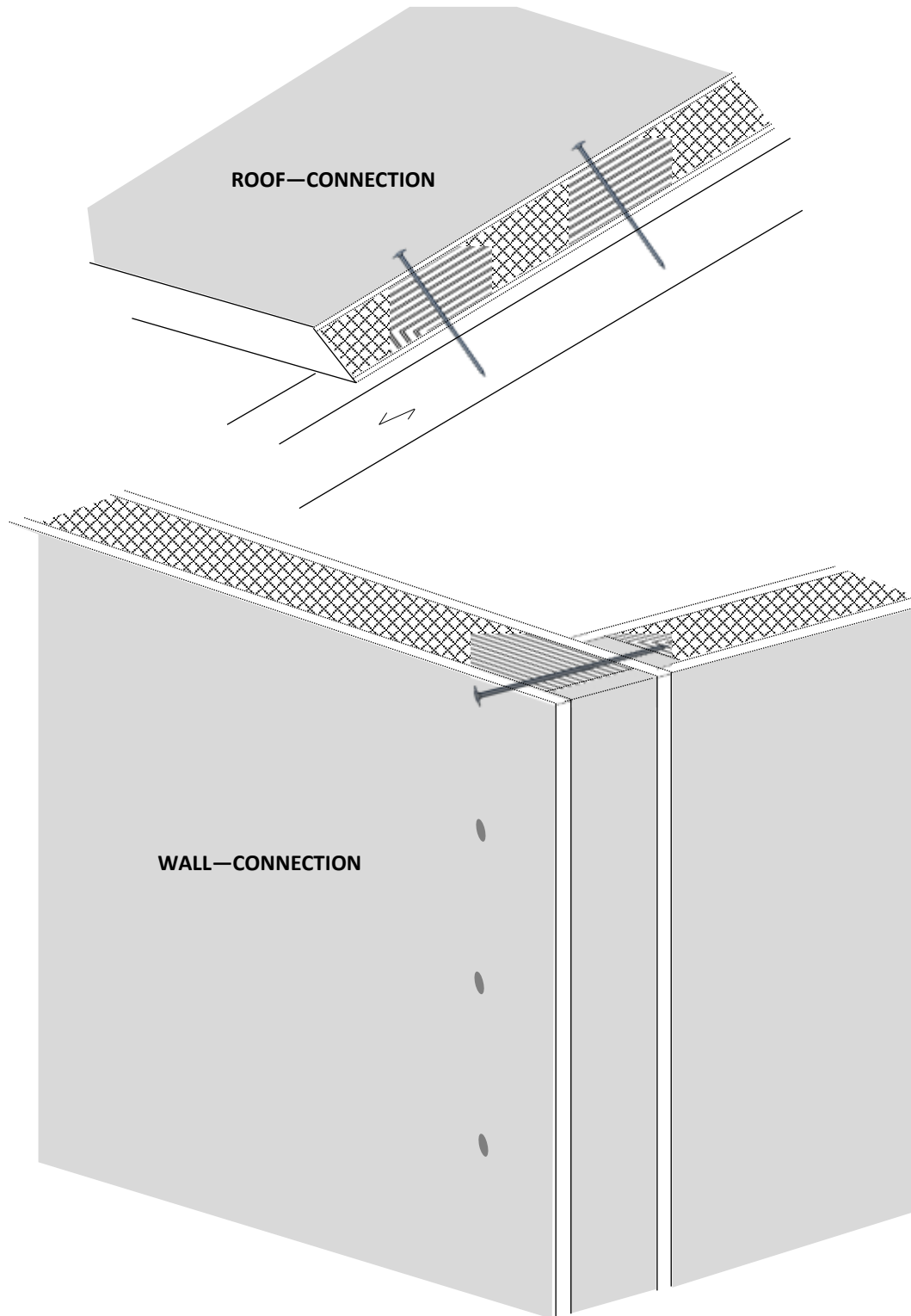


MyTiCon Timber Connectors



SWG ASSY® SK Screws for Structural Insulated Panel (SIP) Fastenings

WOOD you like to CONNECT?



