schmid schrauben hainfeld

Solutions for timber constructions

Product Information I Technical data sheets

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Content

The pioneer of timber screws

Partial thread

Full thread

Special solutions with ETA

Additional information

RAPID® partial thread

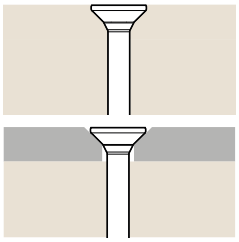
The next generation in wood construction

Head types

90° countersunk head

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

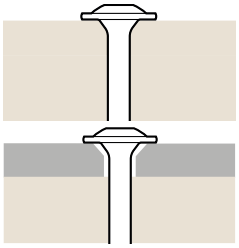
> Milling pockets reduce tearing and splitting in the wood



Washer head

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

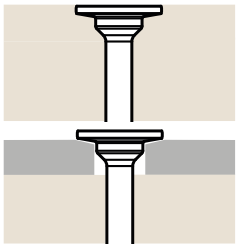
> No washers required, which makes processing faster



SuperSenkFix

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

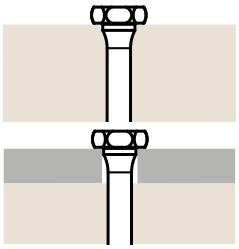
> Clean, flush countersinking in connections with high pull-through values - optimal for visible screwed connections



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



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

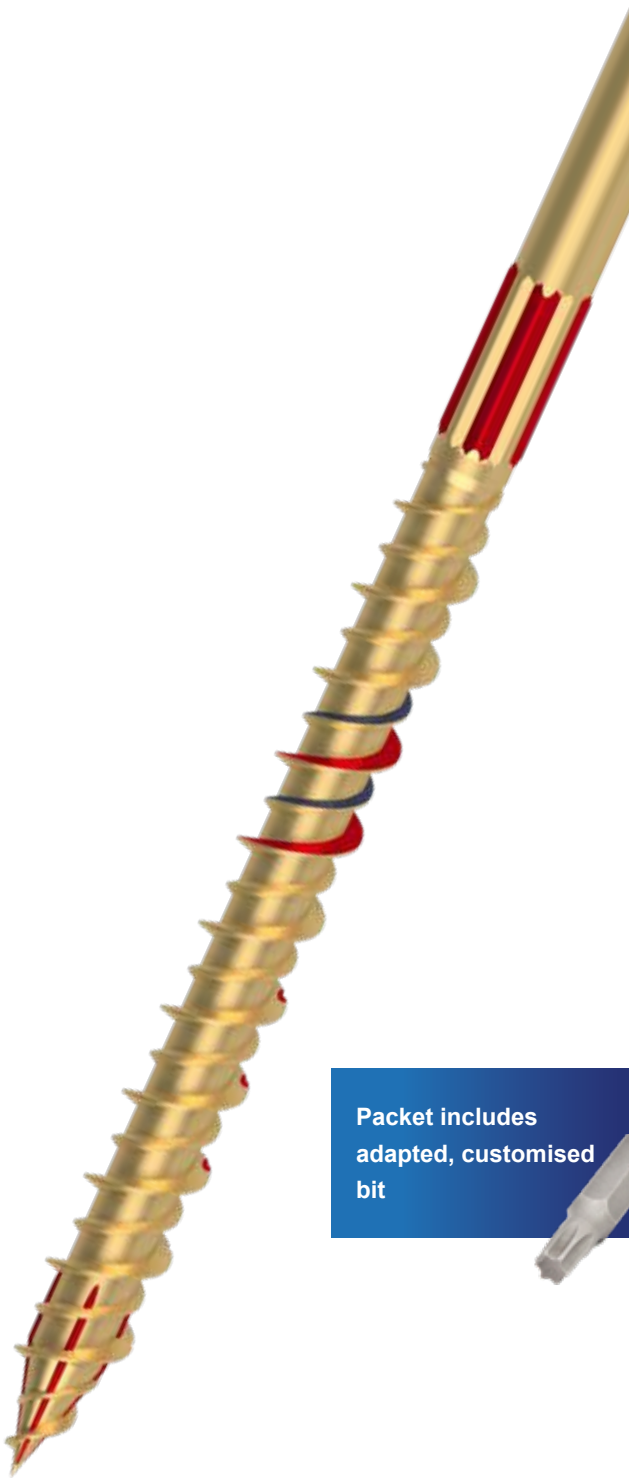
> The wavy profile on the flanks reduces splitting and screw-in resistance thanks to the cutting function

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

ETA-12/0373

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

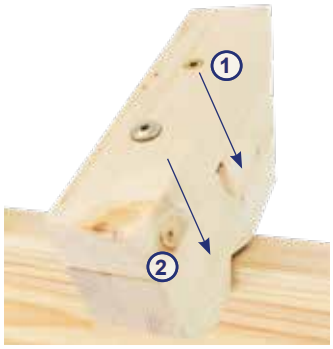
Applications

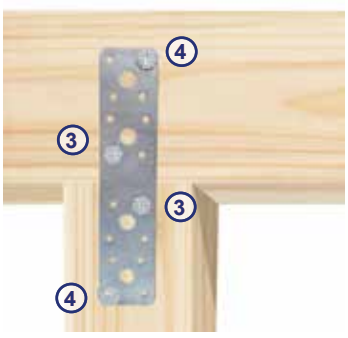
DOUBLING RAFTERS (1)

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.

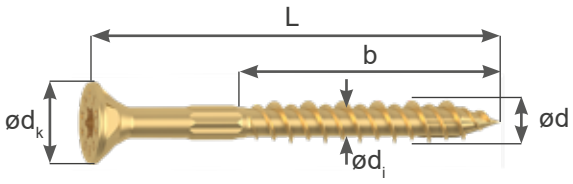
CLT WALLS AND CEILINGS

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.

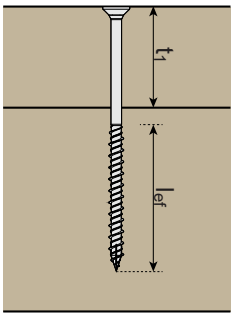
Corner and wall screw connections are pulled tightly together and securely screwed with RAPID® SuperSenkFix.

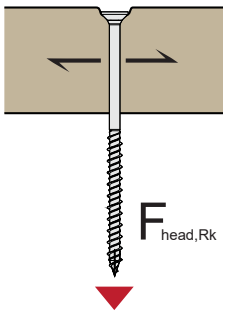
RAPID® partial thread countersunk head

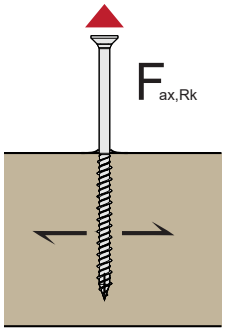
CHARACTERISTICS AND VALUES FOR C24						
D	**[mm]**	**ø 4**	**ø 4.5**	**ø 5**	**ø 6**	**ø 8**
d_k	[mm]	8.0	9.0	10.0	12.0	15.0
d_i	[mm]	2.45	2.75	3.25	4.00	5.35
$f_{ax,90,k}$	[N/mm²]	14.3	13.3	13.6	13.0	10.9
$f_{head,k}$	[N/mm²]	17.1	17.6	14.6	14.6	12.4
$F_{tens,k}$	[kN]	5.0	7.0	8.8	13.1	23.3
$M_{y,k}$	[Nmm]	3 100	4 200	5 900	10 700	22 600

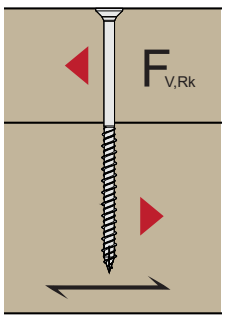


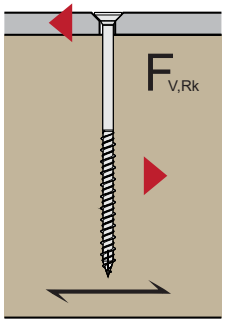
				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø [mm]	**L/b** [mm]	$t_{1,min}$ [mm]	$F_{head,Rk}$ [kN]	$F_{ax,Rk}$ [kN]	$F_{v,Rk}$ [kN]	$F_{V,Rk,thin}$ [kN]	$F_{V,Rk,thick}$ [kN]
ø 4.0	4.0	**30**/20	-	1.09	1.14	-	0.79	1.27
	4.0	**35**/20	-	1.09	1.14	-	0.94	1.40
	4.0	**40**/25	-	1.09	1.43	-	1.09	1.47
	4.0	**45**/25	-	1.09	1.43	-	1.15	1.47
	4.0	**50**/30	-	1.09	1.72	-	1.22	1.54
	4.0	**60**/35	25	1.09	2.00	1.06	1.29	1.61
	4.0	**70**/35	25	1.09	2.00	1.06	1.29	1.61
ø 4.5	4.5	**30**/20	-	1.43	1.20	-	0.84	1.39
	4.5	**35**/20	-	1.43	1.20	-	1.00	1.53
	4.5	**40**/25	-	1.43	1.50	-	1.17	1.73
	4.5	**45**/25	-	1.43	1.50	-	1.33	1.73
	4.5	**50**/30	-	1.43	1.80	-	1.40	1.80
	4.5	**60**/40	-	1.43	2.39	-	1.55	1.95
	4.5	**70**/40	30	1.43	2.39	1.31	1.55	1.95
	4.5	**80**/40	30	1.43	2.39	1.31	1.55	1.95
ø 5.0	5.0	**30**/20	-	1.46	1.36	-	0.89	1.57
	5.0	**35**/20	-	1.46	1.36	-	1.06	1.71
	5.0	**40**/25	-	1.46	1.70	-	1.24	1.94
	5.0	**50**/30	-	1.46	2.04	-	1.59	2.17
	5.0	**60**/40	-	1.46	2.72	-	1.86	2.34
	5.0	**70**/40	30	1.46	2.72	1.49	1.86	2.34
	5.0	**80**/50	30	1.46	3.40	1.49	2.03	2.51
	5.0	**90**/50	40	1.46	3.40	1.54	2.03	2.51
	5.0	**100**/60	40	1.46	4.08	1.54	2.20	2.68
	5.0	**110**/60	40	1.46	4.08	1.54	2.20	2.68
	5.0	**120**/60	40	1.46	4.08	1.54	2.20	2.68







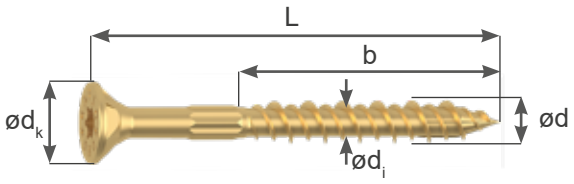




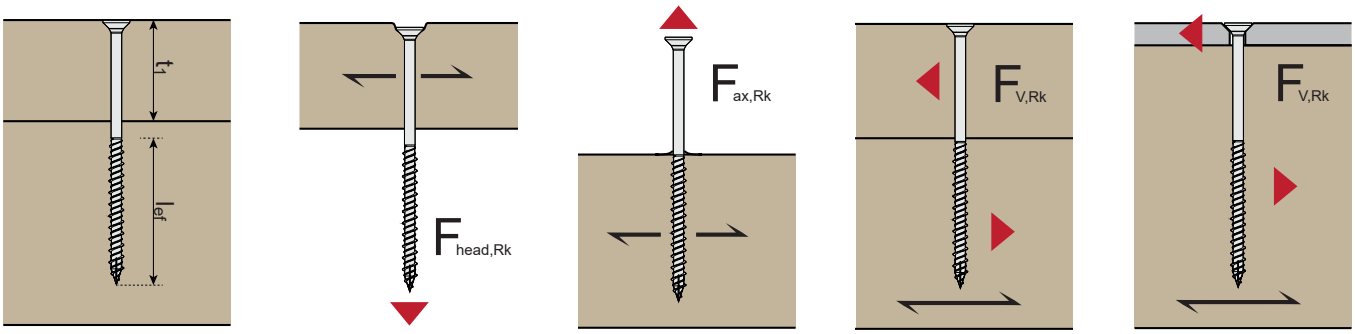
				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø [mm]	L/b [mm]	$t_{1,min}$ [mm]	$F_{head,Rk}$ [kN]	$F_{ax,Rk}$ [kN]	$F_{v,Rk}$ [kN]	$F_{V,Rk,thin}$ [kN]	$F_{V,Rk,thick}$ [kN]
ø 6.0	6.0	**50**/30	-	2.10	2.34	-	1.77	2.75
	6.0	**60**/40	-	2.10	3.12	-	2.17	3.17
	6.0	**70**/40	30	2.10	3.12	1.93	2.47	3.17
	6.0	**80**/50	30	2.10	3.90	1.93	2.66	3.36
	6.0	**90**/50	40	2.10	3.90	2.20	2.66	3.36
	6.0	**100**/60	40	2.10	4.68	2.20	2.86	3.56
	6.0	**110**/60	50	2.10	4.68	2.21	2.86	3.56
	6.0	**120**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**130**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**140**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**150**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**160**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**180**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**200**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**220**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**240**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**260**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**280**/70	50	2.10	5.46	2.21	3.05	3.75
	6.0	**300**/70	50	2.10	5.46	2.21	3.05	3.75
ø 8.0	8.0	**80**/50	30	2.79	4.36	2.69	3.54	4.93
	8.0	**90**/50	40	2.79	4.36	2.97	3.80	4.93
	8.0	**100**/60	40	2.79	5.23	2.97	4.02	5.14
	8.0	**120**/80	40	2.79	6.98	2.97	4.46	5.58
	8.0	**140**/80	60	2.79	6.98	3.41	4.46	5.58
	8.0	**160**/80	60	2.79	6.98	3.41	4.46	5.58
	8.0	**180**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**200**/100	60	2.79	8.72	3.41	4.89	6.02

