

KKZ A2 | AISI304

COUNTERSUNK CYLINDRICAL HEAD SCREW



HARD WOODS

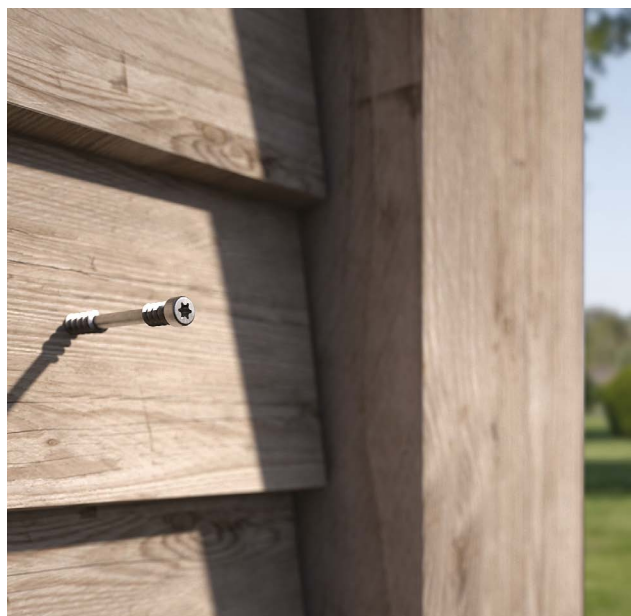
Special tip with sword-shaped geometry specially designed to efficiently drill very high density woods without pre-drill (with pre-drill, over 1000 kg/m³).

DOUBLE THREAD

The larger diameter right-hand under-head thread ensures an effective grip, guaranteeing good coupling of the wooden elements. Concealed head.

BURNISHED VERSION

Available in a version in antique-burnished stainless steel, ideal to guarantee superb camouflaging in the wood.



DIAMETER [mm]

3,5 8

LENGTH [mm]

20 320

SERVICE CLASS

☒ SC1 ☒ SC2 ☒ SC3

ATMOSPHERIC CORROSIVITY

☒ C1 ☒ C2 ☒ C3 ☒ C4

WOOD CORROSIVITY

☒ T1 ☒ T2 ☒ T3 ☒ T4

MATERIAL

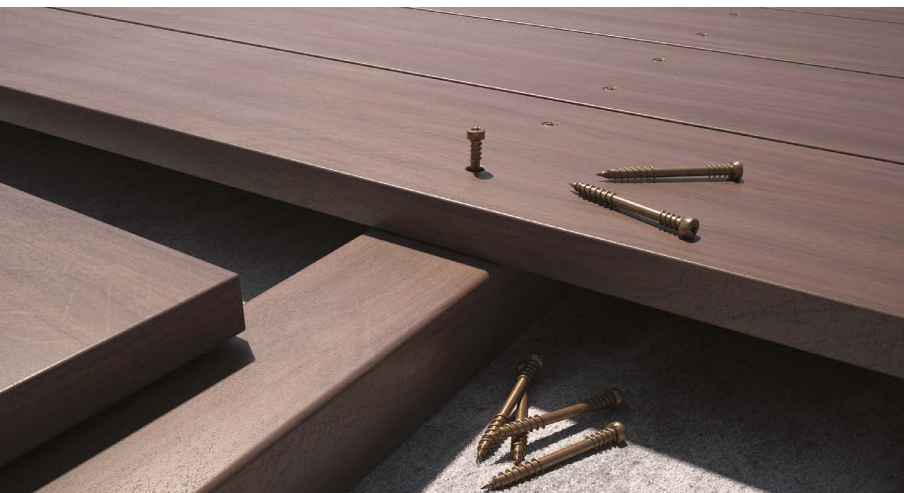
A2 AISI 304 A2 | AISI304 austenitic stainless steel (CRC II)



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KKZ BRONZE A2 | AISI304



FIELDS OF USE

Use in aggressive outdoor environments. Wooden boards with density of < 780 kg/m³ (without pre-drill) and < 1240 kg/m³ (with pre-drill). WPC boards (with pre-drill).

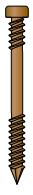
CODES AND DIMENSIONS

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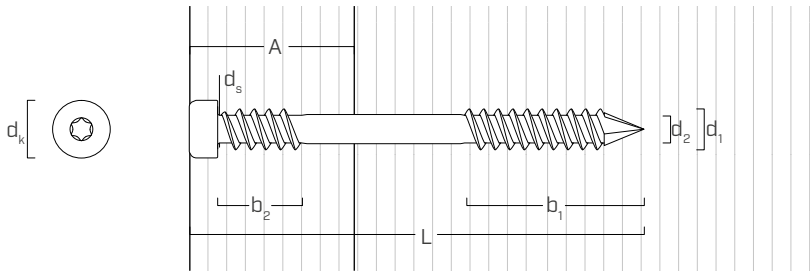
d_1 [mm]	CODE	L [mm]	b_1 [mm]	b_2 [mm]	A [mm]	pcs
5 TX 25	KKZ550	50	22	11	28	200
	KKZ560	60	27	11	33	200
	KKZ570	70	32	11	38	100

KKZ BRONZE A2 | AISI304



d_1 [mm]	CODE	L [mm]	b_1 [mm]	b_2 [mm]	A [mm]	pcs
5 TX 25	KKZB550	50	22	11	28	200
	KKZB560	60	27	11	33	200

