*

Joint Group: classification of a timber according to its fastener-holding capacity. *See page 4 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 corrosion environments, except areas that are classified as heavy industrial or those subject to high humidity (eg: enclosed swimming pools) etc. 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* stipulates 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.

LIMITED WARRANTY

Pryda Australia warrants:

* Products in this guide are free from defects in the material or 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 within 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. Bolt hole diameter must be 0.8 mm to 1.5 mm larger than the bolt diameter and the specified washers must be installed.
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.

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Pryda Connectors & Tie-down Connectors Guide

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Machine Driven Nail Use – General Note

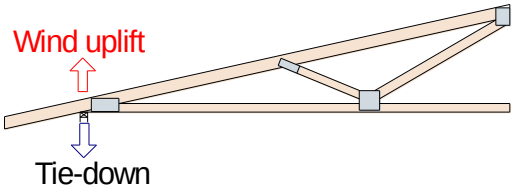
32x2.3 mm Duo-Fast C SHEG (ie: screw hardened electro galvanized) machine driven nails (code D40810) or equivalent may be used instead of the specified 35x3.15 mm Pryda Timber Connector Nails to fix Pryda connectors provided that:

- 20% more nails are used (eg: 5 instead of 4, 4 instead of 3, 3 instead of 2) or alternatively, design capacities are to be reduced by 20% where the same number of nails are used.
- machine driven nails are driven at nail spacings and edge distances similar to the hole pattern, ensuring that these nails are not driven into the holes or located not closer than 5mm from the edge of a hole.

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

SELECTION GUIDE

Selection guide for use with AS1684 Residential Timber-framed Construction



Introduction

AS1684-2010 Residential Timber-framed Construction requires that some frame members be tied-down against wind uplift load. Section 9 of Parts 2 and 3 of the code includes tables of the Uplift Force (kN) to be resisted at joints in frames. To assist designers and builders to meet these requirements, this selectiion guide provides tables of design loads and capacities for **Pryda Connectors & Tie-down Connectors**.

How to Select a Suitable Connector

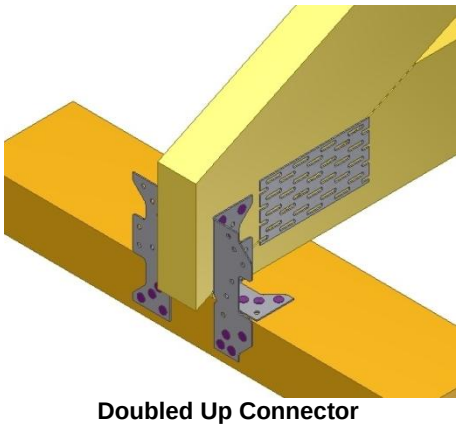
To use this guide follow these steps:

1. **Determine the Joint Group of the timber.** Joint groups are tabulated in Pryda's Timber Data (see table in this page) or in AS 1720.1 SAA Timber Structures Code-Part 1.
2. **Read off the Design Uplift Force** from AS 1684 Residential Timber-framed Construction or other reference.
3. **Select the appropriate table for the type of joint required** ie:

Table No.	Joint Type	Page
1	Roof battens or purlins to trusses, rafters or beams	3
2	Roof trusses, rafters or beams to supports	3
3	Wall plates to studs	4
4	Wall plates to concrete slab floors	4

4. **In the selected table, chose a Pryda Bracket or Strap with sufficient design capacity** for the joint group and design load.

   For higher design loads, some **Pryda connectors** can be "doubled up" (ie: two connectors used) to provide twice the capacity. These connectors are: **Bottom Plate Anchors, Cyclone Straps, Joist Straps, Multigrips, Ties, Triple Grips and Unities**.



Doubled Up Connector

5. **Order the Pryda Bracket or Strap**, preferably by its code as tabulated in the following tables.

Timber Joint Groups

Joint groups for some common timber are tabulated below. A more comprehensive table is given in AS1720.1 SAA Timber Structures Code.

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

Tie-down Design Loads & Capacities

The tabulated capacities in Tables 1 to 4 are for joints in domestic buildings and on secondary members in structures other than houses (or Category 1 joints as per AS1720.1:2010). For all other joints, i.e Category 2 or 3 joints as per AS1720.1:2010), multiply these LSD capacities by 0.94 or 0.88 respectively.

Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code.

Lower Design Loads

Where the required design load is much less than the tabulated design load, and the bracket or strap is fixed with more than two **Pryda Timber Connector Nails**, it is permissible to use proportionally fewer nails. For example, for half the design load, use half the tabulated number of nails;

Design Load Cases

Following is a description of the combined load cases adopted in this design guide 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*)

Fixing into steel supporting structure

Pryda products can be fixed into steel using Teks screws or similar.

Information on fixing Pryda tie-down connectors to steel framing is available in the publication titled *Design Guide – Pryda Connectors for Steel Framing.*

Table 1. Battens or Purlins to Trusses, Rafters or Beams

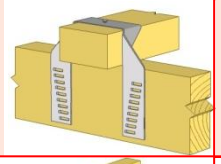
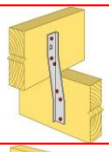
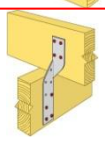
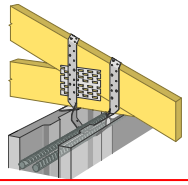
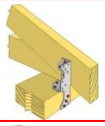
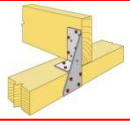
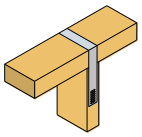
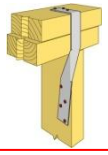
Bracket or Strap Name & Code	Diagram	Fixing Details	Tie-down Load/Capacity (kN) Per Connector						
			Green Timber			Dry Timber			
			J4	J3	J2	JD5	JD4	JD3	JD2
Batten Strap BS70		18 Claw Nails each end + one 3.75 mm nail through batten into truss/rafter	6.3	6.3	6.3	6.3	6.3	6.3	6.3
Joist Strap GJS		2 Pryda Timber Connector Nails into each member	1.3	1.8	2.6	1.6	1.8	2.6	3.3
Unitie UT90		4 Timber Connector Nails into both members	2.6	3.8	5.3	3.2	3.8	5.3	6.8

Table 2. Trusses, Rafters and Roof Beams to Supports

Bracket or Strap Name & Code	Diagram	Fixing Details	Tie-down Load/Capacity (kN)						
			Green Timber			Dry Timber			
			J4	J3	J2	JD5	JD4	JD3	JD2
Cyclone Straps		35x3.15 mm Timber Connector Nails each end:	2.6	3.8	5.3	3.2	3.8	5.3	6.6
QHS6		3	3.5	5.0	6.9	4.4	5.3	7.4	9.4
QHS9		4	4.5	6.3	8.9	5.8	6.9	9.7	12.4
		6	6.3	8.9	12.4	8.4	10.1	12.4	12.4
Wrapped Round QHS6, QHS9		4 nails per leg driven into the underside of the top plate	12.4	12.4	12.4	12.4	12.4	12.4	12.4
QHS9/2			15.0	15.0	15.0	15.0	15.0	15.0	15.0
Bond Beam Tie-Down Straps BBTD		2 nails on far face through strap folded over the chord, 1 nail on top and 3 nails on near face	15.0	15.0	15.0	15.0	15.0	15.0	15.0
Multigrip MG		4@ 35x3.15 mm Timber Connector Nails into truss and side of supporting wall plate or beam	2.6	3.7	4.2	3.2	3.8	4.2	4.2
Triple Grip TGAR TGAL		4@ 35x3.15 mm Timber Connector Nails into both members	2.6	3.8	5.3	3.2	3.8	4.6	5.8

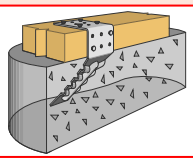
Notes:
1. All of the connectors in Tables 1 and 2 except Batten Straps can be doubled up for twice the design capacity.
2. Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code.
3. Re: Machine driven nails – see **General Note** on page 3.
4. Detail data sheets for the newly introduced High Capacity Tie-down (HCTD) plates and the Hold Down Brackets are available in pages 19 and 20.

Table 3. Tie-down Design Loads for Wall Plates to Studs

Bracket or Strap		Fixing Details	Design Capacity (kN) per Stud Tie for Timber Joint Group						
			Green Timber			Dry Timber			
Name & Code	Diagram		J4	J3	J2	JD5	JD4	JD3	JD2
Stud Ties ST3	 Double-sided	In-built Claw nails	3.7	5.6	7.0	5.3	6.3	7.0	7.0
ST4 (Double sided)		In-built Claw nails	4.3	6.6	7.0	6.2	6.9	7.0	7.0
STS3 (Single sided)		See Installation – **Page 16**	2.8	4.1	5.6	3.4	4.1	5.7	7.0

*Note: See also **Stud Ties - Design Loads.*** Re: Duration factor- see item 4 on page 3

Table 4. Tie-down Design Loads for Wall Plates to Concrete Slab Floors

Bracket or Strap		Fixing Details	Design Capacity (kN)		
Name & Code	Diagram		Along Plate	Across Plate	Uplift
Bottom Plate Anchor BPA		See **Pryda Bottom Plate Anchor** page 9	3.9	3.9	7.5

Notes:

Examples of Tie-down Connector Selection

Ex. 1.

