RAPID® partial thread

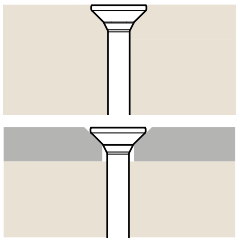
The next generation in wood construction

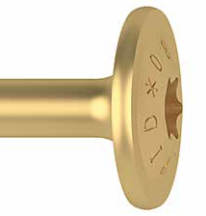
Head types

90° countersunk head

> Countersinks fully into the wood and fits well in steel bores

> Milling pockets reduce tearing and splitting in the wood

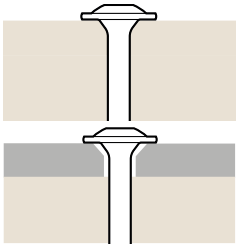




Washer head

> Highest permissible head pull-through values for sturdy joints pulled tightly together

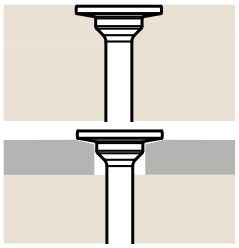
> No washers required, which makes processing faster



SuperSenkFix

> Innovative countersunk and washer head connections for the perfect fit in steel bores

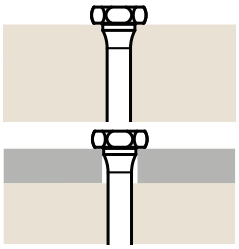
> Clean, flush countersinking in connections with high pull-through values - optimal for visible screwed connections



Dual

> The hexagonal recess allows for better force transfer; recommended for woods with higher density and impact drivers

> Additional T-drive saves the time of changing tools



schmid schrauben hainfeld

Thread geometry

Minimised effort

> With hardwood screw development innovations

> Significantly reduced turning resistance from the friction part

> Longer battery life for screwdriver

Fastest screwing processes

> Dual thread with high and low flanks

> Accelerated screwing processes save time - compared to conventional wood construction screws

> The highest technical values guarantee a secure hold, even for oblique and cross grained wood screw connections

Low splitting, little resistance

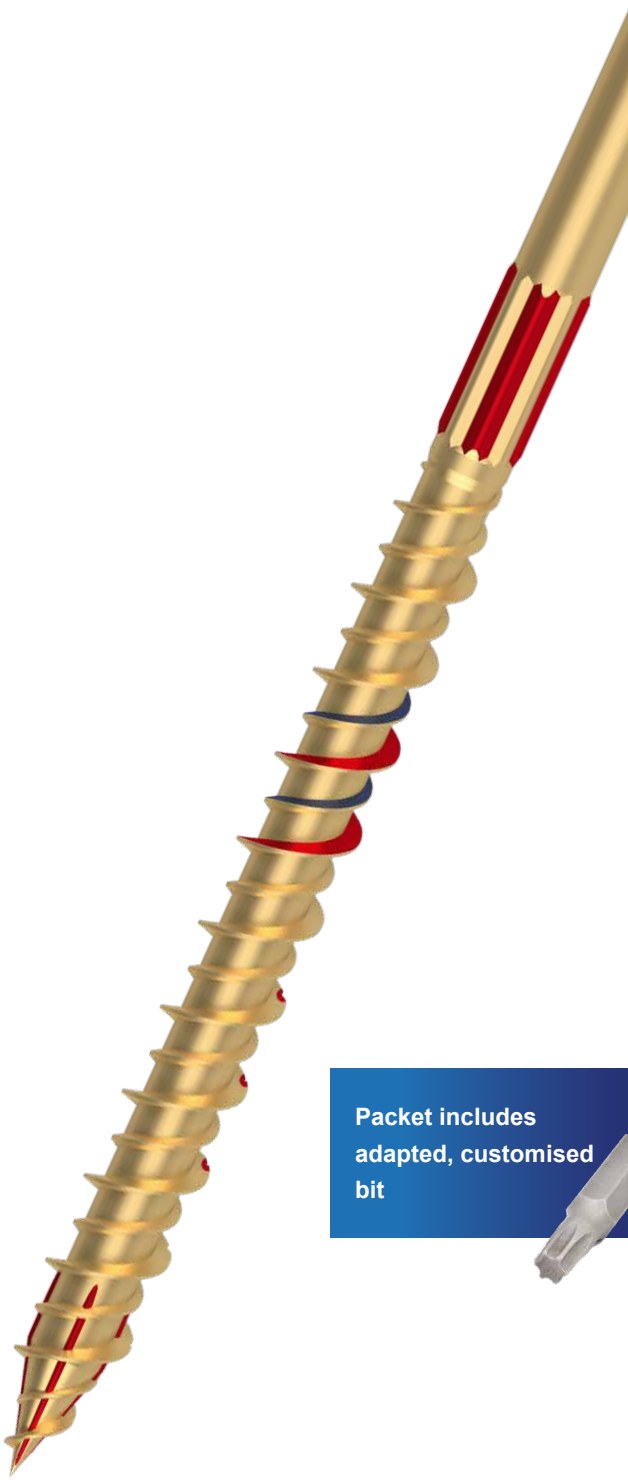
> The wavy profile on the flanks reduces splitting and screw-in resistance thanks to the cutting function