RAPID® partial thread countersunk head

CHARACTERISTICS AND VALUES FOR C24				
D	**[mm]**	**ø 8**	**ø 10**	**ø 12**
d_k	[mm]	15.0	18.5	21.0
d_i	[mm]	5.35	6.80	7.00
$f_{ax,90,k}$	[N/mm²]	10.9	11.0	11.2
$f_{head,k}$	[N/mm²]	12.4	12.2	10,3
$F_{tens,k}$	[kN]	23.3	35.0	42.0
$M_{y,k}$	[Nmm]	22 600	33 600	46 900



				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	**220**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**240**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**260**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**280**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**300**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**320**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**340**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**360**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**380**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**400**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**420**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**440**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**460**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**480**/100	60	2.79	8.72	3.41	4.89	6.02
	8.0	**500**/100	60	2.79	8.72	3.41	4.89	6.02
ø 10.0	10.0	**80**/50	-	4.18	5.50	-	4.03	6.21
	10.0	**100**/60	40	4.18	6.60	3.86	5.18	6.71
	10.0	**120**/80	40	4.18	8.80	3.86	5.78	7.26
	10.0	**140**/80	60	4.18	8.80	4.62	5.78	7.26
	10.0	**160**/80	60	4.18	8.80	4.62	5.78	7.26
	10.0	**180**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**200**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**220**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**240**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**260**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**280**/100	60	4.18	11.00	4.62	6.33	7.81



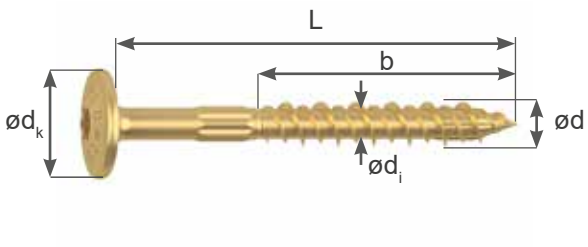
				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø	L/b	$t_{1.min}$	$F_{head.Rk}$	$F_{ax.Rk}$	$F_{v.Rk}$	$F_{V.Rk.thin}$	$F_{V.Rk.thick}$
	[mm]	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]
ø 10.0	10.0	**300**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**320**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**340**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**360**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**380**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**400**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**420**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**440**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**460**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**480**/100	60	4.18	11.00	4.62	6.33	7.81
	10.0	**500**/100	60	4.18	11.00	4.62	6.33	7.81
ø 12.0	12.0	**100**/60	-	4.54	8.06	-	5.75	8.38
	12.0	**120**/80	-	4.54	10.75	-	7.06	9.06
	12.0	**140**/80	-	4.54	10.75	-	7.19	9.06
	12.0	**160**/80	80	4.54	10.75	5.64	7.19	9.06
	12.0	**180**/100	80	4.54	13.44	5.64	7.86	9.73
	12.0	**200**/100	80	4.54	13.44	5.64	7.86	9.73
	12.0	**220**/100	80	4.54	13.44	5.64	7.86	9.73
	12.0	**240**/100	80	4.54	13.44	5.64	7.86	9.73
	12.0	**260**/100	80	4.54	13.44	5.64	7.86	9.73
	12.0	**280**/100	80	4.54	13.44	5.64	7.86	9.73
	12.0	**300**/120	80	4.54	16.13	5.64	8.53	10.40
	12.0	**320**/120	80	4.54	16.13	5.64	8.53	10.40
	12.0	**340**/120	80	4.54	16.13	5.64	8.53	10.40
	12.0	**360**/120	80	4.54	16.13	5.64	8.53	10.40
	12.0	**380**/120	80	4.54	16.13	5.64	8.53	10.40
	12.0	**400**/120	80	4.54	16.13	5.64	8.53	10.40

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

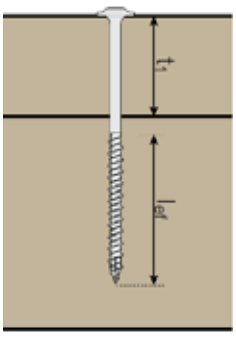
Type and printing errors reserved. The values stated are meant to serve as planning guides; projects should only be undertaken by authorised professionals.

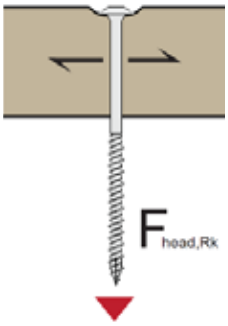
RAPID® partial thread washer head

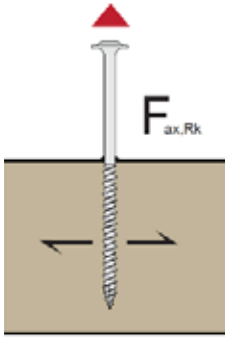
CHARACTERISTICS AND VALUES FOR C24				
d	**[mm]**	**ø 6**	**ø 8**	**ø 10**
d_k	[mm]	14.0	20.0	25.0
d_i	[mm]	4.00	5.35	6.80
$f_{ax,90,k}$	[N/mm²]	13.0	10.9	11.0
$f_{head,k}$	[N/mm²]	16.7	17.6	15.2
$F_{tens,k}$	[kN]	13.1	23.3	35.0
$M_{y,k}$	[Nmm]	10 700	22 600	33 600

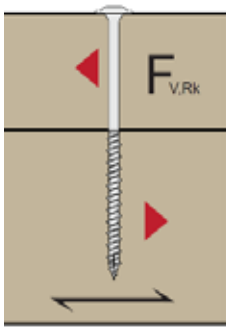


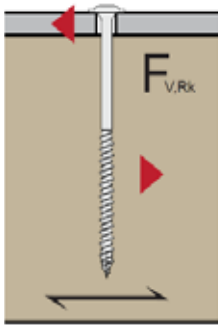
				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø [mm]	L/b [mm]	$t_{1,min}$ [mm]	$F_{head,Rk}$ [kN]	$F_{ax,Rk}$ [kN]	$F_{v,Rk}$ [kN]	$F_{V,Rk,thin}$ [kN]	$F_{V,Rk,thick}$ [kN]
ø 6.0	6.0	**60**/40	-	3.27	3.12	-	2.17	3.17
	6.0	**80**/50	30	3.27	3.90	2.22	2.66	3.36
	6.0	**100**/60	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









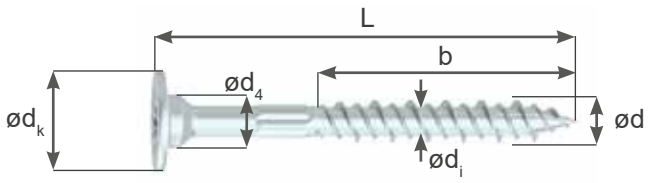


				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø	L/b	$t_{1,min}$	$F_{head,Rk}$	$F_{ax,Rk}$	$F_{v,Rk}$	$F_{V,Rk,thin}$	$F_{V,Rk,thick}$
	[mm]	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]
ø 8.0	8.0	**320**/100	60	7.04	8.72	4.47	4.89	6.02
	8.0	**340**/100	60	7.04	8.72	4.47	4.89	6.02
	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

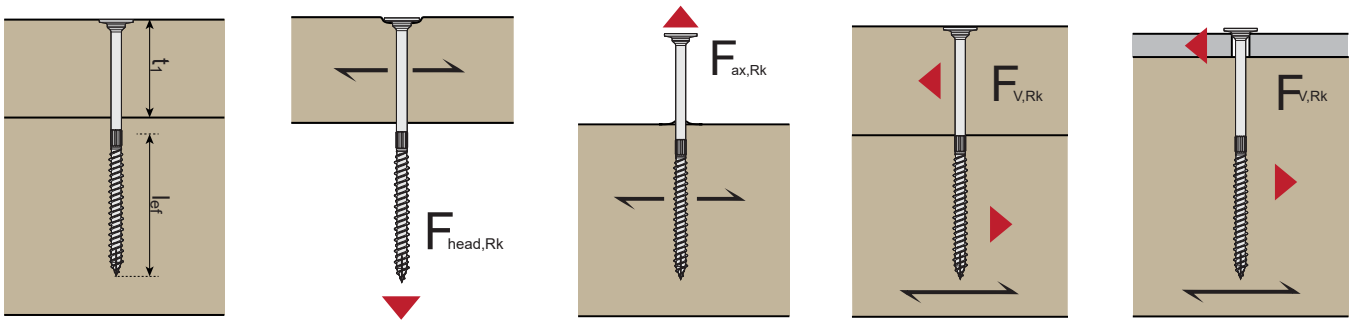
Values for C24 (ρ_k=350kg/m³), axial axis to grain: 30° - 90°, $F_{ax,Rk}$ = thread withdrawal, $F_{head,Rk}$ = head pull through, $F_{v,Rk}$ = shear (// to grain 0° – ⊥ to grain 90°), wood/steel plate: l_{ef} = thread length b, t_1 min= minimum wood thickness, t_1 max= maximum wood thickness add-on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

RAPID® partial thread SuperSenkFix

CHARACTERISTICS AND VALUES FOR C24				
d	**[mm]**	**ø 6**	**ø 8**	**ø 10**
d_k	[mm]	13.0	19.0	24.0
d_4	[mm]	8.0	10.0	13.0
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]	19.7	22.9	12.3
$F_{tens,k}$	[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	**80**/50	30	3.33	3.90	2.23	2.66	3.36
	6.0	**100**/60	40	3.33	4.68	2.51	2.86	3.56
	6.0	**120**/70	50	3.33	5.46	2.52	3.05	3.75
	6.0	**140**/70	50	3.33	5.46	2.52	3.05	3.75
	6.0	**160**/70	50	3.33	5.46	2.52	3.05	3.75
	6.0	**180**/70	50	3.33	5.46	2.52	3.05	3.75
	6.0	**200**/70	50	3.33	5.46	2.52	3.05	3.75
ø 8.0	8.0	**80**/50	30	8.27	4.36	3.08	3.54	4.93
	8.0	**100**/60	40	8.27	5.23	3.58	4.02	5.14
	8.0	**120**/80	40	8.27	6.98	4.02	4.46	5.58
	8.0	**140**/80	60	8.27	6.98	4.46	4.46	5.58
	8.0	**160**/80	60	8.27	6.98	4.46	4.46	5.58
	8.0	**180**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**200**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**220**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**240**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**260**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**280**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**300**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**320**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**340**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**360**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**380**/100	60	8.27	8.72	4.78	4.89	6.02
	8.0	**400**/100	60	8.27	8.72	4.78	4.89	6.02



				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 10.0	10.0	**120**/80	40	7.08	8.80	4.59	5.78	7.26
	10.0	**140**/80	60	7.08	8.80	5.35	5.78	7.26
	10.0	**160**/80	60	7.08	8.80	5.35	5.78	7.26
	10.0	**180**/100	60	7.08	11.00	5.35	6.33	7.81
	10.0	**200**/100	60	7.08	11.00	5.35	6.33	7.81
	10.0	**220**/100	60	7.08	11.00	5.35	6.33	7.81
	10.0	**240**/100	60	7.08	11.00	5.35	6.33	7.81
	10.0	**260**/100	60	7.08	11.00	5.35	6.33	7.81
	10.0	**280**/100	60	7.08	11.00	5.35	6.33	7.81
	10.0	**300**/100	60	7.08	11.00	5.35	6.33	7.81
	10.0	**350**/100	60	7.08	11.00	5.35	6.33	7.81
	10.0	**400**/100	60	7.08	11.00	5.35	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