Joint	= Roof battens to sheet roof trusses
Truss spacing	= 1200 mm
Batten spacing	= 900 mm
Wind Zone	= N3
Truss timber	= Dry pine – JD4 joint group
Net uplift force	= From AS1684.2 Table 9.14: General: **1.7 kN** Edges: **3.1 kN**

From Table 1 in this guide, a BS70 **Batten Strap** has a design capacity of **6.3 kN**. This is adequate for general area and at edges.

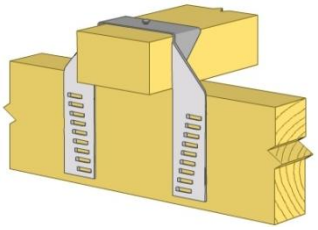
Ex. 2

Joint	= Roof trusses to wall frame
Roofing	= Sheet roof & ceiling
Uplift Load Width	= 4500 mm
Truss spacing	= 900 mm
Wind Zone	= N2
Wall frame timber	= Dry hardwood – JD3 joint group
Net uplift force	= From AS1684.2 Table 9.13: **3.0 kN**

From Table 2 in this guide, one **Triple Grip** or **Multigrip** is sufficient (design capacity = 4.6 kN and 4.2 kN respectively).

BATTEN STRAPS

Economical, Easy to use, Roof batten Connectors & Tie-down Connector



BS70 Batten Strap

Features

Pryda Batten Straps are used for tying down roof battens to trusses or rafters. They:

- **Are easy and quick to install** being factory bent to suit 70 mm battens. They have in-built, sharp pointed **"Claw" nails** for penetration into both softwoods and hardwoods.
- **Save construction time and cost** by being faster and easier to install.
- **Meet tie-down requirements for all wind zones including C3** - see Design Capacities following.

Description

Pryda Batten Straps details are:

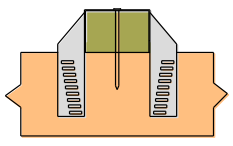
Product Code	Fixing each end	Applicable Battens
BS70	18 built-in **"Claw" nails**	70 mm width by up 50 mm depth

Batten Straps are packed 70 per carton. Steel is 1.0 mm Zincform^{R} G300-Z275 or equivalent.

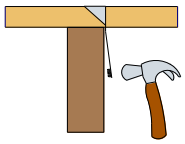
Installation

Pryda Batten Straps are installed as follows:

1. Put the Batten Strap over the batten and fix both the strap and batten to the supporting truss or rafter with one galvanised, flat-head nail as follows:
   - 25mm thick batten: 75 x 3.75mm nail
   - 38mm thick batten: 75 x 3.75mm nail
   - 50mm thick batten: 100 x 3.75mm nail



Joint Detail



Hammer Fixing

2. Hammer all of the Claw nails into the truss chord or rafter.

Design Capacity

Design capacity per Batten Strap is 6.3 kN for J3 or better green timber or JD5 or better dry timber.

This capacity applies directly to all members in houses and secondary members in other structures. For primary members in other structures, multiply the capacity by 0.88.

Design Tables

Based on the design uplift forces in AS 1684- 2010 Residential Timber-framed Construction, the numbers of **Batten Straps** required for batten tie-down in various wind zones are as follows.

Tiled Roofs

One Batten Strap is adequate for all joints in tiled roofs in wind zones N1 to N4 or C1 to C4 with maximum truss or rafter spacing up to 900 mm and batten spacing of 330 mm.

Sheet Roofs

Non-cyclonic Areas

One Batten Strap is adequate for all joints in sheet roofs in wind zones N1 to N4 with maximum truss or rafter spacing up to 1200 mm and maximum batten spacing of 1200 mm.

Cyclonic Areas

Rafter/ Truss Spacing mm	Batten Spacing mm	Wind Zone					
		C1		C2		C3	
		Gen.	Edges	Gen.	Edges	Gen.	Edges
		Number of Batten Straps Required Per Joint					
Maximum Internal Pressure							
600	900	1	1	1	1	1	1
	1200	1	1	1	1	1	NS
900	600	1	1	1	1	1	1
	750	1	1	1	1	1	NS
	900	1	1	1	NS	1	NS
	1200	1	1	1	NS	NS	NS
1200	600	1	1	1	1	1	NS
	750	1	1	1	NS	NS	NS
	900	1	1	1	NS	NS	NS
	1200	1	NS	NS	NS	NS	NS
Partial Internal Pressure							
600	900	1	1	1	1	1	1
	1200	1	1	1	1	1	NS
900	600	1	1	1	1	1	1
	750	1	1	1	1	1	1
	900	1	1	1	1	1	NS
	1200	1	1	1	NS	1	NS
1200	600	1	1	1	1	1	NS
	750	1	1	1	1	1	NS
	900	1	1	1	NS	1	NS
	1200	1	1	1	NS	NS	NS

Notes:

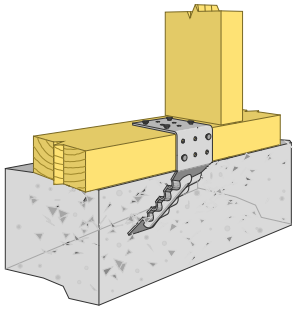
1. "Roof edges" are any areas of the roof within 1200 mm of an edge, hip, ridge, fascia or barge.
2. "Maximum internal pressure" applies where:
   - the ceiling or eaves lining is on top of the rafters or trusses, or
   - the ceiling or eaves lining does not have sufficient strength to resist the internal wind pressure, or
   - roof cavities are vented to the inside of the building, eg: the manhole cover(s) is not rigidly fixed.

   Otherwise, "partial internal pressure" can be assumed.
3. Wind zones are as defined in AS4055 Wind Loads for Houses.
4. The above tabulated numbers apply for: seasoned timber – JD5 or better; unseasoned timber: J3 or better.

   For lower joint groups, compare the design capacity (previous page) to Table 9.14 of AS 1684 Part 2 or 3.

BOTTOM PLATE ANCHOR

A pressed steel bracket for fixing timber bottoml plates to a concrete slab floor



Features

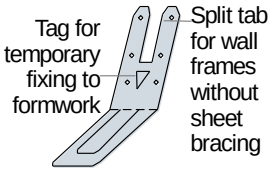
Pryda Bottom Plate Anchors:

- **Replace concrete nail fixing** of bottom wall plates to a concrete slab.

Where the anchor is used on frames with brick veneer, ABSAC have advised that metal fixings behind the brick may be regarded as "not exposed" and do not require additional corrosion protection, as specified for exposed coastal conditions. ABSAC is a national organisation which issues appraisals of building innovations; these appraisals are often used to gain state or national accreditation.

Specification

Pryda Bottom Plate Anchors have the following details:

Product Code:	BPA
Diagram:	
Dimensions	235x50x1.2
Materials:	G300- Z450 Galvanised steel
Packing:	50 per carton

Anchor Spacing

Maximum spacings for Bottom Plate Anchors, determined from the design wind uplift pressures in AS1684-2010 Part 2 and Part 3, Table 9.5 are as tabulated in the following.

Non-cyclonic Areas

Wind Uplift Load Width (mm)	Max. Spacing (mm) for Bottom Plate Anchors							
	N1		N2		N3		N3	
	Sheet Roof	Tile Roof	Sheet Roof	Tile Roof	Sheet Roof	Tile Roof	Sheet Roof	Tile Roof
3000	1800	NA	1800	NA	1800+	1800+	1500	1800
4500	1800	NA	1800	NA	1800+	1800+	900	1200
6000	1800	NA	1800	NA	1200	1800+	750	900
7500	1800	NA	1800	NA	1000	1800	600	750

Cyclonic Areas

Wind Uplift Load Width (mm)	Max. Spacing (mm) - Bottom Plate Anchors					
	C1		C2		C3	
	Sheet Roof	Tile Roof	Sheet Roof	Tile Roof	Sheet Roof	Tile Roof
1500	1800	1800	1800	1800	1200	1200
3000	1500	1800	900	900	600	600
4500	900	1200	600	600	NS	NS
6000	750	900	NS	NS	NS	NS
7500	600	600	NS	NS	NS	NS

Installation

For fixing, use only 35 x 3.15 mm, galvanised **Pryda Timber Connector Nails** as specified in the following or alternative nails which have guaranteed equivalent nailholding strength.

Note that these anchors are designed for use in **dry use conditions.**

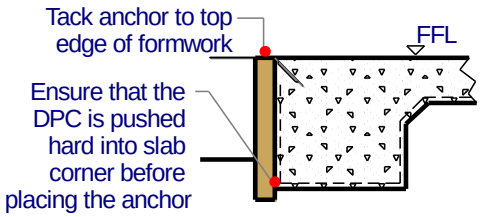
Installation Procedure

Stage 1:

Made sure the DPC is pushed hard into the corners of the trench before placing the anchors.

If the top edge of the formwork is level with the FFL, tack the anchor to the formwork edge using the triangle tag.

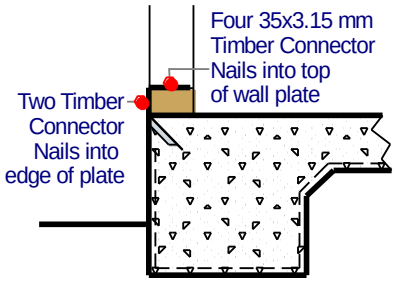
In all cases, position the anchor with the tab (flat end) horizontal and the crimped end pointing downward at 45 degrees.