Patented tip – no pre-drilling necessary!

> Self-drilling tip with ridged core

> Saves time by biting precisely and instantly, even with oblique and cross grained wood screw connections

> Much less splitting and lower screw-in resistance compared to conventional wood construction screws



Packet includes adapted, customised bit

AUSTRIA ETA CE ETA-12/0373 UK CA ICC ES

RAPID® partial thread

Dimensions & surfaces

		Countersunk head		Washer head	SuperSenkFix	Dual
		≤ 25 mm	≥ 30 mm			
						
Ø 3.0	Drive	T10		–	–	–
	Length	16–45 mm		–	–	–
	Thread	Single thread	HiLo	–	–	–
	Underhead	Milling pockets		–	–	–
Ø 3.5	Drive	T20		–	–	–
	Length	16–50 mm		–	–	–
	Thread	Single thread	HiLo	–	–	–
	Underhead	Milling pockets		–	–	–
Ø 4.0	Drive	T20		–	–	–
	Length	20–70 mm		–	–	–
	Thread	Single thread	HiLo	–	–	–
	Underhead	Milling pockets		–	–	–
Ø 4.5	Drive	T20		–	–	–
	Length	20–80 mm		–	–	–
	Thread	Single thread	HiLo	–	–	–
	Underhead	Milling pockets		–	–	–
Ø 5.0	Drive	T25 (T20*)		–	–	–
	Length	20–120 mm		–	–	–
	Thread	Single thread	HiLo	–	–	–
	Underhead	Milling pockets		–	–	–
Ø 6.0	Drive	–	T30	T30	T30	–
	Length	–	50–300 mm	60–300 mm	80–300 mm	–
	Thread	–	HiLo	HiLo	HiLo	–
	Underhead	–	Milling pockets	Cone	Shoulder	–
Ø 8.0	Drive	–	T40	T40	T40	T30/SW12
	Length	–	80–500 mm	80–500 mm	80–400 mm	50–400 mm
	Thread	–	HiLo	HiLo	HiLo	HiLo
	Underhead	–	Milling pockets	Cone	Shoulder	Shoulder
Ø 10.0	Drive	–	T50	T50	T50	T40/SW15
	Length	–	80–500 mm	100–500 mm	120–400 mm	60–400 mm
	Thread	–	HiLo	HiLo	HiLo	HiLo
	Underhead	–	Milling ribs	Cone	Shoulder	Shoulder
Ø 12.0	Drive	–	T50	–	–	T40/SW17
	Length		100–400 mm	–	–	80–400 mm
	Thread	–	Single thread	–	–	Single thread
	Underhead	–	Milling ribs	–	–	Shoulder
	Surface	YellWin 500+ Cr[VI] free			BlueWin 700+ Cr[VI] free	BlueWin Cr[VI] free

