

## SmartJoist Supporting Offset Load Bearing Wall

Brick or masonry wall

Steel beam as per eng. spec

Load bearing wall

Refer to table below for the maximum roof area supported

Fix the top mount hanger onto the top of the steel as per eng. spec

Min 3mm, max 6mm space to eliminate contact between hanger and steel which may cause squeaks

Install packer inside the steel if the hanger is shorter than the supporting beam

One 30x6 gauge bugle-head screw through bottom hole OR one skew nail into each side of the bottom flange.

Top-mount bracket to match joist size

Joist Span (refer to table below)

Joist Spacing (mm)	300	400	450	600	300	400	450	600
Maximum roof area supported** (m <sup>2</sup> )	21.7	15.0	12.8	8.2	9.6	6.7	5.7	3.6
Joist Span (mm)	211	145	123	79	94	64	55	31
4500	20.5	13.9	11.7	5.7	9.1	6.2	5.2	2.5
4500	20.0	13.4	10.4	4.4	8.9	5.9	4.6	2.0
5500	19.4	12.3	9.1	3.2	8.6	5.4	4.1	1.4

\*\*Based upon worst case of 40mm flange width (conservative for wider flange joists)

**SmartJoist Supporting Offset Load Bearing Wall With Uniform Roof Loads Using Top-Mount Hanger**

**RA1**

Brick or masonry wall

Steel beam as per eng. spec

Load bearing wall

Refer to table below for the maximum roof area supported

Rebate of 12mm Max.

Install web-stiffener (grain vertical) on both sides as per detail F13

SmartJoist blocking at 1800mm c/s max. Blocking to be placed outside the steel

Rebate of 12mm Max.

Joist Span (refer to table below)

Joist Spacing (mm)	300	400	450	600	300	400	450	600
Maximum roof area supported** (m <sup>2</sup> )	21.7	15.0	12.8	8.2	9.6	6.7	5.7	3.6
Joist Span (mm)	211	145	123	79	94	64	55	31
3500	6.9	6.4	6.2	5.3	3.1	2.9	2.8	2.4
4000	6.7	6.2	6.0	4.6	3.0	2.8	2.7	2.0
4500	6.6	6.0	5.7	3.9	2.9	2.7	2.5	1.7
5000	6.4	5.8	5.1	3.1	2.9	2.6	2.3	1.4
5500	6.3	5.3	4.6	2.4	2.8	2.4	2.0	1.1

\*\*Based upon worst case of 40mm flange width (conservative for wider flange joists)

**SmartJoist Rebated Into Steel Supporting Offset Load Bearing Wall With Uniform Roof Loads**

**RA2**

Brick or masonry wall

Steel beam as per eng. spec

Stud/post supporting TGT/GT or other concentrated roof loads

Skew nail 2 off 3.15 x 75mm nails through to lower plate

70 x 35 F5 nailed to underside of top flange of the adjacent joists with 3.15 x 60 nails.

SmartJoist blocking at 1800mm c/s max. Blocking to be placed outside the steel

Rebate of 12mm Max.

Min. 58mm end bearing

90 x 45 F5 strut under critical stud/post to transfer the concentrated load to the steel

Number of struts to match number of members in jamb stud or post

Install web-stiffener (grain vertical) on both sides as per detail F13

**SmartJoist Rebated Into Steel Supporting Offset Load Bearing Wall With Concentrated Roof Loads**

**RA3**

Brick or masonry wall

Steel beam as per eng. spec

Offset load bearing wall with uniform loads or stud/post supporting concentrated loads

Rebate as per eng. spec

Adequate lateral restraint as per eng. spec

Min. bearing as per eng. spec

Rebate as per eng. spec

**SmartLVL Rebated Into Steel Supporting Offset Load Bearing Wall With Concentrated/Uniform Loads**

**RA4**

Offset load bearing wall

Brick or masonry wall

Install web-stiffener (grain vertical) on both sides as per detail F13

70x35mm or 70x45mm horizontal softwood packer shot fastened to steel web

Continuous timber flange plate, size dependent upon SmartJoist and steel beam sizes, but not less than 25mm bearing onto steel beam. Min. 35mm thick & securely fixed back to packers with nails or screws

Face-mount bracket to match joist size

Offset load bearing wall

Steel beam as per eng. spec

One 30x6 gauge bugle-head screw through bottom hole OR one skew nail into each side of the bottom flange.

Install web-stiffener (grain vertical) on both sides as per detail F13

70x35mm or 70x45mm horizontal softwood packer shot fastened to steel web

Continuous timber flange plate, size dependent upon SmartJoist and steel beam sizes, but not less than 25mm bearing onto steel beam. Min. 35mm thick & securely fixed back to packers with nails or screws

**SmartJoist Supporting Offset Load Bearing Wall With Uniform Roof Loads Using Face-Mount Hanger**

**RA5**

## SmartJoist Supporting Offset Load Bearing Wall

Brick or masonry wall

Offset load bearing wall supporting uniform roof loads only. (no concentrated loads)

Install web-stiffener (grain vertical) on both sides as per detail F13

Min. 60mm edge distance for M12 bolts

Min. 60mm edge distance for M12 bolts

LVL15 face plate to match joist depth (Minimum 42mm thick)

LVL/Pine timber packer

Steel beam as per eng. spec

Face-mount bracket to match joist size.

One 30x6 gauge bugle-head screw through bottom hole OR one skew nail into each side of the bottom flange.

For tiled roof with truss/rafter span up to 10m & floor joist span up to 6m with 40kg/m<sup>2</sup> dead load. Use 2 rows of M12 bolts at 300mm c/s or 3 rows of M12 bolts at 450mm c/s for sheet roof with truss/rafter span up to 10m & floor joist span up to 6m with 40kg/m<sup>2</sup> dead load. Use 2 rows of M12 bolts @ 450mm c/s or 3 rows of M12 bolts at 900mm c/s. For wall with concentrated roof loads, the connection will have to be designed by an engineer.

**SmartJoist Supporting Offset Load Bearing Wall With Uniform Roof Loads Using Face-Mount Hanger**

**RA6**

Brick or masonry wall

Offset load bearing wall supporting uniform roof loads only. (no concentrated loads)

5-6mm gap

Max. rebate D/2

Steel beam as per eng. spec

Diagonal web-stiffener on both sides of the web as per detail F13.

Rebate of 12mm Max.

Min. 45mm bearing

SmartJoist blocking at 1800mm c/s max. Blocking to be placed outside the steel

Joist depth D

**SmartJoist Rebated Into Steel Supporting Offset Load Bearing Wall With Uniform Roof Loads**

**RA7**

## Load Bearing Cantilevered SmartJoist

SmartJoist blocking panel

Load bearing wall

Web stiffeners (grain vertical) required on both sides of SmartJoist as per detail F13

Rimboard End Blocking

2 x cantilever span but MINIMUM of 1200mm

Small Gap (3mm ±)

5/20044, 5/24040, 5/24051  
4 of 3.15 x 65 nails clinched  
5/30040, 5/30051  
5/30058 & 5/40058  
5 of 3.15 x 65 nails clinched  
5/24070 & 5/30070  
5 of 3.15 x 75 nails clinched  
5/24090 & 5/30090  
5 of 3.75 x 100 nails clinched  
5/30090 & 5/40090  
6 of 3.75 x 100 nails clinched

Right fit

**Load Bearing Cantilevered Double SmartJoists**

**C1**

SmartJoist blocking panel

Load bearing wall

Web stiffeners (grain vertical) required on both sides of SmartJoist over support. Refer to detail F13

Rimboard End Blocking

2 x cantilever span but MINIMUM of 1200mm

Face grain of ply reinforcement parallel to the span

NOTE: 15mm F11 structural ply is required on one or both sides of the joist (See Tables). Depth shall match the full height of the SmartJoist. Nail with 3.15 x 65 nails at 100mm c/s in a staggered pattern.

**Load Bearing Cantilevered SmartJoist With Ply Reinforcement**

**C2**

25x1.0mm G.I. strap with 7/35x3.15 dia. each side

3 rows of 3.75 dia x 40mm nails into the web-stiffener each side

SmartJoist shall be designed to support the load-bearing wall above when not stacked over wall below.

Load bearing wall

SmartJoist blocking panel

2 x cantilever span but MINIMUM of 1200mm

INVERTED (Upside-down)

Face mount joist hanger

25x1.0mm G.I. strap with 7/35x3.15 dia. each side

Solid timber or LVL end trimmer

Web-Stiffener (grain vertical) on both sides as per detail F13

**Load Bearing Cantilevered SmartJoist With Inverted Face-Mount Bracket**

**C3**

## Load Bearing Cantilevered SmartJoist

SmartJoist blocking panel

Load bearing wall

Web stiffeners (grain vertical) required on both sides of SmartJoist as per detail F13

Rimboard End Blocking

2 x cantilever span but MINIMUM of 1200mm

Small Gap (3mm ±)

5/20044, 5/24040, 5/24051  
4 of 3.15 x 65 nails clinched  
5/30040, 5/30051  
5/30058 & 5/40058  
5 of 3.15 x 65 nails clinched  
5/24070 & 5/30070  
5 of 3.15 x 75 nails clinched  
5/24090 & 5/30090  
5 of 3.75 x 100 nails clinched  
5/30090 & 5/40090  
6 of 3.75 x 100 nails clinched

Right fit

**Load Bearing Cantilevered SmartJoist**

**C4**

Load bearing wall

SmartJoist blocking panel

Cyclone rod, nut & washer under plate

Web stiffeners (grain vertical) required on both sides of SmartJoist as per detail F13

Cyclone strap or equivalent

Rimboard End Blocking

2 x cantilever span but MINIMUM of 1200mm

Small Gap (3mm ±)

5/20044, 5/24040, 5/24051  
4 of 3.15 x 65 nails clinched  
5/30040, 5/30051  
5/30058 & 5/40058  
5 of 3.15 x 65 nails clinched  
5/24070 & 5/30070  
5 of 3.15 x 75 nails clinched  
5/24090 & 5/30090  
5 of 3.75 x 100 nails clinched  
5/30090 & 5/40090  
6 of 3.75 x 100 nails clinched

Right fit

Where the strap ends of the cyclone strap are wrapped around the wall plate or other timber member & are fixed with 4 of 3.15 x 35 nails, the design capacity N<sub>d</sub> of 15.3kN is applicable, regardless of the timber joint group. Test has proven that bending the legs of cyclone straps around the timber increases the ultimate load capacity.