Stage 2:

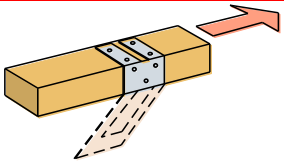
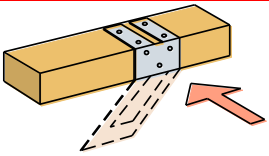
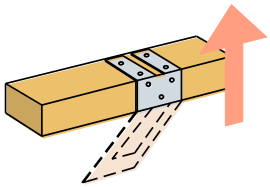
After the initial cure of the concrete slab, position the wall frame at the slab edge.

Bend the anchor up and over the bottom wall plate. If the anchor coincides with a stud, bend only one leg of the tab over the plate. Fix the anchor with 4 **Pryda Timber Connector Nails** into the top face of the wall plate (or 2 into the plate and 2 into the stud) and with two **Timber Connector Nails** into the edge of the plate.



Bottom Plate Anchor Continued:

Design Capacities - Wind Load

Loading Code	Design Capacity ϕN_j (kN) for Load Direction:		
	Along plate	Across plate	Uplift
			
AS/NZS1170:2002	3.9	3.9	7.5

Notes:
1. For capacity marked *, double the design load across the plate where the two screws or nails are driven into the wall plate.
2. Dead load capacities are about 60% of the wind load capacities.
3. Product testing by Monash University, Melbourne (NATA Registered Laboratory). Test report available on request.

RAMSET™ ANCHORSCREWS™ and WASHERS

Screws for fixing timber bottom plates to a concrete slab floor

Specification

Product Codes:	AS12100H and AS12150H
Diagram:	
Dimensions	AS12100H = M12 x 100 AS12150H = M12 x 150
Materials:	Galvanised steel
Packing:	50 per carton

Washer Specifications

Square Washer Size (mm)	Round Washer Size (mm)	Washer Type and Pryda Code	Capacity (ΦNj) (kN) for Joint Group:	
			JD5	JD4
50 x 50 x 3.0	**55 dia x 3.0**	Standard OW12/56S	8.4	10.5
65 x 65 x 5.0	**75 dia x 5.0**	Heavy Duty OW12/65S	20.8	26.1

Design Capacities of Ramset™ AnkaScrews™

Ramset™ AnkaScrews™ through 35mm thick bottom plates

Part Code	Anchor Size	Effective Anchor Depth For 35mm Bottom Plate	Uplift Capacity (ΦNj) (kN)			Minimum Concrete Thickness (mm)
			External Walls		Internal Walls	
			70 mm	90 mm		
AS12100H	M12 x 100	60	9.1	10.8	11.2	85
AS12150H	M12 x 150	110	22.0	26.1	27.2	135

Ramset™ AnkaScrews™ through 45mm thick bottom plates

Part Code	Anchor Size	Effective Anchor Depth For 45mm Bottom Plate	Uplift Capacity (ΦNj) (kN)			Minimum Concrete Thickness (mm)
			External Walls		Internal Walls	
			70 mm	90 mm		
AS12100H	M12 x 100	50	7.0	8.2	8.5	75
AS12150H	M12 x 150	100	19.2	22.8	23.8	125

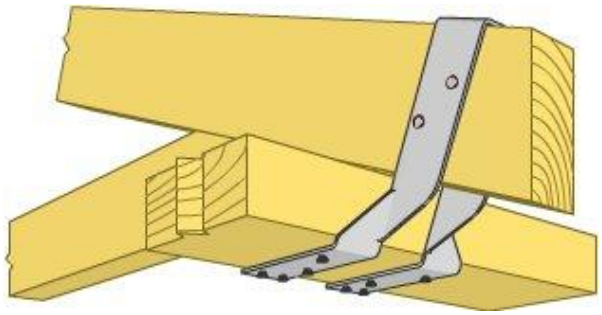
Washers:

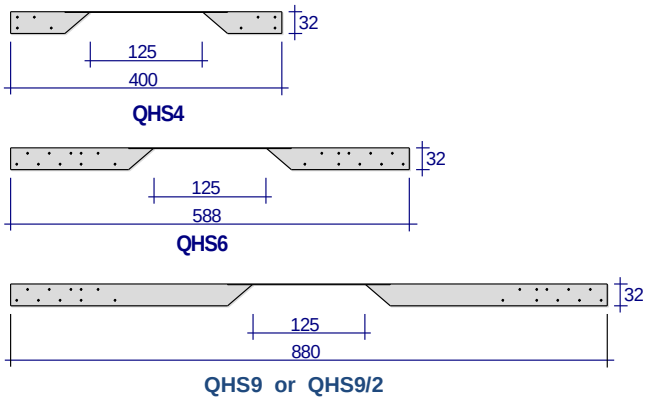
It is important to use an appropriate washer with the Anchorscrew to achieve the desired capacity.

The tie-down capacity is the minimum of the design values given here for the selected washer and the Anchorscrew .

Installation of AnkaScrews is quick and easy. See the Ramset installation instructions on their web site: **www.ramset.com.au** or contact Ramset.

CYCLONE STRAPS





Pryda Cyclone Straps are used primarily in cyclonic areas for tying down purlins to trusses or roof trusses or other roof members to the wall frame.

Features

- Quick and easy to install
- Sufficient capacity for many cyclonic area uses
- Can be "doubled up" for twice tie-down capacity
- Range of lengths to suit different nailing and capacity requirements
- Maximum design capacity determined from Pryda tests

Specification

Size	See Dimensions below			
Steel	G300-Z275 Galvanised steel			
Packing	100 per carton			
Product Code	**QHS4**	**QHS6**	**QHS9**	**QHS9/2**
Thickness (mm)	1.0	1.0	1.0	1.2
Packing No.	80	80	25	25
Per	Carton	Carton	Bundle	Bundle
Length	400 mm	588 mm	880 mm	880 mm

Note: QHS4 and QHS6 are also available in **Merchant Packs**.

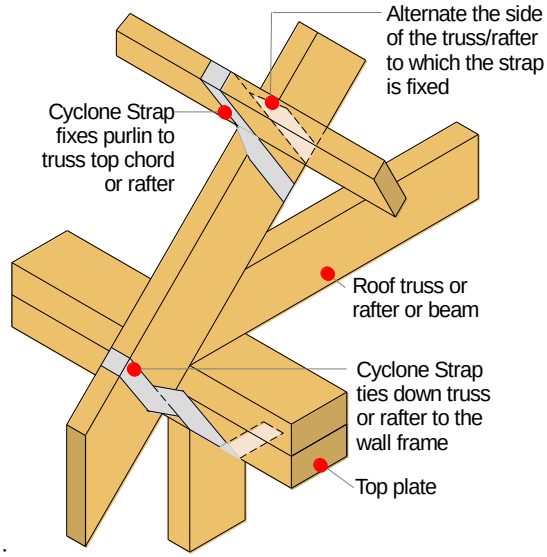
Design Capacities

Limit State Design capacities for a single **Pryda Cyclone Strap** resisting wind uplift are as tabulated below.

Nails per Leg	**Design Capacity (ϕN_j) (kN) for Timber Joint Group using any Cyclone Strap:**					
	J3	**J2**	**JD5**	**JD4**	**JD3**	**JD2**
2	3.8	5.3	3.2	3.8	5.3	6.8
3	5.0	6.9	4.4	5.3	7.4	9.4
4	6.3	8.9	5.8	6.9	9.7	12.3
6 (5)	8.9	12.4(3)	8.4	10.1	12.4(3)	12.4(3)
Capacities for straps that are Wrapped Round (see Note 4)						
QHS4 QHS6 QHS9	12.4	12.4	12.4	12.4	12.4	12.4
QHS9/2	15.0	15.0	15.0	15.0	15.0	15.0

Applications

Typical applications of **Pryda Cyclone Straps** are shown in the diagram below:



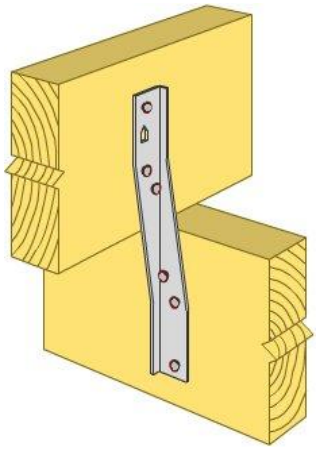
:

Notes:

1. Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code.
2. These design capacities apply to **Pryda Cyclone Straps** fixed at both ends with 35x3.15 mm galvanised **Pryda Timber Connector Nails** or equivalent.
3. The 12.4 kN value may be increased to 15.0 kN for QHS9/2 cyclone strap.
4. When the strap is wrapped round the wall plate or other timber member and fixed with 4 nails per leg driven into the underside of the top plate, the capacity is limited by the steel. Tests have proven that bending the legs of **Cyclone Straps** around the timber increases the ultimate load the strap is capable of carrying.
5. QHS4 is not suitable for 6 nails per leg option. Use either QHS6 or QHS9 (or QHS9/2) for this application.
6. Joint groups for timbers are specified in AS1720. See also **joint groups for some common timbers**
7. Re: Machine driven nails – see **General Note** on page 3.

