EWS AISI410 | EWS A2

CONVEX HEAD SCREW

CE
EN 14592

AESTHETIC PERFORMANCE AND ROBUSTNESS

Countersunk teardrop shaped head with curved surface for a pleasant look and firm grip with the bit. The increased shank diameter with high torsional strength for a strong, safe screwing even in high density woods.

EWS AISI410

The martensitic stainless steel version offers the highest mechanical performance. Suitable for outdoor applications and on acid wood, but away from corrosive agents (chlorides, sulphides, etc.).

EWS A2 | AISI305

The austenitic A2 stainless steel version offers higher corrosion resistance. Suitable for outdoor applications up to 1 km from the sea and on most of T4 class acid woods.

EWS AISI410

EWS A2 | AISI305

BIT INCLUDED

DIAMETER [mm]

3,5 — 5 — 8

LENGTH [mm]

20 — 50 — 80 — 320

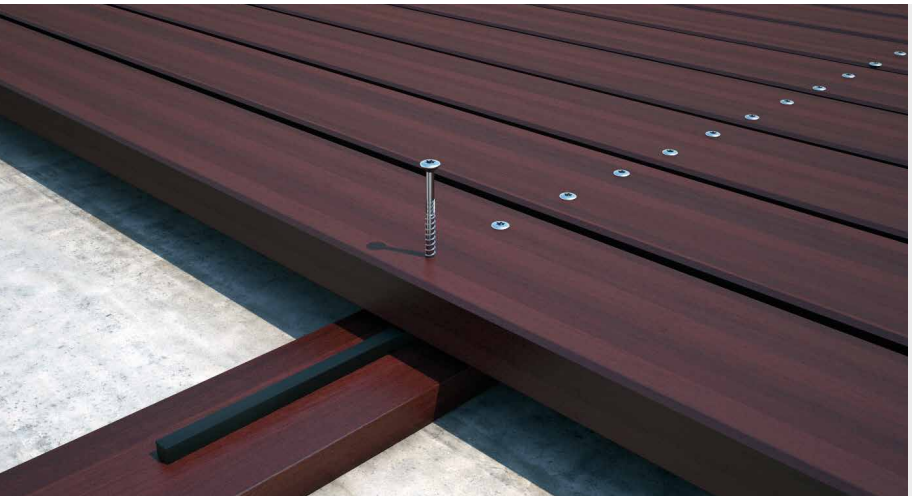
MATERIAL

410 AISI — AISI410 martensitic stainless steel

SC3 | C2 | T4

A2 AISI 305 — A2 | AISI305 austenitic stainless steel (CRC II)

SC3 | C3 | T4



FIELDS OF USE

Outdoor use.
WPC boards (with pre-drill).

EWS AISI410: wooden boards with density of < 880 kg/m³ (without pre-drill).

EWS A2 | AISI305: wooden boards with density of < 550 kg/m³ (without pre-drill) and < 880 kg/m³ (with pre-drill).

CODES AND DIMENSIONS

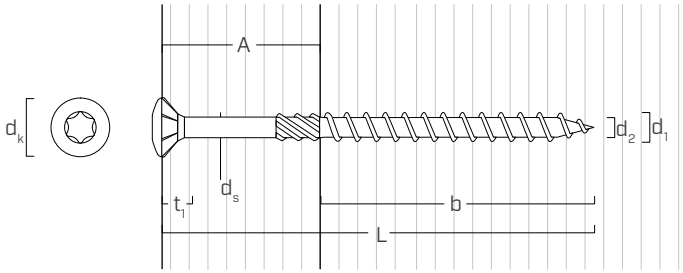
EWS AISI410

d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 25	**EWS550**	50	30	20	200
	EWS560	60	36	24	200
	EWS570	70	42	28	100
	EWS580	80	48	32	100

EWS A2 | AISI305

d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 25	**EWSA2550**	50	30	20	200
	EWSA2560	60	36	24	200
	EWSA2570	70	42	28	100

GEOMETRY AND MECHANICAL CHARACTERISTICS



GEOMETRY

			EWS AISI410	EWS A2 | AISI305
Nominal diameter	**d_1**	**[mm]**	**5,3**	**5,3**
Head diameter	d_K	[mm]	8,00	8,00
Thread diameter	d_2	[mm]	3,90	3,90
Shank diameter	d_S	[mm]	4,10	4,10
Head thickness	t_1	[mm]	3,65	3,65
Pre-drilling hole diameter(1)	d_V	[mm]	3,5	3,5

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

CHARACTERISTIC MECHANICAL PARAMETERS

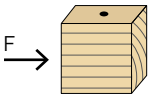
			EWS AISI410	EWS A2 | AISI305
Nominal diameter	**d_1**	**[mm]**	**5,3**	**5,3**
Tensile strength	$f_{tens,k}$	[kN]	13,7	7,3
Yield moment	$M_{y,k}$	[Nm]	14,3	9,7
Withdrawal resistance parameter	$f_{ax,k}$	[N/mm^2]	16,5	16,6
Associated density	ρ_a	[kg/m^3]	350	350
Head-pull-through parameter	$f_{head,k}$	[N/mm^2]	21,1	21,4
Associated density	ρ_a	[kg/m^3]	350	350

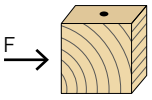
WITHOUT PRE-DRILLED HOLE

EWS AISI410 can be used, without pre-drill, in woods having a maximum density of 880 kg/m^3. EWS A2 | AISI305 can be used, without pre-drill, in woods having a maximum density of 550 kg/m^3.