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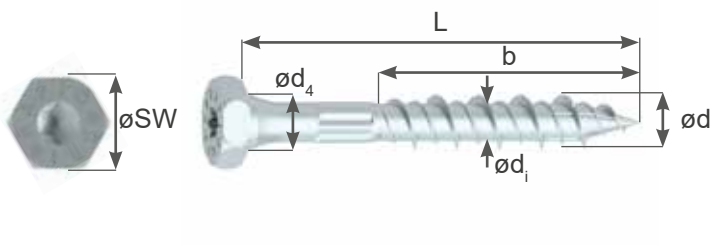
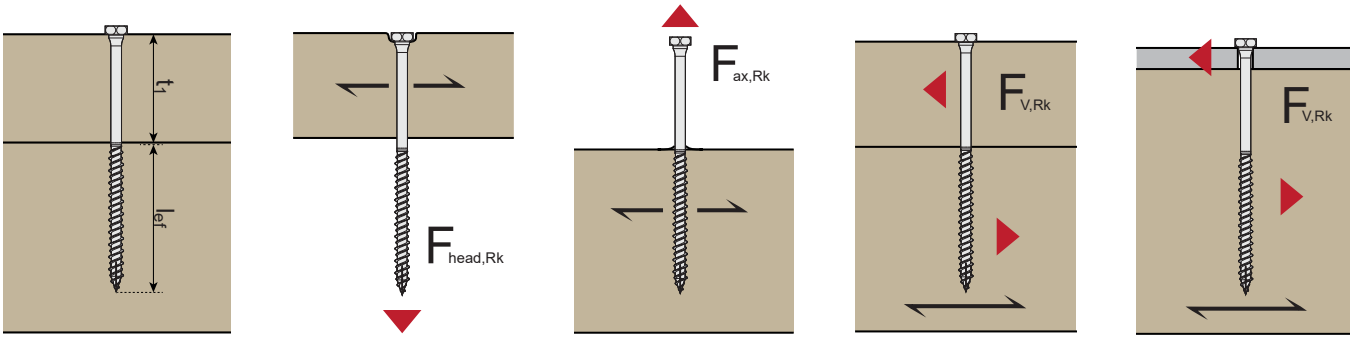
RAPID® partial thread Dual

CHARACTERISTICS AND VALUES FOR C24				
d	**[mm]**	**ø 8**	**ø 10**	**ø 12**
SW = d_k	[mm]	12.0	15.0	17.0
d_i	[mm]	5.35	6.80	7.00
d_4	[mm]	7.8	9.8	11.8
$f_{ax,90,k}$	[N/mm²]	10.9	11.0	11.2
$f_{head,k}$	[N/mm²]	16.5	16.7	17.1
$F_{tens,k}$	[kN]	23.3	35.0	42.0
$M_{y,k}$	[Nmm]	22 600	33 600	46 900



				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 8.0	8.0	**50**/30	-	2.38	2.62	-	2.07	3.52
	8.0	**60**/40	-	2.38	3.49	-	2.56	4.12
	8.0	**70**/40	30	2.38	3.49	2.41	3.05	4.54
	8.0	**80**/50	30	2.38	4.36	2.58	3.54	4.93
	8.0	**100**/60	40	2.38	5.23	2.87	4.02	5.14
	8.0	**120**/80	40	2.38	6.98	2.87	4.46	5.58
	8.0	**140**/80	60	2.38	6.98	3.31	4.46	5.58
	8.0	**160**/80	60	2.38	6.98	3.31	4.46	5.58
	8.0	**180**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**200**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**220**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**240**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**260**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**280**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**300**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**320**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**340**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**360**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**380**/100	60	2.38	8.72	3.31	4.89	6.02
	8.0	**400**/100	60	2.38	8.72	3.31	4.89	6.02
ø 10.0	10.0	**60**/40	-	3.76	4.40	-	2.88	4.99
	10.0	**70**/40	-	3.76	4.40	-	3.45	5.44
	10.0	**80**/50	-	3.76	5.50	-	4.03	6.21
	10.0	**100**/60	40	3.76	6.60	3.76	5.18	6.71
	10.0	**120**/80	40	3.76	8.80	3.76	5.78	7.26



				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 10.0	10.0	**140**/80	60	3.76	8.80	4.51	5.78	7.26
	10.0	**160**/80	60	3.76	8.80	4.51	5.78	7.26
	10.0	**180**/100	60	3.76	11.00	4.51	6.33	7.81
	10.0	**200**/100	60	3.76	11.00	4.51	6.33	7.81
	10.0	**220**/100	60	3.76	11.00	4.51	6.33	7.81
	10.0	**240**/100	60	3.76	11.00	4.51	6.33	7.81
	10.0	**260**/100	60	3.76	11.00	4.51	6.33	7.81
	10.0	**280**/100	60	3.76	11.00	4.51	6.33	7.81
	10.0	**300**/100	60	3.76	11.00	4.51	6.33	7.81
	10.0	**350**/100	60	3.76	11.00	4.51	6.33	7.81
	10.0	**400**/100	60	3.76	11.00	4.51	6.33	7.81
ø 12.0	12.0	**80**/50	-	4.94	6.72	-	4.45	7.23
	12.0	**100**/60	-	4.94	8.06	-	5.75	8.38
	12.0	**120**/80	-	4.94	10.75	-	7.06	9.06
	12.0	**140**/80	-	4.94	10.75	-	7.19	9.06
	12.0	**160**/80	80	4.94	10.75	5.74	7.19	9.06
	12.0	**180**/100	80	4.94	13.44	5.74	7.86	9.73
	12.0	**200**/100	80	4.94	13.44	5.74	7.86	9.73
	12.0	**220**/100	80	4.94	13.44	5.74	7.86	9.73
	12.0	**240**/100	80	4.94	13.44	5.74	7.86	9.73
	12.0	**260**/100	80	4.94	13.44	5.74	7.86	9.73
	12.0	**280**/100	80	4.94	13.44	5.74	7.86	9.73
	12.0	**300**/120	80	4.94	16.13	5.74	8.53	10.40
	12.0	**350**/120	80	4.94	16.13	5.74	8.53	10.40
	12.0	**400**/120	80	4.94	16.13	5.74	8.53	10.40

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.

StarDrive GPR

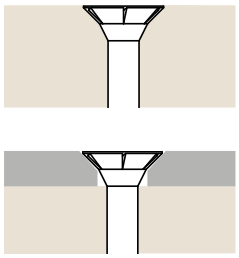
Highest quality – innovative technology

Head types

90° countersunk head with milling fins

> Underhead fins for optimal countersinking in timber

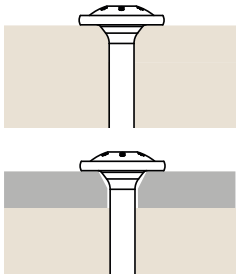
> Reduce tearing and splitting in the wood



Washer head

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

> No washers required, which makes processing faster



Thread geometry

Lower screw-in resistance

> The friction part reduces the screw-in resistance by reaming the wood around the shaft

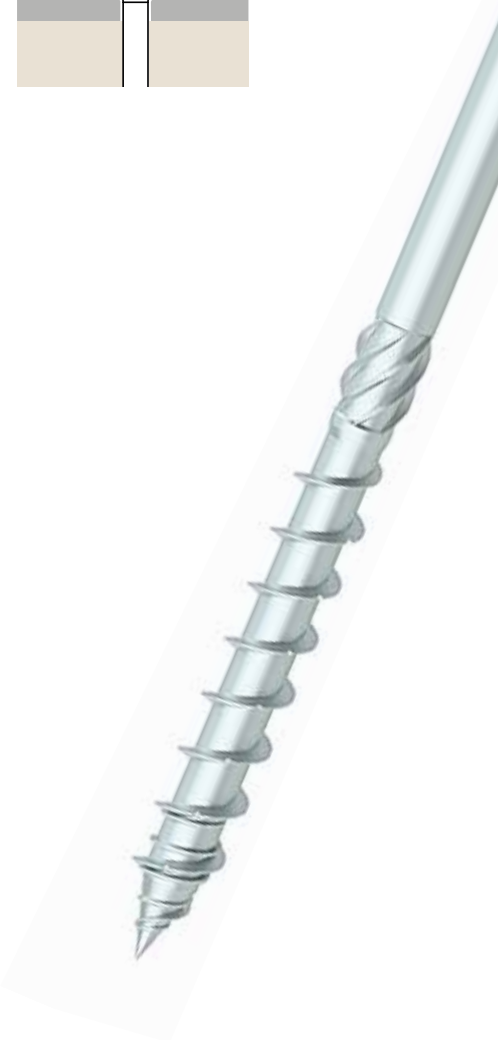
Fast screwing processes

> Coarse thread including patented follower thread, rolled out to the tip

> Low screw-in torque

Patented follower thread tip – no pre-drilling necessary

> Ensures that screw bites quickly with low splitting

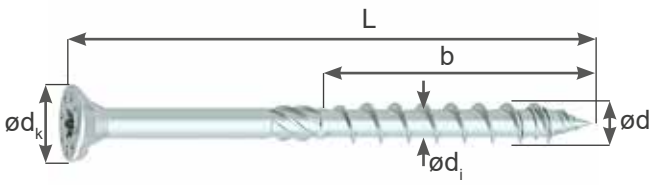


Dimensions & surfaces

		Countersunk head	Washer head	A2 countersunk head	A2 washer head
					
Ø 4.0	Drive	T 20	–	–	–
	Length	30-70 mm	–	–	–
	Thread	Coarse thread	–	–	–
	Underhead	Underhead ribs	–	–	–
Ø 4.5	Drive	T 20	–	–	–
	Length	50-80 mm	–	–	–
	Thread	Coarse thread	–	–	–
	Underhead	Underhead ribs	–	–	–
Ø 5.0	Drive	T 25	–	–	–
	Length	50-120 mm	–	–	–
	Thread	Coarse thread	–	–	–
	Underhead	Underhead ribs	–	–	–
Ø 6.0	Drive	T 30	T 30	–	–
	Length	60-300 mm	60–200 mm	–	–
	Thread	Coarse thread	Coarse thread	–	–
	Underhead	Underhead ribs	Cone	–	–
Ø 8.0	Drive	T 40	T 40	T 40	T 40
	Length	80–400 mm	80–400 mm	100–140 mm	100–140 mm
	Thread	Coarse thread	Coarse thread	Coarse thread	Coarse thread
	Underhead	Underhead ribs	Cone	Underhead ribs	Cone
Ø 10.0	Drive	T 40	T 50	–	–
	Length	80–400 mm	100–400 mm	–	–
	Thread	Coarse thread	Coarse thread	–	–
	Underhead	Underhead ribs	Cone	–	–
	Surface	galvanised blue, Cr[VI] free		Stainless steel A2	

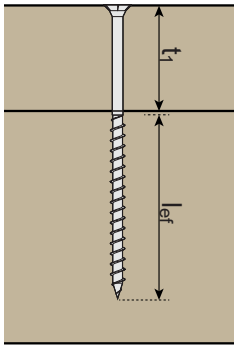
StarDrive GPR
partial thread countersunk head

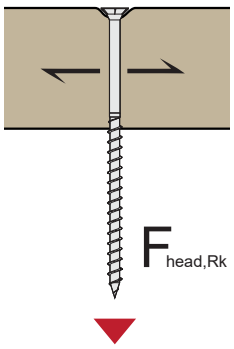
CHARACTERISTICS AND VALUES FOR C24							
D	**[mm]**	**ø 4**	**ø 4.5**	**ø 5**	**ø 6**	**ø 8**	**ø 10**
d_k	[mm]	8.0	9.0	10.0	12.0	15.0	18.5
d_i	[mm]	2.50	2.70	3.25	3.95	5.30	6.20
$f_{ax,90,k}$	[N/mm²]	14.8	13.8	12.8	12.1	10.7	9.5
$f_{head,k}$	[N/mm²]	17.1	17.6	14.6	14.6	12.4	12.2
$F_{tens,k}$	[kN]	5.0	5.8	8.5	12.4	22.0	32.0
$M_{y,k}$	[Nmm]	3 200	4 900	6 500	10 100	21 000	33 000