**Load Bearing Cantilevered SmartJoist With Cyclone Straps**

**CS1**

## Non-Load Bearing Cantilevered SmartJoist

**FOR CANTILEVERS SUPPORTING LOAD BEARING WALL**

REFER TO DETAIL C1, C2, C3, C4 OR CS1

Additional nails at end to prevent rotation

90 - 190 mm joist - 6 nails

200 - 290 mm joist - 8 nails

300 - 400 mm joist - 10 nails

Non Load bearing wall to a maximum height of 2400 mm

End trimmer (min 25mm thick)

SmartJoist blocking

Uniform loads only

H3 treated timber

Extension joist

Nailed to backer block & joist with 2 rows of 3.75 dia x 75 mm at 150 mm centres and clinch

Backer block

Nailed with 2 rows of 3.75 dia x 65 mm nails at 150 centres (clinch if required)

15 mm

70mm

150 mm

65 mm

MINIMUM - 2 x Cantilever Span

1200 mm MAX

1200 mm MIN.

1.5 x MIN.

Note: Backer-block nails may be omitted if extension nails penetrate filler block and joist web and are clinched.

**Non-Load Bearing Cantilevers (Balconies) With Adjacent Cantilevers Joists**

**F9**

Non Load bearing wall to a maximum height of 2400 mm

End trimmer (min 25mm thick)

All H3 treated deck members are to be lined and sealed with protectadec and ensal spray as per detail PD1

Solid blocking (min. 25mm thick), between every joist

L/2 MAX.

Example: 1200mm

Non Load bearing wall to a maximum height of 2400 mm

For Internal Applications Only

SmartJoist blocking

SmartJoist Applications as per detail F1

SmartJoists may be cantilevered upto 1/3 of their span.

L/3 MAX.

Example: 800mm

Example: 2400mm

**Non-Load Bearing Cantilevered SmartJoist/SmartLVL**

**F9A**

**FOR CANTILEVERS SUPPORTING LOAD BEARING WALL**

REFER TO DETAIL C1, C2, C3, C4 OR CS1

Non Load bearing wall to a maximum height of 2400 mm

End trimmer (min 25mm thick)

SmartJoist blocking

Uniform loads only

H3 treated timber

Extension joist fully supported by the bottom flange and nailed to the OSB web with 2 rows of 3.15 dia x 75 mm at 150 mm centres and clinch. Use longer nails if required to ensure min. 30mm penetration into the second extension joist.

Install protectadec as per detail PD1

150 mm

1.5 x MIN.

65 mm

35 mm

70mm

1200 mm MAX

1200 mm MIN.

Section A-A Single nested cantilevered joist

Section A-A Double nested cantilevered joists

Additional nails at each end to prevent rotation

90 - 190 mm joist - 6 nails

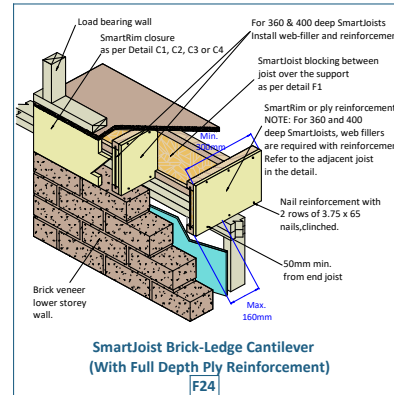
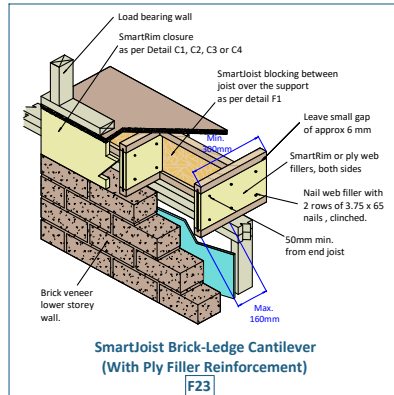
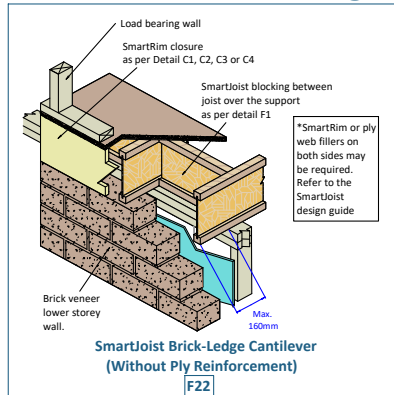
200 - 290 mm joist - 8 nails

300 - 400 mm joist - 10 nails

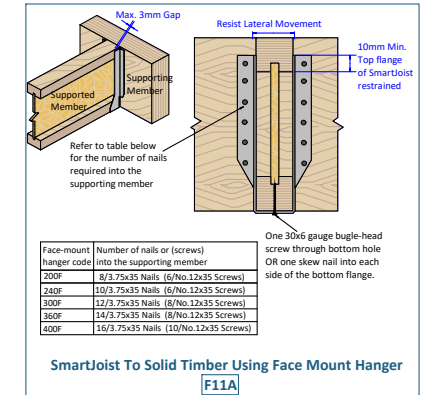
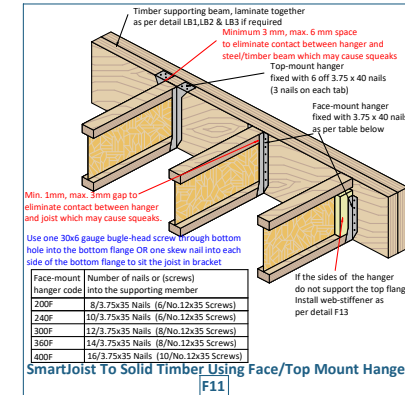
**Non-Load Bearing Cantilevers (Balconies) With Nested Cantilevers Joists**

**F9B**

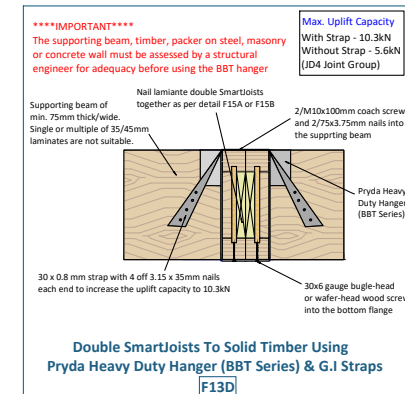
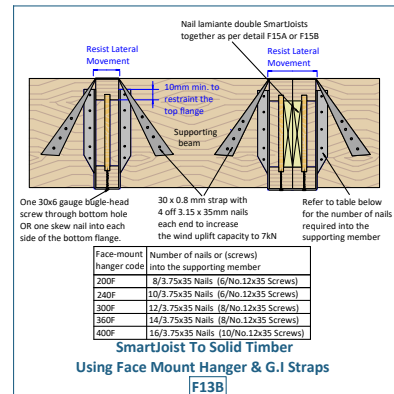
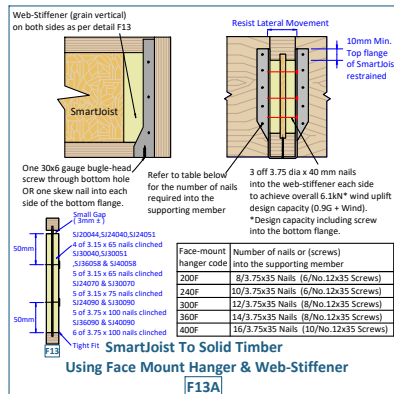
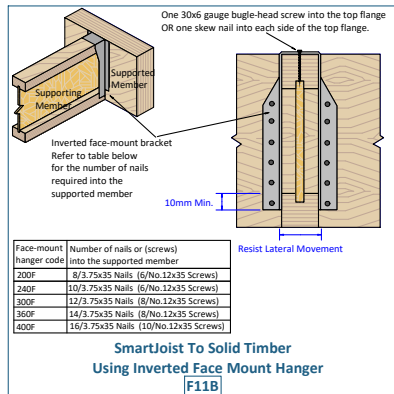
## SmartJoist Brick-Ledge Cantilever