*Carpentry line

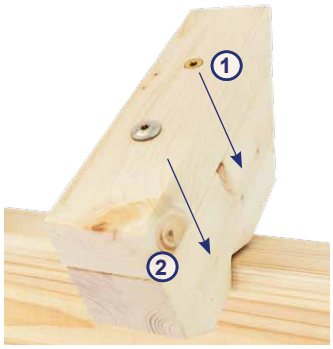
Applications

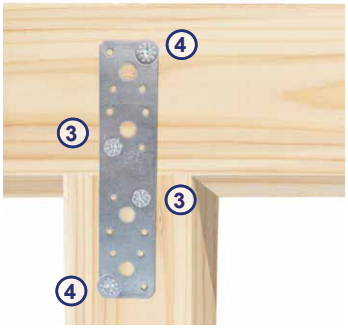
DOUBLING RAFTERS (1)

Doubling for reinforcement is usually done on the top or side of the rafter.

RAFTERS (2)

Partial thread screws transfer the wind suction load and shear forces to the substructure through the screw heads.





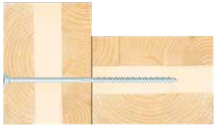
METAL SHEETS AND SHAPED SHEET METAL PARTS

RAPID® Dual (3)-, RAPID® SuperSenkFix (4)- and StarDrive GPR post screws are optimal for metal sheets and shaped sheet metal parts.
These screws have an underhead shoulder which allows them to be optimally centred and to fit perfectly in the metal.

CLT WALLS AND CEILINGS

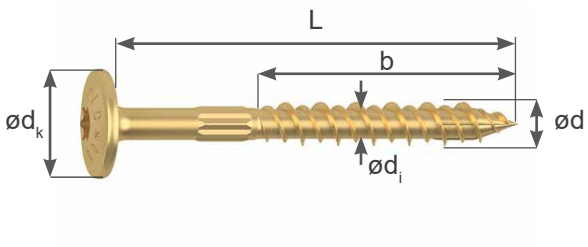
Cross-Laminated-Timber (CLT) - ceiling panel screwed to the walls with RAPID® SuperSenkFix. Schmid screws are approved for all applications in side and end wood (0° and 90°) as well as CLT side faces and narrow edges.

Corner and wall screw connections are pulled tightly together and securely screwed with RAPID® SuperSenkFix.



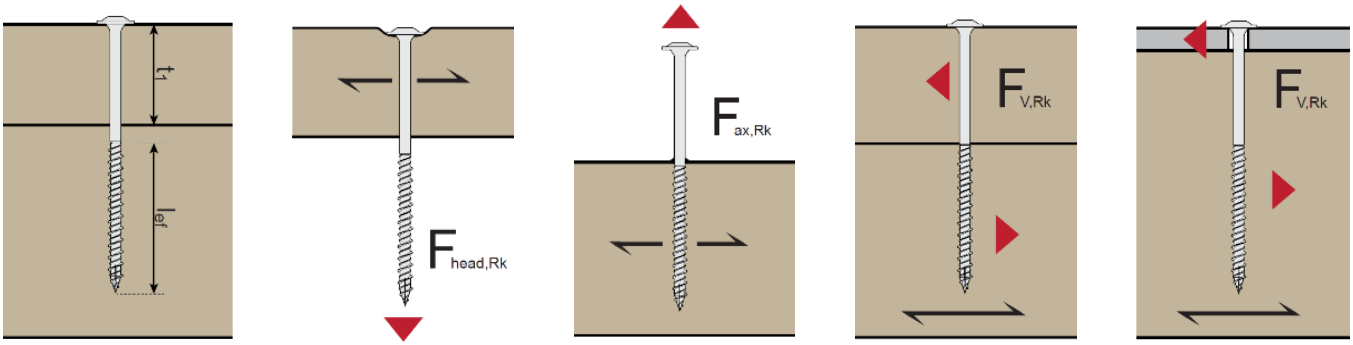
RAPID® partial thread washer head

CHARACTERISTICS AND VALUES FOR C24				
d	**[mm]**	**ø 6**	**ø 8**	**ø 10**
d_k	[mm]	14.0	20.0	25.0
d_i	[mm]	4.00	5.35	6.80
$f_{ax,90,k}$	[N/mm²]	13.0	10.9	11.0
$f_{head,k}$	[N/mm²]	16.7	17.6	15.2
$F_{tens,k}$	[kN]	13.1	23.3	35.0
$M_{y,k}$	[Nmm]	10 700	22 600	33 600