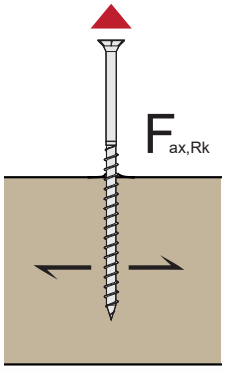


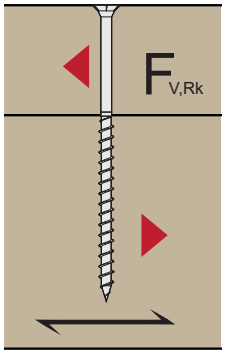
				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø	L/b	$t_{1,min}$	$F_{head,Rk}$	$F_{ax,Rk}$	$F_{v,Rk}$	$F_{V,Rk,thin}$	$F_{V,Rk,thick}$
	[mm]	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]
ø 4.0	4.0	**30**/24	-	1.09	1.42	-	0.79	1.34
	4.0	**35**/24	-	1.09	1.42	-	0.94	1.47
	4.0	**40**/30	-	1.09	1.78	-	1.09	1.58
	4.0	**50**/30	-	1.09	1.78	-	1.24	1.58
	4.0	**60**/35	25	1.09	2.07	1.06	1.32	1.65
	4.0	**70**/35	25	1.09	2.07	1.06	1.32	1.65
ø 4.5	4.5	**40**/24	-	1.43	1.49	-	1.17	1.77
	4.5	**45**/24	-	1.43	1.49	-	1.33	1.83
	4.5	**50**/29	-	1.43	1.80	-	1.48	1.91
	4.5	**60**/29	30	1.43	1.80	1.38	1.48	1.91
	4.5	**70**/39	30	1.43	2.42	1.38	1.64	2.07
	4.5	**80**/39	30	1.43	2.42	1.38	1.64	2.07
ø 5.0	5.0	**50**/30	-	1.46	1.92	-	1.59	2.22
	5.0	**60**/30	30	1.46	1.92	1.47	1.71	2.22
	5.0	**70**/37	30	1.46	2.37	1.51	1.83	2.34
	5.0	**80**/37	35	1.46	2.37	1.60	1.83	2.34
	5.0	**90**/55	35	1.46	3.52	1.60	2.11	2.62
	5.0	**100**/55	35	1.46	3.52	1.60	2.11	2.62
	5.0	**110**/55	35	1.46	3.52	1.60	2.11	2.62
	5.0	**120**/55	35	1.46	3.52	1.60	2.11	2.62
ø 6.0	6.0	**60**/36	24	2.10	2.92	1.77	2.17	3.05
	6.0	**70**/36	30	2.10	2.92	1.91	2.37	3.05
	6.0	**80**/48	30	2.10	3.89	1.91	2.61	3.29
	6.0	**90**/48	40	2.10	3.89	2.16	2.61	3.29
	6.0	**100**/48	40	2.10	3.89	2.16	2.61	3.29
	6.0	**110**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**120**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**130**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**140**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**150**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**160**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**180**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**200**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**220**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**240**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**260**/64	40	2.10	5.18	2.16	2.94	3.61

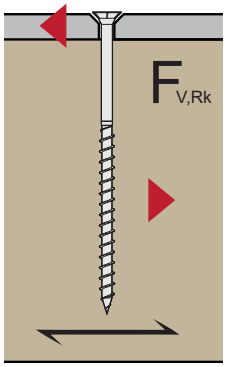
StarDrive GPR PT CS







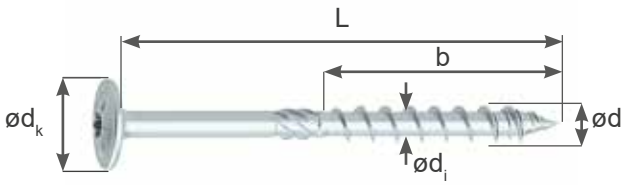




				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø [mm]	L/b [mm]	$t_{1,min}$ [mm]	$F_{head,Rk}$ [kN]	$F_{ax,Rk}$ [kN]	$F_{v,Rk}$ [kN]	$F_{V,Rk,thin}$ [kN]	$F_{V,Rk,thick}$ [kN]
ø 6.0	6.0	**280**/64	40	2.10	5.18	2.16	2.94	3.61
	6.0	**300**/64	40	2.10	5.18	2.16	2.94	3.61
ø 8.0	8.0	**80**/54	-	2.79	5.66	0.00	3.54	5.11
	8.0	**100**/54	45	2.79	5.66	3.10	4.03	5.11
	8.0	**120**/54	55	2.79	5.66	3.31	4.03	5.11
	8.0	**140**/84	55	2.79	8.80	3.31	4.82	5.90
	8.0	**160**/84	55	2.79	8.80	3.31	4.82	5.90
	8.0	**180**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**200**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**220**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**240**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**260**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**280**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**300**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**320**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**340**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**360**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**380**/100	55	2.79	10.48	3.31	5.23	6.32
	8.0	**400**/100	55	2.79	10.48	3.31	5.23	6.32
ø 10.0	10.0	**80**/60	-	4.18	6.75	-	4.03	6.51
	10.0	**100**/60	45	4.18	6.75	4.02	5.18	6.70
	10.0	**120**/60	55	4.18	6.75	4.41	5.23	6.70
	10.0	**140**/60	55	4.18	10.50	4.41	6.17	7.64
	10.0	**160**/100	60	4.18	10.50	4.59	6.17	7.64
	10.0	**180**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**200**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**220**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**240**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**260**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**280**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**300**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**320**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**340**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**360**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**380**/100	60	4.18	12.50	4.59	6.67	8.14
	10.0	**400**/100	60	4.18	12.50	4.59	6.67	8.14

StarDrive GPR partial thread washer head

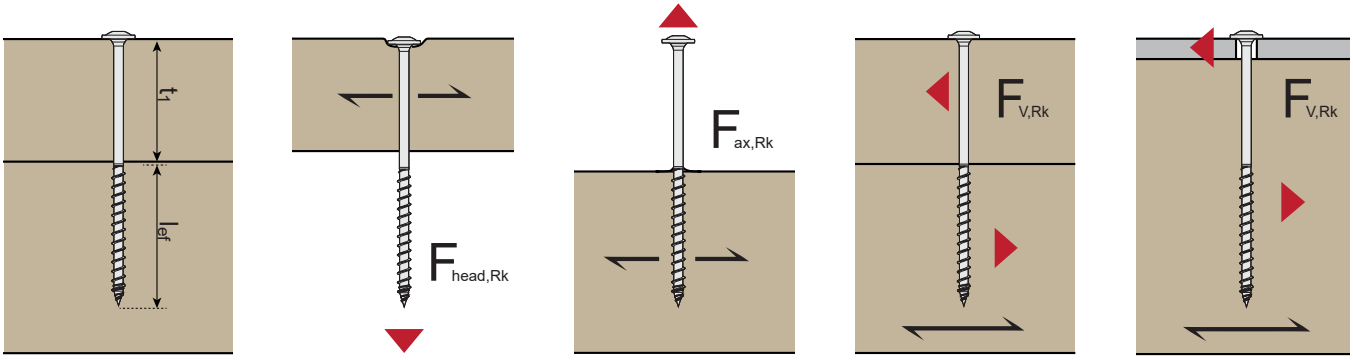
CHARACTERISTICS AND VALUES FOR C24				
D	**[mm]**	**ø 6**	**ø 8**	**ø 10**
d_k	[mm]	14.0	20.0	25.0
d_i	[mm]	3.95	5.30	6.20
$f_{ax,90,k}$	[N/mm²]	13.5	13.1	12.5
$f_{head,k}$	[N/mm²]	16.7	17.6	15.2
$F_{tens,k}$	[kN]	12.4	22.0	32.0
$M_{y,k}$	[Nmm]	10 100	21 000	33 000



				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**/36	24	3.27	2.92	1.97	2.17	3.05
	6.0	**80**/48	30	3.27	3.89	2.20	2.61	3.29
	6.0	**100**/48	40	3.27	3.89	2.46	2.61	3.29
	6.0	**120**/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**140**/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**160**/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**180**/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**200**/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**220***/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**240***/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**260***/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**280***/64	40	3.27	5.18	2.46	2.94	3.61
	6.0	**300***/64	40	3.27	5.18	2.46	2.94	3.61
ø 8.0	8.0	**80**/54	-	7.04	5.66	-	3.54	5.11
	8.0	**100**/54	45	7.04	5.66	3.82	4.03	5.11
	8.0	**120**/54	55	7.04	5.66	4.03	4.03	5.11
	8.0	**140**/84	55	7.04	8.80	4.37	4.82	5.90
	8.0	**160**/84	55	7.04	8.80	4.37	4.82	5.90
	8.0	**180**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**200**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**220**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**240**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**260**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**280**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**300**/100	55	7.04	10.48	4.37	5.23	6.32

*available by request

StarDrive GPR 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	55	7.04	10.48	4.37	5.23	6.32
	8.0	**340**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**360**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**380**/100	55	7.04	10.48	4.37	5.23	6.32
	8.0	**400**/100	55	7.04	10.48	4.37	5.23	6.32
ø 10.0	10.0	**100**/60	40	9.50	7.50	4.68	5.18	6.89
	10.0	**120**/60	60	9.50	7.50	5.42	5.42	6.89
	10.0	**140**/60	60	9.50	7.50	5.42	5.42	6.89
	10.0	**160**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**180**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**200**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**220**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**240**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**260**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**280**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**300**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**320**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**340**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**360**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**380**/100	60	9.50	12.50	5.92	6.67	8.14
	10.0	**400**/100	60	9.50	12.50	5.92	6.67	8.14

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

StarDrive GPR PS

Post screw

The StarDrive GPR PS is a full thread screw that expands our proven StarDrive GPR assortment. The StarDrive GPR PS is specially designed for metal/wood connections. The special underhead guarantees a perfect fit in the metal. The zinc nickel 1000+ surface is the ideal complement to hot-dip galvanised metal parts and is also suitable for use in demanding conditions.

Washer head for higher pull-through values

> The washer head eliminates the need to use a separate washer

> Reduced assembly times - higher pull-through values

Centres automatically when turning

> Ensures a perfect fit in metal parts

Fast screwing processes

> Coarse thread including patented follower thread, rolled out to the tip

> Minimised splitting

> Lower screwing torque

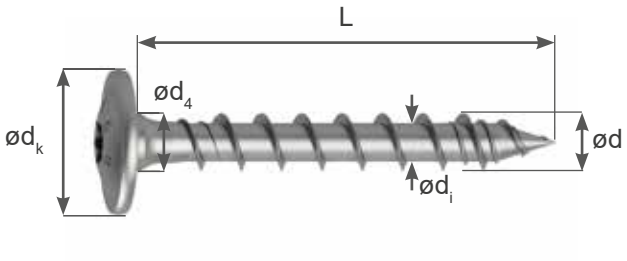
Patented follower thread tip – no pre-drilling necessary

> Ensures that screw bites quickly with low splitting

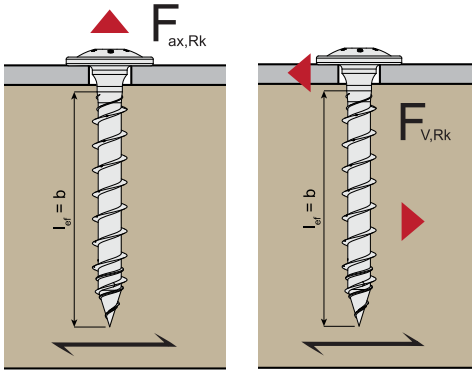
StarDrive GPR PS		
		
Ø 8.0	Drive	T 40
	Length	40–60 mm
	Thread	Coarse thread
	Underhead	Shoulder
	Surface	zinc nickel 1000+ Cr[VI] free

*Special lengths available upon request

CHARACTERISTICS AND VALUES FOR C24		
d	**[mm]**	**ø 8**
d_k	[mm]	20.0
d_i	[mm]	5.30
d_4	[mm]	7.8
$f_{ax,90,k}$	[N/mm²]	13.1
$f_{head,k}$	[N/mm²]	17.6
$F_{tens,k}$	[kN]	22.0
$M_{y,k}$	[Nmm]	21 000



Values for C24 (ρ_k=350kg/m³), axial axis to grain: 30° - 90°,
F_{ax} = thread withdrawal force,
F_v = shear force (// to grain 0° – ⊥ to grain 90°),
$F_{V,Rk,thin}$= steel plate t ≤ d/2,
$F_{V,RK,thick}$= steel plate t ≥ d



			AXIAL WITHDRAWAL	SHEAR	
			METAL - TIMBER		
	ø	**L/b**	$F_{ax,Rk}$	$F_{V,Rk,thin}$	$F_{V,Rk,thick}$
	[mm]	[mm]	[kN]	[kN]	[kN]
ø 8.0	8.0	**40**/32	3,35	1,57	3,33
	8.0	**50**/42	4,40	2,07	3,92
	8.0	**60**/52	5,45	2,56	4,57

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

RAPID® fullthread

The best technical values - extremely reliable

Head types

Cylinder head

> Reduced splitting so that wood surface does not splinter

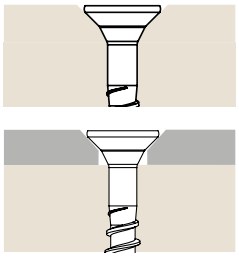
> Head is able to countersink deep into wood with a long bit

> Improved force transfer thanks to deeper drive

90° countersunk head

> Ideal for metal/wood connections

> Fits perfectly into metal parts



Thread geometry

> Constantly low torque due to anti-friction coating

> Excellent thread pull-out values

> Excellent pressure values

> Maximum load-bearing capacity

By request, also available in:

> Stainless steel A2 and A4 (approved for Ø 8.0 to 300 mm length and Ø 10.0 to 510 mm length)

> alternative surfaces such as: zinc nickel

YellWin 500+, Cr[VI] free

Stainless steel

Zinc nickel 1000+ Cr[VI] free

Patented tip – no pre-drilling necessary

> Self-drilling tip with ridged core

> Minimised splitting

> 50 percent lower screw-in torque

Half tip (HSP)