JOIST STRAP

A simple joist strap with a variety of uses in building

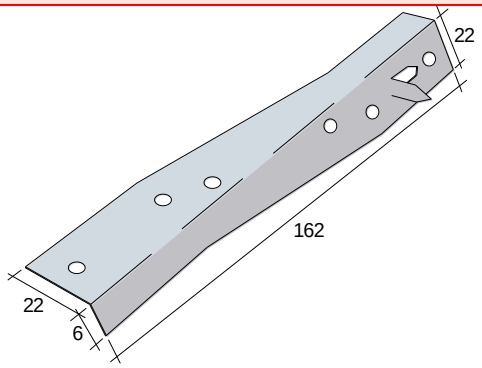


Features

Pryda Joist Strap is a simple, bent metal strap with an in-built nail and nail holes for fixing with 35x3.15 mm galvanised **Pryda Timber Connector Nails**. It is ideal for connecting timber members at right angles such as floor joists to bearers, hanging beams to ceiling joists, rafters to beams, purlins to rafters or trusses.

Specification

Steel:	0.6 mm G300-Z275 galvanised steel.
Product Code:	GJS
Packing:	150 per carton



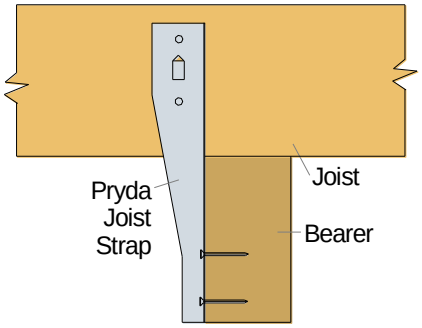
Dimensions

Installation

Position the **Joist Strap** with all nail holes at least 16 mm from the nearest timber edge. Using 35x3.15 mm galvanised **Pryda Timber Connector Nails** or equivalent, drive both these nails and the in-built nail fully into both timber members. Regarding machine driven nails – see **General Note** on page 3.

Application

The common application of **Pryda Joist Strap** is shown below.



Design Capacities

Limit State Design capacities per **Pryda Joist Strap** fixed with 2@ nails each end are as tabulated below:

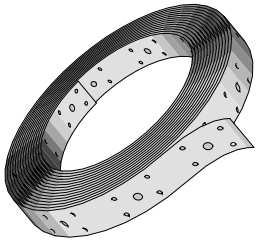
Load Case	Design Capacity (ϕN_j) (kN) for Joint Group:						
	J4	J3	J2	JD5	JD4	JD3	JD2
1.35G	0.7	0.9	1.3	0.8	0.9	1.3	1.7
1.2G+1.5Qf	0.8	1.1	1.6	1.0	1.1	1.6	2.0
1.2G+1.5Qr	0.9	1.3	1.8	1.1	1.3	1.8	2.3
1.2G+Wd or Wind Uplift	1.3	1.8	2.6	1.6	1.8	2.6	3.3

Note:

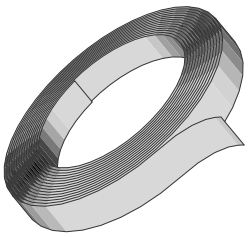
1. These capacities apply directly for joints in houses and on secondary beams in other structures. For joints on primary beams in structures other than houses, multiply these capacities by 0.88.
2. Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code.
3. Refer page 4 for description of load cases used in table above.

HOOP IRON & STRAPPING

Pryda manufactures a range of **Hoop Iron** (in coils with punched nail holes) and **Unpunched Strapping** (coils) in two sizes. Unpunched Strapping can be used for tie-down and other joints in accordance with AS1684-2010 Residential Timber-framed Construction or other specifications. Hoop Iron is not recommended for structural bracing. See **Sales Data**

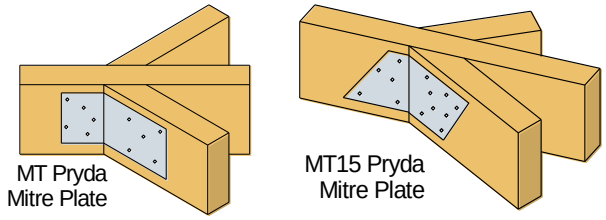


Hoop Iron



Unpunched Strapping

MITRE PLATES



Features

Pryda Hip Mitre Plates are used for connecting creeper trusses to hip trusses. They:

- **Are easy and quick to install** being factory bent to suit the common 45 degrees angle between most creeper and hip trusses. Can also be used with rafters. The angle of bend in the Mitre Plate stops the top corner from protruding above the line of the roof.
- **Meet the requirements in AS 4440-2004.** See **Design Loads**.
- **Are available right handed and left handed**. This is required to pick up the creeper from both sides of the hip.

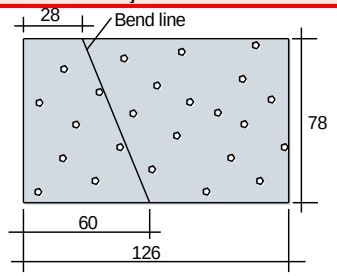
Description

Pryda Hip Mitre Plates require 5/35x3.15 galvanised **Pryda Timber Connector Nails** into the creeper top or bottom chord, and the same into the hip truss chords.

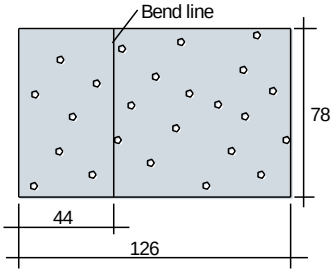
*Note: ** The nails specified in AS 4440 – 2004 are 6 / 2.80 nails into each leg, and this capacity can also be achieved by using - 5 / 35x3.15 Pryda nails, or 5 / 38x2.87 mm (code **GF18AZA**) hardened, screw shank nails, or 3 / No.12 – 11x25 hex-head Type 17 screws close to the bend line.*

Specification

Steel:	78 x 1.0 mm galvanised steel, grade G300, coated to Z275 or equivalent.
Packing:	20 per carton (10 left, 10 right)
Codes:	MT15 are for top chord connections. MT suit bottom chord joints.



MT15

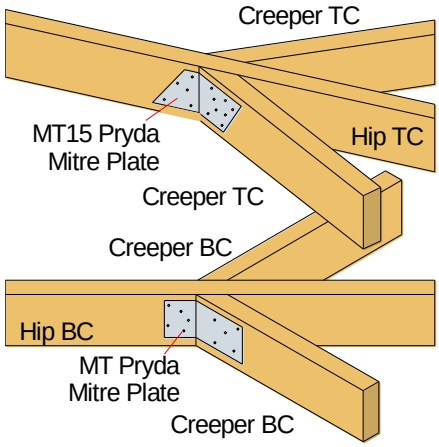


MT

Installation

Pryda Hip Mitre Plates are installed as follows:

1. Refer to AS4440- 2004. Nail the creeper top chord and bottom chord to the hip truss using 65 mm long nails through the full thickness of the creeper truss members.
2. Place the long leg of the Mitre Plate against the creeper truss so that the bend is tight into the joint between the creeper and hip truss. Fix 5 / 35x3.15 Pryda Product nails to the creeper, and to the hip truss.



Hip Mitre Plate Fixing of Creepers

Design Loads

When used to carry gravity loads or to resist wind uplift from creeper trusses or rafters **Pryda Hip Mitre Plates** have the following design properties when fixed with five 35x3.15 Pryda Timber Connector Nails into both members. All design capacities are limited by nail capacity, and all nails are considered to be fully effective in shear and not carrying any in-plane moments.

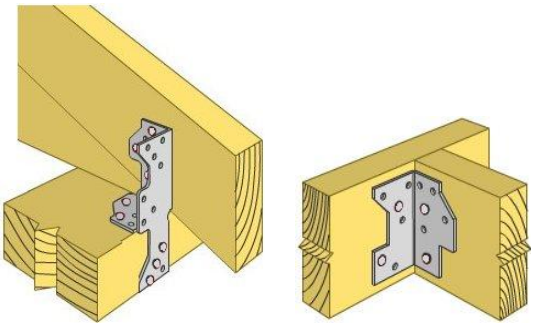
Load Type	HMP Design Capacities, ΦNj (kN)			
	Seasoned timber			
	JD3	JD4	JD5	JD6
1.35G	3.3	2.3	2.0	1.4
1.2G+1.5Qr	4.4	3.2	2.7	2.0
1.2G+Wd or Wind uplift	6.6	4.7	3.9	2.9
	Unseasoned timber			
	J2	J3	J4	
1.35G	3.3	2.3	1.7	
1.2G+1.5Qr	4.4	3.2	2.3	
1.2G+Wd or Wind uplift	6.6	4.7	3.3	

*Note: ** Additional capacity can be achieved by considering the nailing of the creeper to the hip truss with 3 / 65 nails before applying the Mitre Plate. This detail is required in some circumstances in AS4440-2004.*

Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code.

MULTIGRIPS AND MINIGRIPS

Multi-purpose metal connectors for timber construction



Features

Pryda Multigrips are ideal connectors for many uses in timber framing. They are suitable for high load applications such as a tie-down connector for trusses or rafters to top plates and for fixing joists to the face of bearers.

Pryda Minigrips provide a more economical connector for the numerous, more lightly loaded joints in houses and other buildings.

Specification

Steel: 1.0 mm G300-Z275 galvanised steel or .
Marine Grade Stainless steel.

Product Codes & Packing:

Code	Product	Quantity
MG*	Multigrips	100 per carton no nails
MGL	Long Multigrips	100 per carton no nails
MG200/SS316	Stainless Steel Marine Grade	200
MPMGS*	Minigrips	100 per carton no nails

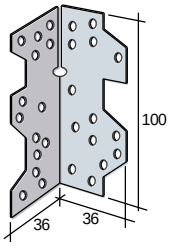
* Available in merchant pack and individually barcoded product.

