HBS SOFTWOOD

COUNTERSUNK SCREW

CE
EN 14592

HBS S
Special self-perforating tip with serrated thread (SAW tip) that cuts the timber fibres, facilitating initial grip and subsequent penetration.

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

CHROMIUM (VI) FREE
Total absence of hexavalent chromium. Compliance with the strictest regulations governing chemical substances (SVHC).
REACH information available.

CHARACTERISTICS

FOCUS	long thread
HEAD	countersunk with under-head ribs
DIAMETER	from 5,0 mm to 8,0 mm
LENGTH	from 50 mm to 400 mm

MATERIAL

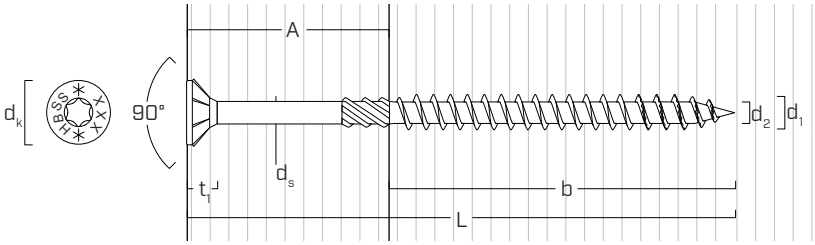
Galvanized carbon steel.

FIELDS OF USE

- wood based panels
- fibre board and MDF panels
- solid timber
- glulam (Glued Laminated Timber)
- CLT, LVL

Service classes 1 and 2.

GEOMETRY AND MECHANICAL CHARACTERISTICS

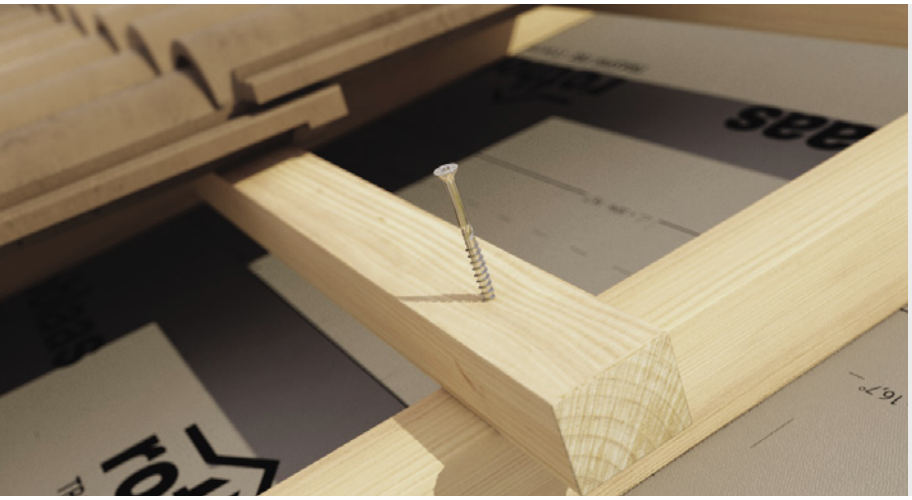


Nominal diameter	d_1	[mm]	5	6	8
Head diameter	d_k	[mm]	6,00	7,00	8,00
Tip diameter	d_2	[mm]	3,40	3,95	5,40
Shank diameter	d_s	[mm]	3,65	4,30	5,80
Head thickness	t_1	[mm]	3,10	4,50	4,50
Pre-drilling hole diameter	d_v	[mm]	3,0	4,0	5,0
Characteristic yield moment	$M_{y,k}$	[Nmm]	6912,39	10672,63	22219,41
Characteristic withdrawal-resistance parameter	$f_{ax,k}$	[N/mm²]	13,9	14,7	14,7
Associated density	ρ_a	[kg/m³]	350	350	350
Characteristic head-pull-through parameter	$f_{head,k}$	[kN]	18,9	15,0	15,3
Associated density	ρ_a	[kg/m³]	350	350	350
Characteristic tensile strength	$f_{tens,k}$	[kN]	10,5	13,5	19,6

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
6 TX 30	**HBSS680**	80	50	30	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

