SPP

SELF-DRILLING TIMBER-TO-METAL SCREW

CE
EN 14592

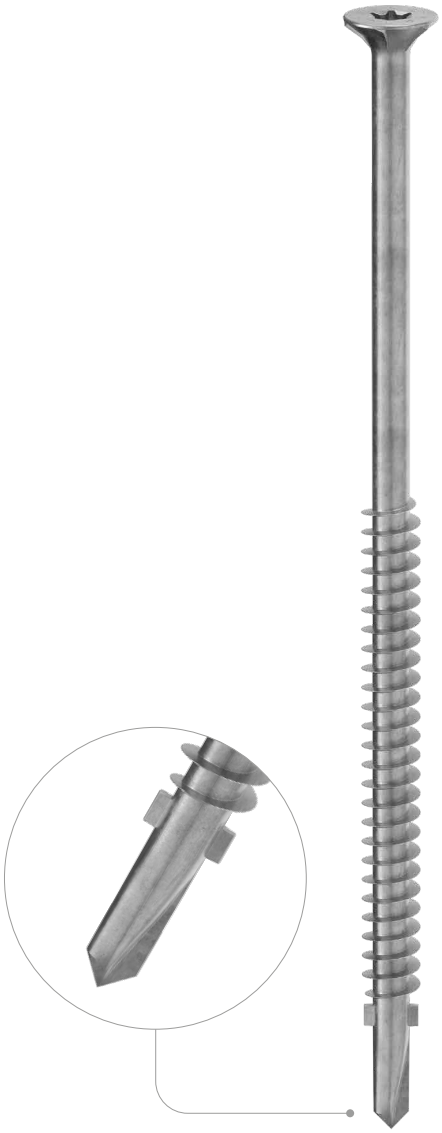
CERTIFIED
The SPP self-drilling screw is CE marked according to EN 14592. It is the ideal choice for professionals who demand quality, safety and reliable performance in structural timber-to-metal applications.

TIMBER-TO-METAL TIP
Special self-perforating tip with bleeder geometry for excellent drilling capacity both in aluminium (thickness: up to 10 mm) and steel (thickness: up to 8 mm).

CUTTING FINS
The fins protect the screw thread during timber pull-through. They guarantee maximum threading efficiency in metal and perfect adhesion between the thickness of the wood and the metal.

WIDE RANGE
The SPP version, with partially thread, is ideal for fastening sandwich panels, even thick ones, to steel. Very sharp under-head ribs for a perfect surface finish on the wooden element.

TESTED IN NORTH AMERICA
The tensile strength and bending yield strength were evaluated in accordance with AC233, using the test methods specified in ASTM F1575 and AISI S904-17.



BIT INCLUDED

DIAMETER [mm]	3,5	6,3 (8)
LENGTH [mm]	25	125 240 (240)
SERVICE CONDITION	EC1	DRY
ATMOSPHERIC CORROSIVITY	C1	C2
WOOD CORROSIVITY	T1	T2
MATERIAL	Zn ELECTRO PLATED	electrogalvanized carbon steel

CANADIAN DESIGN VALUES
USA, EU and more design values available online.



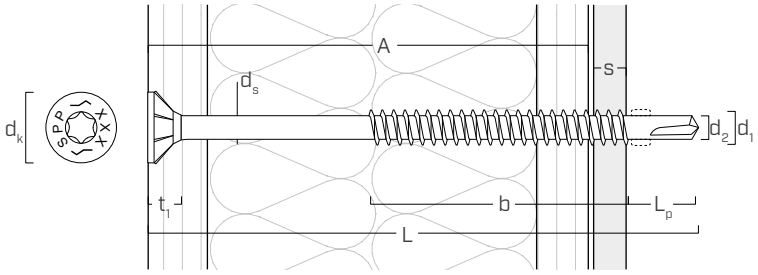
FIELDS OF USE
Direct fastening, without pre-drilling hole, of timber elements to steel substructures:
- in S235 steel with a maximum thickness of 8 mm
- in aluminium with a maximum thickness of 10 mm

CODES AND DIMENSIONS

d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	s_S [mm]	s_A [mm]	pcs
6,3 TX 30	**SPP63125**	125	60	96	6 - 8	8 - 10	100
	SPP63145	145	60	116	6 - 8	8 - 10	100
	SPP63165	165	60	136	6 - 8	8 - 10	100
	SPP63180	180	60	151	6 - 8	8 - 10	100
	SPP63200	200	60	171	6 - 8	8 - 10	100
	SPP63220	220	60	191	6 - 8	8 - 10	100
	SPP63240	240	60	211	6 - 8	8 - 10	100

s_S thickness that can be drilled, steel plate S235/St37
s_A thickness that can be drilled, aluminium plate