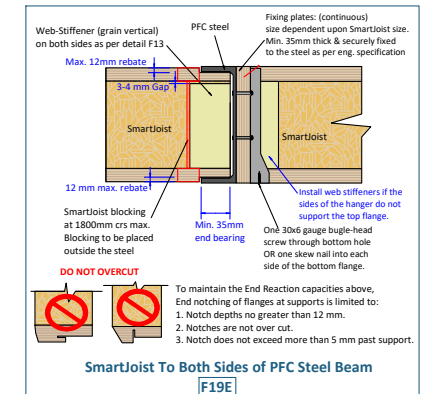
## SmartJoist To Timber Beam



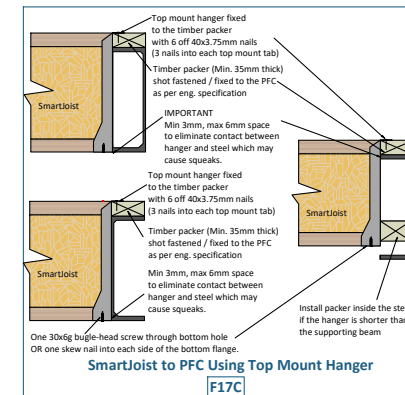
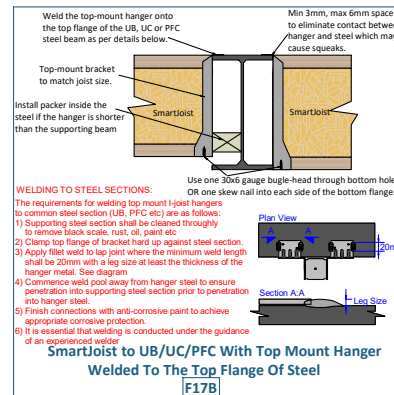
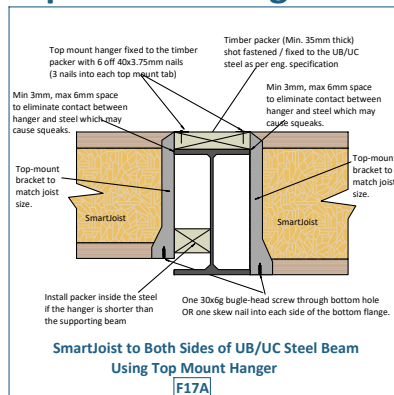
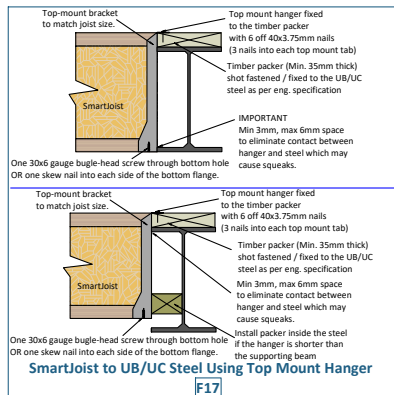
## SmartJoist To Timber Beam



## SJ To Both Sides of PFC

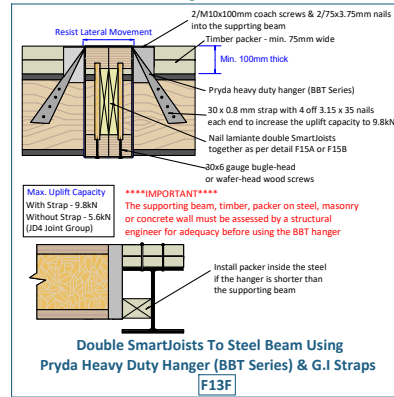
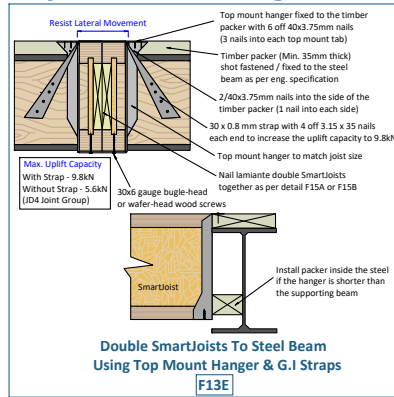
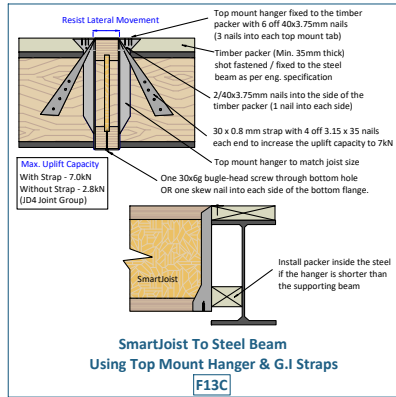


## SmartJoist To Steel With Top-Mount Hanger

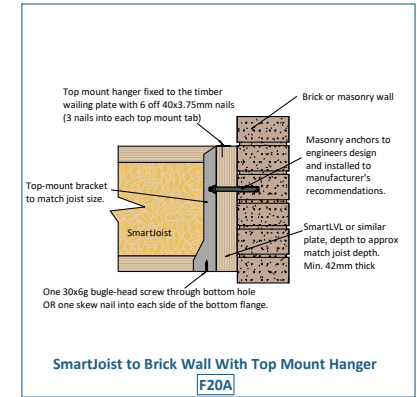
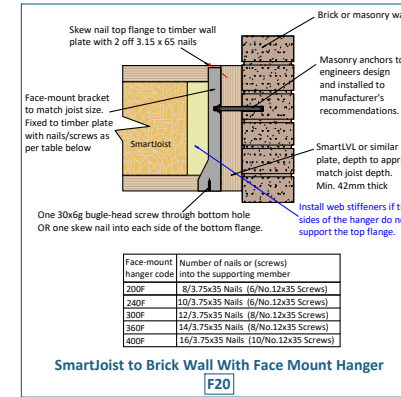




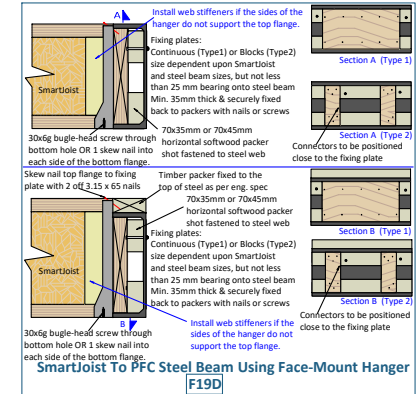
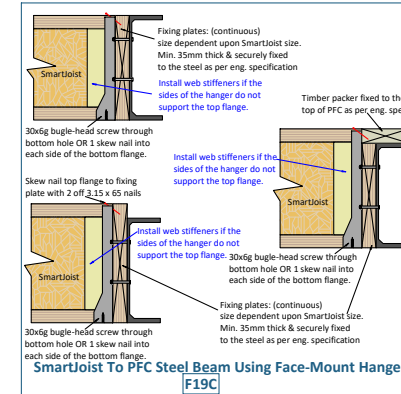
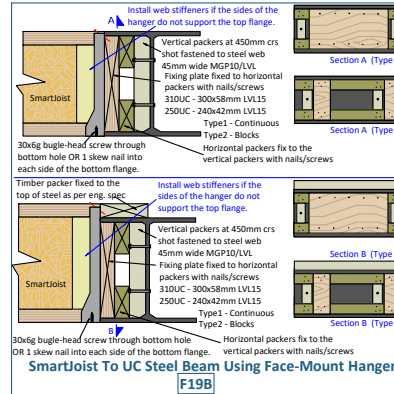
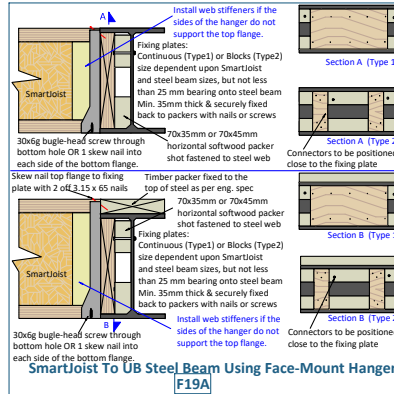
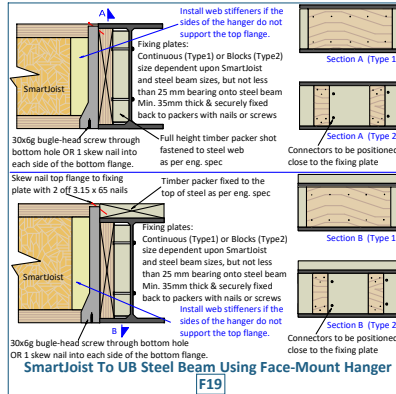
## SmartJoist To Steel With Top-Mount Hanger & Tie-Down Strap