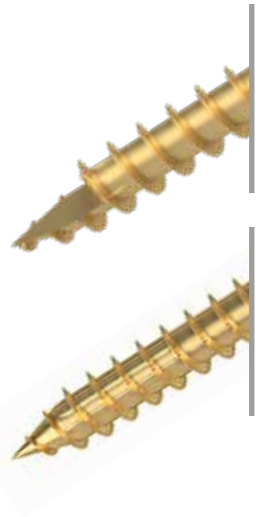
> Bites rapidly even with oblique and cross grained wood screw connections

> Especially with long screws

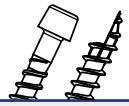
> Can be placed closer to the edge

Full tip with ridged core

> Minimised splitting and bites into wood quickly



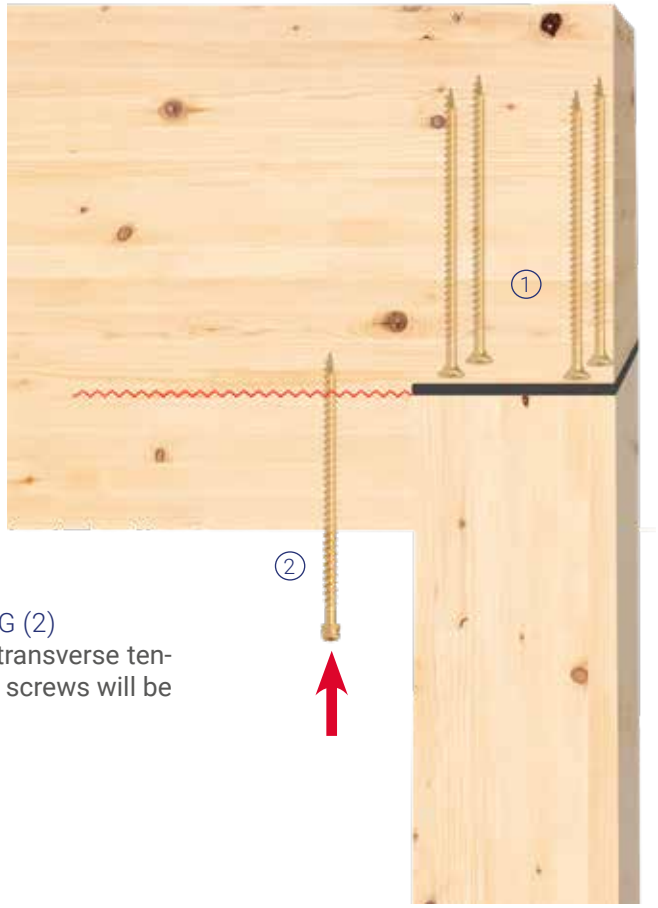
Dimensions

		Countersunk head	Cylinder head	HSP cylinder head
				
Ø 8.0	Drive	T 40	T 40	T 40
	Length	120–600 mm	120–400 mm	450–600 mm
	Thread	Single thread	Single thread	Single thread
	Tip	Half tip	Full tip	Half tip
Ø 10.0	Drive	T 50	–	T 50
	Length	120–1000 mm	–	200–1000 mm
	Thread	Single thread	–	Single thread
	Tip	Half tip	–	Half tip
Ø 12.0	Drive	T 50	–	–
	Length	200–1000 mm	–	–
	Thread	Single thread	–	–
	Tip	Half tip	–	–
	Surface	YellWin 500+, Cr[VI] free		

Note: Guide bores of 5d recommended for L > 800 mm

Applications

SUPPORT REINFORCEMENT WITH STEEL PLATE AND FULL THREAD SCREWS (1)
RAPID® fullthread screws transfer the support load from the timber section directly
to the steel plate through the screw heads. They distribute the force evenly into the end grain of the support.



TRANSVERSE TENSILE REINFORCEMENT FOR NOTCHING (2)
The structural engineer must review the requirement. If the transverse tensile load is too high for the timber section, RAPID® fullthread screws will be used to reinforce and secure the beam in the red line area.

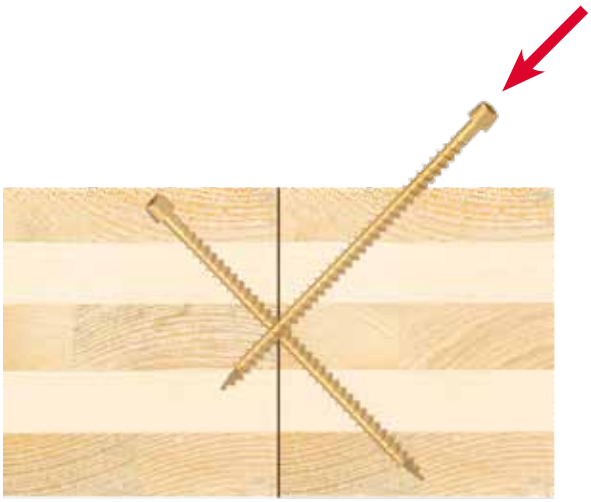
CONNECTIONS AT THE BASE POINT OF THE SUPPORT
RAPID® fullthread screws with a countersunk head are best suited for this application. Shear forces and wind suction are effectively transferred. The RAPID® offers a high degree of security with 500 hours of corrosion resistance.

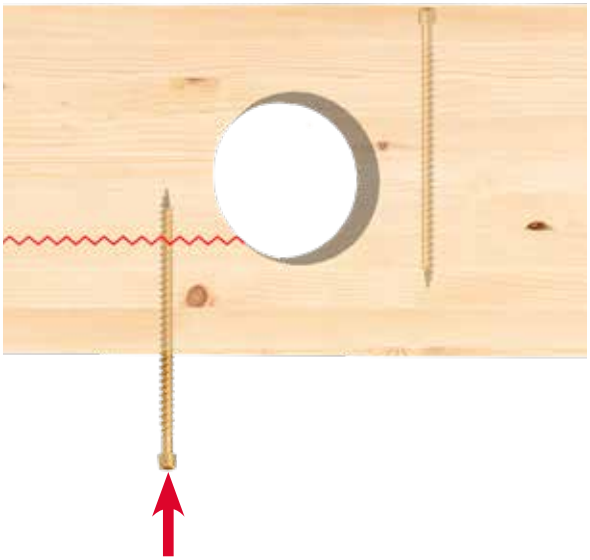
Info: In areas exposed to weather (use class 3), stainless steel screws should be used in accordance with the timber structure design code. The executive person should perform a final assessment of the necessary corrosion protection.

CROSS LAMINATED TIMBER (CEILING RIB)

Shear-resistant crosswise screwing for cross laminated timber ceilings.

Tip: the connection should first be pulled tightly together using e.g., partial thread screws.
The pitch of the screws should be oriented in the direction of the main load.





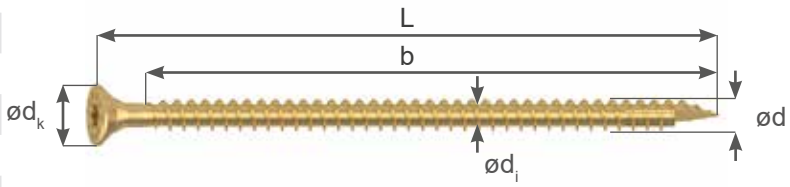
REINFORCEMENT OF OPENINGS WITH LONG FULL THREAD SCREWS

The area marked in red indicates the risk of cracking. The same thread length is required above and below this marking.
Long RAPID® fullthread screws with cylinder heads are recommended. They can be positioned exactly using long bits.

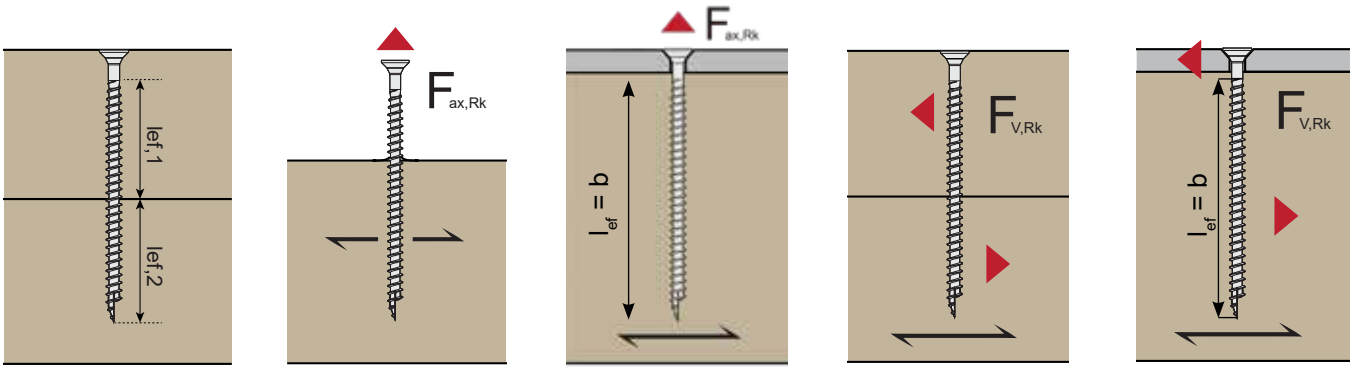
RAPID® fullthread countersunk head

CHARACTERISTICS AND VALUES FOR C24				
D	**[mm]**	**ø 8**	**ø 10**	**ø 12**
d_k	[mm]	15.0	18.5	21.0
d_i	[mm]	5.10	6.30	7.00
$f_{ax,90,k}$	[N/mm²]	13.1	12.5	11.2
$f_{head,k}$	[N/mm²]	12.4	12.2	10.3
$F_{tens,k}$	[kN]	24.1	40.0	46.7
$M_{y,k}$	[Nmm]	20 300	36 700	48 500
$N_{pl,k \cdot kc}$(*)	[kN]	12.2	18.9	23.6

(*) total screw length in timber



			AXIAL 90°		SHEAR 90°		
			TIMBER - TIMBER	METAL - TIMBER	TIMBER - TIMBER	METAL - TIMBER	
			l_{ef} = b/2	l_{ef} = b	l_{ef} = b/2	l_{ef} = b	
	ø	**L/b**	**$F_{ax,Rk}$**	**$F_{ax,Rk}$**	**$F_{V,Rk}$**	**$F_{V,Rk,thin}$**	**$F_{V,Rk,thick}$**
	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]
ø 8.0	8.0	**120**/110	5.76	11.53	4.01	5.14	6.52
	8.0	**140**/130	6.81	13.62	4.27	5.14	7.04
	8.0	**160**/150	7.86	15.72	4.54	5.14	7.27
	8.0	**180**/170	8.91	17.82	4.80	5.14	7.27
	8.0	**200**/190	9.96	19.91	5.06	5.14	7.27
	8.0	**220**/210	11.00	22.01	5.14	5.14	7.27
	8.0	**240**/230	12.05	24.10	5.14	5.14	7.27
	8.0	**260**/250	13.10	24.10	5.14	5.14	7.27
	8.0	**280**/270	14.15	24.10	5.14	5.14	7.27
	8.0	**300**/290	15.20	24.10	5.14	5.14	7.27
	8.0	**325**/315	16.51	24.10	5.14	5.14	7.27
	8.0	**350**/340	17.82	24.10	5.14	5.14	7.27
	8.0	**375**/365	19.13	24.10	5.14	5.14	7.27
	8.0	**400**/390	20.44	24.10	5.14	5.14	7.27
	8.0	**450**/428	22.37	24.10	5.14	5.14	7.27
	8.0	**500**/478	24.10	24.10	5.14	5.14	7.27
	8.0	**600**/578	24.10	24.10	5.14	5.14	7.27
ø 10.0	10.0	**120**/108	6.75	13.50	5.08	6.33	8.66
	10.0	**160**/148	9.25	18.50	6.05	7.47	9.91
	10.0	**180**/168	10.50	21.00	6.36	7.47	10.53
	10.0	**200**/188	11.75	23.50	6.67	7.47	10.57
	10.0	**220**/208	13.00	26.00	6.99	7.47	10.57
	10.0	**240**/228	14.25	28.50	7.30	7.47	10.57
	10.0	**260**/248	15.50	31.00	7.47	7.47	10.57
	10.0	**280**/268	16.75	33.50	7.47	7.47	10.57