MINIMUM DISTANCES FOR SHEAR LOADS

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



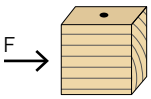


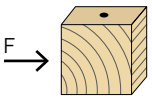
d	[mm]		5
a_1	[mm]	12·d	60
a_2	[mm]	5·d	25
$a_{3,t}$	[mm]	15·d	75
$a_{3,c}$	[mm]	10·d	50
$a_{4,t}$	[mm]	5·d	25
$a_{4,c}$	[mm]	5·d	25

d	[mm]		5
a_1	[mm]	5·d	25
a_2	[mm]	5·d	25
$a_{3,t}$	[mm]	10·d	50
$a_{3,c}$	[mm]	10·d	50
$a_{4,t}$	[mm]	10·d	50
$a_{4,c}$	[mm]	5·d	25

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

screws inserted **WITHOUT pre-drilled hole** — 420 kg/m³ < $\rho_k \leq$ 500 kg/m³



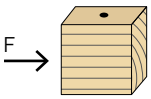


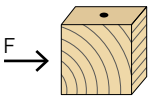
d	[mm]		5
a_1	[mm]	15·d	75
a_2	[mm]	7·d	35
$a_{3,t}$	[mm]	20·d	100
$a_{3,c}$	[mm]	15·d	75
$a_{4,t}$	[mm]	7·d	35
$a_{4,c}$	[mm]	7·d	35

d	[mm]		5
a_1	[mm]	7·d	35
a_2	[mm]	7·d	35
$a_{3,t}$	[mm]	15·d	75
$a_{3,c}$	[mm]	15·d	75
$a_{4,t}$	[mm]	12·d	60
$a_{4,c}$	[mm]	7·d	35

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

screws inserted **WITH pre-drilled hole**

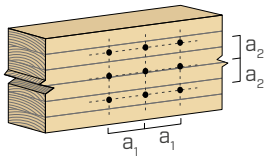




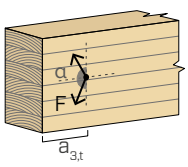
d	[mm]		5
a_1	[mm]	5·d	25
a_2	[mm]	3·d	15
$a_{3,t}$	[mm]	12·d	60
$a_{3,c}$	[mm]	7·d	35
$a_{4,t}$	[mm]	3·d	15
$a_{4,c}$	[mm]	3·d	15

d	[mm]		5
a_1	[mm]	4·d	20
a_2	[mm]	4·d	20
$a_{3,t}$	[mm]	7·d	35
$a_{3,c}$	[mm]	7·d	35
$a_{4,t}$	[mm]	7·d	35
$a_{4,c}$	[mm]	3·d	15

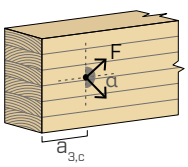
α = load-to-grain angle
d = screw diameter



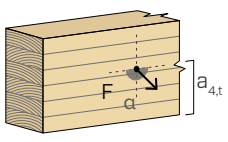
stressed end
-90° < α < 90°



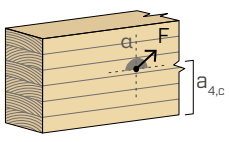
unloaded end
90° < α < 270°



stressed edge
0° < α < 180°



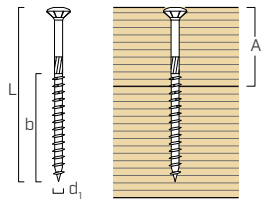
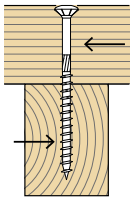
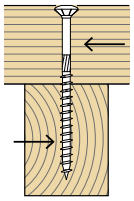
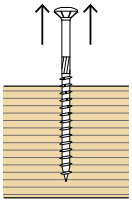
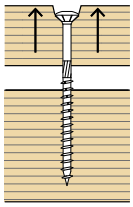
unload edge
180° < α < 360°

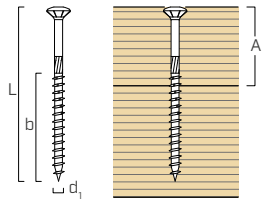
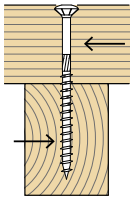
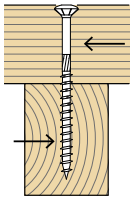
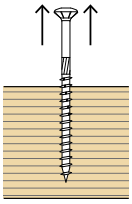
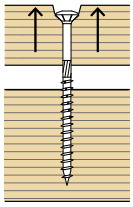


NOTES

- The minimum distances are according to EN 1995:2014 considering a calculation diameter of d = screw diameter.
- The minimum spacing for all panel-to-timber connections (a_1, a_2) can be multiplied by a coefficient of 0,85.

STRUCTURAL VALUES

EWS AISI410				SHEAR		TENSION	
geometry				timber-to-timber without pre-drilled hole	timber-to-timber with pre-drilling hole	thread withdrawal	head pull-through
							
d_1 [mm]	L [mm]	b [mm]	A [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]
5	50	30	20	1,38	1,84	2,86	1,56
	60	36	24	1,58	2,09	3,44	1,56
	70	42	28	1,77	2,21	4,01	1,56
	80	48	32	1,85	2,34	4,58	1,56

EWS A2 | AISI305				SHEAR		TENSION	
geometry				timber-to-timber without pre-drilled hole	timber-to-timber with pre-drilling hole	thread withdrawal	head pull-through
							
d_1 [mm]	L [mm]	b [mm]	A [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]
5	50	30	20	1,39	1,80	2,88	1,58
	60	36	24	1,55	1,92	3,46	1,58
	70	42	28	1,64	2,06	4,03	1,58

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.
- 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 screws must be positioned in accordance with the minimum distances.

NOTES

- The axial thread withdrawal resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.
- The axial resistance to head pull-through was calculated using wood elements.
- For the calculation process a timber characteristic density ρ_k = 420 kg/m^3 has been considered.