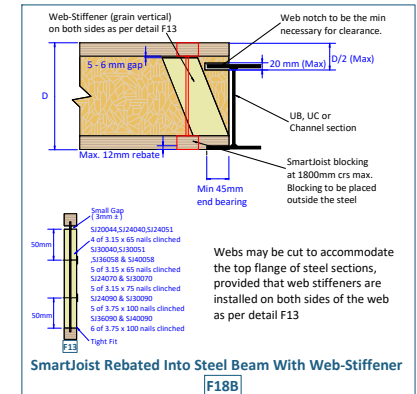
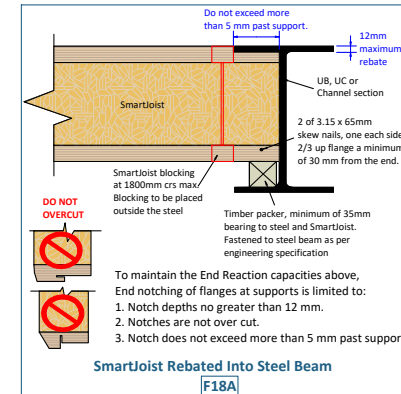
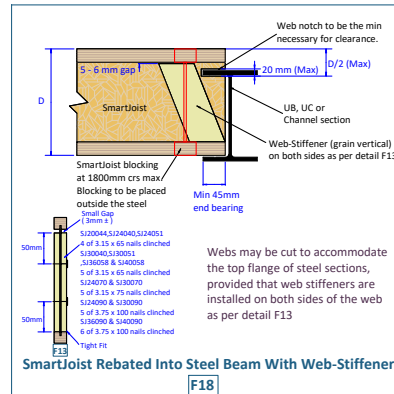
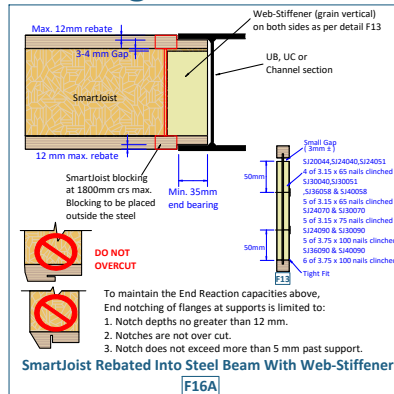
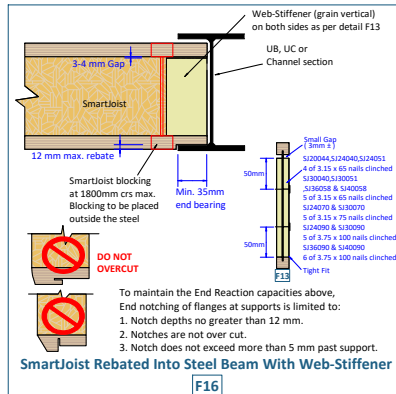
## SmartJoist To Brick Wall



## SmartJoist To Steel With Face-Mount Hanger



## SmartJoist To Steel Without Hanger





## Multiple Member Lamination

**IMPORTANT NOTES**  
1) DO NOT USE CUP HEAD BOLT OR COACH BOLT  
2) BOLTS TO BE SNUG-TIGHT.

Beam hanger as per eng. specification

End distance Table 1

Washer size Table 5

Temporary waterproof membrane

No. of bolts at ends of support Table 3

No. of bolts at either side of the supported beam Table 4

Table 5 - Washer size

Beam Size	Min. diameter	Min. side length
M12	12mm	50mm

Table 1 - Bolt Spacing (Top Loaded)

Section Width	Min. diameter	Min. side length
2/35	3.15 x 65	2 or 3"
3/35 & 2/45	3.30 x 90	2 or 3"

Table 3 - Min. Edge & End Distance

Beam Size	Min. Edge	Min. End	Min. Distance Between
M12	60mm	60mm	60mm

Table 4 - No. of Extra Bolts

Beam Depth (mm)	At either side of the Support	At either side of the supported beam
90 to 150	1	1
160 to 240	2	2
> 240mm	3	3

**Multiple Member Lamination Using Bolts**  
LB1

Beam hanger as per eng. specification

End distance Table 1

Nail spacing Table 2

Temporary waterproof membrane

No. of nails at ends of support Table 3

No. of nails at either side of the supported beam Table 4

Table 1 - Nail Spacing (Top Loaded)

Section Width	Min. diameter	Min. side length
2/35	3.15 x 65	2 or 3"
3/35 & 2/45	3.30 x 90	2 or 3"

Table 2 - Nail Spacing (Side Loaded)

Section Width	Min. diameter	Min. side length
2/35	3.15 x 65	2 or 3"
3/35 & 2/45	3.30 x 90	2 or 3"

Table 3 - Min. Edge & End Distance

Beam Depth (mm)	At either side of the Support	At either side of the supported beam
90 to 150	1	1
160 to 240	2	2
> 240mm	3	3

**Multiple Member Lamination Using Nails**  
LB2

Beam hanger as per eng. specification

End distance Table 1

Screw spacing Table 2

Temporary waterproof membrane

No. of screws at ends of support Table 3

No. of screws at either side of the supported beam Table 4

Table 1 - Screw Spacing (Side & Top Loaded)

Section Width	Min. diameter	Min. side length
2/35	3.15 x 65	2 or 3"
3/35 & 2/45	3.30 x 90	2 or 3"

Table 2 - Min. Edge & End Distance

Beam Depth (mm)	At either side of the Support	At either side of the supported beam
90 to 150	1	1
160 to 240	2	2
> 240mm	3	3

**Multiple Member Lamination Using Screws**  
LB3

## SmartRim End Blocking

Butt sections together at centre of lower storey stud.

Fix rimboard to the top & bottom flanges with 1 off 3.15 x 65 nail.

Fix rimboard to the top & bottom plates 30mm in and at 45 deg angle with 60x3.15mm nail @ 150mm c/s

Single layer rimboard blocking for

- 1) Top floor of a multi-storey
- 2) Sub floor of a single storey

**Single layer of rimboard end blocking required for top floor of a multi-storey or sub-floor of a single storey**  
F3

Butt sections together at centre of lower storey stud.

Fix rimboard to the top & bottom flanges with 1 off 3.15 x 75 nail.

Fix rimboard to the top plate / floor bearer & bottom plates 30mm in and at 45 deg angle with 3.15 x 75 nail @ 150mm c/s

2 layers of rimboard blocking for

- 1) All lower floors of a multi-storey except the top floor
- 2) Sub floor of a single storey

**2 layers of rimboard end blocking required for all lower floors of a multi-storey except the top floor**  
F3

## SmartJoist Blocking (End/Intermediate)

Upper load bearing wall

Blocking @ 1800 c/s for

- 1) Sub floor of a single storey
- 2) Top floor of a two/three storey

Blocking between every joist for

- 1) Sub floor of a two storey.
- 2) Ground & 1st floor of a three storey.

Joist to top plate as per detail F29

Beam under LWB

Critical block required at all corners

Refer to the supplied installation guide for the blocking installation requirement

Fix blocking to top plate with 3.15mm dia. x 65 nails at 150mm centre & 2 skew nails into top flange.

**SmartJoist Cut-To-Length End Blocking**  
F1

Upper load bearing wall

Blocking between every joist for all levels

Joist to top plate as per detail F29

Beam under LWB

Fix blocking to top plate with 3.15mm dia. x 65 nails at 150mm centre & 2 skew nails into top flange.

**SmartJoist Cut-To-Length End Blocking**  
F1Q

SmartJoist Rimjoist

Nail rimjoist to the end of the top & bottom flange of each SmartJoist with 1/3.15mm dia. x 65 nail, use 1/3.75mm dia. x 75 nail for 58, 70 or 90mm wide flanges.

Fix SmartJoists to top plate as per detail F29

Top plate width must be greater than flange width + 30mm (min. bearing length)

**SmartJoist RimJoist End Blocking**  
F2

SmartJoist End Blocking

Solid block all posts from above to bearing below.

**SmartJoist End Blocking**  
F5

Mid span blocking may be used to reduce vibrations. Two possible methods of attachment are shown below.

Method 1: 1/3.15 x 65 nail at both side of top & bottom flange at each end of the I-joist blocking.

Caution: effective toenailing may be difficult to achieve due to limited access of pneumatic nailers. The builder shall evaluate installation for potential of nail squeak.

Method 2: Minimum 2 rows of 3.75 x 75mm nails thru OSB web of the I-joist blocking into the filler block & clinched on back face of OSB web of I-joist blocking. In addition, nail through OSB web of full-length joist into filler block with minimum 2/3.75 x 75mm nails. Repeat at opposite end of I-joist blocking

**SmartJoist Midspan Blocking**  
B1

## SmartJoist/SmartRim Blocking Under Concentrated Load

Concentrated point load (eg. girder trusses, TG's, all beams & jamb studs)

Fix 90x45mm F5 compression block to SmartJoist where load exceeds 6.5KN\*

\*Reaction needs to be factored for load duration

Single SmartJoist with flange width < plate width

\*k1 load duration factor

Load duration	k1
0.57 for 50+ year	0.57
0.80 for 5 months	0.80
0.94 for 5 days	0.94
0.97 for 5 hours	0.97
1.00 for 5 mins/secs	1.00

**Compression Block / Cripple Next To SmartJoist Blocking**  
F30A

\*k1 load duration factor

Load duration	k1
0.57 for 50+ year	0.57
0.80 for 5 months	0.80
0.94 for 5 days	0.94
0.97 for 5 hours	0.97
1.00 for 5 mins/secs	1.00

Concentrated point load (eg. girder trusses, TG's, all beams & jamb studs)

Fix 90x45mm F5 compression block to SmartJoist where load exceeds 6.5KN\*

\*Reaction needs to be factored for load duration

Single SmartJoist with flange width >= plate width

**Compression Block / Cripple Fixed To SmartJoist Blocking**  
F30B

Concentrated point load (eg. girder trusses, TG's, all beams & jamb studs)

Fix 90x45mm F5 compression block to single rimboard where load exceeds 26kN\*

\*Reaction needs to be factored for load duration.

