

CONE-SHAPED CONCEALED HEAD SCREW

ORGANIC COLOURED COATING

Carbon steel version with coloured anti-rust coating (brown, grey, green, sand and black) for outdoor use in service class 3 on non acid timbers (T3).

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 COLOR STRIP
bound version



DIAMETER [mm]

3,5

LENGTH [mm]

20

SERVICE CLASS

☒ SC1 ☒ SC2 ☒ SC3

ATMOSPHERIC CORROSIVITY

☒ C1 ☒ C2 ☒ C3

WOOD CORROSIVITY

☒ T1 ☒ T2 ☒ T3 ☒ T4

MATERIAL

ORGANIC COATING carbon steel with coloured organic anti-rust coating



FIELDS OF USE

Outdoor use.
Wooden boards with density of $< 780 \text{ kg/m}^3$ (without pre-drill) and $< 880 \text{ kg/m}^3$ (with pre-drill).
WPC boards (with pre-drill).

For vertical surfaces (e.g. façades), use as an visible fastener is not recommended.

CODES AND DIMENSIONS

KKT BROWN COLOUR

	d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 20		KKTM540	43	25	16	200
		KKTM550	53	35	18	200
		KKTM560	60	40	20	200
		KKTM570	70	50	25	100
		KKTM580	80	53	30	100
6 TX 25		KKTM660	60	40	20	100
		KKTM680	80	50	30	100
		KKTM6100	100	50	50	100
		KKTM6120	120	60	60	100

KKT GREY COLOUR

	d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 20		KKTG540	43	25	16	200
		KKTG550	53	35	18	200
		KKTG560	60	40	20	200
		KKTG570	70	50	25	100
		KKTG580	80	53	30	100

KKT GREEN COLOUR

	d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 20		KKTV550	53	35	18	200
		KKTV560	60	40	20	200
		KKTV570	70	50	25	100

KKT SAND COLOUR

	d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 20		KKTS550	53	35	18	200
		KKTS560	60	40	20	200
		KKTS570	70	50	25	100

KKT BLACK COLOUR

	d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5 TX 20		KKTN540(*)	43	36	16	200
		KKTN550	53	35	18	200
		KKTN560	60	40	20	200

(*) Full threaded screw.

KKT COLOR STRIP

Bound version available for fast and accurate installation.
Ideal for large projects.

For information on screwdriver and additional products see page 403.

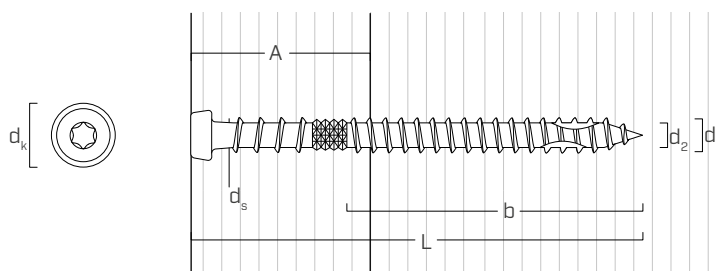


KKT BROWN COLOUR

d_1 [mm]	CODE	L [mm]	b [mm]	A [mm]	pcs
5	KKTMSTRIP540	43	25	16	800
TX 20	KKTMSTRIP550	53	35	18	800

Compatible with KMR 3371 loaders, code HH3371 with appropriate TX20 bit (code TX20L177).

GEOMETRY AND MECHANICAL CHARACTERISTICS



GEOMETRY

Nominal diameter	d_1	[mm]	5,1	6
Head diameter	d_k	[mm]	6,75	7,75
Thread diameter	d_2	[mm]	3,40	3,90
Shank diameter	d_s	[mm]	4,05	4,40
Pre-drilling hole diameter ⁽¹⁾	d_v	[mm]	3,0 - 4,0	4,0 - 5,0

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

CHARACTERISTIC MECHANICAL PARAMETERS

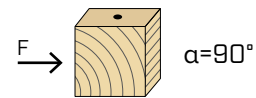
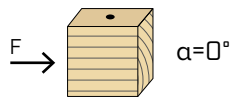
Nominal diameter	d_1	[mm]	5,1	6
Tensile strength	$f_{tens,k}$	[kN]	9,6	14,5
Yield moment	$M_{y,k}$	[Nm]	8,4	9,9
Withdrawal resistance parameter	$f_{ax,k}$	[N/mm ²]	14,7	14,7
Associated density	ρ_a	[kg/m ³]	400	400
Head-pull-through parameter	$f_{head,k}$	[N/mm ²]	68,8	20,1
Associated density	ρ_a	[kg/m ³]	730	350

MINIMUM DISTANCES FOR SHEAR LOADS



screws inserted **WITHOUT** pre-drilled hole

$\rho_k \leq 420 \text{ kg/m}^3$



d	[mm]	5	6
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

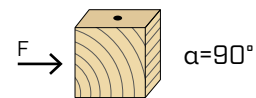
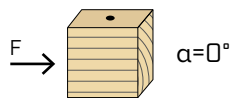
d	[mm]	5	6
a ₁	[mm]	5·d	25
a ₂	[mm]	5·d	25
a _{3,t}	[mm]	10·d	50
a _{3,c}	[mm]	10·d	50
a _{4,t}	[mm]	10·d	50
a _{4,c}	[mm]	5·d	25