GEOMETRY AND MECHANICAL CHARACTERISTICS



GEOMETRY

Nominal diameter	**d_1**	**[mm]**	**6,3**
Head diameter	d_K	[mm]	12,50
Root diameter	d_2	[mm]	4,85
Shank diameter	d_S	[mm]	5,20
Head thickness	t_1	[mm]	5,30
Tip length	L_p	[mm]	20,0

MECHANICAL PROPERTIES

Nominal diameter	**d_1**	**[mm]**		**6,3**
Factored tensile strength	Φf_u	[kN]		12,13
Bending yield strength	F_{yb}	[MPa]		1091
Factored shear strength of the screw	Φv_s	[kN]		3,53
Specified head pull-through resistance per screw	F_{pt}	[kN]	G=0.35	0,99
			G=0.42	1,19
			G=0.49	1,38
			G=0.55	1,55

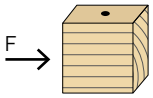


SIP PANELS

The SPP version is ideal for fastening SIP panels and sandwich panels thanks to the complete range of lengths (up to 240 mm).

MINIMUM DISTANCES FOR SHEAR LOADS | TIMBER

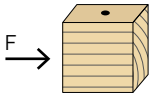
screws inserted **WITHOUT pre-drilled hole** — **G ≤ 0.44**



d_1		6,3 [mm]	*0.32 [in]*
S_P	12·d‡	76	*3*
S_Q	5·d	32	*1 1/4*
a_L	15·d‡	95	*3 3/4*
a	10·d‡	63	*2 1/2*
e_Q	10·d	63	*2 1/2*
e_P	5·d	32	*1 1/4*

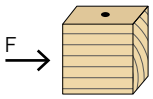
‡ For Western Red Cedar, this minimum spacing shall be increased by 50%.

screws inserted **WITHOUT pre-drilled hole** — **0.44 < G ≤ 0.50**



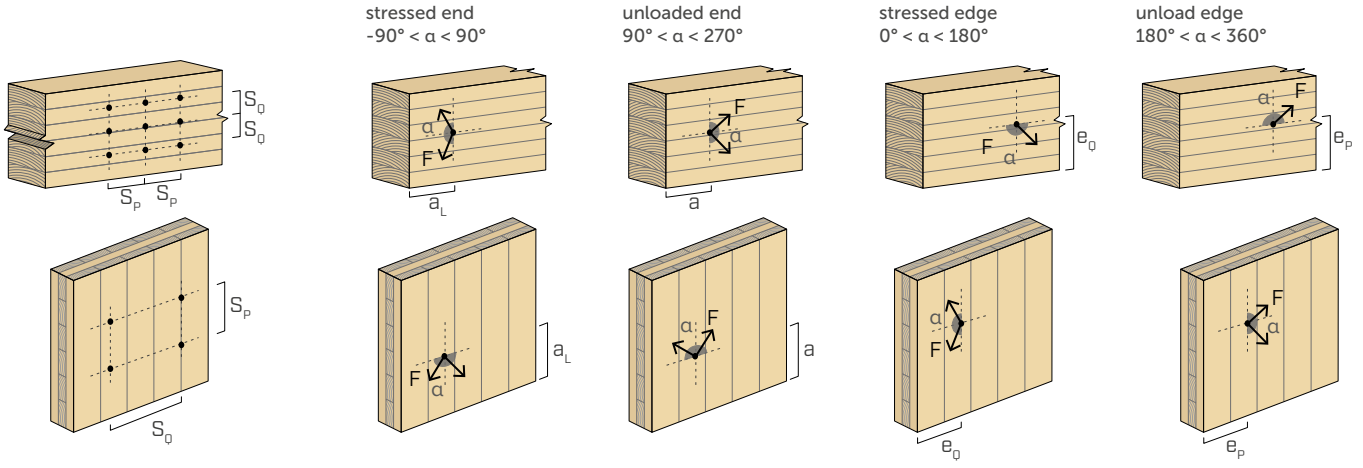
d_1		6,3 [mm]	*0.32 [in]*
S_P	18·d	114	*4 1/2*
S_Q	7·d	45	*1 3/4*
a_L	22·d	139	*5 1/2*
a	15·d	95	*3 3/4*
e_Q	12·d	76	*3*
e_P	7·d	45	*1 3/4*

screws inserted **WITH pre-drilled hole**



d_1		6,3 [mm]	*0.32 [in]*
S_P	5·d†	32	*1 1/4*
S_Q	4·d	26	*1 1/32*
a_L	12·d†	76	*3*
a	7·d†	45	*1 3/4*
e_Q	7·d	45	*1 3/4*
e_P	3·d	19	*3/4*

