Installation Guide for Pre-fabricated Walls with Pryda Bracing



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March 2012

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INTRODUCTION

This guide applies to the installation of prefabricated wall frames including Pryda bracing products into conventional, timber-framed, residential buildings of one or two storeys complying with **AS1684-2010 Residential timber-framed construction- Part 2 or 3**. These wall frames have been fully prefabricated, including installation of wind bracing units (aka “bracing panels” or “bracing walls”). AS1684 limitations are:

Storeys	One or two
Maximum length in direction of wind, excluding eaves	16000 mm
Maximum wall height	3000 mm
Maximum roof pitch	35 degrees
Wind classification (aka “wind zone”)	N1, N2, N3, N4, C1, C2, C3

For builders and wall frame installers, this guide provides details of practical methods of fixing the wall frames to the floor structure and, for internal walls, to the roof.

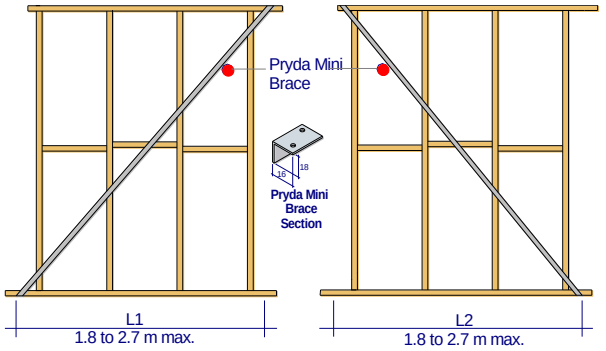
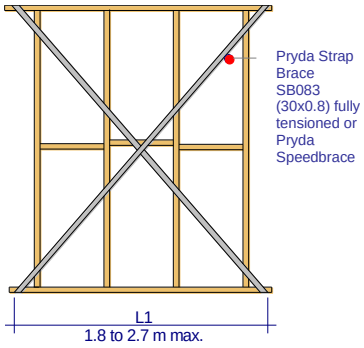
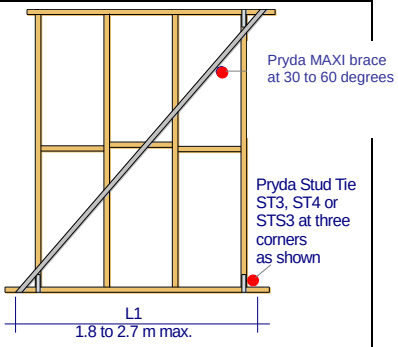
Other fixing details for these purposes are included in AS1684 Part 2 and Part 3, Tables 8.22 and 8.24.

For simplicity, bracing units in this guide are denoted as “Type A” and “Type B”. Design capacities of these units, in kN/m, are specified on the diagrams. Tie-down and shear capacities for connections are also specified in this guide.

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(A) TYPE A BRACING UNITS

A1 Bracing Unit Options

Bracing Unit	Bracing Unit	Bracing Unit
		
Mini Brace, Two Lengths of Same Wall, Type A Unit Capacity = 0.8 x (L1 + L2) kN	**Strap Brace/Speedbrace, Type A Unit** Capacity = 1.5 x L1 kN	**Maxi Brace, Type A Unit** Capacity = 1.5 x L1 kN

Note: Pryda Maxi Brace can be used instead of Mini Brace.

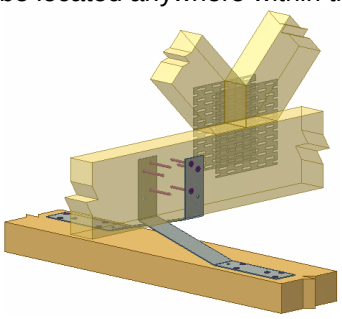
A2 Fixing to floor at bottom plate

Nominal fixing is required, ie:

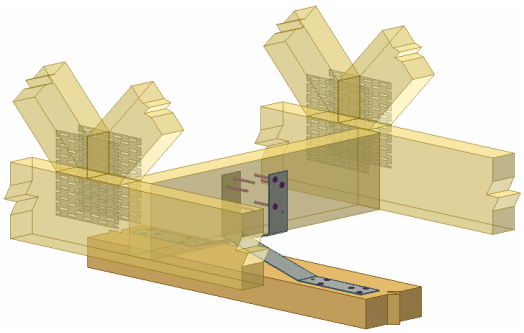
Floor Type	Fixing Required
Timber	Plate thickness up to: 38 mm - 2/75x3.05 mm nails @ 600 mm maximum 50 mm – 2/90x3.05 mm nails @ 600 mm maximum
Concrete slab	One 75 mm masonry nail (hand-driven at slab edge), screw or bolt at 1200 mm centres maximum

A3 Fixing to roof structure at top plate (for non-load bearing walls only)

At all bracing units in internal, non-loadbearing walls, the bracing unit must be connected to the roof as shown below to be effective as part of the bracing system. One connection per each Type A bracing unit is required and it can be located anywhere within the length of the bracing unit.