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General information

This document provides shear, withdrawal and head pull-in capacities for SIP connections using Code approved SWG ASSY® SK screws. The recommendations are based on the following SIP and timber specifications:

- SIPs consisting of two layers of OSB and EPS foam core such as Insulspan® as per CCMC report ‘CCMC 13016-R’ and Insulspan® SIP Installation Guide (<http://www.insulspan.com/downloads/InstallationGuide.pdf>)
- Standard panel sizes of overall thicknesses of 115—310 mm (4-1/2 - 12-1/4”) including two OSB skins of 11 mm (7/16”) or 15 mm (5/8”) thickness
- Oriented Strand Board (OSB) as per Weyerhaeuser Edge™ and Edge Gold™ (<http://www.woodbywy.com/document/OSB-4000/>) or similar with minimum SG = 0.5
- Solid timber of strength S-P-F #2 or better (SG = 0.42) or of PSL (SG = 0.5) and of size such that the edge and end distances as well as spacing requirements of the issued CCMC report “CCMC 13677-R” (see table 6) are fulfilled

Conditions of use

- Side member of the connection is a SIP panel sized equal or similar to those outlined in this document
- Main member of connection is solid timber with a minimum width of 89 mm (3-1/2”) and a minimum thickness of 38 mm (1-1/2”) and may also be the end stud of an adjacent SIP of equal minimum size
- In cases where more than 1*d (=outside thread diameter) of the screw point exits the far side of the timber a minimum thread penetration of 38 mm (1-1/2”) is required

Design and installation procedure

- Factored resistances are outlined in table 2 to 4. The respective SWG ASSY SK screw can be selected from table 5.

Fastener interaction (group factor) shall be considered as provided in table 1.

The appropriate screw length to be selected as follows:

$$\text{min } L_{\text{SWG ASSY® SK screw}} = \text{SIP thickness} + L_{\text{thread penetration}} + L_{\text{tip}}$$

$$\text{max } L_{\text{SWG ASSY® SK screw}} = \text{SIP thickness} + \text{main member thickness} + L_{\text{tip}}$$

(Screw tip interference with other members must be checked)

rafter, I-Joist top flange or end stud with minimum thickness of 38 mm (1.5”) & width of 89 mm (3.5”)

- Install screws according to table 6 or as per SIP manufacturer requirements. Fasteners are not to be installed less than 100 mm (4”) to the top or bottom edge of the SIPs.
- SWG ASSY® SK screws are to be driven with firm bearing of the washer on the surface of the outer OSB skins of the SIP. Do not over-drive screw head through the OSB.

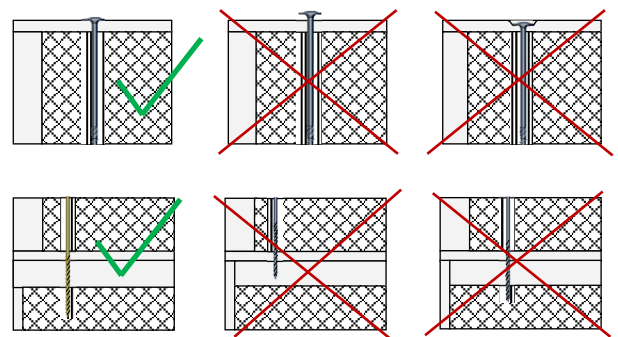


Table 1: effective number of SWG ASSY® SK screws in one row parallel to grain

Effective number of fasteners J_F per meter (=40") in one row parallel to grain				
Spacing o.c. parallel to grain			Fastener Diameter [mm (in)]	
mm	in	# per m (=40")	6 (1/4)	8 (5/16)
101	4	10.00	8.47	7.89
152	6	6.66	6.51	6.06
203	8	5.00	5.00	5.00
254	10	4.00	4.00	4.00
304	12	3.33	3.33	3.33
355	14	2.85	2.85	2.85
406	16	2.50	2.50	2.50
457	18	2.22	2.22	2.22

Resistances for SWG ASSY SK screws in SIP connections

The outlined resistances are based on the CSA 086-09 considering fastener parameters of the issued CCMC report "CCMC 13677-R".

- Listed factored resistances apply to mean oven dry relative density and specific gravity (SG) as outlined in respective tables
- Angle between screw axis and wood grain direction considered $\alpha = 90^\circ$
- Wood moisture content 12% $\pm 2\%$
- Applied modification factors are $K_{SF} = 1$, $K_T = 1$ and either $K_D = 1.00$ (shear) or $K_D = 1.15$ (uplift)
- For withdrawal resistance the threaded length less one diameter for the tip is considered
- Design of the SIP panel itself is not considered and remains responsibility of a design professional

FACTORED RESISTANCES

Table 2: axial uplift resistance (head pull-in) of SWG ASSY® SK screws in SIP connections

Factored uplift resistance ¹ [kN (lbs)] per screw driven in SIP ³ and wood/ EWP ⁴					
SIPs of 115—310 mm (4-1/2—12-1/4") nominal thickness including top & bottom OSB ⁵ skins of thickness			SWG ASSY® SK screw		
			D [mm /(in)]		
mm	in		6 (1/4)	8 (5/16)	
11	7/16		0.32 (72)		
15	5/8		0.47 (105)	1.32 (297)	

