

COUNTERSUNK SCREW

SAW TIP

Special self-perforating tip with serrated thread (SAW tip) that cuts the timber grains, facilitating initial grip and subsequent pull-through.

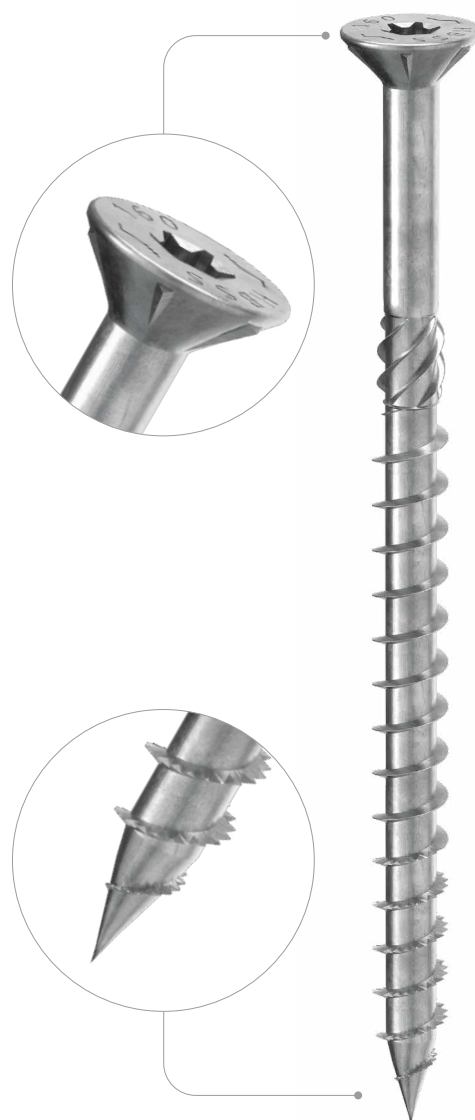
LONGER THREAD

Greater thread length (60%) to ensure superb joint closure and great versatility.

SOFTWOOD

Optimised geometry for maximum performance on the most common construction timbers.

DIAMETER [mm]	3	5	8	12
LENGTH [mm]	12	50	400	1000
SERVICE CLASS	SC1	SC2		
ATMOSPHERIC CORROSIVITY	C1	C2		
WOOD CORROSIVITY	T1	T2		
MATERIAL	 electrogalvanized carbon steel			



FIELDS OF USE

- timber based panels
- fibreboard and MDF panels
- solid timber
- glulam (Glued Laminated Timber)
- CLT and LVL



TIMBER ROOF

The screws' fast initial grip makes it possible to create secure structural connections in all assembly conditions.

SIP PANELS

The size range is specially designed for the application of fasteners on medium and large structural elements, such as lightweight boards and frames, up to SIP and Sandwich panels.

CODES AND DIMENSIONS

d ₁ [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 25	HBSS550	50	30	20	200
	HBSS560	60	35	25	200
	HBSS570	70	40	30	200
	HBSS580	80	50	30	100
	HBSS5100	100	60	40	100
	HBSS5120	120	60	60	100
6 TX 30	HBSS660	60	35	25	100
	HBSS670	70	40	30	100
	HBSS680	80	50	30	100
	HBSS690	90	55	35	100
	HBSS6100	100	60	40	100
	HBSS6120	120	75	45	100
	HBSS6140	140	80	60	100
	HBSS6160	160	90	70	100
	HBSS6180	180	100	80	100
	HBSS6200	200	100	100	100
	HBSS6220	220	100	120	100
	HBSS6240	240	100	140	100
	HBSS6260	260	100	160	100
	HBSS6280	280	100	180	100
	HBSS6300	300	100	200	100