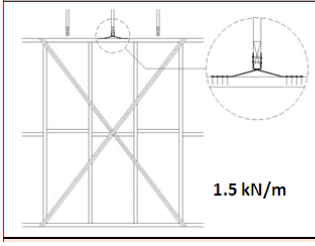


(a) Trusses Perpendicular to wall



(b) Trusses Parallel to wall

Pryda Shear Connector (PSC) in application (always used in pairs)

BRACING TYPE	Wall Lengths (mm)	No. of pairs of Pryda Shear Connectors	No. of nail fixing onto top plate per connector**
	1800	1	4
	2400	1	4
	2700	1	5

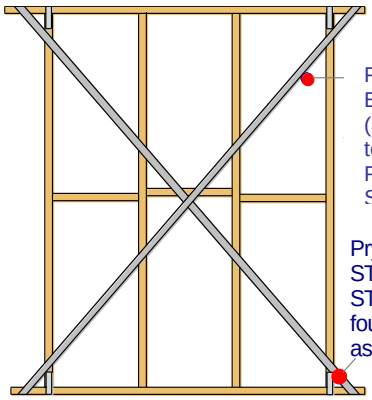
Note: Other types of joints for this use are shown in Table 8.22 of AS1684:2010 Parts 2 and 3. In this instance, the connection must allow vertical movement of roof trusses and must have a clearance of at least 10 mm between the truss bottom chord or ceiling battens (if used) and the top plate to allow for truss settlement over time.

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(B) TYPE B BRACING UNITS

B1 Bracing Unit Option

Bracing Unit



Strap Brace or Speedbrace, Type B Unit
Capacity = 3.0 kN/m x Length

B2 Fixing to floor at bottom plate

Nominal fixing is required, ie:

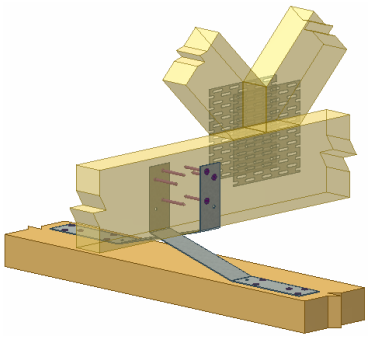
Floor Type	Fixing Required
Timber	Plate thickness up to: 38 mm - 2/75x3.05 mm nails @ 600 mm maximum 50 mm – 2/90x3.05 mm nails @ 600 mm maximum
Concrete slab	One 75 mm masonry nail (hand-driven at slab edge), screw or bolt at 1200 mm centres maximum

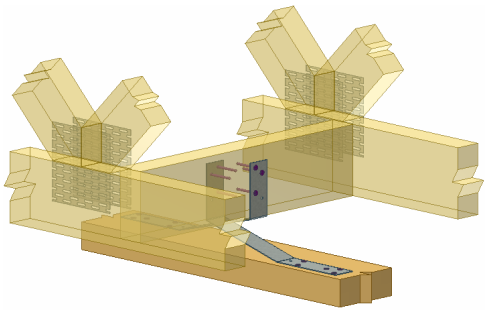
Note: Table 8.18 of AS1684.2:2010 nominates that bracing systems with a racking capacity of 3.4 kN/m only require nominal fixing of the bottom plate to the concrete slab. This reduced requirement has been established from whole house testing programs, along with post-wind damage assessments of the performance of bracing in housing.

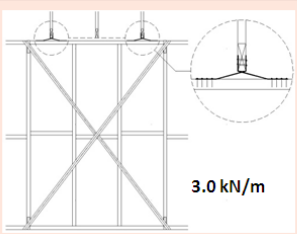
B3 Fixing to roof structure at top plate (for non-load bearing walls only)

At all bracing units in internal, non-loadbearing walls, the bracing unit must be connected to the roof to be effective as part of the bracing system. The connection can be located anywhere within the length of the bracing unit.

B3A Two Connections Per Unit System- using two pairs of Pryda Shear Connectors





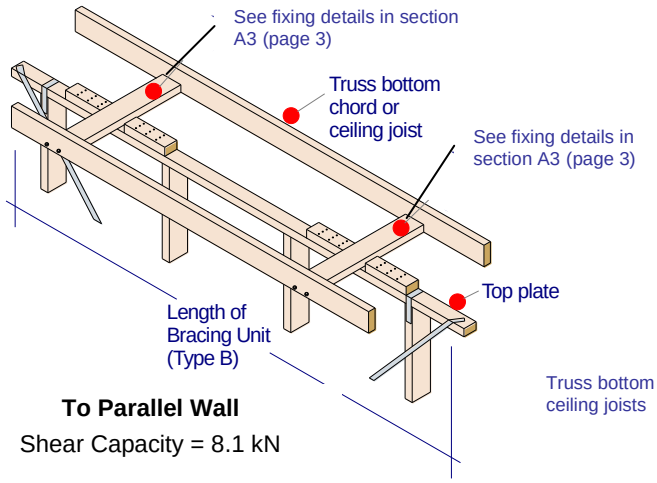
BRACING TYPE	Wall Lengths (mm)	No. of pairs of Pryda Shear Connectors	No. of nail fixing onto top plate per connector**
 3.0 kN/m	1800	2	4
	2400	2	4
	2700	2	5

Note: Other types of joints for this use are shown in Table 8.22 of AS1684:2010 Parts 2 and 3. In this instance, the connection must allow vertical movement of roof trusses and must have a clearance of at least 10 mm between the truss bottom chord or ceiling battens (if used) and the top plate to allow for truss settlement over time.