				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø [mm]	L/b [mm]	$t_{1,min}$ [mm]	$F_{head,Rk}$ [kN]	$F_{ax,Rk}$ [kN]	$F_{v,Rk}$ [kN]	$F_{V,Rk,thin}$ [kN]	$F_{V,Rk,thick}$ [kN]
ø 6.0	6.0	**60**/40	-	3.27	3.12	-	2.17	3.17
	6.0	**80**/50	30	3.27	3.90	2.22	2.66	3.36
	6.0	**100**/60	40	3.27	4.68	2.49	2.86	3.56
	6.0	**120**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**140**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**160**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**180**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**200**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**220**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**240**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**260**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**280**/70	50	3.27	5.46	2.51	3.05	3.75
	6.0	**300**/70	50	3.27	5.46	2.51	3.05	3.75
ø 8.0	8.0	**80**/50	30	7.04	4.36	3.08	3.54	4.93
	8.0	**100**/60	40	7.04	5.23	3.58	4.02	5.14
	8.0	**120**/80	40	7.04	6.98	4.02	4.46	5.58
	8.0	**140**/80	60	7.04	6.98	4.46	4.46	5.58
	8.0	**160**/80	60	7.04	6.98	4.46	4.46	5.58
	8.0	**180**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**200**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**220**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**240**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**260**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**280**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**300**/100	60	7.04	8.72	4.47	4.89	6.02

RAPID® PT WH



				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø	L/b	$t_{1,min}$	$F_{head,Rk}$	$F_{ax,Rk}$	$F_{v,Rk}$	$F_{V,Rk,thin}$	$F_{V,Rk,thick}$
	[mm]	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]
ø 8.0	8.0	**320**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**340**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**360**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**380**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**400**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**450**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**500**/100	60	7.04	8.72	4.47	4.89	6.02
ø 10.0	10.0	**100**/60	40	9.50	6.60	4.47	5.18	6.71
	10.0	**120**/80	40	9.50	8.80	5.02	5.78	7.26
	10.0	**140**/80	60	9.50	8.80	5.78	5.78	7.26
	10.0	**160**/80	60	9.50	8.80	5.78	5.78	7.26
	10.0	**180**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**200**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**220**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**240**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**260**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**280**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**300**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**320**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**340**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**360**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**380**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**400**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**450**/100	60	9.50	11.00	5.95	6.33	7.81
	10.0	**500**/100	60	9.50	11.00	5.95	6.33	7.81

Values for C24 (ρ_k=350kg/m³), axial axis to grain: 30° - 90°, $F_{ax,Rk}$ = thread withdrawal, $F_{head,Rk}$ = head pull through, $F_{v,Rk}$ = shear (// to grain 0° – ⊥ to grain 90°), wood/steel plate: l_{ef} = thread length b, t_1 min= minimum wood thickness, t_1 max= maximum wood thickness add-on part (L-b), $F_{V,Rk,thin}$= steel sheet t ≤ d/2, $F_{V,RK,thick}$= steel sheet t ≥ d

Type and printing errors reserved. The values stated are meant to serve as planning guides; projects should only be undertaken by authorised professionals.

