SPP

CE
EN 14592

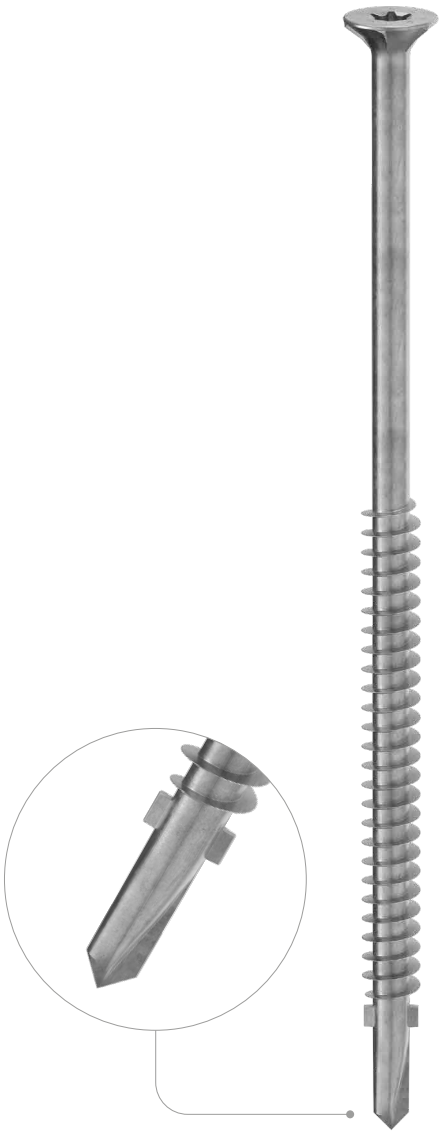
SELF-DRILLING TIMBER-TO-METAL SCREW

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.



BIT INCLUDED

DIAMETER [mm]	3,5	6,3 (8)
LENGTH [mm]	25	125 240 (240)
SERVICE CLASS	SC1 SC2	
ATMOSPHERIC CORROSIVITY	C1 C2	
WOOD CORROSIVITY	T1 T2	
MATERIAL	Zn ELECTRO PLATED	electrogalvanized carbon steel

FIELDS OF USE

Direct fastening, without pre-drilling hole, of timber elements to steel substructures:

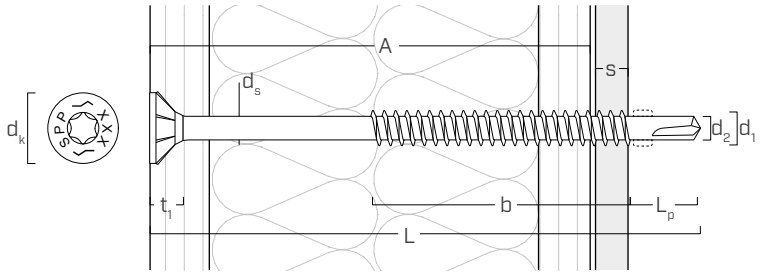
- in S235 steel with a maximum thickness of 8 mm
- in aluminium with a maximum thickness of 10 mm

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
Thread 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

CHARACTERISTIC MECHANICAL PARAMETERS

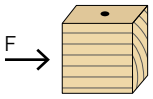
Nominal diameter	**d_1**	**[mm]**	**6,3**
Tensile strength	$f_{tens,k}$	[kN]	16,5
Yield moment	$M_{y,k}$	[Nm]	18,0
Withdrawal resistance parameter	$f_{ax,k}$	[N/mm^2]	-
Associated density	ρ_a	[kg/m^3]	-
Head-pull-through parameter	$f_{head,k}$	[N/mm^2]	14,0
Associated density	ρ_a	[kg/m^3]	350

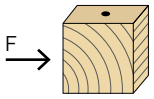
SIP PANELS

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-TO-STEEL

screws inserted **WITHOUT pre-drilled hole** — $\rho_k \leq 420$ kg/m³



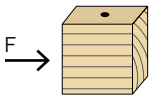


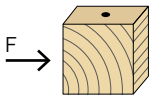
d_1	[mm]		6,3
a_1	[mm]	**12·d**	76
a_2	[mm]	**5·d**	32
$a_{3,t}$	[mm]	**15·d**	95
$a_{3,c}$	[mm]	**10·d**	63
$a_{4,t}$	[mm]	**5·d**	32
$a_{4,c}$	[mm]	**5·d**	32

d_1	[mm]		6,3
a_1	[mm]	**5·d**	32
a_2	[mm]	**5·d**	32
$a_{3,t}$	[mm]	**10·d**	63
$a_{3,c}$	[mm]	**10·d**	63
$a_{4,t}$	[mm]	**10·d**	63
$a_{4,c}$	[mm]	**5·d**	32

α = load-to-grain angle
d = d_1 = nominal screw diameter

screws inserted **WITH pre-drilled hole**

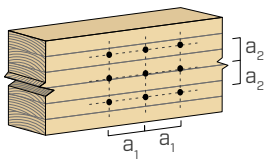




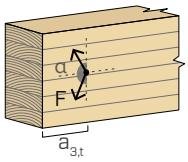
d_1	[mm]		6,3
a_1	[mm]	**5·d**	32
a_2	[mm]	**3·d**	19
$a_{3,t}$	[mm]	**12·d**	76
$a_{3,c}$	[mm]	**7·d**	44
$a_{4,t}$	[mm]	**3·d**	19
$a_{4,c}$	[mm]	**3·d**	19

d_1	[mm]		6,3
a_1	[mm]	**4·d**	25
a_2	[mm]	**4·d**	25
$a_{3,t}$	[mm]	**7·d**	44
$a_{3,c}$	[mm]	**7·d**	44
$a_{4,t}$	[mm]	**7·d**	44
$a_{4,c}$	[mm]	**3·d**	19