Rimboard End Blocking

\*k1 load duration factor

Load duration	k1
0.57 for 50+ year	0.57
0.80 for 5 months	0.80
0.94 for 5 days	0.94
0.97 for 5 hours	0.97
1.00 for 5 mins/secs	1.00

**Compression Block / Cripple Next To Rimboard Blocking**  
F30C

Cyclone rod

Load bearing wall

Floor sheeting

SmartJoist fully supported on wall

Min. 51mm wide flange

Web stiffeners on both sides as per detail F13

Max distance from cyclone rod to web stiffener of 100mm

Cyclone rod, nut and washer under top plate

Fix 90x45mm F5 compression block to single rimboard where load exceeds 26kN\*

\*Reaction needs to be factored for load duration.

\*k1 load duration factor

Load duration	k1
0.57 for 50+ year	0.57
0.80 for 5 months	0.80
0.94 for 5 days	0.94
0.97 for 5 hours	0.97
1.00 for 5 mins/secs	1.00

**Cyclone Tie-Down Rod Through SmartJoist Fully Supported On Wall Plate**  
F30D



## Penetration In SmartJoist/SmartRim Blocking

When concentrated loads are present on SmartJoist/SmartRim (loads not supported by any other vertical-load-carrying members such as squash/compression blocks), holes **SHOULD NOT** be placed in the SmartJoist/SmartRim within a distance equal to the depth of the SmartJoist/SmartRim from the area of loading

SmartJoist/SmartRim blocking fully supported on wall

Blocking depth	Max. hole size (a) (b)	Min. length
200mm	130mm	1050mm
240mm	160mm	1280mm
300mm	200mm	1600mm
360mm	235mm	1900mm
400mm	265mm	2100mm

(a) These hole provisions do not apply to SmartJoist/SmartRim installed over openings such as doors or windows  
(b) The diameter of the round hole or the longer dimension of the rectangular hole.

**Penetration in SmartJoist/SmartRim End Blocking**

**F3A**

For multiple holes, the clear spacing between holes shall be at least two times the diameter of the larger hole, or twice the length of the longest rectangular hole. This minimum hole spacing does not apply to holes of 40mm or less in diameter, which can be placed anywhere in the rim board except that the clear distance to the adjacent hole shall be 75mm minimum.

SmartJoist/SmartRim blocking fully supported on wall

Blocking depth	Max. hole size (a) (b)	Min. length
200mm	130mm	1050mm
240mm	160mm	1280mm
300mm	200mm	1600mm
360mm	235mm	1900mm
400mm	265mm	2100mm

(a) These hole provisions do not apply to SmartJoist/SmartRim installed over openings such as doors or windows  
(b) The diameter of the round hole or the longer dimension of the rectangular hole.

**Multiple Penetrations in SmartJoist/SmartRim End Blocking**

**F3B**

## Multiple SmartJoist Lamination

Double SmartJoists supporting parallel or perpendicular load bearing wall

Double SmartJoists supporting point load from above such as jamb stud, roof beam or TGT/GT.

Double SmartJoists supporting floor bearer to both SmartJoists

Particleboard fastened to both SmartJoists

Continuous filler block to laminate the double joists

Backer block (Min. 250mm long) fixed to SmartJoist with 10/3.75x75mm nails

Tight Fit

Small Gap (3mm ±)

Continuous filler block

2 rows of 3.75 x 75 nails at 150mm spacing. (Offset nails from opposite face by 75mm)

**Double SmartJoists Supporting Load Bearing Wall, Concentrated Load or Bearer**

**F15A**

Double SmartJoists supporting parallel or perpendicular load bearing wall

Double SmartJoists supporting point load from above such as jamb stud, roof beam or TGT/GT.

Double SmartJoists supporting floor bearer to both SmartJoists

Particleboard fastened to both SmartJoists

Continuous filler block to laminate the double joists

Backer block (Min. 250mm long) fixed to SmartJoist with 10/3.75x75mm nails

Tight Fit

Small Gap (3mm ±)

Continuous filler block

2 rows of 3.75 x 75 nails at 150mm spacing. (Offset nails from opposite face by 75mm)

**Double SmartJoists Supporting Load Bearing Wall, Concentrated Load or Bearer**

**F15B**

**THIS DETAIL IS ONLY APPLICABLE FOR DOUBLE SMARTJOISTS SUPPORTING UNIFORM FLOOR/ROOF LOADS.**

Double SmartJoists supporting uniform floor loads only

Particleboard must be fastened to both SmartJoists

Packing for laminating double smartjoists is not required.

**Double SmartJoists Supporting Uniform Floor/Roof Loads**

**F15C**

## Web-Stiffener On SJ

Web-stiffeners under concentrated loads are required as shown below for concentrated loads that exceed 6.5KN\*  
\*reaction needs to be factored for load duration

SmartJoist Web Stiffener Attachment Detail

**F13**

## Bevel Cut On SJ

DO NOT bevel cut joist beyond inside face of wall.

**Bevel Cut On SmartJoist**

**F14**

## Rafter Cut On SJ

Top flange must be braced either by sheathing or 100 x 50 for lateral stability.

1 MIN

2

Min. 115mm

600mm

Blocking

90 mm Min bearing

19 mm F11 Ply or SmartRim. Install reinforcement to both sides of joist using adhesive meeting AS/NZS 4364:1996 and nail using 14/75 x 3.75mm evenly spaced as shown. Alternate nailing from each side and clinch.

**Rafter/Taper Cut On SmartJoist**

**F26**

## SmartJoist Bearing

Do NOT start toe nail into the corner of the flange or the top of the flange.

Nail should be as far as practical from the end of the joist.

Start toe nail approximately 2/3 up the side of the flange

**SmartJoist Bearing Detail**

**F29**

## Protectadeck

H3 treated or Natural Durability class 1 or 2 sapwood removed decking

Protectadeck or similar impervious membrane to prevent water ponding on joist

Skew deck nails slightly to cross multiple veneers. Use Galvanised helical threaded nails or screws.

H3 treated timber beam.

**Protectadeck On H3 Treated Timber Beam**

**PD1**

## Floor Beam Into Wall Frame Above or Below

Load bearing floor beam Built into wall frame above

Load bearing floor joist Built into wall frame above

Floor sheet

Face-Mount joist bracket

Full length floor joist to support the flooring and ceiling plasterboard

Load bearing floor beam built into wall frame above

Load bearing floor joist built into wall frame above

Floor sheet

Timber walling plate to support the flooring and ceiling plasterboard

Timber walling plate or full length floor joist to support the flooring.

**Load Bearing Floor Beam Built Into Frame Above**

**BA1**

Flooring continuous under wall plate

Load bearing floor beam built into wall frame below

Face-Mount joist bracket

Bulkhead under

Full length floor joist to support the plasterboard

Timber walling plate to support the plasterboard

Bulkhead under

**Load Bearing Floor Beam Built Into Frame Below**

**BB1**

## Solid Timber End Blocking

Solid-wood blocking between joists over lines of support

Tight fit

Floor Joist

**Solid Timber End Blocking Detail**

**F29A**

Solid block all posts from above to bearing below.

**Solid Timber End Blocking Detail**

**F29B**

## SmartJoist To The Bottom of Bracing Wall

**For solid timber joist, refer to Table 8.24(d) in AS1684.2**

For parallel bracing wall - Install SmartLVL15 timber bridging cleat at no closer than 1200mm c/s

For perpendicular bracing wall - Install SmartLVL15 timber bridging cleat under the bracing wall to suit

Refer to table below for timber bridging cleat size

Timber bridging cleat size	No. of nails into joist web and end grain of the timber bridging cleat	Design Capacity (Wind downward)
90 x 42/58mm LVL15	2/3.15 x 75mm nails	6.0kN
130 x 42/58mm LVL15	3/3.15 x 75mm nails	4.9kN
170 x 42/58mm LVL15	4/3.15 x 75mm nails	5.8kN

**Bolt or screw into the timber bridging cleat**

	Design Capacity (Wind uplift)
1/M10 bolt with 42mm wide LVL15 timber bridging cleat	6.1kN
1/M12 bolt with 58mm wide LVL15 timber bridging cleat	8.0kN
1/No.14 screw with min. 40mm penetration into the timber bridging cleat	2.0kN

**SmartJoist To The Bottom of Parallel/Perp. Bracing Wall**  
**F21**

**For solid timber joist, refer to Table 8.24(e) in AS1684.2**

For parallel bracing wall - Install SmartLVL15 timber bridging cleat at no closer than 1200mm c/s

For perpendicular bracing wall - Install SmartLVL15 timber bridging cleat under the bracing wall to suit

Refer to table below for timber bridging cleat size

Timber bridging cleat size	Hanger size	No. of nails into the web-stiffener	No. of nails into the timber bridging cleat	Design Capacity (Wind uplift or downward)
90 x 58mm LVL15	F8S890	8/3.15 x 35mm nails	4/3.15 x 35mm nails	9.6kN
130 x 58mm LVL15	F8S8120	12/3.15 x 35mm nails	6/3.15 x 35mm nails	13.6kN
170 x 58mm LVL15	F8S8170	20/3.15 x 35mm nails	10/3.15 x 35mm nails	20kN

**SmartJoist To The Bottom of Parallel/Perp. Bracing Wall**  
**F21A**

**High capacity Bracing wall**

Seasoned timber blocking piece

M12 bolt at end of each panel and intermediately at max. 1200mm c/s (tighten the nut from the top)

1 piece of min. 35mm timber hard against both sides of bolt, 50mm washer bearing onto both pieces

**DO NOT DRILL THROUGH EITHER FLANGE OF SMARTJOIST UNLESS IT'S FULLY SUPPORTED ON WALL PLATE OR SIMILAR**

**SmartJoist To The Bottom of High Capacity Parallel Bracing Wall**  
**F21B**

**High capacity bracing wall**

M12 bolt at end of each panel and intermediately at Max. 1200mm c/s or as per AS1684.2

Double joists under parallel bracing wall

15mm deep notching of double joists is permitted ONLY if a single un-notched joist is structurally adequate in this position

**DO NOT DRILL THROUGH SINGLE MEMBERS UNLESS THE WHOLE MEMBER IS RE-ANALYSED WITH A REDUCED CROSS SECTION AT THE HOLE LOCATION**

**Solid Timber Joist To The Bottom of High Capacity Parallel Bracing Wall**  
**F21C**

**Low capacity bracing wall**

3.4kN/m or less

Fix bottom plate to the floor joist with screws or nails as per table below.