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



screws inserted **WITHOUT** pre-drilled hole

$420 \text{ kg/m}^3 < \rho_k \leq 500 \text{ kg/m}^3$



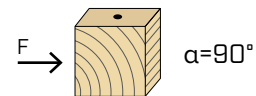
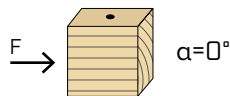
d	[mm]	5	6
a ₁	[mm]	15·d	75
a ₂	[mm]	7·d	35
a _{3,t}	[mm]	20·d	100
a _{3,c}	[mm]	15·d	75
a _{4,t}	[mm]	7·d	35
a _{4,c}	[mm]	7·d	35

d	[mm]	5	6
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



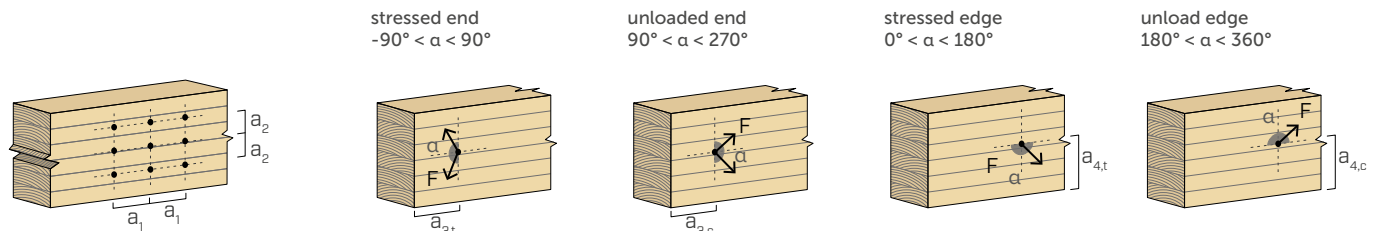
screws inserted **WITH** pre-drilled hole



d	[mm]	5	6
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

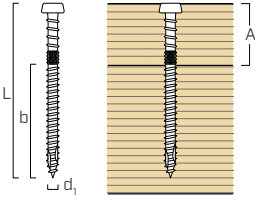
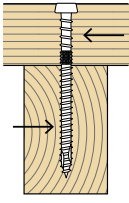
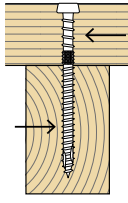
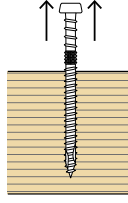
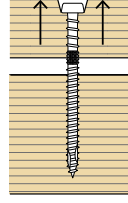
d	[mm]	5	6
a ₁	[mm]	4·d	20
a ₂	[mm]	4·d	20
a _{3,t}	[mm]	7·d	35
a _{3,c}	[mm]	7·d	35
a _{4,t}	[mm]	7·d	35
a _{4,c}	[mm]	3·d	15

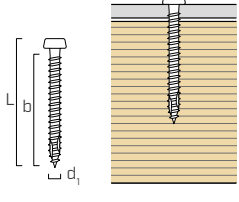
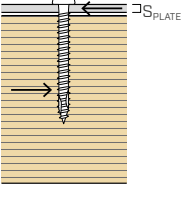
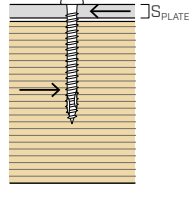
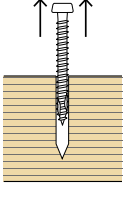
α = load-to-grain angle
d = screw diameter



NOTES

- The minimum distances are compliant with EN 1995:2014, according to ETA-11/0030, considering a calculation diameter of d = screw diameter.
- The minimum spacing for all steel-to-timber connections (a₁, a₂) can be multiplied by a coefficient of 0,7.
- The minimum spacing for all panel-to-timber connections (a₁, a₂) can be multiplied by a coefficient of 0,85.

KKT				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	A	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]
5	43	25	16	1,08	1,43	1,91	1,05
	53	35	18	1,22	1,48	2,67	1,05
	60	40	20	1,25	1,53	3,06	1,05
	70	50	25	1,34	1,68	3,82	1,05
	80	53	30	1,45	1,84	4,05	1,05
6	60	40	20	1,46	1,80	3,67	1,40
	80	50	30	1,67	2,16	4,59	1,40
	100	50	50	1,93	2,27	4,59	1,40
	120	60	60	1,93	2,27	5,50	1,40

KKTN540			SHEAR		TENSION
geometry			steel-to-timber thin plate	steel-to-timber intermediate plate	thread withdrawal
					
d_1	L	b	S_{PLATE} [mm]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]
5	40	36	2	1,32	2,75
			3	1,50	

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 screws with twin thread are mainly used for wood-wood joints.
- The KKTN540 fully threaded screw is mainly used for steel plates (e.g. FLAT 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.
- A characteristic head-pull-through parameter equal to 20 N/mm² with associated density $\rho_a = 350 \text{ kg/m}^3$ is considered in the calculation phase for the Ø5 diameter.
- 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 $\rho_k = 420 \text{ kg/m}^3$ has been considered.