

SBL

ROUND-HEAD SCREW AND FLAT UNDERHEAD

- Screw developed and certified for metal plate applications
- The geometry of the head, designed to fit into the hole in the metal plate, guarantees excellent static performance
- Outstanding shear and tensile strength values

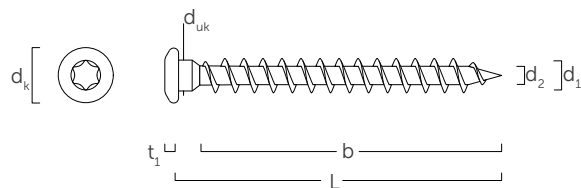


MATERIAL: carbon steel with bright zinc plated



d_1 [mm]	d_k [mm]	CODE	L [mm]	b [mm]	pcs
5 TX 20	7,80	LBS525	25	21	500
		SBL540	40	36	500
		SBL550	50	46	200
		SBL560	60	56	200
		SBL570	70	66	200
7 TX 30	11,00	LBS760	60	55	100
		LBS780	80	75	100
		LBS7100	100	95	100

GEOMETRY AND MECHANICAL CHARACTERISTICS



nominal diameter	d_1	[mm]	5	7
head diameter	d_k	[mm]	7,80	11,00
thread diameter	d_2	[mm]	3,00	4,40
underhead diameter	d_{UK}	[mm]	4,90	7,00
head thickness	t_1	[mm]	2,40	3,50
pre-drilling hole diameter ⁽¹⁾	d_v	[mm]	3,0	4,0
characteristic yield moment	$M_{y,k}$	[Nm]	5,4	14,2
characteristic withdrawal-resistance parameter ⁽²⁾	$f_{ax,k}$	[N/mm ²]	11,7	11,7
characteristic tensile strength	$f_{tens,k}$	[kN]	7,9	15,4

⁽¹⁾ Pre-drilling valid for softwood.

⁽²⁾ Valid for softwood - maximum density 440 kg/m³. Associated density $\rho_a = 350$ kg/m³. For applications with different materials or with high density please see ETA-11/0030.

STRUCTURAL VALUES

geometry			SHEAR													
steel-to-timber ⁽¹⁾																
d ₁ [mm]	L [mm]	b [mm]	R _{v,k} [kN]													
5	25	21	S _{PLATE} = 1,5 mm	1,59	S _{PLATE} = 2,0 mm	1,58	S _{PLATE} = 2,5 mm	1,56	S _{PLATE} = 3,0 mm	-	S _{PLATE} = 4,0 mm	-	S _{PLATE} = 5,0 mm	-	S _{PLATE} = 6,0 mm	-
	40	36		2,24		2,24		2,24		2,24		2,23				
	50	46		2,39		2,39		2,39		2,39		2,38				
	60	56	2,55	2,55	2,55	2,55	2,54	2,52								
	70	66	2,71	2,71	2,71	2,71	2,69	2,68								
7	60	55	S _{PLATE} = 2,0 mm	2,86	S _{PLATE} = 3,0 mm	2,81	S _{PLATE} = 4,0 mm	2,98	S _{PLATE} = 5,0 mm	3,37	S _{PLATE} = 6,0 mm	3,79	S _{PLATE} = 7,0 mm	4,21	S _{PLATE} = 8,0 mm	4,18
	80	75		3,81		3,80		3,88		4,13		4,38		4,66		4,63
	100	95		4,25		4,25		4,38		4,63		4,87		5,10		5,08

geometry			SHEAR				TENSION	
timber-to-timber			thread withdrawal ⁽²⁾					
d ₁ [mm]	L [mm]	b [mm]	A [mm]	R _{v,k} [kN]		R _{ax,k} [kN]		
5	25	21	-	-		1,33		
	40	36	15	1,01		2,27		
	50	46	20	1,19		2,90		
	60	56	25	1,40		3,54		
	70	66	30	1,59		4,17		
7	60	55	25	2,01		4,86		
	80	75	35	2,57		6,63		
	100	95	45	3,04		8,40		

NOTES

- The characteristic shear-strength value for SBL Ø5 nails has been evaluated assuming a plate thickness = S_{PLATE}, always considering the case of thick plate according to ETA-11/0030 (S_{PLATE} ≥ 1,5 mm). The characteristic shear-strength value for SBL Ø7 screws has been evaluated assuming a plate thickness = S_{PLATE}, and considering the thin (S_{PLATE} ≤ 0,5 d₁), intermediate (0,5 d₁ < S_{PLATE} < d₁) or thick (S_{PLATE} ≥ d₁) plate case scenario.
- The axial thread withdrawal resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.

GENERAL PRINCIPLES

- Characteristic values comply with the EN 1995:2014 standard in accordance with ETA-11/0030.
- 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.
- For the mechanical resistance values and the geometry of the screws, reference was made to ETA-11/0030.
- For the calculation process a timber characteristic density ρ_k = 385 kg/m³ has been considered.
- Dimensioning and verification of the timber elements must be carried out separately.
- The characteristic shear strength are calculated for screws inserted without pre-drilling hole.