GEOMETRY AND MECHANICAL CHARACTERISTICS



GEOMETRY

Nominal diameter	d_1	[mm]	5
Head diameter	d_k	[mm]	6,80
Thread diameter	d_2	[mm]	3,50
Shank diameter	d_s	[mm]	4,35
Pre-drilling hole diameter ⁽¹⁾	d_v	[mm]	3,5

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

CHARACTERISTIC MECHANICAL PARAMETERS

Nominal diameter	d_1	[mm]	5
Tensile strength	$f_{tens,k}$	[kN]	5,7
Yield moment	$M_{y,k}$	[Nm]	5,3
Withdrawal resistance parameter	$f_{ax,k}$	[N/mm ²]	17,1
Associated density	ρ_a	[kg/m ³]	350
Head-pull-through parameter	$f_{head,k}$	[N/mm ²]	36,8
Associated density	ρ_a	[kg/m ³]	350



HARD WOOD

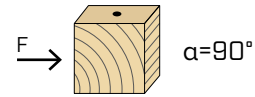
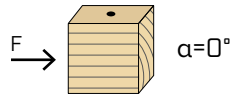
Also tested on very high density woods, such as IPE, massaranduba or bamboo Microllam® (over 1000 kg/m³).

ACID TIMBER T4

Based on Rothoblaas' experimental experience, A2 (AISI 304) stainless steel is suitable for use in applications on most aggressive woods with acidity (pH) levels below 4, such as oak, Douglas fir and chestnut (see page 314).

MINIMUM DISTANCES FOR SHEAR LOADS

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

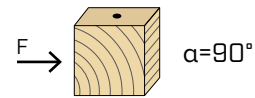
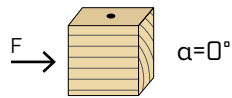


d	[mm]	5
a_1	[mm]	12·d
a_2	[mm]	5·d
$a_{3,t}$	[mm]	15·d
$a_{3,c}$	[mm]	10·d
$a_{4,t}$	[mm]	5·d
$a_{4,c}$	[mm]	5·d

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

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

screws inserted **WITHOUT** pre-drilled hole $420 \text{ kg/m}^3 < \rho_k \leq 500 \text{ kg/m}^3$

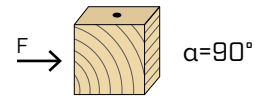
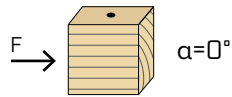


d	[mm]	5
a_1	[mm]	15·d
a_2	[mm]	7·d
$a_{3,t}$	[mm]	20·d
$a_{3,c}$	[mm]	15·d
$a_{4,t}$	[mm]	7·d
$a_{4,c}$	[mm]	7·d

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

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

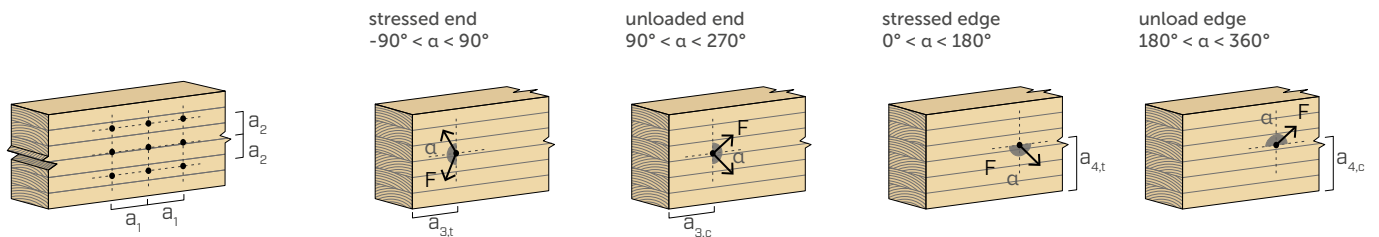
screws inserted **WITH** pre-drilled hole



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

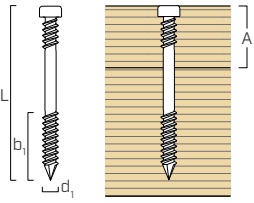
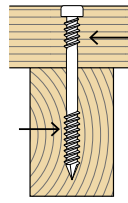
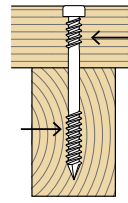
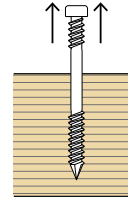
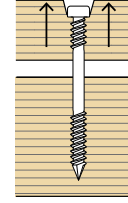
d	[mm]	5
a_1	[mm]	4·d
a_2	[mm]	4·d
$a_{3,t}$	[mm]	7·d
$a_{3,c}$	[mm]	7·d
$a_{4,t}$	[mm]	7·d
$a_{4,c}$	[mm]	3·d

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



NOTES

- The minimum distances are according to EN 1995:2014 considering a calculation diameter of d = nominal screw diameter.
- 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.

					SHEAR		TENSION		
geometry				timber-to-timber without pre-drilling hole		timber-to-timber with pre-drilling hole		thread withdrawal	head pull-through including upper thread withdrawal
									
d1	L	b1	A	R _{V,k}	R _{V,k}	R _{ax,k}	R _{head,k}		
[mm]	[mm]	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]		
5	50	22	28	1,41	1,71	2,18	1,97		
	60	27	33	1,52	1,83	2,67	1,97		
	70	32	38	1,61	1,83	3,17	1,97		

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.
- 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 timber elements also considering the underhead thread.
- For the calculation process a timber characteristic density $\rho_k = 420 \text{ kg/m}^3$ has been considered.