**DO NOT DRILL THROUGH EITHER FLANGE OF SMARTJOIST UNLESS IT'S FULLY SUPPORTED ON WALL PLATE OR SIMILAR**

Nails or screws	Design capacity (Wind uplift)
2/3.05 nails with min. 40mm penetration into the joist	0.5kN
1/No.12 screw with min. 40mm penetration into the joist	2.4kN
1/No.14 screw with min. 40mm penetration into the joist	2.7kN

**SmartJoist To The Bottom of Low Capacity Parallel Bracing Wall**  
**F21F**

## SmartJoist/SmartLVL To The Top of Bracing Wall

**Low capacity bracing wall**

3.4kN/m or less

Fix bottom plate to the floor joist with screws or nails as per table below.

**DO NOT DRILL THROUGH SINGLE MEMBERS UNLESS THE WHOLE MEMBER IS RE-ANALYSED WITH A REDUCED CROSS SECTION AT THE HOLE LOCATION**

Nails or screws	Design capacity (Wind uplift)
2/3.05 nails with min. 40mm penetration into the joist	0.5kN
1/No.12 screw with min. 40mm penetration into the joist	1.5kN
1/No.14 screw with min. 40mm penetration into the joist	1.7kN

**Solid Timber Joist To The Bottom of Low Capacity Parallel Bracing Wall**  
**F21G**

ZClip fixed with 3 Mittek nails to top of trimmer and bottom of joist.

Fixed trimmer to top plate with 1/M12 bolt and washers or 2/No.14 Type 17 screws

SmartJoist

90 x 35 F8 or MGP12 trimmer

SmartJoist

ZClip fixed with 3 Mittek nails to top of trimmer and bottom of joist.

Fixed trimmer to top plate with 1/M12 bolt and washers or 2/No.14 Type 17 screws

Category	1	2	3
Adjustment factor	1.0	0.94	0.88

**Floor Joist To The Top of Parallel Bracing Wall**  
**F21D**

**Refer to Table 8.22(j) in AS1684.2 for alternative fixing method for solid timber joist.**

Solid timber joist

Lower bracing wall

Web-stiffener on both sides of the SmartJoist as per detail F13

4/3.15 x 35mm nails

2/3.15 x 35mm nails

Pryda triple grips or similar.

Refer to table below

Limit State Design Shear Capacity per joist (kN)	JD4	JD5
2/3.05 skew nails as per AS1684.2	1.1	0.9
2/3.33 skew nails as per AS1684.2	1.2	1.0
2/3.05 skew nails + 1/triple grip	2.1	1.5
2/3.33 skew nails + 1/triple grip	2.2	1.6
2/3.05 skew nails + 2/triple grips	4.8	3.7
2/3.33 skew nails + 2/triple grips	4.9	3.8

Category	1	2	3
Adjustment factor	1.0	0.94	0.88

**Floor Joist To The Top of Perpendicular Bracing Wall**  
**F21E**

ZClip fixed with 3 Mittek nails to top of trimmer and bottom of joist.

Shear blocks nailed or bolted to the top plate as per table.

SmartJoist

For solid timber joist, refer to Table 8.22(e) in AS1684.2

Limit State Design Shear Capacity (kN)	JD4	JD5
2/3.05 skew nails as per AS1684.2	1.1	0.9
2/3.33 skew nails as per AS1684.2	1.2	1.0
2/3.05 skew nails + 1/triple grip	2.1	1.5
2/3.33 skew nails + 1/triple grip	2.2	1.6
2/3.05 skew nails + 2/triple grips	4.8	3.7
2/3.33 skew nails + 2/triple grips	4.9	3.8

Category	1	2	3
Adjustment factor	1.0	0.94	0.88

**Floor Joist To The Top of Parallel Bracing Wall**  
**F21H**

130 x 80 x 6mm Mittek bearing plate

Fix with 4 / 30 x 2.8 mm reinforced head nails

OR

140 x 75 x 6mm Pryda anti-crush plate

Fix with 4 / 35 x 3.15 mm Pryda connector nails

Critical studs

Top plate

Note: Steel anti-crush plate to be supplied by others

**Mittek/Pryda Steel Anti-Crush Plate**  
**F31**

## MiTek SPH, Dunning QSPH & Pryda JHHS Split Hanger

When multiple laminated beams are used as supporting beam, longer screws may be required in bracket OR alternatively beams to be screw/bolt laminated appropriately as per detail LB1 or LB3 to ensure loads are shared between all laminations of beams.

Min. 32mm edge distance

Pair of split hangers fixed to the supporting & supported beams with 10 off No.14 x 30mm long Type17 screws to each face

Unless the top of the supported beam is provided with additional lateral restraints such as mini or multi grips, the bracket must cover at least 60% of the supported beam depth.

**Timber Beam To Timber Beam Fixing With MiTek SPH220 or Dunnings BSPH220 Split Hanger**  
**SH1**

Min. 32mm edge distance

Single split hanger fixed to the supporting & supported beams with 10 off No.14 x 30mm long Type17 screws to each face

Notes:

- When multiple laminated beams are used, longer screws may be required in bracket OR alternatively beams to be screw/bolt laminated appropriately as per detail LB1 or LB3 to ensure loads are shared between all laminations of beams.
- Provide 2/No.14 x 90 screws from the back of supporting beam into end-grain of supported beam to resist twisting of supporting beam.
- Use longer screw lengths if required to ensure a min. 35mm penetration.
- Unless the top of the supported beam is provided with additional lateral restraints such as mini or multi grips, the bracket must cover at least 60% of the supported beam depth.

**Timber Beam To Timber Beam Corner Fixing With MiTek SPH220 or Dunnings BSPH220 Split Hanger**  
**SH2**

When multiple laminated beams are used as supporting beam, longer screws may be required in bracket OR alternatively beams to be screw/bolt laminated appropriately as per detail LB1 or LB3 to ensure loads are shared between all laminations of beams.

Min. 32mm edge distance

Pair of split hangers fixed to the supporting & supported beams with 8 off No.14 x 30mm long Type17 screws to each face

Unless the top of the supported beam is provided with additional lateral restraints such as mini or multi grips, the bracket must cover at least 60% of the supported beam depth.

**Timber Beam To Timber Beam Fixing With MiTek SPH180 or Dunnings BSPH180 Split Hanger**  
**SH3**

Min. 32mm edge distance

Single split hanger fixed to the supporting & supported beams with 8 off No.14 x 30mm long Type17 screws to each face

Notes:

- When multiple laminated beams are used, longer screws may be required in bracket OR alternatively beams to be screw/bolt laminated appropriately as per detail LB1 or LB3 to ensure loads are shared between all laminations of beams.
- Provide 2/No.14 x 90 screws from the back of supporting beam into end-grain of supported beam to resist twisting of supporting beam.
- Use longer screw lengths if required to ensure a min. 35mm penetration.
- Unless the top of the supported beam is provided with additional lateral restraints such as mini or multi grips, the bracket must cover at least 60% of the supported beam depth.

**Timber Beam To Timber Beam Corner Fixing With MiTek SPH180 or Dunnings BSPH180 Split Hanger**  
**SH4**

When multiple laminated beams are used as supporting beam, longer screws may be required in bracket OR alternatively beams to be screw/bolt laminated appropriately as per detail LB1 or LB3 to ensure loads are shared between all laminations of beams.

