KKT A4 | AISI316

CONE-SHAPED CONCEALED HEAD SCREW

CE
EN 14592

AGGRESSIVE ENVIRONMENTS

A4 | AISI316 stainless steel version ideal for very aggressive environments, for acidic, chemically treated wood and very high internal moisture (T5). KKT X version with short length and long bit for use with clips.

COUNTER THREAD

The inverse (left-hand) under-head thread guarantees excellent grip. Small conical head to ensure it is hidden in the timber.

TRIANGULAR BODY

The three-lobed thread makes it possible to cut the wood grain during screwing. Exceptional timber pull-through.

KKT A4 | AISI316

KKT X A4 | AISI316

long insert included

BIT INCLUDED

DIAMETER [mm]

3,5 — 5 — 8

LENGTH [mm]

20 — 20 — 80 — 320

SERVICE CLASS

SC1 SC2 SC3 SC4

ATMOSPHERIC CORROSIVITY

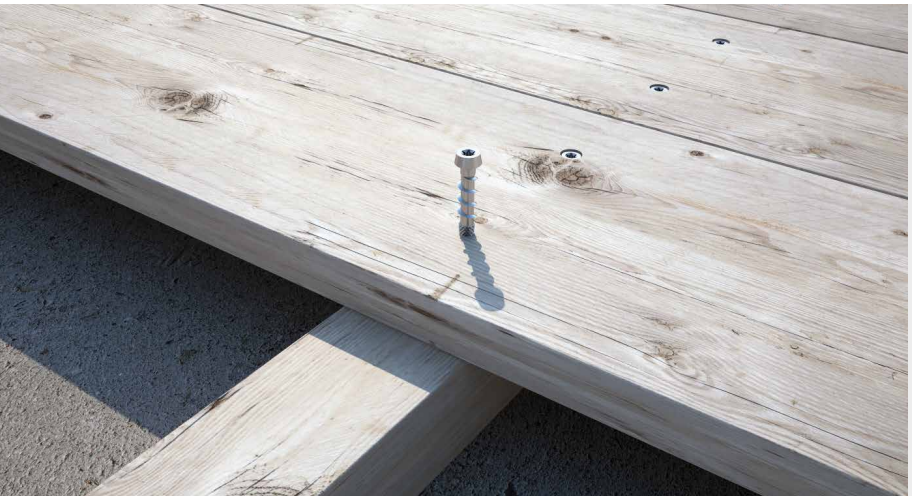
C1 C2 C3 C4 C5

WOOD CORROSIVITY

T1 T2 T3 T4 T5

MATERIAL

A4 AISI 316 — A4 | AISI316 austenitic stainless steel (CRC III)



FIELDS OF USE

Outdoor use in highly aggressive environments. Wooden boards with density of < 550 kg/m³ (without pre-drill) and < 880 kg/m³ (with pre-drill). WPC boards (with pre-drill).

CODES AND DIMENSIONS

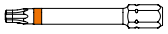
KKT A4 | AISI316

d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 20	**KKT540A4**	43	25	16	200
	KKT550A4	53	35	18	200
	KKT560A4	60	40	20	200
	KKT570A4	70	50	25	100
	KKT580A4	80	53	30	100

KKT X A4 | AISI316 - fully threaded screw

d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 20	**KKTX520A4(*)**	20	16	4	200
	KKTX525A4(*)	25	21	4	200
	KKTX530A4(*)	30	26	4	200
	KKTX540A4	40	36	4	100

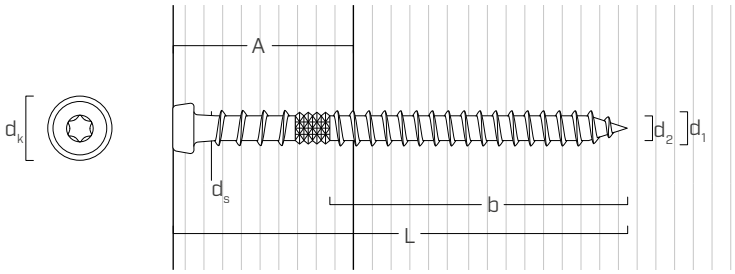
(*) Not holding CE marking.