Table 3: lateral resistance of SWG ASSY® SK screws in SIP connections with main members of at least SG = 0.42

Factored lateral resistance ² [kN (lbs)] per screw driven in SIP ³ and wood/ EWP ⁴ with at least SG = 0.42					
SIPs of 115—310 mm (4-1/2—12-1/4") nominal thickness including top & bottom OSB ⁵ skins of thickness			SWG ASSY® SK screw		
			D [mm /(in)]		
mm	in		6 (1/4)	8 (5/16)	
			Pr ⁶	Qr ⁷	
11	7/16		0.50 (112)	0.28 (62)	0.65 (145) 0.36 (81)
15	5/8		0.54 (121)	0.31 (70)	0.70 (157) 0.41 (91)

Table 4: lateral resistance of SWG ASSY® SK screws in SIP connections with main members of at least SG = 0.5

Factored lateral resistance ² [kN (lbs)] per screw driven in SIP ³ and wood/ EWP ⁴ with at least SG = 0.5					
SIPs of 115—310 mm (4-1/2—12-1/4") nominal thickness including top & bottom OSB ⁵ skins of thickness			SWG ASSY® SK screw		
			D [mm /(in)]		
mm	in		6 (1/4)	8 (5/16)	
			Pr ⁶	Qr ⁷	
11	7/16		0.50 (112)	0.31 (70)	0.65 (145) 0.40 (90)
15	5/8		0.60 (135)	0.35 (78)	0.80 (180) 0.45 (101)

Notes:

¹ K_{SF} = 1.0, K_T = 1.0, K_D = 1.15 (wind uplift) and angle between screw axis and wood grain direction considered $\alpha = 90^\circ$

² K_{SF} = 1.0, K_T = 1.0, K_D = 1.00 and angle between screw axis and wood grain direction considered $\alpha = 90^\circ$

³ SIP: Structural Insulated Panel

⁴ wood and EWP (Engineered Wood Product) with a **minimum (thread) penetration of 38 mm**

⁵ properties as per Weyerhaeuser Edge™ and Edge Gold™ floor panel or similar

⁶ Pr: main member loaded parallel to main grain direction

⁷ Qr: main member loaded perpendicular to main grain direction

SWG ASSY® SK screw specifications

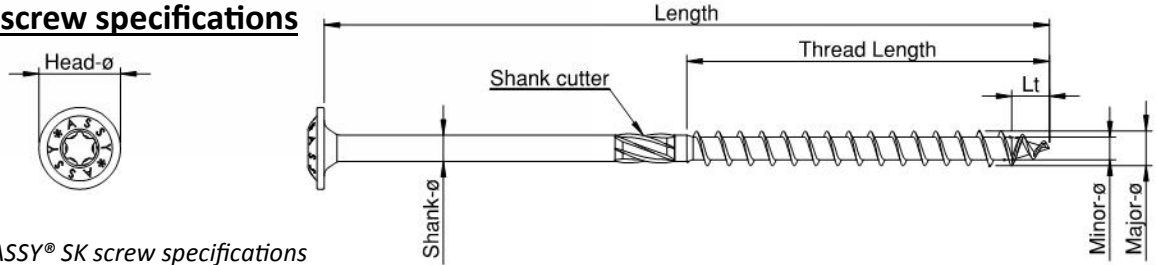


Table 5: SWG ASSY® SK screw specifications

D		Shank-Ø		Length		Thread Length		L _t		Head-Ø	
mm	in	mm	in	mm	in	mm	in	mm	in	mm	in
6	1/4	4.4	0.173	160	6-1/4	70	2-3/4	6	1/4	14	9/16
				220	8-5/8						
				260	10-1/4						
8	5/16	5.8	0.228	160	6-1/4	80	3-1/8	8	5/16	22	7/8
				220	8-5/8	100	4				
				260	10-1/4						
				320	12-5/8						
				360	14-1/8						

Note: values in the table are average measurements to the nearest imperial size

Minimum spacing, end and edge distances for SWG ASSY® SK screws

Table 6: minimum spacing for SWG ASSY® SK screws

Min. timber thickness = 4d	Screws loaded laterally	
	density * ≤ 0.42	0.42 < density * ≤ 0.5
S _p Spacing parallel to grain	12d	15d (22.5 in D-Fir)
S _q Spacing perpendicular to grain	5d	7d
a _L Loaded end distance	15d	20d (30d in D-Fir)
a Unloaded end distance	10d	15d (22.5d in D-Fir)
e _L Loaded edge distance	10d	12d
e Unloaded edge distance	5d	7d

Note: * density = mean oven dry relative density

Find more resources for our modern timber connection systems, including technical design data, installation guides, CAD files, videos, research data and more white papers on our website

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