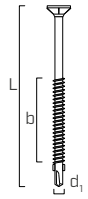
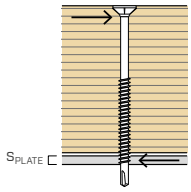
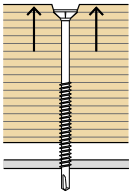
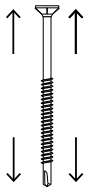
† For Douglas Fir–Larch and Western Red Cedar, this minimum spacing shall be increased by 50%.
d = d_1 = nominal diameter of the screw
α = load-to-grain angle



NOTES

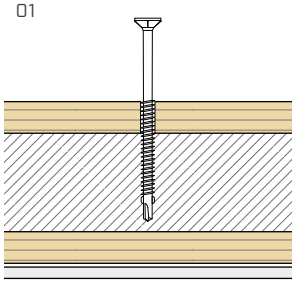
- The minimum spacing and distances comply with Clause 12.12.5 of CSA O86:24, where d_1 refers to the nominal diameter of the self-tapping screw.
- The spacing, end, and edge distances for Rothoblaas screws installed in the narrow face of CLT panels shall comply with the specifications outlined in ETA-11/0030.
- The placement of fasteners subjected to axial loading shall be determined in accordance with Clause 12.12.5 of CSA O86:24.

STRUCTURAL VALUES | STEEL-TO-TIMBER

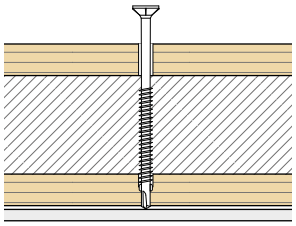
geometry				SHEAR[1] timber-to-steel α = 90°				TENSION[2] head pull-through α = 90°				TENSION[2] steel tension
												
d_1	L		b	S_{PLATE}	factored lateral resistance N_r				factored head pull-through resistance P_{pt}[3]				factored tension resistance T_{rs}
					G				G				
					0.35	0.42	0.49	0.55	0.35	0.42	0.49	0.55	
[mm] *[in]*	[mm]	*[in]*	[mm]	[mm] *[in]*	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
6.3 *0.25*	125	*4 15/16*	60	6,4 *1/4*	1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	12,13
	145	*5 11/16*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	165	*6 1/2*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	180	*7 1/8*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	200	*8*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	220	*8 5/8*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	240	*9 1/2*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
6.3 *0.25*	125	*4 15/16*	60	7,9 *5/16*	1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	145	*5 11/16*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	165	*6 1/2*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	180	*7 1/8*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	200	*8*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	220	*8 5/8*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	
	240	*9 1/2*	60		1,83	2,00	2,16	2,29	0,69	0,83	0,97	1,09	

INSTALLATION

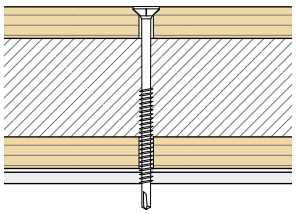
01



02



03



RECOMMENDATIONS FOR SCREWING:
steel: $v_S \approx 1000$ - 1500 rpm
aluminium: $v_A \approx 600$-1000 rpm

STRUCTURAL VALUES

GENERAL PRINCIPLES

- The reference factored lateral resistance for self-tapping screws has been determined following the guidelines in Clause 12.12 of the CSA O86:24 including the withdrawal restraint effect. Listed values are based on standard long term load duration factor (K_D = 1.0), dry service condition factor (K_{SF} = 1.0), and treatment factor (K_T = 1.0).
- The reference lateral design values are calculated for screws inserted without pre-drilling as per CSA O86:24 Clause 12.12.10.5.3. The direction of the bearing-to-grain angle does not influence lateral resistance. In the case of screws inserted with pre-drilling, greater resistance values can be obtained.
- The steel plate is assumed to be ASTM A36 with a minimum ultimate tensile strength, f_u, equal to 58 ksi (400 MPa).
- SPP screws must be positioned in accordance with the minimum distances.
- G is the mean relative density according to CSA O86:24 Table A12. Most common wood species are assumed such as Northern species (G = 0.35), Spruce-Pine-Fir (G = 0.42), Douglas Fir (G = 0.49), and Southern Pine (G = 0.55).
- As part of the connection design, the designer must size and verify both the structural wood members and the steel plates separately.

NOTES

(1) Lateral resistances are factored and according to CSA O86:24 Clause 12.12.10. Values apply to dry service conditions and are representative of a single screw. The penetration length into the timber is considered to be $L - S_{PLATE} - L_p$.

(2) The factored tensile resistance of the connector (P_{rt}) is governed by the lower value between the withdrawal resistance (P_{rw}), head pull-through resistance (P_{pt}) and the steel strength (T_{rs}). SPP screws do not develop thread resistance in the timber element.

(3) Head pull-through values have been determined in accordance with CSA O86:24, Clause A.12.12.8.3. using a 0.8 reduction factor to account for the head geometry. A minimum timber thickness of 30 mm should be used when evaluating screw-head pull-through resistance.