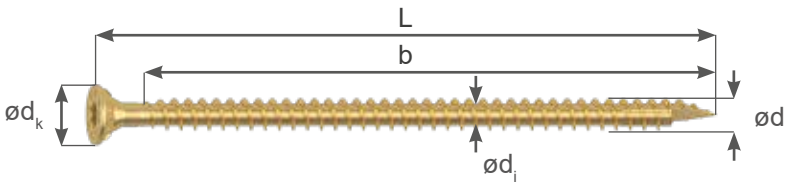


			AXIAL 90°		SHEAR 90°		
			TIMBER - TIMBER	METAL - TIMBER	TIMBER - TIMBER	METAL - TIMBER	
			l_{ef} = b/2	l_{ef} = b	l_{ef} = b/2	l_{ef} = b	
	ø	L/b	$F_{ax,Rk}$	$F_{ax,Rk}$	$F_{V,Rk}$	$F_{V,Rk,thin}$	$F_{V,Rk,thick}$
	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]
ø 10.0	10.0	**300**/288	18.00	36.00	7.47	7.47	10.57
	10.0	**325**/301	18.81	37.63	7.47	7.47	10.57
	10.0	**350**/326	20.38	40.00	7.47	7.47	10.57
	10.0	**375**/351	21.94	40.00	7.47	7.47	10.57
	10.0	**400**/376	23.50	40.00	7.47	7.47	10.57
	10.0	**450**/426	26.63	40.00	7.47	7.47	10.57
	10.0	**500**/476	29.75	40.00	7.47	7.47	10.57
	10.0	**600**/576	36.00	40.00	7.47	7.47	10.57
	10.0	**700**/676	40.00	40.00	7.47	7.47	10.57
	10.0	**800**/776	40.00	40.00	7.47	7.47	10.57
	10.0	**1000**/976	40.00	40.00	7.47	7.47	10.57
ø 12.0	12.0	**200**/180	12.10	24.19	7.60	9.16	12.52
	12.0	**220**/200	13.44	26.88	7.94	9.16	12.95
	12.0	**240**/220	14.78	29.57	8.27	9.16	12.95
	12.0	**260**/240	16.13	32.26	8.61	9.16	12.95
	12.0	**280**/260	17.47	34.94	8.95	9.16	12.95
	12.0	**300**/280	18.82	37.63	9.16	9.16	12.95
	12.0	**350**/330	22.18	44.35	9.16	9.16	12.95
	12.0	**400**/380	25.54	46.70	9.16	9.16	12.95
	12.0	**500**/480	32.26	46.70	9.16	9.16	12.95
	12.0	**600**/580	38.98	46.70	9.16	9.16	12.95
	12.0	**700**/680	45.70	46.70	9.16	9.16	12.95
	12.0	**800**/780	46.70	46.70	9.16	9.16	12.95
	12.0	**1000**/980	46.70	46.70	9.16	9.16	12.95

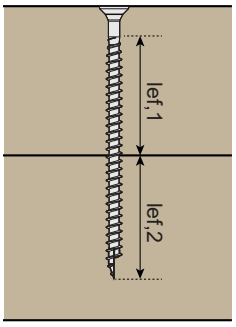
RAPID® fullthread countersunk head

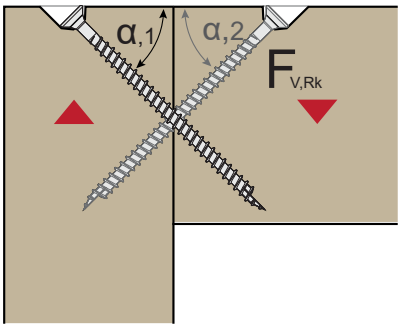
CHARACTERISTICS AND VALUES FOR C24				
d	**[mm]**	**ø 8**	**ø 10**	**ø 12**
d_k	[mm]	15.0	18.5	21.0
d_i	[mm]	5.10	6.30	7.00
$f_{ax,90,k}$	[N/mm²]	13.1	12.5	11.2
$f_{head,k}$	[N/mm²]	12.4	12.2	10.3
$F_{tens,k}$	[kN]	24.1	40.0	46.7
$M_{y,k}$	[Nmm]	20 300	36 700	48 500
$N_{pl,k \cdot kc(*)}$	[kN]	12.2	18.9	23.6

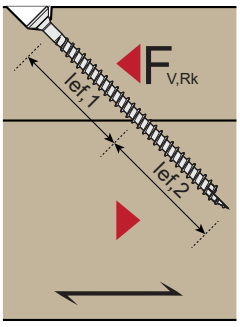
(*) total screw length in timber

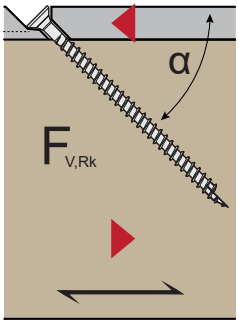


			AXIAL 45°			SHEAR 45°	
			CROSS-TYPE SCREW FITTING			TIMBER-TIMBER	METAL-TIMBER
			l_{ef} = b/2			l_{ef} = b/2	l_{ef} = b
	ø [mm]	**L/b** [mm]	$F_{v,X1,Rk}$ [kN]	$F_{v,X2,Rk}$ [kN]	$F_{v,X3,Rk}$ [kN]	$F_{v,Rk}$ [kN]	$F_{V,Rk}$ [kN]
ø 8.0	8.0	**120**/110	8.15	14.67	22.01	5.09	10.19
	8.0	**140**/130	9.63	17.34	26.01	6.02	12.04
	8.0	**160**/150	11.12	20.01	30.01	6.95	13.89
	8.0	**180**/170	12.60	22.68	34.01	7.87	15.75
	8.0	**200**/190	14.08	25.34	38.02	8.80	17.60
	8.0	**220**/210	15.56	28.01	42.02	9.73	19.45
	8.0	**240**/230	16.58	29.84	44.76	10.65	21.30
	8.0	**260**/250	17.32	31.17	46.76	11.58	21.30
	8.0	**280**/270	18.06	32.51	48.76	12.51	21.30
	8.0	**300**/290	18.80	33.84	50.76	13.43	21.30
	8.0	**325**/315	19.73	35.51	53.26	14.59	21.30
	8.0	**350**/340	20.65	37.18	55.76	15.75	21.30
	8.0	**375**/365	21.58	38.84	58.26	16.91	21.30
	8.0	**400**/390	22.51	40.51	60.77	18.06	21.30
	8.0	**450**/428	23.88	42.98	64.47	19.78	21.30
	8.0	**500**/478	25.10	45.17	67.76	21.30	21.30
	8.0	**600**/578	25.10	45.17	67.76	21.30	21.30
ø 10.0	10.0	**120**/108	9.55	17.18	25.77	5.97	11.93
	10.0	**160**/148	13.08	23.55	35.32	8.18	16.35
	10.0	**180**/168	14.85	26.73	40.09	9.28	18.56
	10.0	**200**/188	16.62	29.91	44.87	10.39	20.77
	10.0	**220**/208	18.38	33.09	49.64	11.49	22.98
	10.0	**240**/228	20.15	36.27	54.41	12.60	25.19
	10.0	**260**/248	21.92	39.46	59.18	13.70	27.40
	10.0	**280**/268	23.69	42.64	63.96	14.81	29.61









			AXIAL45°			SHEAR 45°	
			CROSS-TYPE SCREW FITTING			TIMBER-TIMBER	METAL-TIMBER
			l_{ef} = b/2			l_{ef} = b/2	l_{ef} = b
	ø	L/b	$F_{v,X1,Rk}$	$F_{v,X2,Rk}$	$F_{v,X3,Rk}$	$F_{v,Rk}$	$F_{V,Rk}$
	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]
ø 10.0	10.0	**300**/288	25.26	45.46	68.19	15.91	31.82
	10.0	**325**/301	25.83	46.49	69.74	16.63	33.26
	10.0	**350**/326	26.93	48.48	72.72	18.01	35.36
	10.0	**375**/351	28.04	50.47	75.71	19.39	35.36
	10.0	**400**/376	29.14	52.46	78.69	20.77	35.36
	10.0	**450**/426	31.35	56.44	84.66	23.53	35.36
	10.0	**500**/476	33.56	60.41	90.62	26.30	35.36
	10.0	**600**/576	37.98	68.37	102.55	31.82	35.36
	10.0	**700**/676	40.81	73.46	110.19	35.36	35.36
	10.0	**800**/776	40.81	73.46	110.19	35.36	35.36
	10.0	**1000**/976	40.81	73.46	110.19	35.36	35.36
ø 12.0	12.0	**200**/180	17.11	30.79	46.19	10.69	21.38
	12.0	**220**/200	19.01	34.21	51.32	11.88	23.76
	12.0	**240**/220	20.91	37.63	56.45	13.07	26.13
	12.0	**260**/240	22.81	41.06	61.58	14.26	28.51
	12.0	**280**/260	24.71	44.48	66.71	15.44	30.89
	12.0	**300**/280	26.61	47.90	71.85	16.63	33.26
	12.0	**350**/330	31.36	56.45	84.68	19.60	39.20
	12.0	**400**/380	33.79	60.82	91.23	22.57	41.28
	12.0	**500**/480	38.54	69.37	104.06	28.51	41.28
	12.0	**600**/580	43.29	77.92	116.89	34.45	41.28
	12.0	**700**/680	48.04	86.48	129.72	40.39	41.28
	12.0	**800**/780	48.75	87.76	131.63	41.28	41.28
	12.0	**1000**/980	48.75	87.76	131.63	41.28	41.28

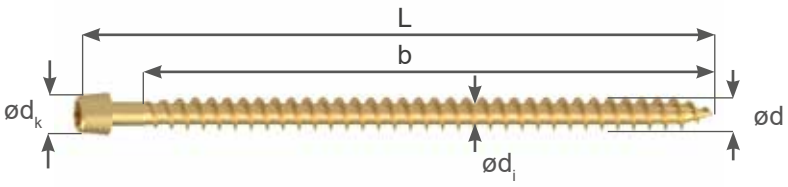
Values for C24 (ρ_k=350kg/m³), axial axis to grain: 30° - 90°, $F_{ax,Rk}$ = thread withdrawal, $F_{head,Rk}$ = head pull through, $F_{v,Rk}$ = shear (// to grain 0° – ⊥ to grain 90°), wood/steel plate: l_{ef} = thread length b, t_1 min= minimum wood thickness, t_1 max= maximum wood thickness add-on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

RAPID® fullthread cylinder head

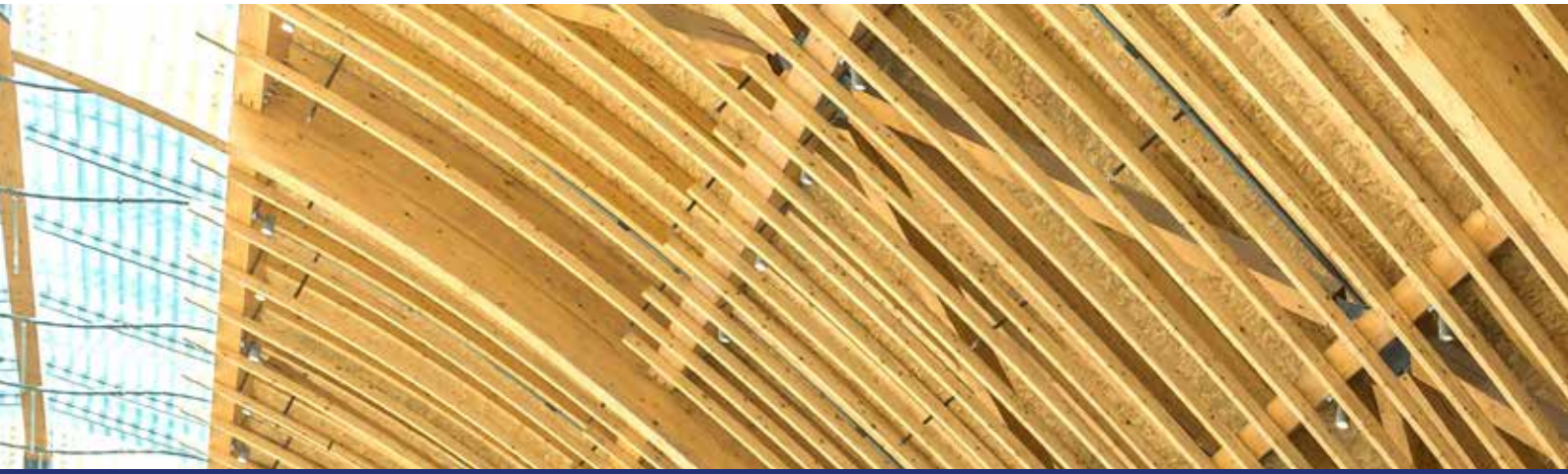
Values apply to the RAPID® FT CL with core fins tip and to the RAPID® FT CL with half tip.
The RAPID® FT cylinder head is not suitable for timber/steel plate screw fittings; our range has the RAPID® FT countersunk head for this.

