

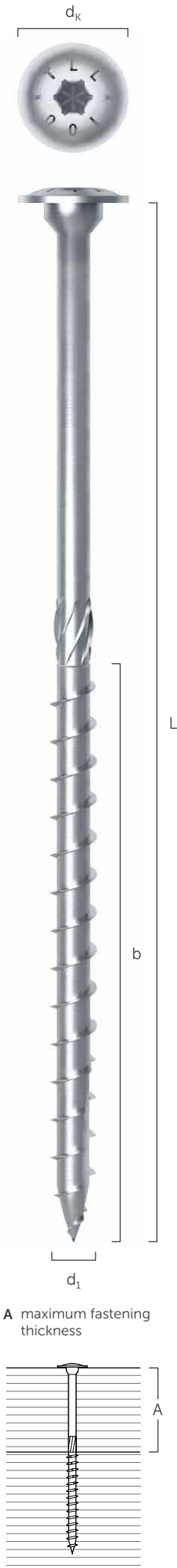
# TLL

## WHITE FLANGE-HEAD SCREW FOR WOOD

- Universal flange head screw for various applications, from small structures to timber buildings
- The flange head acts as an integrated washer, providing high tensile strength. Ideal in the presence of wind or variations in timber dimensions
- Certified for structural applications stressed in any direction relative to the fibre, use on CLT and high density woods such as LVL



MATERIAL: carbon steel with bright zinc plated

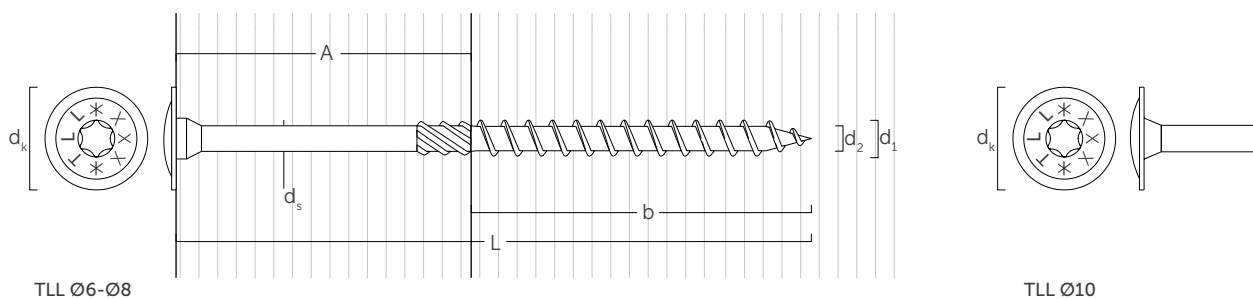


$d_1$ [mm]	$d_k$ [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
6 TX 30	15,50	TLL660	60	40	20	100
		TLL670	70	40	30	100
		TLL680	80	50	30	100
		TLL6100	100	60	40	100
		TLL6120	120	75	45	100
		TLL6140	140	75	65	100
		TLL6160	160	75	85	100
		TLL6180	180	75	105	100
		TLL6200	200	75	125	100
8 TX 40	19,00	TLL860	60	52	10	100
		TLL880	80	52	28	50
		TLL8100	100	52	48	50
		TLL8120	120	80	40	50
		TLL8140	140	80	60	50
		TLL8160	160	100	60	50
		TLL8180	180	100	80	50
		TLL8200	200	100	100	50
		TLL8220	220	100	120	50
		TLL8240	240	100	140	50
		TLL8260	260	100	160	50
		TLL8280	280	100	180	50
		TLL8300	300	100	200	50
		TLL8320	320	100	220	50
		TLL8340	340	100	240	50
		TLL8360	360	100	260	50
TLL8380	380	100	280	50		
TLL8400	400	100	300	50		