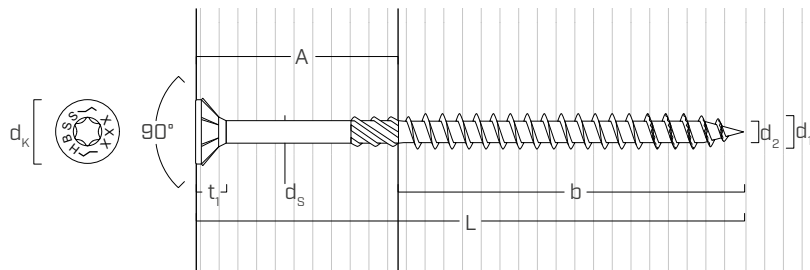
d ₁ [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
8 TX 40	HBSS880	80	52	28	100
	HBSS8100	100	60	40	100
	HBSS8120	120	80	40	100
	HBSS8140	140	80	60	100
	HBSS8160	160	90	70	100
	HBSS8180	180	90	90	100
	HBSS8200	200	100	100	100
	HBSS8220	220	100	120	100
	HBSS8240	240	100	140	100
	HBSS8260	260	100	160	100
	HBSS8280	280	100	180	100
	HBSS8300	300	100	200	100
	HBSS8320	320	100	220	100
	HBSS8340	340	100	240	100
	HBSS8360	360	100	260	100
	HBSS8380	380	100	280	100
	HBSS8400	400	100	300	100

RELATED PRODUCTS



HUS
TURNED WASHER
see page 68

GEOMETRY AND MECHANICAL CHARACTERISTICS



GEOMETRY

Nominal diameter	d ₁	[mm]	5	6	8
Head diameter	d _K	[mm]	10,00	12,00	14,50
Thread diameter	d ₂	[mm]	3,40	3,95	5,40
Shank diameter	d ₅	[mm]	3,65	4,30	5,80
Head thickness	t ₁	[mm]	3,10	4,50	4,50
Pre-drilling hole diameter ⁽¹⁾	d _V	[mm]	3,0	4,0	5,0

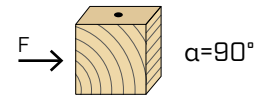
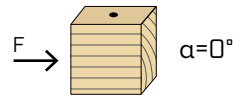
⁽¹⁾ For high density materials, pre-drilled holes are recommended based on the wood specie.

CHARACTERISTIC MECHANICAL PARAMETERS

Nominal diameter	d ₁	[mm]	5	6	8
Tensile strength	f _{tens,k}	[kN]	8,0	12,0	19,0
Yield moment	M _{y,k}	[Nm]	6,0	10,0	20,5
Withdrawal resistance parameter	f _{ax,k}	[N/mm ²]	12,0	12,0	12,0
Associated density	ρ _a	[kg/m ³]	350	350	350
Head-pull-through parameter	f _{head,k}	[N/mm ²]	13,0	13,0	13,0
Associated density	ρ _a	[kg/m ³]	350	350	350

MINIMUM DISTANCES FOR SHEAR LOADS

screws inserted **WITHOUT** pre-drilled hole $\rho_k \leq 420 \text{ kg/m}^3$

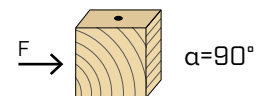
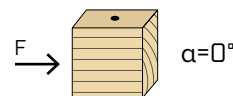


d_1 [mm]		5	6	8
a_1 [mm]	12·d	60	72	96
a_2 [mm]	5·d	25	30	40
$a_{3,t}$ [mm]	15·d	75	90	120
$a_{3,c}$ [mm]	10·d	50	60	80
$a_{4,t}$ [mm]	5·d	25	30	40
$a_{4,c}$ [mm]	5·d	25	30	40

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

d_1 [mm]		5	6	8
a_1 [mm]	5·d	25	30	40
a_2 [mm]	5·d	25	30	40
$a_{3,t}$ [mm]	10·d	50	60	80
$a_{3,c}$ [mm]	10·d	50	60	80
$a_{4,t}$ [mm]	10·d	50	60	80
$a_{4,c}$ [mm]	5·d	25	30	40

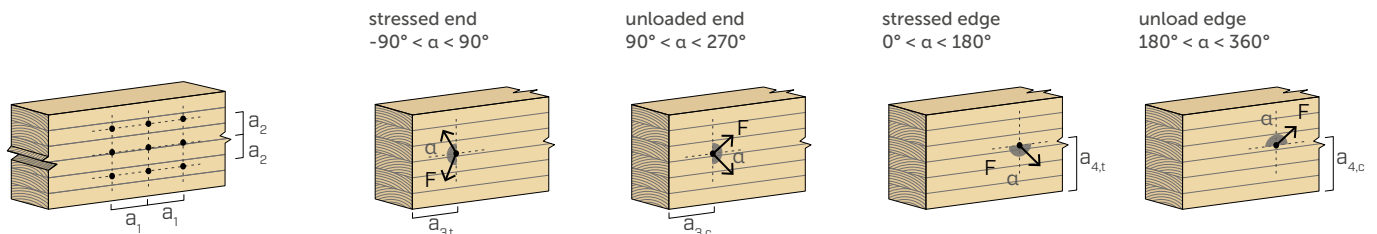
screws inserted **WITH** pre-drilled hole



d_1 [mm]		5	6	8
a_1 [mm]	5·d	25	30	40
a_2 [mm]	3·d	15	18	24
$a_{3,t}$ [mm]	12·d	60	72	96
$a_{3,c}$ [mm]	7·d	35	42	56
$a_{4,t}$ [mm]	3·d	15	18	24
$a_{4,c}$ [mm]	3·d	15	18	24