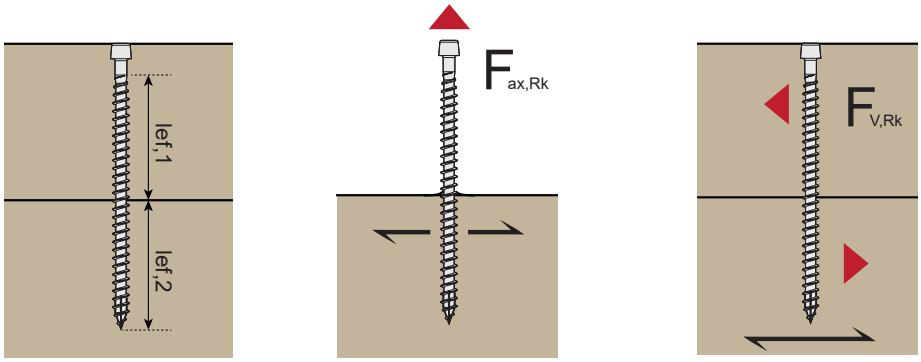
CHARACTERISTICS AND VALUES FOR C24			
d	**[mm]**	**ø 8**	**ø 10**
d_k	[mm]	10.2	13.4
d_i	[mm]	5.10	6.30
$f_{ax,90,k}$	[N/mm²]	13.1	12.5
$f_{head,k}$	[N/mm²]	0	0
$F_{tens,k}$	[kN]	24.1	40.0
$M_{y,k}$	[Nmm]	20 300	36 700
$N_{pl,k \cdot kc(*)}$	[kN]	12.2	18.9

(*) total screw length in timber



			AXIAL 90°	SHEAR 90°
			HEAD PULL THROUGH	TIMBER - TIMBER
			l_{ef} = b/2	l_{ef} = b/2
	ø	**L/b**	**$F_{ax,Rk}$**	**$F_{V,Rk}$**
	[mm]	[mm]	[kN]	[kN]
ø 8.0	8.0	**120**/110	5.76	4.01
	8.0	**140**/130	6.81	4.27
	8.0	**160**/150	7.86	4.54
	8.0	**180**/170	8.91	4.80
	8.0	**200**/190	9.96	5.06
	8.0	**220**/210	11.00	5.14
	8.0	**240**/230	12.05	5.14
	8.0	**260**/250	13.10	5.14
	8.0	**280**/270	14.15	5.14
	8.0	**300**/290	15.20	5.14
	8.0	**325**/315	16.51	5.14
	8.0	**350**/340	17.82	5.14
	8.0	**375**/365	19.13	5.14
	8.0	**400**/390	20.44	5.14
	8.0	**450**/428	22.37	5.14
	8.0	**500**/478	24.10	5.14
	8.0	**600**/578	24.10	5.14





			AXIAL 90°	SHEAR 90°
			HEAD PULL THROUGH	TIMBER - TIMBER
			l_{ef} = b/2	l_{ef} = b/2
	ø [mm]	L/b [mm]	$F_{ax,Rk}$ [kN]	$F_{V,Rk}$ [kN]
ø 10.0	10.0	**200**/188	11.75	6.67
	10.0	**240**/228	14.25	7.30
	10.0	**260**/248	15.50	7.47
	10.0	**280**/268	16.75	7.47
	10.0	**300**/288	18.00	7.47
	10.0	**325**/301	18.81	7.47
	10.0	**350**/326	20.38	7.47
	10.0	**375**/351	21.94	7.47
	10.0	**400**/376	23.50	7.47
	10.0	**450**/426	26.63	7.47
	10.0	**500**/476	29.75	7.47
	10.0	**600**/576	36.00	7.47
	10.0	**700**/676	40.00	7.47
	10.0	**800**/776	40.00	7.47
	10.0	**1000**/976	40.00	7.47

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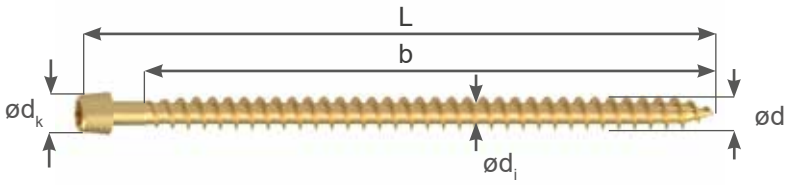
RAPID® fullthread cylinder head

Values apply to the RAPID® FT CL with core fins tip and to the RAPID® FT CL with half tip. The RAPID® FT cylinder head is not suitable for timber/steel plate screw fittings; our range has the RAPID® FT countersunk head for this.

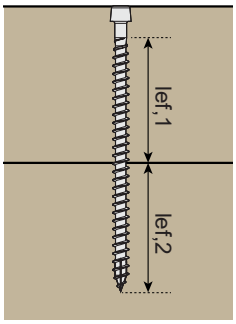
CHARACTERISTICS AND VALUES FOR C24			
D	**[mm]**	**ø 8**	**ø 10**
d_k	[mm]	10.2	13.4
d_i	[mm]	5.10	6.30
$f_{ax,90,k}$	[N/mm²]	13.1	12.5
$f_{head,k}$	[N/mm²]	0	0
$F_{tens,k}$	[kN]	24.1	40.0
$M_{y,k}$	[Nmm]	20 300	36 700
$N_{pl,k \cdot kc}$(*)	[kN]	12.2	18.9

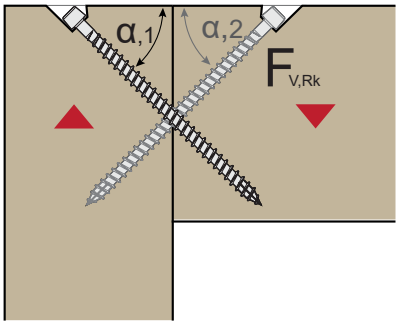


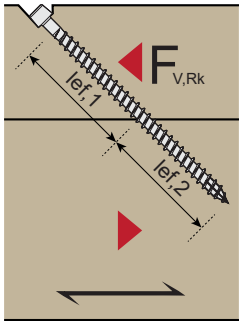
(*) total screw length in timber

			AXIAL 45°			SHEAR 45°
			CROSS-TYPE SCREW FITTING			TIMBER - TIMBER
			l_{ef} = b/2			l_{ef} = b/2
	ø	**L/b**	$F_{v,X1,Rk}$	$F_{v,X2,Rk}$	$F_{v,X3,Rk}$	$F_{v,Rk}$
	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]
ø 8.0	8.0	**120**/110	8.15	14.67	22.01	5.09
	8.0	**140**/130	9.63	17.34	26.01	6.02
	8.0	**160**/150	11.12	20.01	30.01	6.95
	8.0	**180**/170	12.60	22.68	34.01	7.87
	8.0	**200**/190	14.08	25.34	38.02	8.80
	8.0	**220**/210	15.56	28.01	42.02	9.73
	8.0	**240**/230	16.58	29.84	44.76	10.65
	8.0	**260**/250	17.32	31.17	46.76	11.58
	8.0	**280**/270	18.06	32.51	48.76	12.51
	8.0	**300**/290	18.80	33.84	50.76	13.43
	8.0	**325**/315	19.73	35.51	53.26	14.59
	8.0	**350**/340	20.65	37.18	55.76	15.75
	8.0	**375**/365	21.58	38.84	58.26	16.91
	8.0	**400**/390	22.51	40.51	60.77	18.06
	8.0	**450**/428	23.88	42.98	64.47	19.78
	8.0	**500**/478	25.10	45.17	67.76	21.30
	8.0	**600**/578	25.10	45.17	67.76	21.30

Values for C24 (ρ_k=350kg/m³),
Axial axis to grain: 30° - 90°,
$F_{ax,Rk}$ = thread withdrawal,
$F_{v,Rk}$ = shear (// to grain 0° – ⊥ to grain 90°),







			AXIAL 45°			SHEAR 45°
			CROSS-TYPE SCREW FITTING			TIMBER - TIMBER
			l_{ef} = b/2			l_{ef} = b/2
	ø [mm]	L/b [mm]	$F_{v,X1,Rk}$ [kN]	$F_{v,X2,Rk}$ [kN]	$F_{v,X3,Rk}$ [kN]	$F_{v,Rk}$ [kN]
ø 10.0	10.0	**200**/188	16,62	29,91	44,87	10.39
	10.0	**240**/228	20,15	36,27	54,41	12.60
	10.0	**260**/248	21,92	39,46	59,18	13.70
	10.0	**280**/268	23,69	42,64	63,96	14.81
	10.0	**300**/288	25,26	45,46	68,19	15.91
	10.0	**325**/301	25,83	46,49	69,74	16.63
	10.0	**350**/326	26,93	48,48	72,72	18.01
	10.0	**375**/351	28,04	50,47	75,71	19.39
	10.0	**400**/376	29,14	52,46	78,69	20.77
	10.0	**450**/426	31,35	56,44	84,66	23.53
	10.0	**500**/476	33,56	60,41	90,62	26.30
	10.0	**600**/576	37,98	68,37	102,55	31.82
	10.0	**700**/676	40,81	73,46	110,19	35.36
	10.0	**800**/776	40,81	73,46	110,19	35.36
	10.0	**1000**/976	40,81	73,46	110,19	35.36

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

RAPID® T-Lift

1.3 t & 2.5 t lifting system | fullthread

Characteristics

Flexible tool selection

> Dual head (hexagonal and T-slot) offers flexible screwing

> Reinforced area under the head with optimal fitting for reliable force transfer

High pull-out forces and low splitting

> Sharply rolled out thread flanks for a minimised splitting, fast screwing in and very high pull-out forces

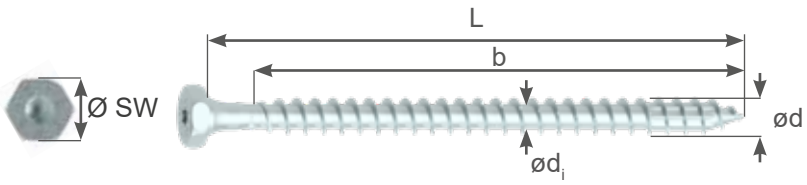
Patented follower thread tip – no pre-drilling necessary

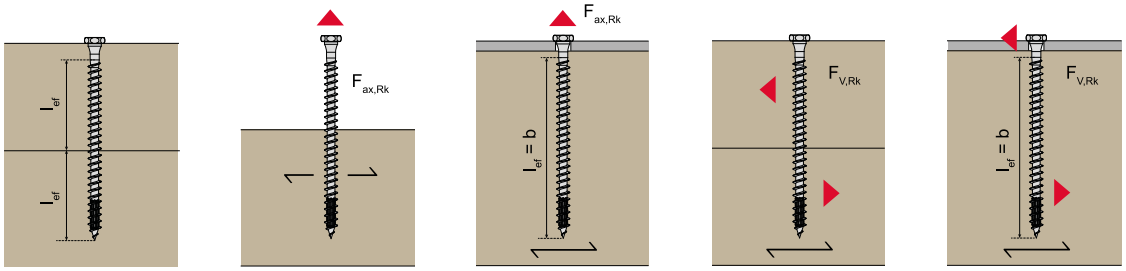
> Patented compressor tip for a quick bite with reduced screwing torque

> Suitable for cordless screwdrivers

T-Lift		
		
Ø 12.0	Drive	T 40/SW 17
	Length	60–380 mm
	Thread	Single thread
	Underhead	Shoulder
Ø 16.0	Drive	T 50
	Length	180–600 mm
	Thread	Single thread
	Underhead	Shoulder
	Surface	BlueWin, Cr[VI] free

CHARACTERISTICS AND VALUES FOR C24			
d	**[mm]**	**ø 12**	**ø 16**
SW = d_k	[mm]	17.0	24.0
d_i	[mm]	7.00	10.70
$f_{ax,90,k}$	[N/mm²]	11.2	11.0
$f_{head,k}$	[N/mm²]	17.1	16.9
$F_{tens,k}$	[kN]	45.0	88.6
$M_{y,k}$	[Nmm]	48 500	112 900





			AXIAL 90°		SHEAR 90°		
			TIMBER-TIMBER	METAL-TIMBER	TIMBER-TIMBER	METAL-TIMBER	
			l_{ef} = b/2	l_{ef} = b	l_{ef} = b/2	l_{ef} = b	
	ø	L/b	$F_{ax,Rk}$	$F_{ax,Rk}$	$F_{V,Rk}$	$F_{V,Rk,thin}$	$F_{V,Rk,thick}$
	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]
ø 12.0	12.0	**60**/48	-	6.45	-	3.14	6.21
	12.0	**80**/68	-	9.14	-	4.45	7.87
	12.0	**100**/85	-	11.42	-	5.75	9.33
	12.0	**120**/105	7.06	14.11	-	7.06	10.00
	12.0	**140**/125	8.40	16.80	-	8.37	10.68
	12.0	**160**/145	9.74	19.49	-	9.16	11.35
	12.0	**180**/165	11.09	22.18	7.35	9.16	12.02
	12.0	**220**/205	13.78	27.55	8.02	9.16	12.95
	12.0	**300**/285	19.15	38.30	9.16	9.16	12.95
	12.0	**380**/365	24.53	45.00	9.16	9.16	12.95
ø 16.0	16.0	**180**/155	13.64	27.28	-	13.11	17.75
	16.0	**240**/215	18.92	37.84	12.46	15.45	20.39
	16.0	**280**/255	22.44	44.88	13.34	15.45	21.85
	16.0	**320**/295	25.96	51.92	14.22	15.45	21.85
	16.0	**400**/375	33.00	66.00	15.45	15.45	21.85
	16.0	**600**/575	50.60	88.60	15.45	15.45	21.85

Values for C24 (ρ_k=350kg/m³), axial axis to grain: 30° - 90°, $F_{ax,Rk}$ = thread withdrawal, $F_{v,Rk}$ = shear (// to grain 0° – ⊥ to grain 90°),
$F_{V,Rk,thin}$ = 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.