A maximum fastening thickness

$d_1$ [mm]	$d_k$ [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
10 TX 50	25,00	TLL10160	160	80	80	50
		TLL10200	200	100	100	50
		TLL10240	240	100	140	50
		TLL10280	280	100	180	50
		TLL10320	320	120	200	50
		TLL10360	360	120	240	50
		TLL10400	400	120	280	50

## GEOMETRY AND MECHANICAL CHARACTERISTICS



nominal diameter	$d_1$	[mm]	6	8	10
head diameter	$d_k$	[mm]	15,50	19,00	25,00
thread diameter	$d_2$	[mm]	3,95	5,40	6,40
shank diameter	$d_s$	[mm]	4,30	5,80	7,00
pre-drilling hole diameter <sup>(1)</sup>	$d_v$	[mm]	4,0	5,0	6,0
characteristic yield moment	$M_{y,k}$	[Nm]	9,5	20,1	35,8
characteristic withdrawal-resistance parameter <sup>(2)</sup>	$f_{ax,k}$	[N/mm <sup>2</sup> ]	11,7	11,7	11,7
characteristic head-pull-through parameter <sup>(2)</sup>	$f_{head,k}$	[N/mm <sup>2</sup> ]	10,5	10,5	10,5
characteristic tensile strength	$f_{tens,k}$	[kN]	11,3	20,1	31,4

<sup>(1)</sup> Pre-drilling valid for softwood.

<sup>(2)</sup> Valid for softwood - maximum density 440 kg/m<sup>3</sup>. Associated density  $\rho_a = 350$  kg/m<sup>3</sup>. For applications with different materials or with high density please see ETA-11/0030.

## STRUCTURAL VALUES

				SHEAR		TENSION	
geometry				timber-to-timber	thread withdrawal <sup>(1)</sup>	head pull-through <sup>(2)</sup>	
d <sub>1</sub> [mm]	L [mm]	b [mm]	A [mm]	R <sub>v,k</sub> [kN]	R <sub>ax,k</sub> [kN]	R <sub>head,k</sub> [kN]	
6	60	40	20	1,89	3,03	2,72	
	70	40	30	2,15	3,03	2,72	
	80	50	30	2,15	3,79	2,72	
	100	60	40	2,35	4,55	2,72	
	120	75	45	2,35	5,68	2,72	
	140	75	65	2,35	5,68	2,72	
	160	75	85	2,35	5,68	2,72	
	180	75	105	2,35	5,68	2,72	
	200	75	125	2,35	5,68	2,72	
8	60	52	10	1,08	5,25	4,09	
	80	52	28	3,02	5,25	4,09	
	100	52	48	3,71	5,25	4,09	
	120	80	40	3,41	8,08	4,09	
	140	80	60	3,71	8,08	4,09	
	160	100	60	3,71	10,10	4,09	
	180	100	80	3,71	10,10	4,09	
	200	100	100	3,71	10,10	4,09	
	220	100	120	3,71	10,10	4,09	
	240	100	140	3,71	10,10	4,09	
	260	100	160	3,71	10,10	4,09	
	280	100	180	3,71	10,10	4,09	
	300	100	200	3,71	10,10	4,09	
	320	100	220	3,71	10,10	4,09	
	340	100	240	3,71	10,10	4,09	
	360	100	260	3,71	10,10	4,09	
380	100	280	3,71	10,10	4,09		
400	100	300	3,71	10,10	4,09		
10	160	80	80	5,64	10,10	7,08	
	200	100	100	5,64	12,63	7,08	
	240	100	140	5,64	12,63	7,08	
	280	100	180	5,64	12,63	7,08	
	320	120	200	5,64	15,15	7,08	
	360	120	240	5,64	15,15	7,08	
	400	120	280	5,64	15,15	7,08	

### NOTES

- <sup>(1)</sup> The axial thread withdrawal resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.
- <sup>(2)</sup> The axial resistance to head pull-through was calculated using timber elements.

### 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  $\gamma_M$  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  $\rho_k = 385 \text{ kg/m}^3$  has been considered.
- Values were calculated considering the threaded part as being completely inserted into the wood.
- 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.