Installation

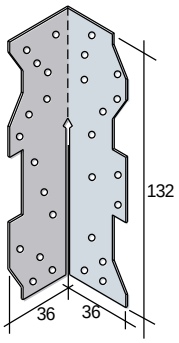
To install **Pryda Multigrips** and **Minigrips**, use only 35 x 3.15mm, galvanised **Pryda Timber Connector Nails** or equivalent with these connectors. Stainless steel nails must be used with stainless steel Multigrips.

Regarding machine driven nails – see the **General Note** on page 3.

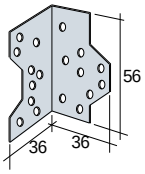
Dimensions



Multigrip



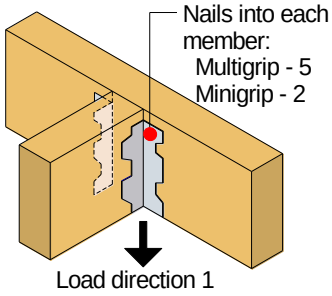
Long Multigrip



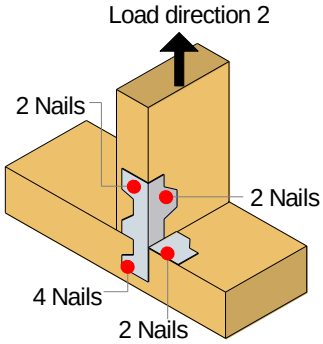
Minigrip

Applications

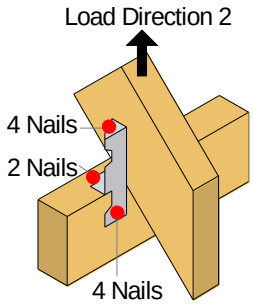
Typical applications and load directions for **Pryda Multigrips and Minigrips** are shown below.



Face Fixing Beams



Stud/column Fixing



Truss/Rafter Tie-down- Multigrip Only (Load Direction 2)

Note: Fix Long Multigrips as for Multigrips

Design Capacities

(a) Load Direction 1 (always used as pairs)

Load Case	Design Capacity ΦNj (kN) per a PAIR of Multigrips or Long Multigrips for Timber Joint Group:						
	J4	J3	J2	JD5	JD4	JD3	JD2
1.35G	2.3	3.2	4.5	2.7	3.2	4.5	5.7
1.2G+1.5Qr	3.0	4.3	6.1	3.6	4.3	6.1	7.7
1.2G+Wd or Wind Uplift	4.6	6.4	9.0	5.4	6.4	9.0	11.4
	Design Capacity (kN) per a PAIR of Minigrips						
1.35G	1.1	1.6	2.2	1.3	1.6	2.2	2.8
1.2G+1.5Qr	1.5	2.1	3.0	1.8	2.1	3.0	3.8
1.2G+Wd or Wind Uplift	2.3	3.2	4.5	2.7	3.2	4.5	5.7

(b) Load Direction 2 (for a single multigrip)

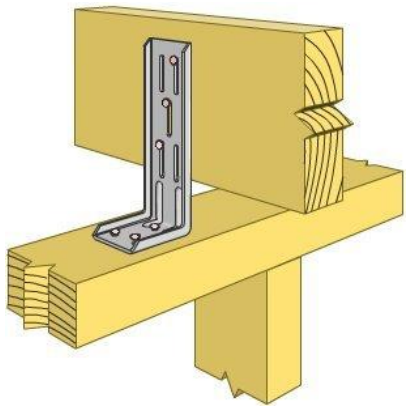
Load Case	Design Capacity ΦNj (kN) for a SINGLE Multigrip or Long Multigrip for Timber Joint Group:						
	J4	J3	J2	JD5	JD4	JD3	JD2
Wind Uplift	2.6	3.7	4.2	3.2	3.8	4.2	4.2

Notes:

1. For joints on primary beams in structures other than houses, multiply the limit state capacities by 0.88.
2. Wind Uplift capacities are based on the AS/NZS1170:2002 code using k1=1.14.
3. Refer page 4 for description of load cases.

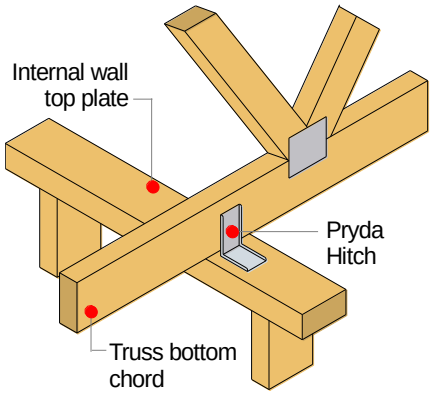
PRYDA HITCH

Bracket which stabilises internal, non-loadbearing walls from bottom chords of trusses

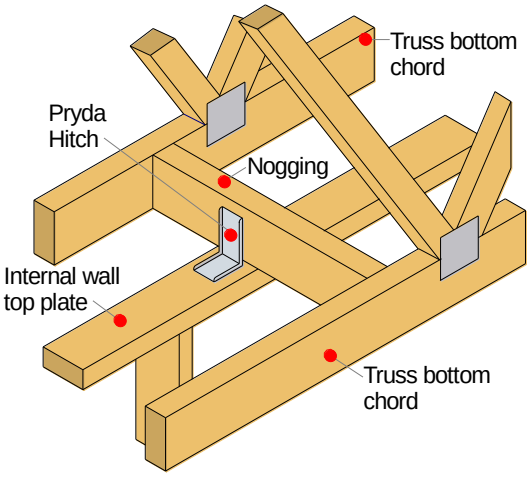


Application

Pryda Hitch stabilises the tops of internal walls by fixing them laterally to the bottom chord of roof trusses. **Pryda Hitch** has built in slots which allow for vertical movement in the truss over time without transferring load to the wall.



Wall at Right Angles to Trusses



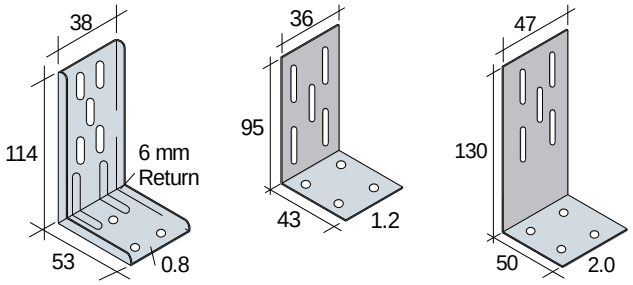
Wall Parallel to Trusses

Specifications & Dimensions

Pryda Hitch specification is as follows:

Steel	G300-Z275 Steel Steel thickness is: PHH - 0.8 mm, PHL – 1.2 mm, PHS – 2.0 mm
Product Codes	PHH (Coined)* PHL (Plain) PHS (Super Heavy Duty)
Packing	PHH - 200 per carton - Merchant pack - 100 PHS & PHL - 100 per carton
Size:	See dimensions below:

* Available in merchant pack and individually barcoded product.



PHH **PHL** **PHS**

Installation

Place the **Pryda Hitch** alongside the truss bottom chord and fix with 35x3.15 mm galvanised **Pryda Timber Connector Nails** to the top plate of the wall, then nail through the slots into the truss bottom chord. The nail should be located at the top of the slot, taking care not to drive the nails fully home which would restrict vertical movement of the truss. The nails may also be located midway in the slots if the truss camber does not exceed 10 mm for PHH or 15 mm for PHL or PHS types.

Extra slots are provided for additional nailing if required. Fixing as described locates the partition framing yet permits the truss to settle without loading a non load bearing wall or partition.

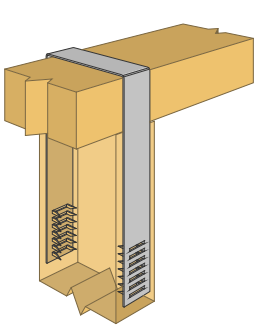
Fix at every second truss or at 1800 mm intervals.

Nailing Requirements

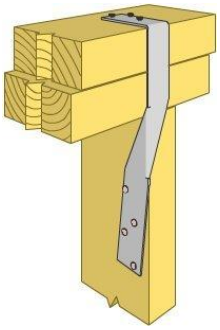
Code	Nailing Requirements
PHH	2@ 35 x 3.15mm Pryda Nails to bottom chord 3@ 35 x 3.15mm Pryda Nails to top plate
PHL	2@35 x 3.15mm Pryda Nails to bottom chord 3@35 x 3.15mm Pryda Nails to top plate
PHS	2@ 35 x 3.15mm Pryda Nails to bottom chord 4@ 35 x 3.15mm Pryda Nails to top plate

STUD TIES

A quick, neat and effective connector between studs and wall plates

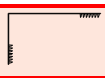
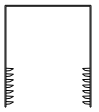


Double Sided Stud Tie



Single Sided Stud Tie
STS3R

Specification & Dimensions

Product Codes:	Double sided, one pre-bend		ST3, ST4
	Double sided, two pre-bends		ST4U70, ST4U90
	Single sided, right & left	STS3R, STS3L dimpled STS3HR, STS3HL - with holes	
Size:	As shown following		
Steel:	1.0 mm G300 – Z275		
Packing	ST3 – 200 per carton, ST4 – 80 per carton STS.. - 50 per carton		

Features

Pryda Stud Ties greatly improve the jointing of top and bottom plates to studs compared to the common nail fixing, ie:

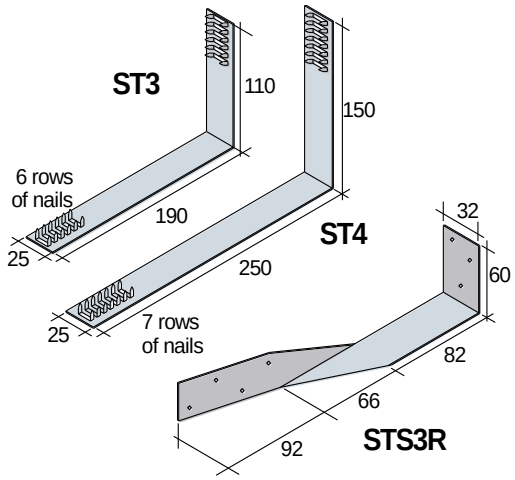
- **Greater tie-down strength**: **Stud Tie** nails are driven into the side grain of the stud to resist wind uplift in lateral shear. This is far stronger than relying on the withdrawal strength of common nails in end grain. For example, two 125x3.75 mm nails driven through 45 mm thick wall plates into the ends of dry pine studs (as required by AS 1684) have a capacity of 0.9 kN (WSD) while ST3 **Stud Ties** provide 3.9 kN.* (see Design Capacities next page)

- **No splitting of the timber**: With **Stud Ties**, the careful location of the nails away from timber ends and edges avoids splitting which can occur in common nails only joints, especially in some timbers and particularly with skew nailing. This is not only unsightly, but it reduces the strength of the joint substantially.

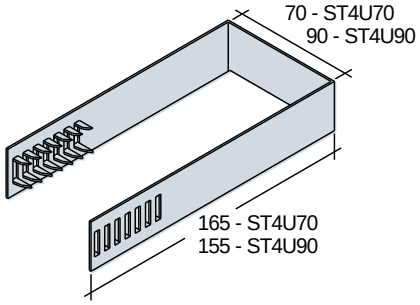
- **Convenience**: As ST3 and ST4 **Stud Ties** have in-built nails, there is no need for other nails. **Stud Ties** are quick and easy to apply; the in-built nails are readily driven home with a conventional hammer. ST4U70 and ST4U90 Stud Ties have two bends for easy installation on 70 mm and 90 mm wall frames respectively.

  Single sided Stud Ties are specially designed for factory production. They avoid the need to reach under the frame on the framing table and have either dimples for easy fixing with power driven nails or holes for fixing with 35x3.15 mm galvanised **Pryda Timber Connector Nails.**

- **Complies with AS1684 Bracing Units rules**: All types of Stud Ties meet the tie-down requirements of the code when installed as specified in the next page.



Pryda Stud Tie Dimensions



Dimensions- Double Sided, Two Pre-bends
ST4U70, ST4U90

Note: Pryda Straps SB103 may be used as an alternative, bent in a U-shape, and fixed with 6 nails on each leg. See Design Capacities for details.

(Continued next page…)

Installation

The minimum permissible end distances for nails are:
* ST3 and ST4 – 12 mm; STS3 - 63 mm. This relates to the distance from the under-side of top plate to the fastener.

Double Sided Stud Ties:

These Stud Ties must be installed symmetrically, ie: with the lengths down each side equal within a 20 mm tolerance.

1. Locate the **Stud Tie** firmly on the external corner of the wall plate with the shorter leg on the side of the stud and centrally located in the stud thickness.
2. Hammer the nails fully into the stud with a carpenter's hammer.

One Bend Ties:

3. Bend the longer leg around the other external edge of the plate and onto the stud.
4. Hammer the remaining nails into the stud.

Single Sided Stud Ties:

(a) With Dimples:

These Ties must be fixed on the same side as the truss fixing (for uplift) or the same side as the bracing.

1. Choose STS3R for right handed installation or STS3L for left handed.
2. Locate the **Stud Tie** over the stud to plate joint, with the vertical bend on the stud arris (corner).
3. Power drive **9/32x2.3 mm galvanised, screw shank nails** (code **D40801**) fully into the stud and wall plate, ie: 4 nails into wall plate and 5 nails into stud, at locations indicated on the Tie.

(b) With Holes:

Install these Stud Ties as for Ties with dimples, except use 35x3.15 mm galvanised **Pryda Timber Connector Nails**, 3 into wall plate and 4 nails into stud.

Applications

Pryda Stud Ties are used in wall bracing units (Types A and B) and other areas of walls for fixing of top and bottom wall plates to studs- as shown . Suitable overall, wall plate thicknesses are: ST3 - 50 mm; ST4 - 100 mm and STS3 - 80 mm.

Design Capacities

Wind uplift Limit State Design capacities for **Pryda Stud Ties** are tabulated below. These loads depend upon the **joint group** of the timber to which the **Stud Ties** are nailed.

Design Wind Uplift Loads per Stud Tie

Stud Tie Code	Design Capacity ϕN_j (kN) per Stud Tie for Timber Joint Group					
	Green Timber			Dry Timber		
	J4	J3	J2	JD5	JD4	JD3
ST3	3.7	5.6	7.0	5.3	6.3	7.0
ST4	4.3	6.5	7.0	6.2	6.9	7.0
STS3 (note 1)	2.8	4.1	5.7	3.4	4.1	5.7
SB103 (note 4)	7.1	10.0	13.6	8.8	10.5	13.6

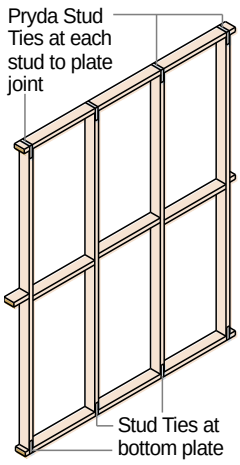
Notes:

1. STS3 Stud Ties may also be used with 5 Pryda Timber Connector nails or 6 power driven nails to the stud, and 3 or 4 nails to the top plate. In this case increase the design capacities by 25% of the values shown here.

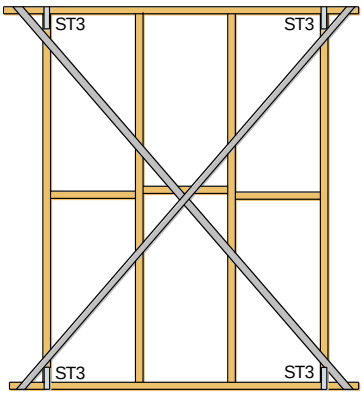
2. The above values include the capacity of 2/skew nails.

3. Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code.

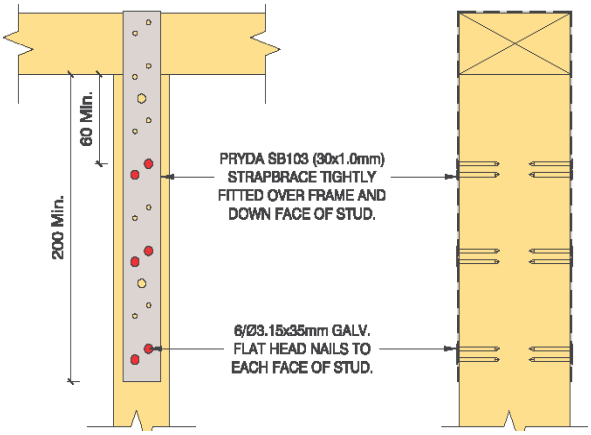
4**. SB103** capacities are based on the fixings shown below, using SIX Pryda Timber Connector nails per leg.



General Use of Stud Ties

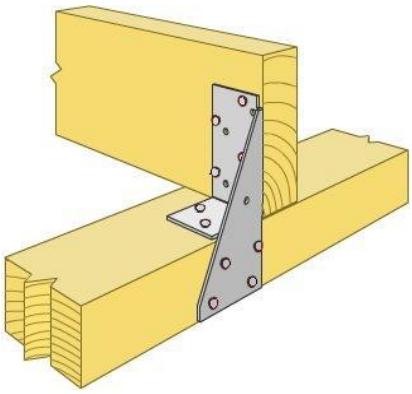


Wall Bracing Units

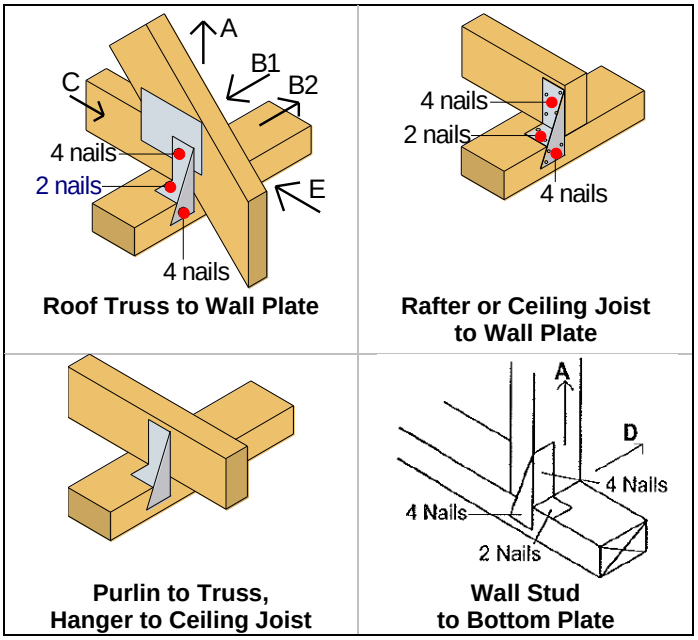


TRIPLE GRIPS

Preformed Framing Anchors



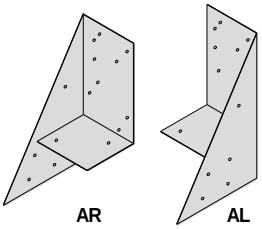
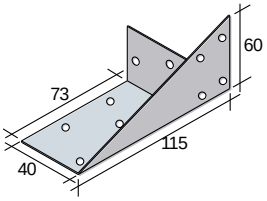
Pryda Triple Grips are used for many nail fixed timber joints some of which are shown in the following typical applications:



Roof Truss to Wall Plate | **Rafter or Ceiling Joist to Wall Plate**

Purlin to Truss, Hanger to Ceiling Joist | **Wall Stud to Bottom Plate**

Specification

Steel	1.0 mm G300- Z275	
Product Codes	TGAR, TGAL MPTGAR, MPTGAL	Note: Product codes are: TG + Profile + R = Right hand or L = Left Hand, "MP" = Merchant pack – individually barcoded product
Profiles Note: Profiles shown are Right hand		
Dimensions		
Packing	100 per carton, 50 per carton (merchant packs)	

Installation

To achieve the design capacities tabulated below, fix Triple Grips with galvanised, 35x3.15 mm **Pryda Timber Connector Nails** with the number of nails as shown on the relevant diagram at top right. Do not use clouts.