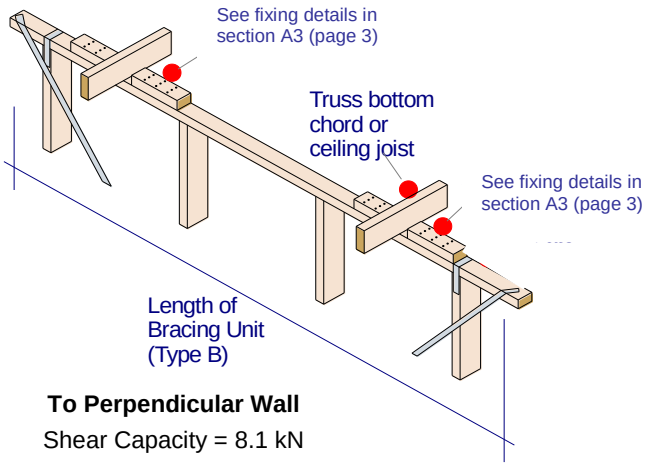
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B3B Two Connections Per Unit System – using blocks as per AS 1684

Adopt similar details as shown for Type A units, but provide two connections per Type B bracing unit as shown below. The total Shear Capacity per unit = 8.1 kN



To Parallel Wall
Shear Capacity = 8.1 kN

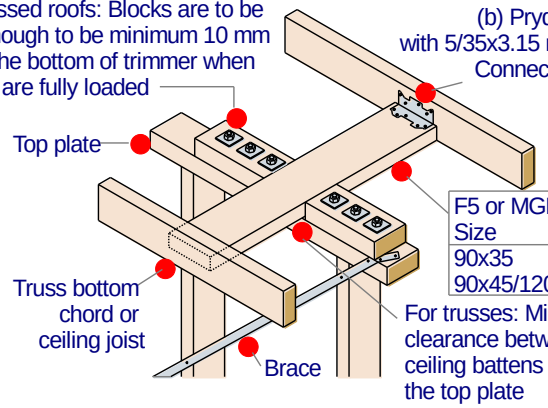


To Perpendicular Wall
Shear Capacity = 8.1 kN

B3C Single Connection Per Unit System

200 mm blocks each side fixed to top plate with 3/M10 bolts with 40 mm square or 45 mm circular x2.5 mm washers each end or 4/14 G Type 17 screws, long enough to penetrate at least 30 mm into top plate.
For pitched roofs: Blocks to be 45 mm thick
For Trussed roofs: Blocks are to be thick enough to be minimum 10 mm above the bottom of trimmer when trusses are fully loaded

Fix trimmer to trusses at each end with either: (a) 2/12G x 65 mm (min.) screws driven through truss chord into trimmer end, or (b) Pryda Multigrips fixed with 5/35x3.15 mm Pryda Timber Connector Nails each leg (as shown)

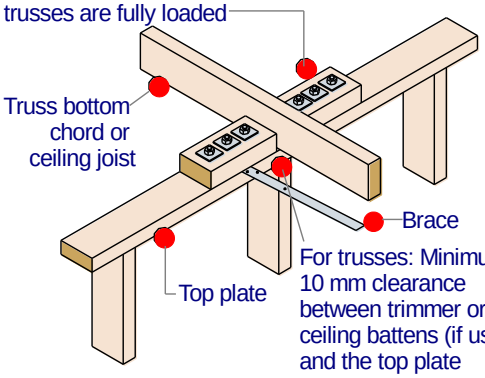


F5 or MGP10 dry trimmer:	
Size	Max. Truss Crs.
90x35	900
90x45/120x35	1200

For trusses: Minimum 10 mm clearance between trimmer or ceiling battens (if used) and the top plate

To Parallel Wall

200 mm blocks each side fixed to top plate with 3/M10 bolts with 40 mm square or 45 mm circular x2.5 mm washers each end or 4/14G Type 17 screws, long enough to penetrate at least 30 mm into top plate.
For pitched roofs: Blocks to be 45 mm thick
For Trussed roofs: Blocks are to be thick enough to be minimum 10 mm above the bottom of trimmer when trusses are fully loaded



To Perpendicular Wall

Shear Capacity of these units is 8.1 kN.

Refer Table 8.22 of AS1684:2010 Parts 2 and 3 for alternatives connections.

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