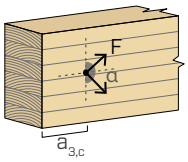
α = load-to-grain angle
d = d_1 = nominal screw diameter



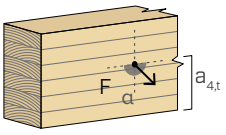
stressed end
-90° < α < 90°



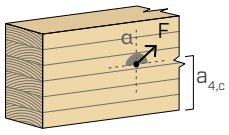
unloaded end
90° < α < 270°



stressed edge
0° < α < 180°



unload edge
180° < α < 360°

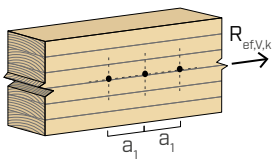


NOTES
- Minimum distances in accordance with EN 1995:2014.

EFFECTIVE NUMBER FOR SHEAR LOADS

The load-bearing capacity of a connection made with several screws, all of the same type and size, may be lower than the sum of the load-bearing capacities of the individual connection system.
For a row of n screws arranged parallel to the direction of the grain at a distance a_1, the characteristic effective load-bearing capacity is equal to:

$$R_{ef,V,k} = n_{ef} \cdot R_{V,k}$$



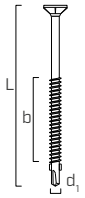
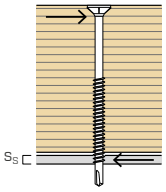
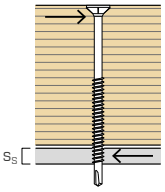
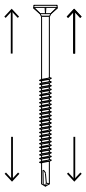
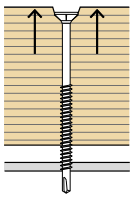
The n_{ef} value is given in the table below as a function of n and a_1.

		a_1(*)										
		4·d	5·d	6·d	7·d	8·d	9·d	10·d	11·d	12·d	13·d	≥ 14·d
n	2	1,41	1,48	1,55	1,62	1,68	1,74	1,80	1,85	1,90	1,95	2,00
	3	1,73	1,86	2,01	2,16	2,28	2,41	2,54	2,65	2,76	2,88	3,00
	4	2,00	2,19	2,41	2,64	2,83	3,03	3,25	3,42	3,61	3,80	4,00
	5	2,24	2,49	2,77	3,09	3,34	3,62	3,93	4,17	4,43	4,71	5,00

(*)For intermediate a_1 values a linear interpolation is possible.

STRUCTURAL VALUES | STEEL-TO-TIMBER

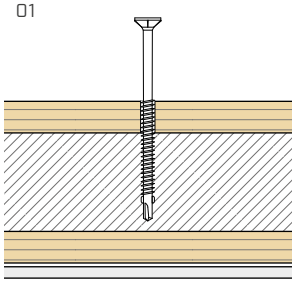
CHARACTERISTIC VALUES
EN 1995:2014

			SHEAR				TENSION		
geometry			timber-to-steel min plate		timber-to-steel max plate		steel tension	head pull-through	
									
d_1 [mm]	L [mm]	b [mm]	S_{PLATE} [mm]	$R_{V,k}$ [kN]	S_{PLATE} [mm]	$R_{V,k}$ [kN]	$R_{tens,k}$ [kN]	A_{min} [mm]	$R_{head,k}$ [kN]
	125	60		3,00		3,09			2,18
	145	60		3,00		3,09			2,18
	165	60		3,00		3,09			2,18
6,3	180	60	6	3,00	8	3,09	16,50	30	2,18
	200	60		3,00		3,09			2,18
	220	60		3,00		3,09			2,18
	240	60		3,00		3,09			2,18

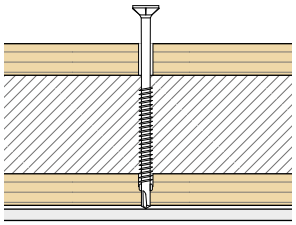
ε = screw-to-grain angle

INSTALLATION

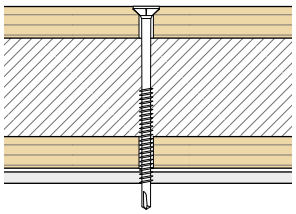
01



02



03



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

STRUCTURAL VALUES

GENERAL PRINCIPLES

- Characteristic values according to EN 1995:2014.
- Design values can be obtained from characteristic values as follows:

$$R_d = \frac{R_k \cdot k_{mod}}{\gamma_M}$$

The coefficients γ_M and k_{mod} should be taken according to the current regulations used for the calculation.

- Mechanical strength values and screw geometry comply with CE marking according to EN 14592.
- Dimensioning and verification of timber elements and steel plates must be carried out separately.
- The screws must be positioned in accordance with the minimum distances.
- The head pull-through characteristic strength was calculated using timber elements.

NOTES | TIMBER

- The characteristic plate shear strengths are evaluated by considering the case of intermediate plate ($0,5\ d_1 < S_{PLATE} < d_1$) or thick plate ($S_{PLATE} \geq d_1$).
- The characteristic shear strengths on a steel plate are calculated for the minimum drilling hole thickness S_{smin} (min plate) and maximum S_{smax} (max plate).
- For the calculation process a timber characteristic density $\rho_k = 385$ kg/m^3 has been considered.