Regarding machine driven nails – see the **General Note** on page 3.

Fixing into Steel Frames

Information on fixing Pryda Triple Grips to steel framing is available in the publication titled *Design Guide – Pryda Connectors for Steel Framing*

Design Capacities

Limit State Design capacities for **Pryda Triple Grips** are as tabulated below for the load directions shown at left.

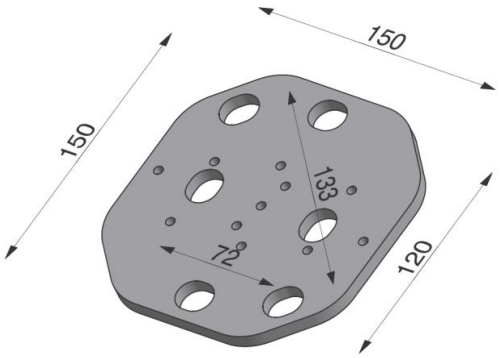
Load Case	Load Dirn.	Design Capacity ϕN_j (kN) per Triple Grip for Timber Joint Group:					
		J3	J2	JD5	JD4	JD3	JD2
1.2G+Wdn or Wind Uplift $k_1 = 1.14$	A	3.8	5.3	3.2	3.8	4.6	5.8
	B1	3.0	4.0	2.2	2.7	3.9	5.2
	B2	1.6	1.8	0.6	1.0	1.6	2.5
	C	3.3	4.5	2.2	2.9	4.3	4.5
	D	3.0	3.0	3.0	3.0	3.0	3.0
	E	2.4	2.4	2.4	2.4	2.4	2.4

Notes:

1. Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code.
2. The above capacities apply directly for joints in houses and on secondary beams in other structures. For joints on primary beams in structures other than houses, multiply these capacities by 0.88
3. Load Direction – Refer illustrations on this page.

HIGH CAPACITY TIE-DOWN PLATES

Pryda High Capacity Tie-down (HCTD) plates are used for extreme tie-down situations, typically encountered with girder trusses in cyclonic areas.



Specifications

Pryda HCTD plate specification is as follows:

Steel	G250 – hot dip galvanized
	8mm thick
Product Code	HCTD, HCTD/WA
Packing	10 kits of 1xHCTD plate plus 2x HCTD/OW over washers Note: The HCTD/WA kit also includes 1/ under washer, 2/M12 x 250 threaded rods & 4 Nylok nuts for use with steel framing
Size:	See dimensions on right

Design Capacities

(I) Using Single Plate

Timber Grade	Truss Laminates (2)	Design Capacity (4) (kN)	Minimum Tie-Down Rod
LVL10/13	Single	**45.0**	2/M12
MGP 10/12	Multiple	**54.0**	2/M12
LVL 14, 18	Single	**54.0**	2/M12
F17, F27	Multiple	**54.0**	2/M12

(II) Using Double Plates

Timber Grade	Truss Laminates (2)	Design Capacity (4) (kN)	Minimum Tie-Down Rod
LVL10/13	Single	**45.0**	2/M12
MGP 10/12	Multiple	**90.0**	2/M16
LVL 14, 18	Single	**75.0**	2/M16
F17, F27	Multiple	**100.0**	2/M16

Notes:

(a) This Table values are valid for both internal and external tie-downs.

(b) Single refers to 1/35 or 1/45 truss laminate. “Multiple” refers to any multiple laminate (2/35, 2/45 or 3/35).

(c) The HCTD plate should be orientated correctly to accommodate single, double or triple laminated trusses. See illustration.

(d) 2/M16 rods may be replaced with high-strength 2/M12 (8.8/s) rods.

(e) The Design Capacities given here are valid only if the tie-down rods are adequately anchored to the ground.

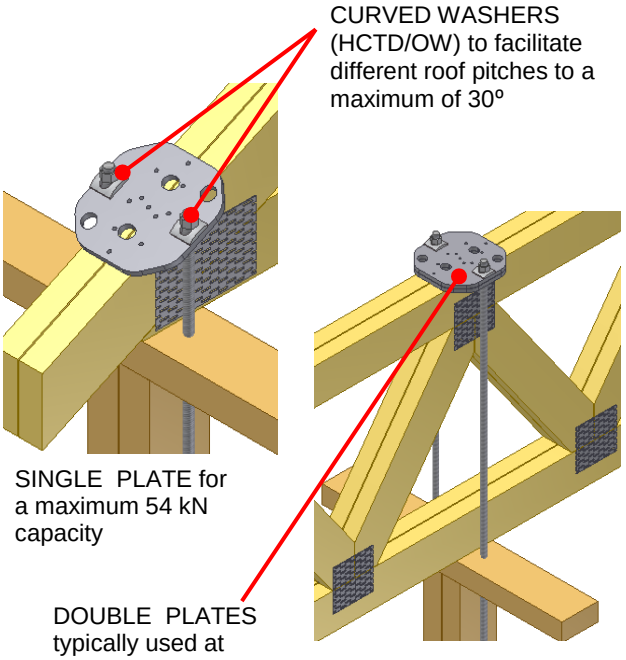
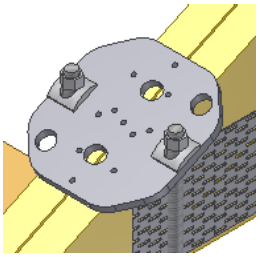
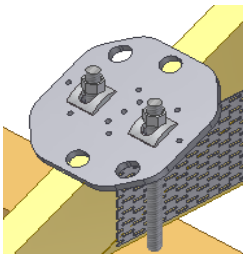


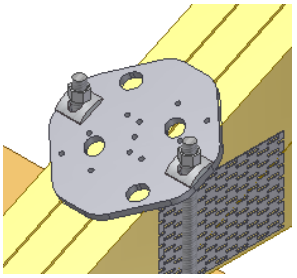
PLATE ORIENTATION



DOUBLE LAMINATE TRUSS



SINGLE LAMINATE TRUSS



TRIPLE LAMINATE TRUSS

HOLD-DOWN ANGLE BRACKET

Pryda Hold-down Bracket can be used in a variety of applications in timber structures. Providing tie-down resistance for roof trusses or wall studs is the most common usage of this product. This bracket is specially useful to achieve a concealed connection.

Specification

Size	130 x 50 x 47
Steel	G300-Z275
Product Code	MPCPAH
Thickness (mm)	2.0
Packing	75 per carton

Design Capacities

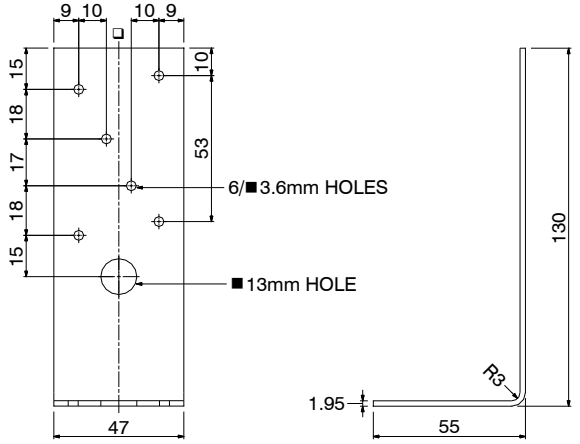
The design capacities for **a pair of MPCPAH** brackets are tabulated below for use with both 35 x 3.15 Pryda Timber Connector nails and No.12 x 35 Type 17 screws. In order to achieve these capacities, a suitable tie-down connector is required.
Note: These capacities are also suitable when CPAH is used as a tie-down bracket for wall studs

Uplift Capacities for a PAIR of brackets using 5/35 x 3.15 nails per bracket

Joint Group Of Truss Chord	Uplift Capacity (kN) (using a total of 10 nails into truss)
JD5	7.9
JD4	9.4
JD3	13.2

Uplift Capacities for a PAIR of brackets using 4/No. 12 x 35 Type 17 screws per bracket

Joint Group Of Truss Chord	Uplift Capacity (kN) (using a total of 8 screws into truss)
JD5	14.0
JD4	20.0
JD3	28.0