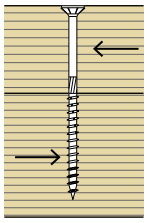
d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
8 TX 40	**HBSS8120**	120	80	40	100
	HBSS8140	140	80	60	100
	HBSS8160	160	90	70	100
	HBSS8180	180	90	80	100
	HBSS8200	200	100	100	100
	HBSS8220	220	100	120	100
	HBSS8240	240	100	140	100
	HBSS8260	260	100	160	100
	HBSS8280	280	100	180	100
	HBSS8300	300	100	200	100
	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



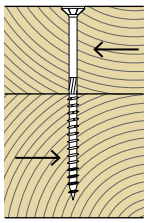
TIMBER ROOF

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

MINIMUM DISTANCES FOR SHEAR LOADS



Load-to-grain angle α = 0°

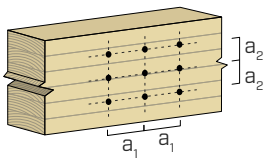


Load-to-grain angle α = 90°

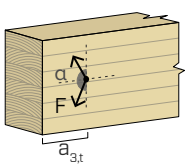
		SCREWS INSERTED WITH PRE-DRILLING HOLES				SCREWS INSERTED WITH PRE-DRILLING HOLES			
			5	6	8		5	6	8
a_1	[mm]	**5·d**	25	30	40	**4·d**	20	24	32
a_2	[mm]	**3·d**	15	18	24	**4·d**	20	24	32
$a_{3,t}$	[mm]	**12·d**	60	72	96	**7·d**	35	42	56
$a_{3,c}$	[mm]	**7·d**	35	42	56	**7·d**	35	42	56
$a_{4,t}$	[mm]	**3·d**	15	18	24	**7·d**	35	42	56
$a_{4,c}$	[mm]	**3·d**	15	18	24	**3·d**	15	18	24

		SCREWS INSERTED WITHOUT PRE-DRILLING HOLE				SCREWS INSERTED WITHOUT PRE-DRILLING HOLE			
			5	6	8		5	6	8
a_1	[mm]	**12·d**	60	72	96	**5·d**	25	30	40
a_2	[mm]	**5·d**	25	30	40	**5·d**	25	30	40
$a_{3,t}$	[mm]	**15·d**	75	90	120	**10·d**	50	60	80
$a_{3,c}$	[mm]	**10·d**	50	60	80	**10·d**	50	60	80
$a_{4,t}$	[mm]	**5·d**	25	30	40	**10·d**	50	60	80
$a_{4,c}$	[mm]	**5·d**	25	30	40	**5·d**	25	30	40

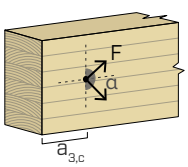
d = nominal screw diameter



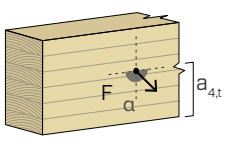
stressed end
-90° < α < 90°



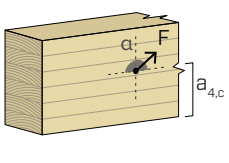
unloaded end
90° < α < 270°



stressed edge
0° < α < 180°



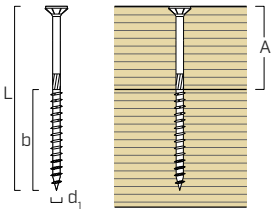
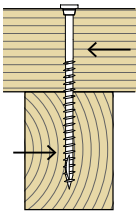
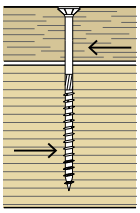
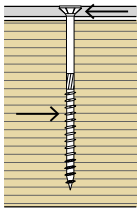
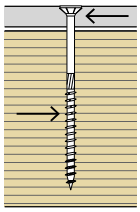
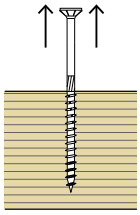
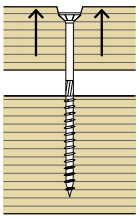
unload edge
180° < α < 360°



NOTES:

- The minimum distances are in accordance with EN 1995:2014, considering a wood characteristic density of $\rho_k \leq 420$ kg/m³.
- 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.