Minimum spacing

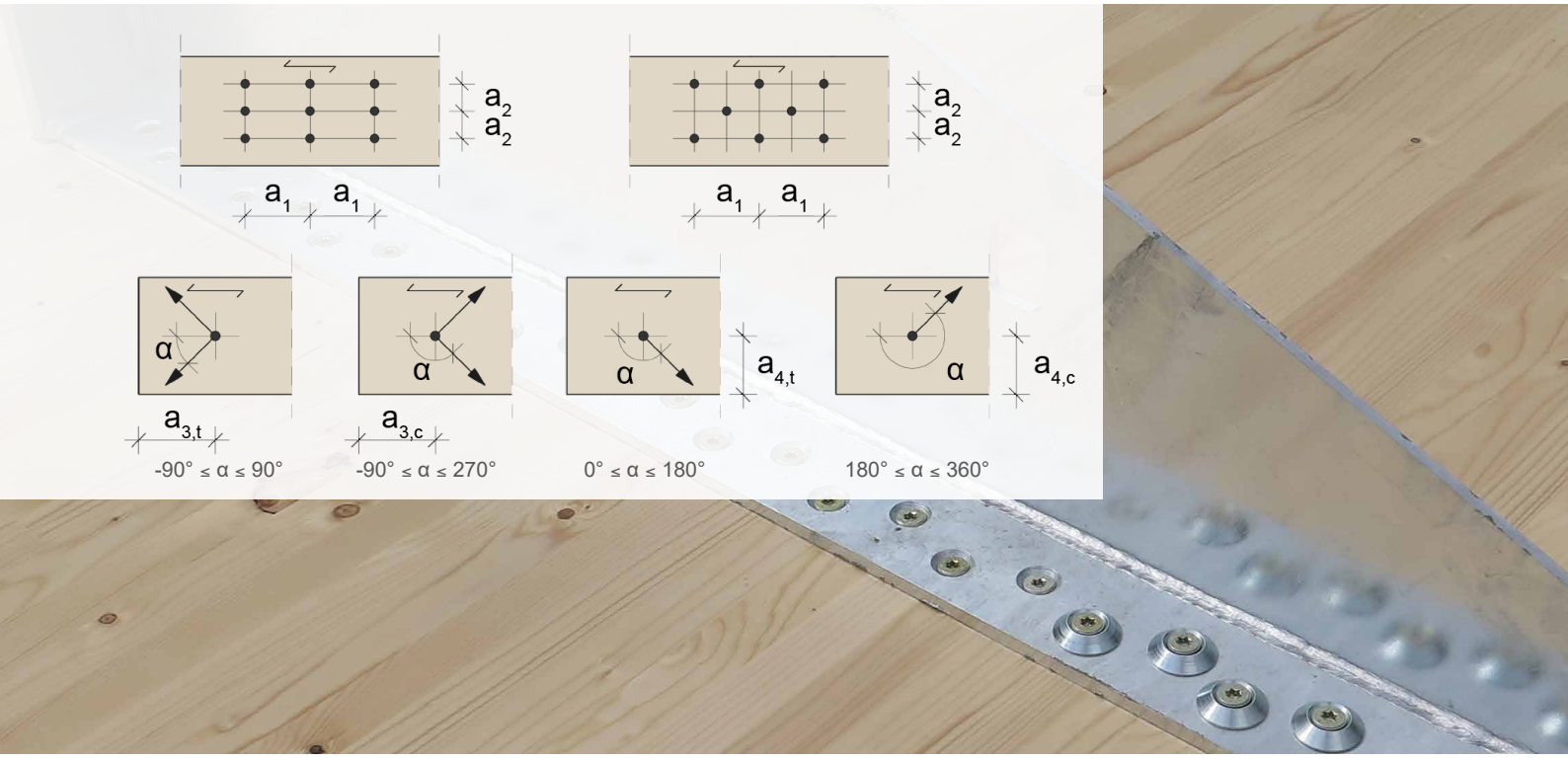
for self-drilling screws RAPID©, StarDrive GPR and for screws with drill bit