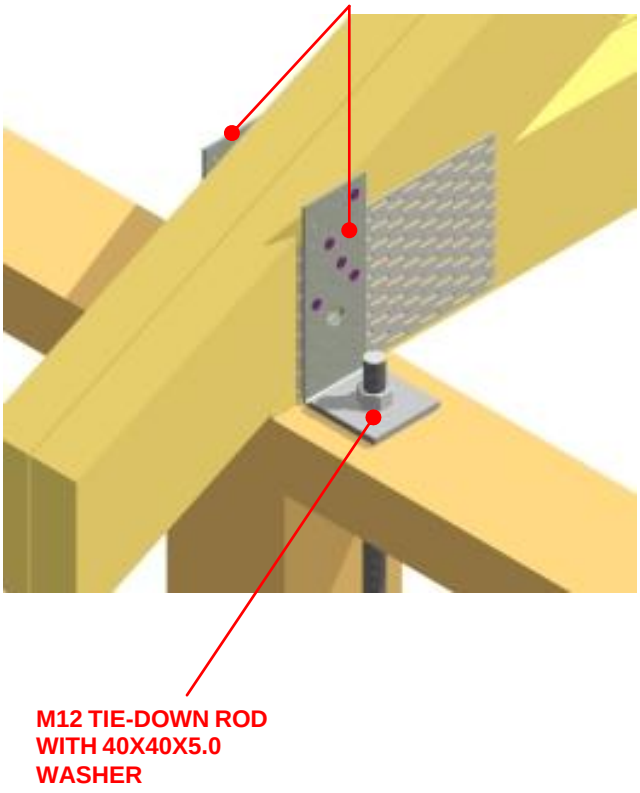
Tie-Down Anchors

Top Plate Tie-Down – Use a M12 tie-down rod with 40x40x5.0 washer anchored in to concrete using a suitable epoxy set chemical anchor.

Alternatively, 4/No.14 x 50 Type 17 screws per bracket may be used in some cases (preferably with pre-drilled holes), to achieve a capacity of 10.0 kN in JD4 material (a total of 20.0 kN for a pair of brackets). In this case, additional connectors are required to transfer tie-down forces from wall plate to foundation.

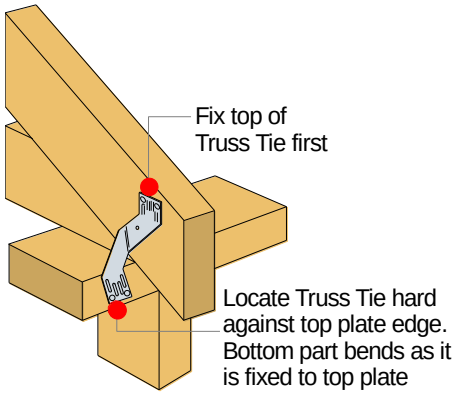
Wall Stud Tie-Down - When MPCPAH is used to tie-down wall studs, adopt M12 x 150 Ramset™ Anchorscrew™ to anchor the bottom plates into concrete slab/footing to satisfy all of the above capacities.

For a minimum edge distance of 35mm and embedment depth of 90mm in Grade 20 concrete, a tie-down capacity of approx 18.0 kN per anchor can be achieved. See more details on Anchorscrews in page 9 of this guide.



MPCPAH IN APPLICATION

TRUSS TIE



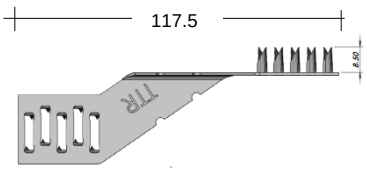
Features

The **Pryda Truss Tie** is a fixing device that has been designed to tie down roof trusses or rafters to a timber top plate. They are easy and quick to install having preformed teeth that allow it to be hammered in without nails.

Truss ties are typically used for low tie-down requirement, for concrete tile roofs.

Truss ties may be used in pairs to achieve double the capacity.

Specification

Steel:	1.0mm G300, Z275
Product Code:	TT
Packing:	50 (left) and 50 (right) per carton
Size:	

Installation

1. The **Truss Tie** should be fixed on the outside face of top plate.
2. Prevent the truss/rafter from moving along the top plate by hammering a nail into the top plate against the side away from the **Truss Tie**, or by placing your foot against the truss/rafter.
3. Hammer the **Truss Tie** into the truss/rafter, then into the top plate. The **Truss Tie** will bend slightly during this second operation, but this is eased by the small bending hole. If two **Truss Ties** are required, the second **Truss Tie** should be located on the opposite truss/rafter face.

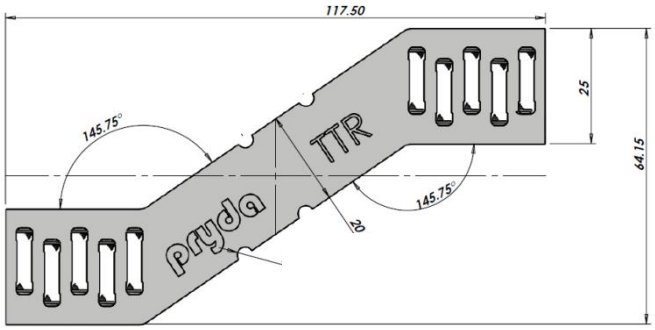
Design Capacities

Wind uplift Limit State Design capacities per **Truss Tie** are as tabulated below:

Fixing Details	Tie-down Design Capacity ϕNj (kN) for Joint Group:						
	Green Timber			Dry Timber			
	J4	J3	J2	JD6	JD5	JD4	JD3
Claw Nails only	1.0	1.2	1.6	0.8	1.0	1.2	1.6

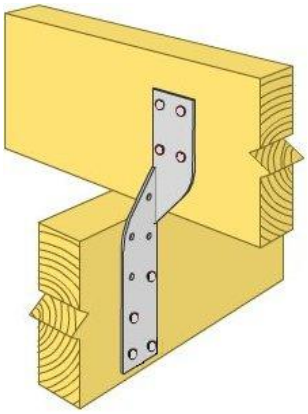
Notes:

1. Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code..
2. Limit State Design capacities apply directly for joints in houses and on secondary beams in other structures. For joints on primary beams in structures other than houses, multiply these capacities by 0.88.
3. Double up capacities when used as pairs.



UNITIE

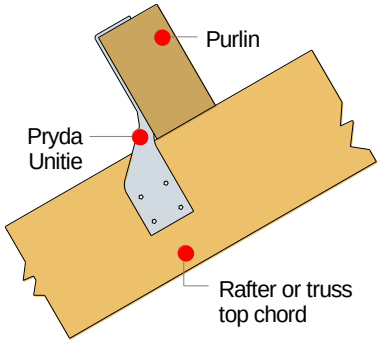
Universal ties for joining timber at right angles



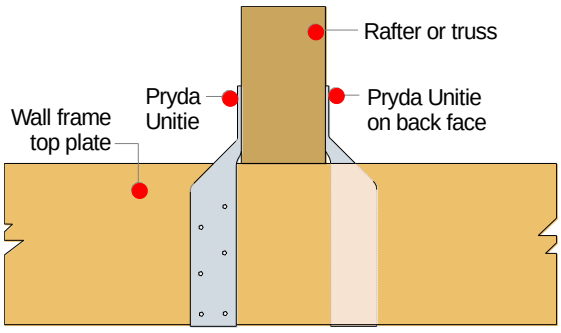
Pryda's Unitie is a simple metal tie for joining timbers crossing at right angles.

Applications

Typical applications for **Pryda Unities** are shown below:



Purlin Anchor



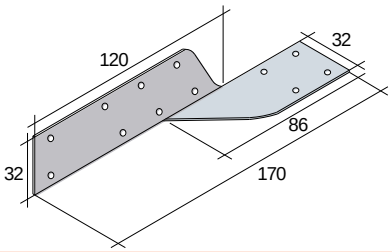
Truss or Rafter Tie-down

Installation

Install **Pryda Unitie** by driving 4@ 35 x 3.15 mm galvanised **Pryda Timber Connector Nails** into each end.

Regarding machine driven nails – see the **General Note** on page 3.

Specifications

Steel:	1.0 mm G300-Z275 galvanised steel
Product Code:	UT/90L* (left hand) and UT/90R* (right hand)
Packing:	100
Size:	

* Merchant pack- individually barcoded product.

Design Capacities

Load Case	Limit State Design Capacity ϕN_j (kN) per Unitie for Joint Group:						
	J4	**J3**	**J2**	**JD5**	**JD4**	**JD3**	**JD2**
1.35G	1.3	1.9	2.6	1.6	1.9	2.6	3.4
1.2G+1.5Qf	1.6	2.3	3.2	1.9	2.3	3.2	4.1
1.2G+1.5Qr	1.8	2.5	3.6	2.1	2.5	3.6	4.5
1.2G+Wdn or Wind Uplift	2.6	3.8	5.3	3.2	3.8	5.3	6.8

Notes:

1. Fixing details are 4@ 35x3.15 mm galvanised **Pryda Timber Connector Nails** into each end.
2. Wind Uplift capacities are based on the Timber Structures Standard, AS1720.1:1997 (Amdt No.4 Nov 2002) or AS1720.1:2010 using k1=1.14, for use in conjunction with AS/NZS1170:2002 loading code.
3. Refer page 4 for description of load cases used in the above table
4. Limit State Design capacities apply directly for joints in houses and on secondary beams in other structures. For joints on primary beams in structures other than houses, multiply these capacities by 0.88.

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