Min. 32mm edge distance

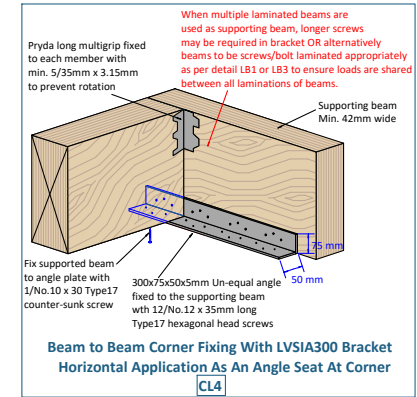
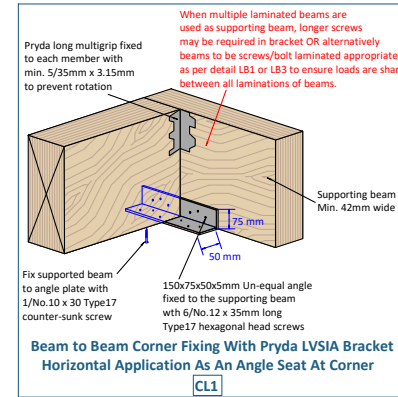
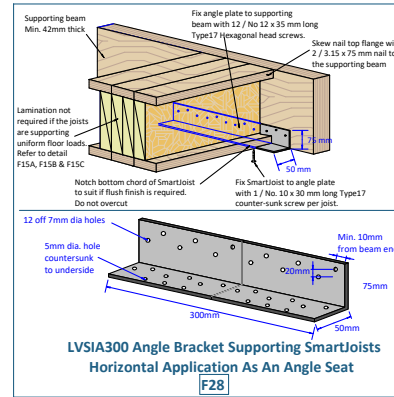
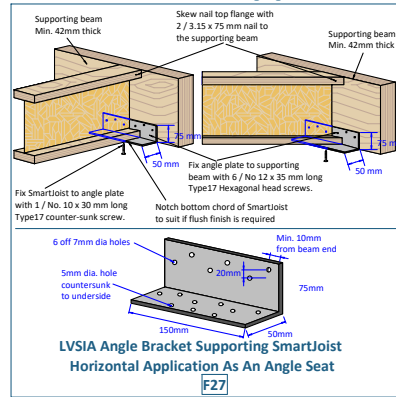
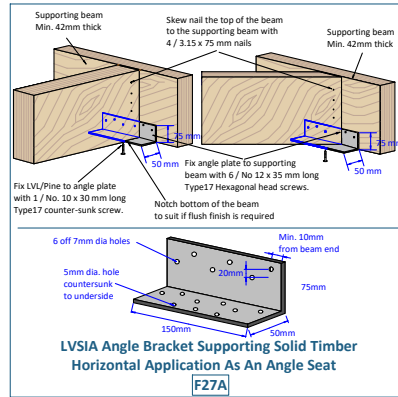
Pair of Pryda JHHS split hanger fixed to the supporting & supported beams with 8 off No.8 x 35mm long Type17 screws to each face

Unless the top of the supported beam is provided with additional lateral restraints such as mini or multi grips, the bracket must cover at least 60% of the supported beam depth.

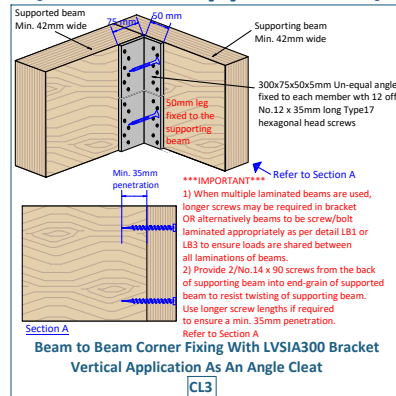
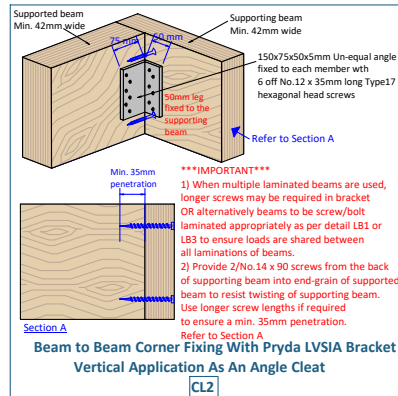
**Timber Beam To Timber Beam Corner Fixing With Pryda JHHS Split Hanger**  
**JHS**



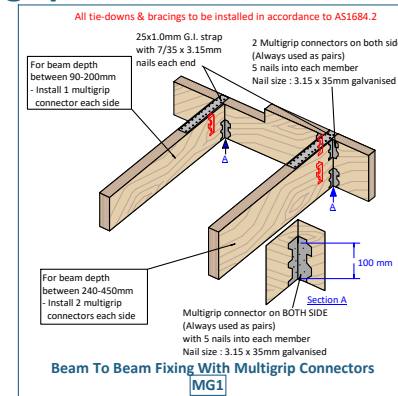
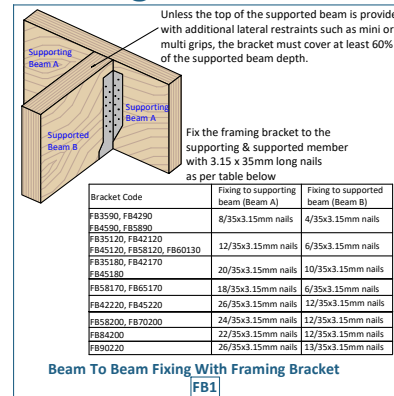
## LVSIA & LVSIA300 Bracket (Horizontal Application)



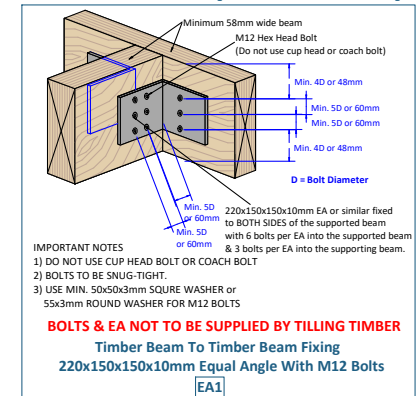
## LVSIA & LVSIA300 Bracket (Vertical Application)



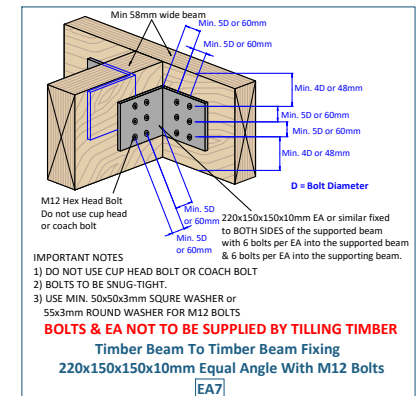
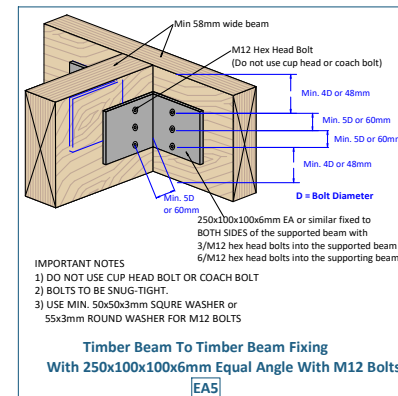
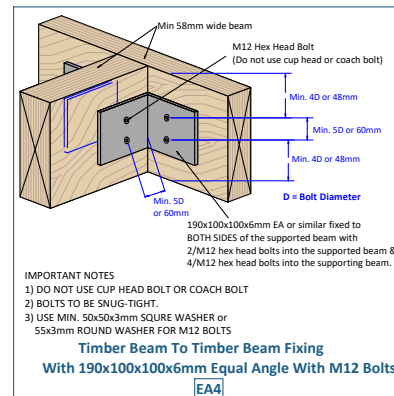
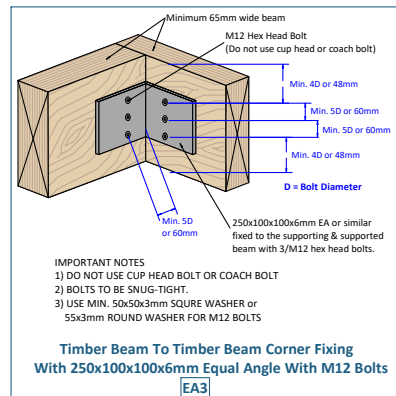
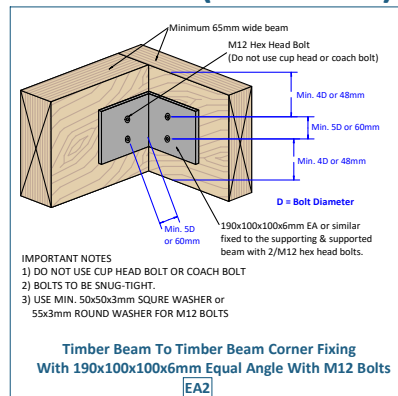
## Framing Bracket & Multigrip Connectors



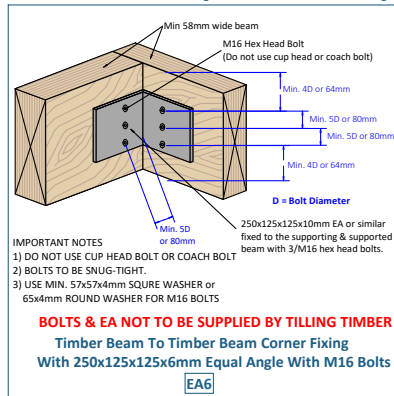
## EA Bracket (M12 Bolts)