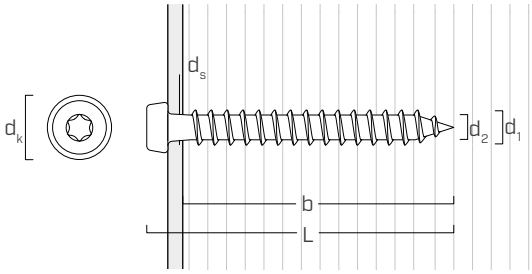
LONG BIT INCLUDED code TX2050

GEOMETRY AND MECHANICAL CHARACTERISTICS

KKT A4 | AISI316



KKT X A4 | AISI316



GEOMETRY

Nominal diameter	**d_1**	**[mm]**	**5,1**
Head diameter	d_K	[mm]	6,75
Thread diameter	d_2	[mm]	3,40
Shank diameter	d_S	[mm]	4,05
Pre-drilling hole diameter(1)	d_V	[mm]	3,0 - 4,0

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

CHARACTERISTIC MECHANICAL PARAMETERS

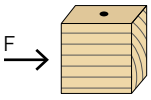
Nominal diameter	**d_1**	**[mm]**	**5,1**
Tensile strength	$f_{tens,k}$	[kN]	7,8
Yield moment	$M_{y,k}$	[Nm]	5,8
Withdrawal resistance parameter	$f_{ax,k}$	[N/mm^2]	13,7
Associated density	ρ_a	[kg/m^3]	350
Head-pull-through parameter	$f_{head,k}$	[N/mm^2]	23,8
Associated density	ρ_a	[kg/m^3]	350

KKT X

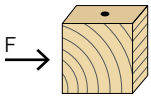
Ideal for fastening standard Rothoblaas clips (TVM, TERRALOCK) in outdoor environments. Long bit included in each package.

MINIMUM DISTANCES FOR SHEAR LOADS

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



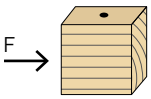
d	[mm]		5
a_1	[mm]	12·d	60
a_2	[mm]	5·d	25
$a_{3,t}$	[mm]	15·d	75
$a_{3,c}$	[mm]	10·d	50
$a_{4,t}$	[mm]	5·d	25
$a_{4,c}$	[mm]	5·d	25



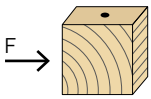
d	[mm]		5
a_1	[mm]	5·d	25
a_2	[mm]	5·d	25
$a_{3,t}$	[mm]	10·d	50
$a_{3,c}$	[mm]	10·d	50
$a_{4,t}$	[mm]	10·d	50
$a_{4,c}$	[mm]	5·d	25

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

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



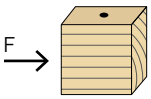
d	[mm]		5
a_1	[mm]	15·d	75
a_2	[mm]	7·d	35
$a_{3,t}$	[mm]	20·d	100
$a_{3,c}$	[mm]	15·d	75
$a_{4,t}$	[mm]	7·d	35
$a_{4,c}$	[mm]	7·d	35



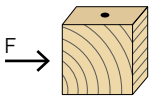
d	[mm]		5
a_1	[mm]	7·d	35
a_2	[mm]	7·d	35
$a_{3,t}$	[mm]	15·d	75
$a_{3,c}$	[mm]	15·d	75
$a_{4,t}$	[mm]	12·d	60
$a_{4,c}$	[mm]	7·d	35

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

screws inserted **WITH pre-drilled hole**

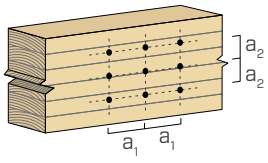


d	[mm]		5
a_1	[mm]	5·d	25
a_2	[mm]	3·d	15
$a_{3,t}$	[mm]	12·d	60
$a_{3,c}$	[mm]	7·d	35
$a_{4,t}$	[mm]	3·d	15
$a_{4,c}$	[mm]	3·d	15