STATIC VALUES

geometry				SHEAR						TENSION	
				timber-to-timber	panel-timber [1]		thin steel-timber plate [2]		thick steel-timber plate [3]	thread withdrawal [4]	head pull-through [5]
											
d_1 [mm]	L [mm]	b [mm]	A [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]		$R_{V,k}$ [kN]		$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]
5	50	30	20	1,35	S_{PAN} = 18 mm	1,57	S_{PLATE} = 2,5 mm	1,48	S_{PLATE} = 5 mm	2,23	2,25	2,04
	60	35	25	1,46		1,68		1,80		2,35	2,63	2,04
	70	40	30	1,56		1,68		1,95		2,44	3,00	2,04
	80	50	30	1,56		1,68		2,13		2,63	3,75	2,04
	100	60	40	1,71		1,68		2,32		2,82	4,50	2,04
6	80	50	30	1,84	S_{PAN} = 18 mm	1,97	S_{PLATE} = 3 mm	2,70	S_{PLATE} = 6 mm	3,41	4,76	2,33
	100	60	40	2,08		1,97		3,00		3,65	5,71	2,33
	120	75	45	2,16		1,97		3,15		4,01	7,14	2,33
	140	80	60	2,16		1,97		3,15		4,13	7,62	2,33
	160	90	70	2,16		1,97		3,15		4,37	8,57	2,33
	180	100	80	2,16		1,97		3,15		4,45	9,52	2,33
	200	100	100	2,16		1,97		3,15		4,45	9,52	2,33
	220	100	120	2,16		1,97		3,15		4,45	9,52	2,33
	240	100	140	2,16		1,97		3,15		4,45	9,52	2,33
	260	100	160	2,16		1,97		3,15		4,45	9,52	2,33
	280	100	180	2,16		1,97		3,15		4,45	9,52	2,33
	300	100	200	2,16		1,97		3,15		4,45	9,52	2,33
8	120	80	40	2,92	S_{PAN} = 18 mm	2,65	S_{PLATE} = 4 mm	5,01	S_{PLATE} = 8 mm	6,10	10,15	3,47
	140	80	60	3,39		2,65		5,04		6,10	10,15	3,47
	160	90	70	3,39		2,65		5,04		6,42	11,42	3,47
	180	90	90	3,39		2,65		5,04		6,42	11,42	3,47
	200	100	100	3,39		2,65		5,04		6,74	12,69	3,47
	220	100	120	3,39		2,65		5,04		6,74	12,69	3,47
	240	100	140	3,39		2,65		5,04		6,74	12,69	3,47
	260	100	160	3,39		2,65		5,04		6,74	12,69	3,47
	280	100	180	3,39		2,65		5,04		6,74	12,69	3,47
	300	100	200	3,39		2,65		5,04		6,74	12,69	3,47
	320	100	220	3,39		2,65		5,04		6,74	12,69	3,47
	340	100	240	3,39		2,65		5,04		6,74	12,69	3,47
	360	100	260	3,39		2,65		5,04		6,74	12,69	3,47
	380	100	280	3,39		2,65		5,04		6,74	12,69	3,47
	400	100	300	3,39		2,65		5,04		6,74	12,69	3,47

NOTES:

[1] The shear characteristic resistances are calculated considering an OSB panel or particle board with a S_{PAN} thickness and timber density of ρ_k = 500 kg/m³.

[2] The shear resistance characteristics are calculated considering the case of a thin plate ($S_{PLATE} \leq 0,5\ d_1$).

[3] The shear resistance characteristics are calculated considering the case of a thick plate ($S_{PLATE} \geq d_1$).

[4] The axial thread withdrawal resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.

[5] The axial resistance to head pull-through, with and without a washer, was calculated using wood elements.

In the case of steel-timber connections, generally the steel tensile strength is binding with respect to head separation or pull-through.

GENERAL PRINCIPLES:

- Characteristic values comply with the 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.

- For the calculation process a timber density ρ_k = 385 kg/m³ has been considered.
- Sizing and verification of the wooden elements, panels and steel plates must be done separately.
- The shear characteristic resistances are calculated for screws inserted without pre-drilling holes. In the case of screws inserted with pre-drilling holes, greater resistance values can be obtained.