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

d_1 [mm]		5	6	8
a_1 [mm]	4·d	20	24	32
a_2 [mm]	4·d	20	24	32
$a_{3,t}$ [mm]	7·d	35	42	56
$a_{3,c}$ [mm]	7·d	35	42	56
$a_{4,t}$ [mm]	7·d	35	42	56
$a_{4,c}$ [mm]	3·d	15	18	24

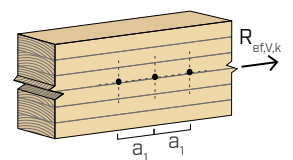


NOTE on page 49.

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:

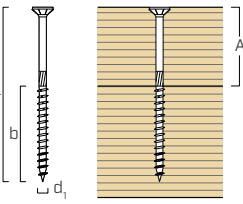
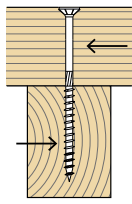
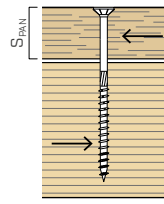
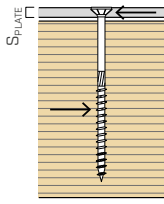
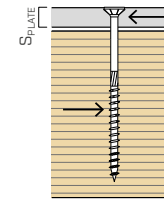
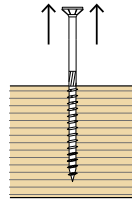
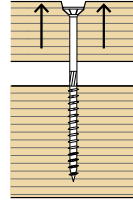
$$R_{ef,V,k} = n_{ef} \cdot R_{V,k}$$



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

		4·d	5·d	6·d	7·d	8·d	$a_1^{(*)}$ 9·d	10·d	11·d	12·d	13·d	$\geq 14·d$
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.

				SHEAR								TENSION	
geometry				timber-to-timber	panel-to-timber	steel-to-timber thin plate		steel-to-timber thick plate		thread withdrawal	head pull-through		
													
d ₁	L	b	A	R _{V,90,k}	S _{PAN}	R _{V,k}	S _{PLATE}	R _{V,k}	S _{PLATE}	R _{V,k}	R _{ax,90,k}	R _{head,k}	
[mm]	[mm]	[mm]	[mm]	[kN]	[mm]	[kN]	[mm]	[kN]	[mm]	[kN]	[kN]	[kN]	
5	50	30	20	1,18	18	1,44	2,5	1,48	5	2,06	1,94	1,40	
	60	35	25	1,27		1,44		1,68		2,14	2,27	1,40	
	70	40	30	1,37		1,44		1,76		2,22	2,59	1,40	
	80	50	30	1,37		1,44		1,92		2,38	3,24	1,40	
	100	60	40	1,46		1,44		2,08		2,55	3,89	1,40	
	120	60	60	1,46		1,44		2,08		2,55	3,89	1,40	
6	60	35	25	1,62	18	1,85	3	2,00	6	2,83	2,72	2,02	
	70	40	30	1,75		1,85		2,30		2,93	3,11	2,02	
	80	50	30	1,75		1,85		2,49		3,12	3,89	2,02	
	90	55	35	1,86		1,85		2,59		3,22	4,27	2,02	
	100	60	40	1,98		1,85		2,69		3,32	4,66	2,02	
	120	75	45	2,03		1,85		2,98		3,61	5,83	2,02	
	140	80	60	2,03		1,85		3,05		3,71	6,22	2,02	
	160	90	70	2,03		1,85		3,05		3,90	6,99	2,02	
	180	100	80	2,03		1,85		3,05		4,10	7,77	2,02	
	200	100	100	2,03		1,85		3,05		4,10	7,77	2,02	
	220	100	120	2,03		1,85		3,05		4,10	7,77	2,02	
	240	100	140	2,03		1,85		3,05		4,10	7,77	2,02	
	260	100	160	2,03		1,85		3,05		4,10	7,77	2,02	
	280	100	180	2,03		1,85		3,05		4,10	7,77	2,02	
300	100	200	2,03	1,85	3,05	4,10	7,77	2,02					
8	80	52	28	2,46	18	2,65	4	3,29	8	4,77	5,39	2,95	
	100	60	40	2,75		2,65		3,97		4,98	6,22	2,95	
	120	80	40	2,75		2,65		4,49		5,50	8,29	2,95	
	140	80	60	3,16		2,65		4,49		5,50	8,29	2,95	
	160	90	70	3,16		2,65		4,75		5,75	9,32	2,95	
	180	90	90	3,16		2,65		4,75		5,75	9,32	2,95	
	200	100	100	3,16		2,65		4,84		6,01	10,36	2,95	
	220	100	120	3,16		2,65		4,84		6,01	10,36	2,95	
	240	100	140	3,16		2,65		4,84		6,01	10,36	2,95	
	260	100	160	3,16		2,65		4,84		6,01	10,36	2,95	
	280	100	180	3,16		2,65		4,84		6,01	10,36	2,95	
	300	100	200	3,16		2,65		4,84		6,01	10,36	2,95	
	320	100	220	3,16		2,65		4,84		6,01	10,36	2,95	
	340	100	240	3,16		2,65		4,84		6,01	10,36	2,95	
	360	100	260	3,16		2,65		4,84		6,01	10,36	2,95	
	380	100	280	3,16		2,65		4,84		6,01	10,36	2,95	
	400	100	300	3,16		2,65		4,84		6,01	10,36	2,95	