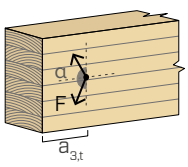


d	[mm]		5
a_1	[mm]	4·d	20
a_2	[mm]	4·d	20
$a_{3,t}$	[mm]	7·d	35
$a_{3,c}$	[mm]	7·d	35
$a_{4,t}$	[mm]	7·d	35
$a_{4,c}$	[mm]	3·d	15

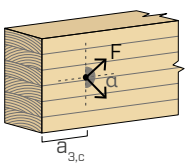
α = load-to-grain angle
d = screw diameter



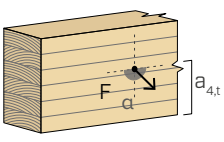
stressed end
-90° < α < 90°



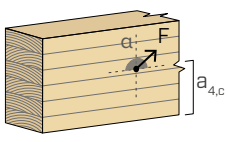
unloaded end
90° < α < 270°



stressed edge
0° < α < 180°

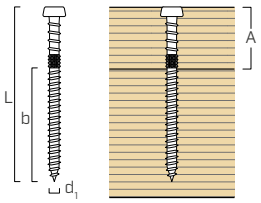
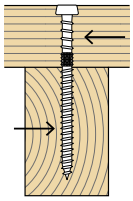
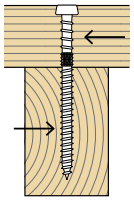
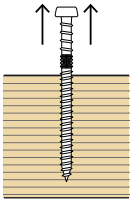
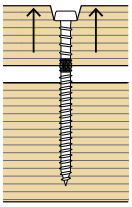


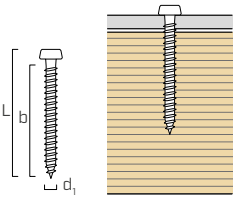
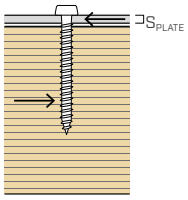
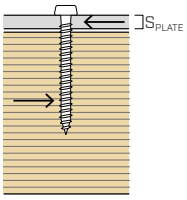
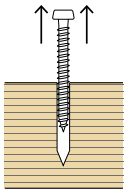
unload edge
180° < α < 360°



NOTES

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

KKT A4 |AISI316				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 [mm]	L [mm]	b [mm]	A [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]
5	43	25	16	1,13	1,35	1,98	1,25
	53	35	18	1,16	1,40	2,77	1,25
	60	40	20	1,19	1,46	3,17	1,25
	70	50	25	1,41	1,77	3,96	1,25
	80	53	30	1,59	2,00	4,20	1,25

KKT X A4 |AISI316			SHEAR				TENSION
geometry			steel-to-timber thin plate		steel-to-timber intermediate plate		thread withdrawal
							
d_1 [mm]	L [mm]	b [mm]	S_{PLATE} [mm]	$R_{V,k}$ [kN]	S_{PLATE} [mm]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]
5	20	16	1,5	0,64	3	0,74	1,27
	25	21		0,82		0,92	1,66
	30	26		0,99		1,10	2,06
	40	36		1,34		1,48	2,85

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 timber elements and steel plates must be carried out separately.
- The screws must be positioned in accordance with the minimum distances.
- The KKT A4 screws with double thread are mainly used for timber-to-timber joints.
- The KKT X total thread screws are mainly used for steel plates (e.g. TERRALOCK patio system).

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.
- The characteristic shear strengths are evaluated considering the case of thin plate ($S_{PLATE} \leq 0,5\ d_1$) and intermediate plate ($0,5\ d_1 < S_{PLATE} < d_1$).
- In the case of steel-to-timber connections, generally the steel tensile strength is binding with respect to head separation or pull-through.
- For the calculation process a timber characteristic density ρ_k = 420 kg/m^3 has been considered.