KKZ A2 | AISI304

CE
EN 14592

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/m^3).

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.

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KKZ BRONZE A2 | AISI304

BIT INCLUDED

DIAMETER [mm]

3,5 — 5 — 8

LENGTH [mm]

20 — 50 70 — 320

SERVICE CLASS

SC1 SC2 SC3

ATMOSPHERIC CORROSIVITY

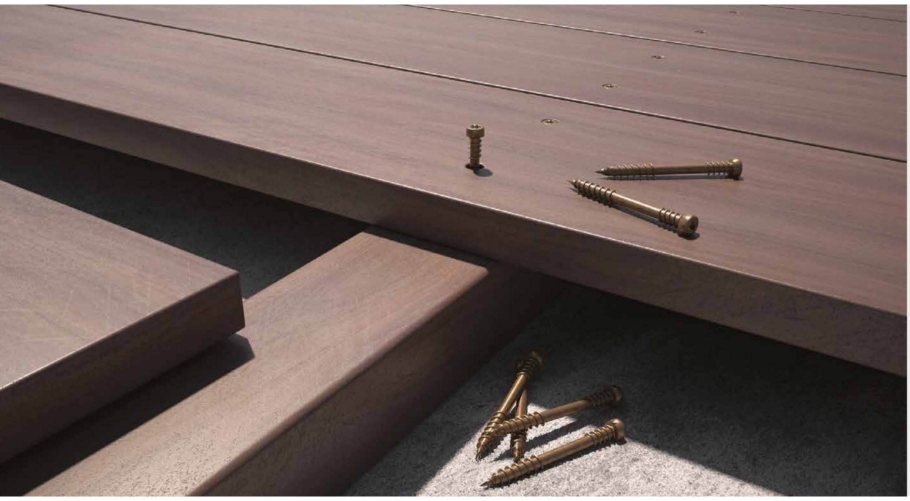
C1 C2 C3 C4

WOOD CORROSIVITY

T1 T2 T3 T4

MATERIAL

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

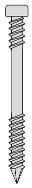


FIELDS OF USE

Use in aggressive outdoor environments.
Wooden boards with density of < 780 kg/m^3 (without pre-drill) and < 1240 kg/m^3 (with pre-drill).
WPC boards (with pre-drill).

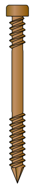
CODES AND DIMENSIONS

KKZ A2 | AISI304



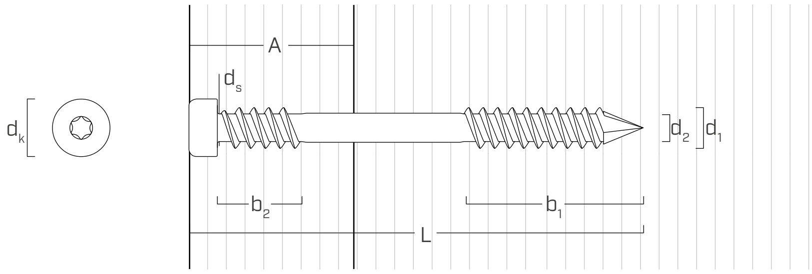
d_1 [mm]	CODE	L [mm]	b_1 [mm]	b_2 [mm]	A [mm]	pcs
5 TX 25	**KKZ550**	50	22	11	28	200
	KKZ560	60	27	11	33	200
	KKZ570	70	32	11	38	100

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 specie.

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

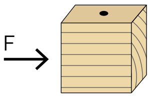
Also tested on very high density woods, such as IPE, massaranduba or bamboo Microllam® (over 1000 kg/m^3).

ACID TIMBER T4

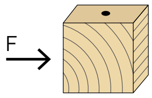
Based on Rothoblaas' experimental experience, A2 (AISI 304) stainless steel is suitable for use in applications on most agressive woods with acidity (pH) levels below 4, such as oak, Douglas fir and chestnut (see page 314).

MINIMUM DISTANCES FOR SHEAR LOADS

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



α=0°



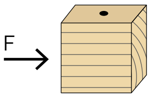
α=90°

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

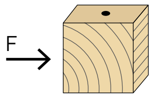
d	[mm]		5
a_1	[mm]	5·d	25
a_2	[mm]	5·d	25
$a_{3,t}$	[mm]	10·d	50
$a_{3,c}$	[mm]	10·d	50
$a_{4,t}$	[mm]	10·d	50
$a_{4,c}$	[mm]	5·d	25

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

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



α=0°



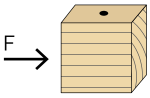
α=90°

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

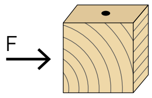
d	[mm]		5
a_1	[mm]	7·d	35
a_2	[mm]	7·d	35
$a_{3,t}$	[mm]	15·d	75
$a_{3,c}$	[mm]	15·d	75
$a_{4,t}$	[mm]	12·d	60
$a_{4,c}$	[mm]	7·d	35

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

screws inserted **WITH pre-drilled hole**



α=0°

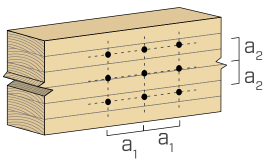


α=90°

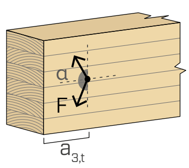
d	[mm]		5
a_1	[mm]	5·d	25
a_2	[mm]	3·d	15
$a_{3,t}$	[mm]	12·d	60
$a_{3,c}$	[mm]	7·d	35
$a_{4,t}$	[mm]	3·d	15
$a_{4,c}$	[mm]	3·d	15

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

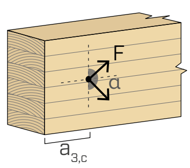
α = load-to-grain angle
d = nominal screw diameter



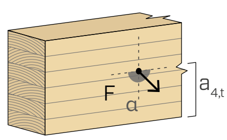
stressed end
-90° < α < 90°



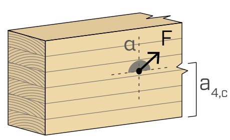
unloaded end
90° < α < 270°



stressed edge
0° < α < 180°



unload edge
180° < α < 360°

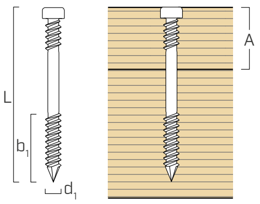


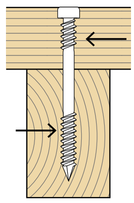
NOTES

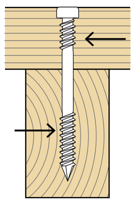
- The minimum distances are according to EN 1995:2014 considering a calculation diameter of d = nominal screw diameter.
- The minimum spacing for all steel-to-timber connections (a_1, a_2) can be multiplied by a coefficient of 0,7.
- The minimum spacing for all panel-to-timber connections (a_1, a_2) can be multiplied by a coefficient of 0,85.

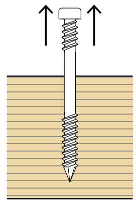
STRUCTURAL VALUES

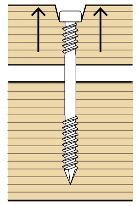
CHARACTERISTIC VALUES
EN 1995:2014











				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
d_1	L	b_1	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 ρ_k = 420 kg/m^3 has been considered.