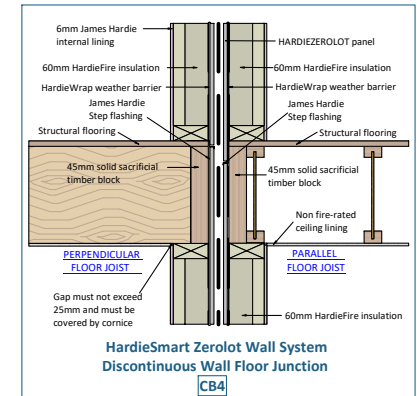
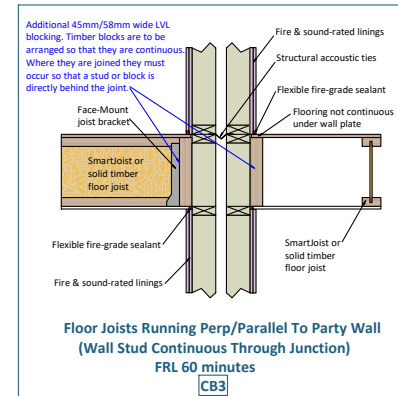
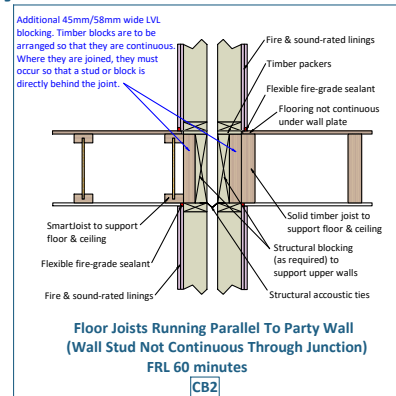
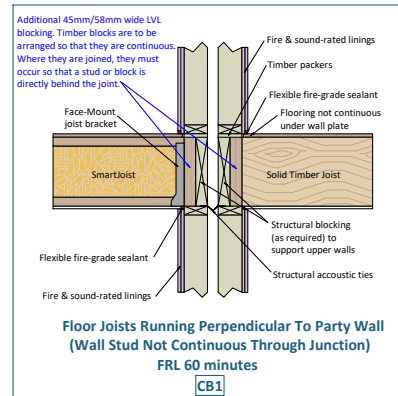
## EA Bracket (M12 Bolts)



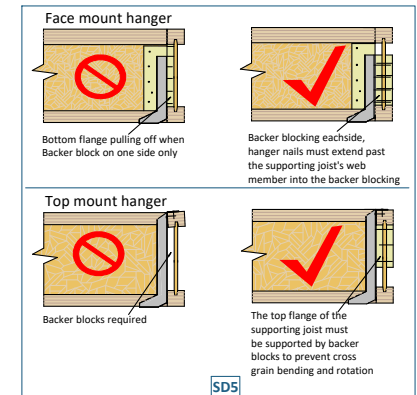
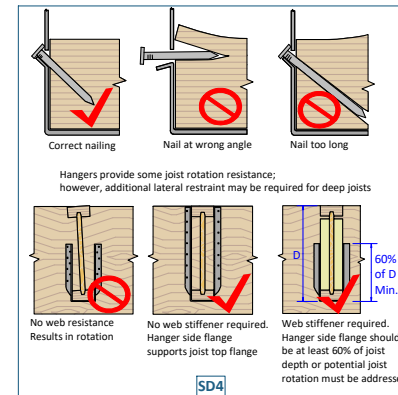
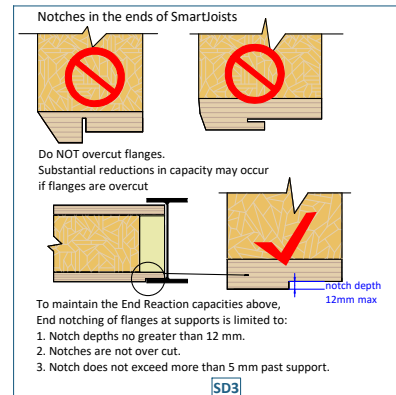
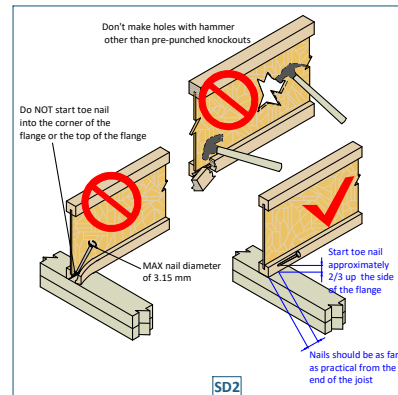
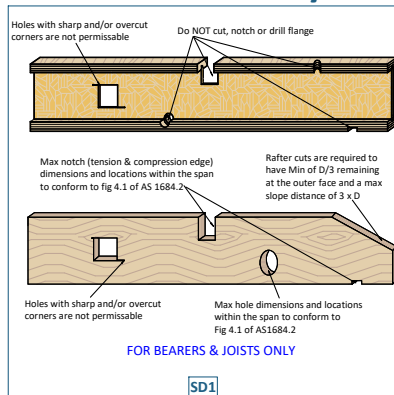
## EA Bracket (M16 Bolts)



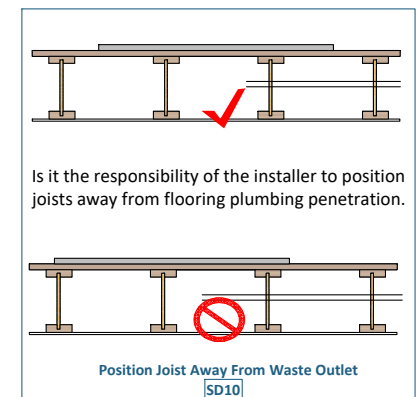
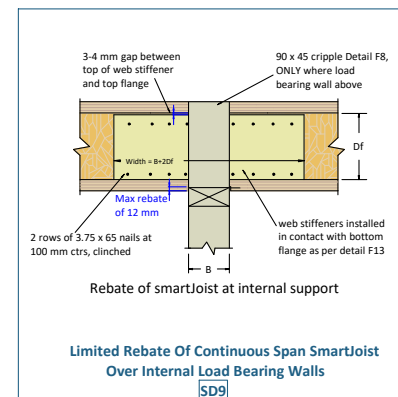
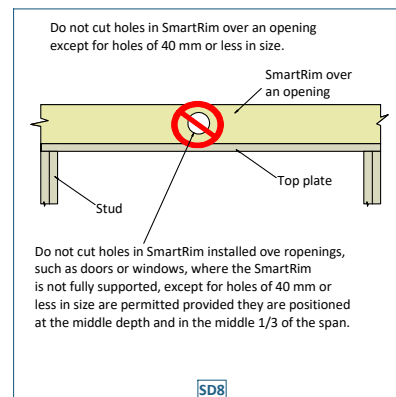
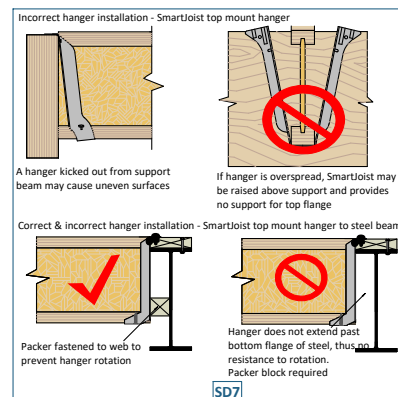
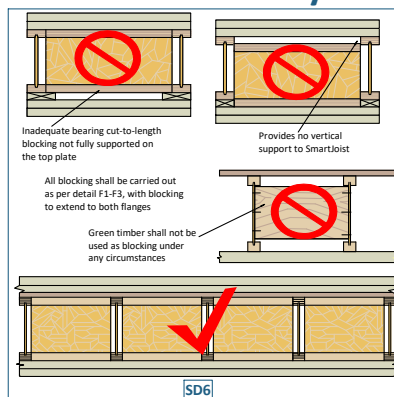
## Charbeam Between Party Wall



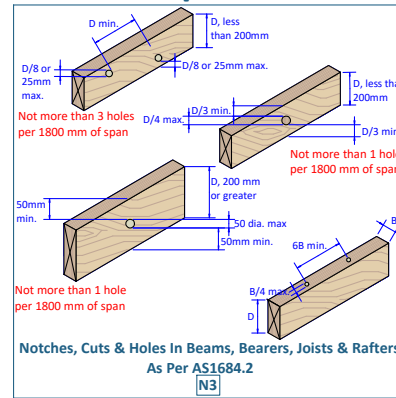
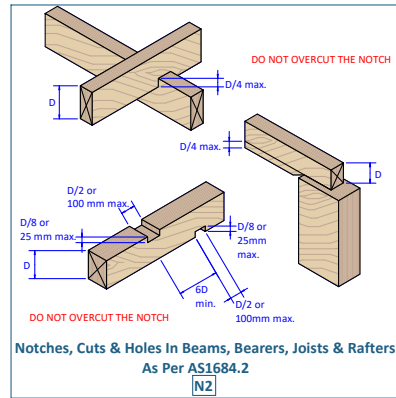
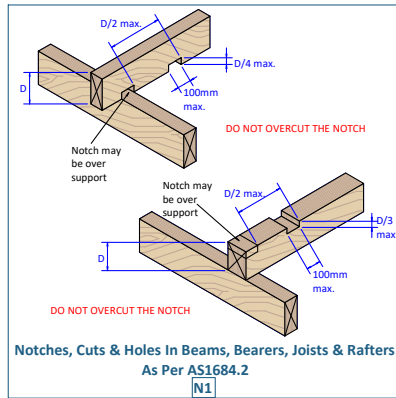
## SmartJoist Floor System - General Installation Details



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## Notches, Cuts & Holes In Beams, Bearers, Joists & Rafters As per AS1684.2



## Tie-Down Details