NOTES and GENERAL PRINCIPLES on page 49.

STRUCTURAL VALUES

GENERAL PRINCIPLES

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

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

The coefficients Y_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.
- Sizing and verification of the timber elements, panels and metal plates must be done separately.
- The characteristic shear resistances are calculated for screws inserted without pre-drilling hole. In the case of screws inserted with pre-drilling hole, greater resistance values can be obtained.
- The screws must be positioned in accordance with the minimum distances.
- The characteristic panel-timber shear strengths are calculated considering an OSB3 or OSB4 panel, as per EN 300, or a particle board panel, as per EN 312, with thickness S_{PAN} .
- The thread withdrawal characteristic strength has been evaluated considering a fixing length equal to b .
- The head pull-through characteristic strength was calculated using timber elements.
In the case of steel-to-timber connections, generally the steel tensile strength is binding with respect to head separation or pull-through.

NOTES

- The characteristic timber-to-timber shear strengths were evaluated by considering an angle ϵ of 90° between the grains of the second element and the connector.
- The characteristic panel-timber and steel-timber shear strengths were evaluated by considering an ϵ angle of 90° between the grains of the timber element and the connector.
- The values in the table are independent of the load-to-grain angle.

- The characteristic plate shear strengths are evaluated considering the case of thin plate ($S_{PLATE} = 0.5 d_1$) and thick plate ($S_{PLATE} = d_1$).
- The characteristic thread withdrawal strength was evaluated by considering a 90° angle ϵ between the fibers of the timber element and the connector.
- For the calculation process a timber characteristic density $\rho_k = 385 \text{ kg/m}^3$ has been considered.
For different values of ρ_k , the strength values in the table (timber-to-timber shear, steel-to-timber shear and tensile) can be converted by means of the coefficient k_{dens} :

$$R'_{V,k} = k_{dens,v} \cdot R_{V,k}$$

$$R'_{ax,k} = k_{dens,ax} \cdot R_{ax,k}$$

$$R'_{head,k} = k_{dens,ax} \cdot R_{head,k}$$

ρ_k [kg/m ³]	350	380	385	405	425	430	440
C-GL	C24	C30	GL24h	GL26h	GL28h	GL30h	GL32h
$k_{dens,v}$	0,90	0,98	1,00	1,02	1,05	1,05	1,07
$k_{dens,ax}$	0,92	0,98	1,00	1,04	1,08	1,09	1,11

Strength values thus determined may differ, for higher safety standards, from those resulting from an exact calculation.

MINIMUM DISTANCES

NOTES

- Minimum distances in accordance with EN 1995:2014.
- The minimum spacing for all steel-to-timber connections (a_1 , a_2) can be multiplied by a coefficient of 0,7.
- The minimum spacing for all panel-to-timber connections (a_1 , a_2) can be multiplied by a coefficient of 0,85.