		Axial loaded screws		Subjected to axial and shear or only shear stress							
		Softwood and softwood based materials (predrilled, not-predrilled) and Hardwood (predrilled)		Cross laminated timer		Softwood and softwood based materials (predrilled, not-predrilled) and Hardwood (predrilled)					
		end-grain and side-grain		wide face	narrow face	end-grain and side-grain					
Conditions	a1 x a2	≥ 25 x d²	≥ 21 x d²	-	-	α	Screwing in pre-drilled coniferous wood, deciduous wood and LVL deciduous wood*		Screwing **without pre-drilling**			
							d < 5mm	d> 5 mm	Screws d < 5 mm in coniferous wood**	Screws d ≥ 5 mm in coniferous wood**	Screws d ≥ 5 mm with HSP in coniferous wood*	RAPID® Hardwood d=8 mm in deciduous wood and LVL beech**
Axial spacing	a1	5 x d	7 x d	4 x d	10 x d	0°	5 x d		10 x d	12 x d	5 x d	15 x d
						90°	4 x d		5 x d	5 x d	4 x d	7 x d
Edge distance	a1, c	5 x d		-	-	0°			-	-	-	-
						90°						
Axial spacing ⊥	a2	2.5 x d	3 x d	2.5 x d	3 x d	0°	3 x d		5 x d		3 x d	7 x d
						90°	4 x d				4 x d	
Edge distance ⊥	a2, c	4 x d		-	-	0°	-		-	-	-	-
						90°						
Edge distance // loaded	a3, t	-	-	6 x d	12 x d	0°	12 x d		15 x d		12 x d	20 x d
						90°	7 x d		10 x d (15 x d if screw d ≥ 8 and timber thickness t < 5d)		7 x d	15 x d
Edge distance // unloaded	a3, c	-	-	6 x d	7 x d	0°	7 x d				7 x d	15 x d
						90°						
Edge distance ⊥ loaded	a4, t	-	-	6 x d	5 x d	0°	3 x d		5 x d	5 x d	3 x d	7 x d
						90°	5 x d	7 x d	7 x d	10 x d	7 x d	12 x d
Edge distance ⊥ unloaded	a4, c	-	-	2.5 x d	3 x d	0°	3 x d		5 x d (3 x d if a1 and a3 min. 25 x d, even if timber thickness t < 5d)		3 x d	7 x d
						90°						
Distance between screws in screw cross	a cross	1.5 x d										
Minimum timber thickness	t	12d		10d								

Screw diameter	< 8	8	10	12
Minimum thickness t for load-bearing timber parts [mm]	24	30	40	80

- If the timber does not meet the minimum thickness, it should generally be pre-drilled
- Pre-drilling diameter: di (-0.5/+1.0) for coniferous wood di (-0/+0.5) for deciduous wood and LVL
- Woods at risk of splintering (e.g. Douglas fir, silver fir) should be pre-drilled or use a higher minimum thickness according to EN1995-1-1
- Drilled holes for positioning, guidance or orientation are NOT PRE-DRILLED
- All screws (d ≥ 5 mm) may be screwed into deciduous wood and LVL beech up to 10d in length without pre-drilling; the distances for RAPID® Hardwood should be observed
- The minimum binding anchoring depth for screws is 4d, or 20d in end wood.
- The minimum anchoring depth for CLT is 4d on the face side and 10d on the narrow edge (front face)

d = outer thread diameter, d_1 = thread core diameter,
α = angle between direction of force and direction of grain
*See EN1995-1-1, table 8.2 how nails are pre-drilled
**See EN1995-1-1, table 8.2 how nails are not pre-drilled



Information

- Geometry and mechanical properties correspond to ETA 12/0373.
- In connections between main and secondary beams, the main beam must be able to adequately with stand torsion and fixed with fork support.
- The values stated for main/secondary beam connections only apply to vertically oriented loads. Any transverse stress must be verified separately.
- The rope effect has been factored into the calculation of shear-off values.
partial thread, Z-9.1-435 for StarDrive GPR, Z-9.1-656 for RAPID® fullthread, these lower values are only intended as guidance.
- Characteristic values F_{Rk}: Design according to EC5 and ETA 12/0373, these values should be used for calculations
- The design value of the ultimate limit state $F_{v,Rd}$ for the final design of the timber connection is taken from the characteristic values as follows:

$$F_{Rd} = \frac{F_{Rk} \cdot k_{mod}}{\gamma_m}$$

F_{Rd} ... Design value of ultimate limit state subjected to shear-off stress or tension depending on connection
F_{Rk} ... characteristic value of ultimate limit state subjected to shear-off stress or tension depending on connection
γ_m , k_{mod} ... Additional values from corresponding national norms