RAPID® T-Lift

1.3 t & 2.5 t lifting system | fullthread

Areas of application

> Used in constructive timber work as a lifting system for prefabricated roofs, walls and ceilings, in timber frame construction for the prefab house industry, solid wood boards, cross laminated timber and the like

> RAPID® T-Lift is suitable for cross-laminated timber, solid wood, coniferous wood-based materials (OSB, LVL etc.). For deciduous woods, we recommend using screws, pre-drilled

> Can be used for axial loads (screw subjected to tension) and transverse loads (screw subjected to shear-off stress)

Application information

> The RAPID® T-Lift sperical head anchor for the load group up to 1.3 t or up to 2.5 t may only be used with the self-drilling RAPID® T-Lift screw certified under ETA-12/0373, ø 12 mm or ø 16 mm

> The weight of the components to be lifted must be known and must not exceed the calculated screw load bearing capacity

> Screws may not be screwed into drying cracks or the like

> Screw-in angle in the timber: 0 - 90°

> Complete operating instructions for the RAPID® T-Lift can be found at www.schmid-screw.com

Photo © Binderholz

Safety information

> For safety reasons, the screws should only be used once

> The entire component must be lifted with at least two screws

> RAPID® T-Lift must be checked for damage before each use

> The lifting system must be checked by an expert/safety officer from the user company at least once a year. The degree of wear and tear in particular should be determined, in addition to damage of all kinds

> Modifications and repairs, especially welding, on the lifting system are not permitted

> The lifting system complies to the EC Machinery Directive 2006/42/EC, Annex II 1A (EN 13001-1, EN ISO 12100:2011-03, VDI/BV-BS 6205:2012-04). Production is externally approved and monitored.

Connecting the RAPID® T-Lift lifting system correctly:

the lug on the sphere must point inward.

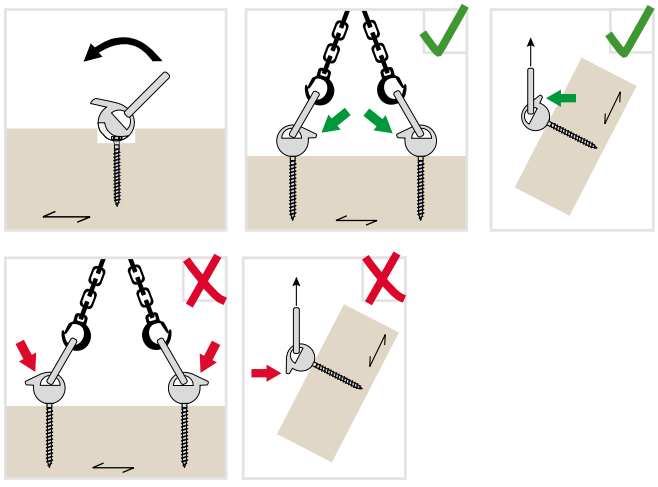


Foto © Binderholz

RAPID® Hardwood

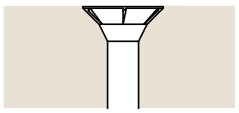
Approved for hardwood and BauBuche without pre-drilling

Characteristics

90° countersunk head

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

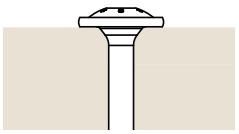
> Milling pockets reduce tearing and splitting in the wood



Washer head

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

> No washers required, which makes processing faster



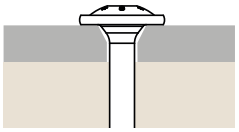
Minimised effort

> The patented friction part greatly reduces screw-in resistance

> Less effort required to screw in

> Faster screwing processes

> Suitable for cordless screwdrivers



Low splitting, high pull-out values

> Also suitable for coniferous timber

> 3-4 times higher values for hardwood, compared to coniferous timber

Patented tip – no pre-drilling necessary

> Bites rapidly even with oblique and cross grained wood screw connections

> Minimised splitting

> No pre-drilling in hardwoods and LVL beech (for lengths up to and including 400 mm; pre-drilling permitted for longer lengths)

Features

The RAPID® Hardwood is the first screw ETA-approved for all hard woods without pre-drilling, both for screwing in side and end timber (90° to 0°) and for screw fittings in the narrow edge of laminated veneer beech lumber.
The unique RAPID® Hardwood makes full loads possible regardless of whether the timber was pre-drilled. However, if you pre-drill with ø max. 6.5 mm screws, the RAPID® Hardwood's screw-in torque will be reduced by 2/3 and the screw distances will be much smaller.

> Saves time by eliminating pre-drilling

> ETA approval

> Tensile capacity comparable to a conventional 10 mm wood construction screw

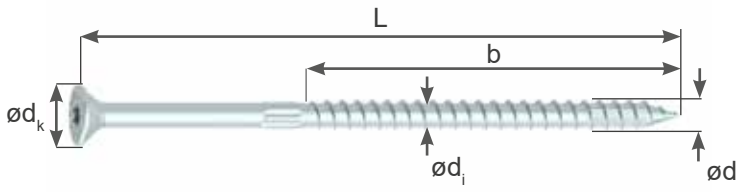
Dimensions & surfaces

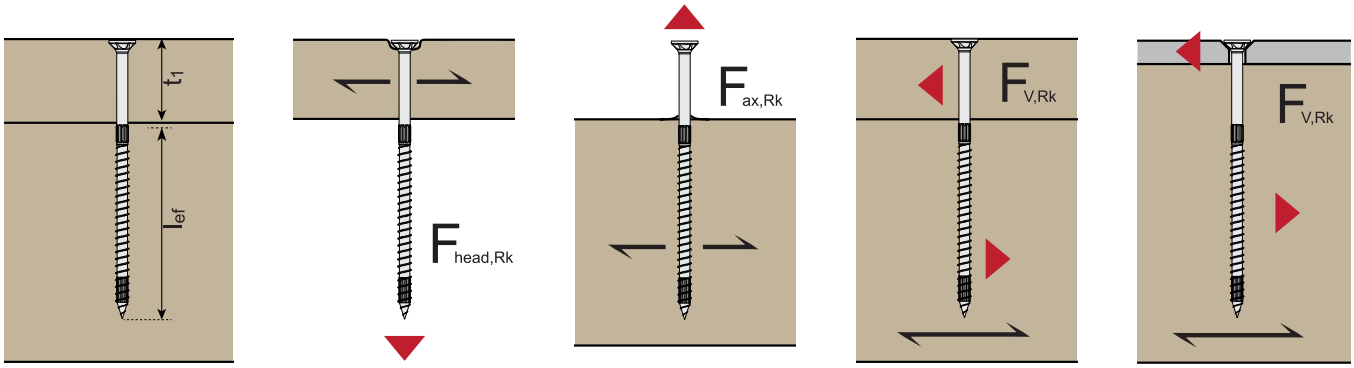
		Countersunk head*	Washer head*
			
Ø 8,0	Drive	T 40	T 40
	Length	80–440 mm	160 mm
	Thread	Single thread	Single thread
	Underhead	Milling pockets	Cone
	Surface	BlueWin 700+, Cr[VI] free	

*Special lengths and other surfaces available by request

RAPID® Hardwood partial thread countersunk head

CHARACTERISTICS AND VALUES			
		LVL beech	C 24
d	**[mm]**	**ø 8**	**ø 8**
d_k	[mm]	15.0	15.0
d_i	[mm]	6.10	6.10
$f_{ax,90,k}$	[N/mm²]	49.2	13.1
$f_{head,k}$	[N/mm²]	46	12.4
$F_{tens,k}$	[kN]	32.8	32.8
$M_{y,k}$	[Nmm]	42 800	42 800



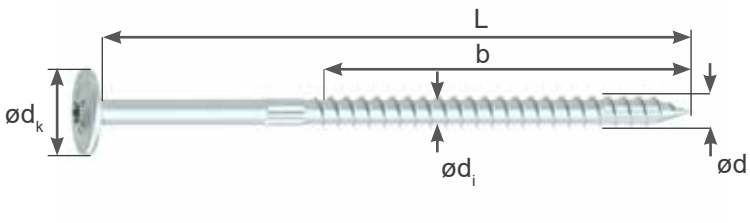


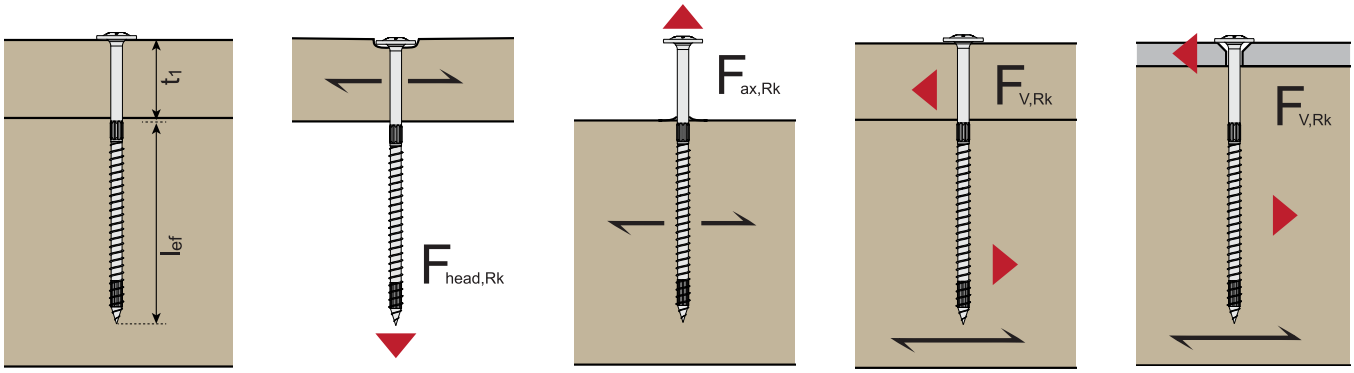
				AXIAL		SHEAR		
				HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER	
	ø [mm]	L/b [mm]	$t_{1,min}$ [mm]	$F_{head,Rk}$ [kN]	$F_{ax,Rk}$ [kN]	$F_{v,Rk}$ [kN]	$F_{V,Rk,thin}$ [kN]	$F_{V,Rk,thick}$ [kN]
				LVL BEECH ρ_k=730kg/m³				
ø 8.0	8.0	**80***/60	-	10.35	23.52	-	7.39	13.50
	8.0	**100***/80	-	10.35	31.36	-	9.44	15.25
	8.0	**120**/100	-	10.35	32.80	-	10.78	15.25
	8.0	**140***/100	40	10.35	32.80	7.23	10.78	15.25
	8.0	**160**/100	55	10.35	32.80	7.98	10.78	15.25
	8.0	**200**/100	55	10.35	32.80	7.98	10.78	15.25
	8.0	**240**/100	55	10.35	32.80	7.98	10.78	15.25
	8.0	**280**/100	55	10.35	32.80	7.98	10.78	15.25
	8.0	**320**/100	55	10.35	32.80	7.98	10.78	15.25
	8.0	**440***/100	55	10.35	32.80	7.98	10.78	15.25
				C24 ρ_k=350kg/m³				
ø 8.0	8.0	**80***/60	-	2.79	6.29	-	3.54	6.06
	8.0	**100***/80	-	2.79	8.38	-	4.53	7.37
	8.0	**120**/100	-	2.79	10.48	-	5.51	7.90
	8.0	**140***/100	40	2.79	10.48	3.40	6.35	7.90
	8.0	**160**/100	60	2.79	10.48	3.98	6.35	7.90
	8.0	**200**/100	75	2.79	10.48	4.43	6.35	7.90
	8.0	**240**/100	75	2.79	10.48	4.43	6.35	7.90
	8.0	**280**/100	75	2.79	10.48	4.43	6.35	7.90
	8.0	**320**/100	75	2.79	10.48	4.43	6.35	7.90
	8.0	**440***/100	75	2.79	10.48	4.43	6.35	7.90

*available by request

RAPID® Hardwood partial thread washer head

CHARACTERISTICS AND VALUES			
		LVL beech	C 24
d	**[mm]**	**ø 8**	**ø 8**
d_k	[mm]	22.0	22.0
d_i	[mm]	6.10	6.10
$f_{ax,90,k}$	[N/mm²]	49.2	13.1
$f_{head,k}$	[N/mm²]	60.8	20.4
$F_{tens,k}$	[kN]	32.8	32.8
$M_{y,k}$	[Nmm]	42 800	42 800





			AXIAL				SHEAR				
			HEAD PULL THROUGH		WITHDRAWAL		TIMBER-TIMBER		METAL-TIMBER		
ø	L/b	$t_{1,min}$	$F_{head,Rk}$	$F_{head,ASD}$	$F_{ax,Rk}$	$F_{ax,ASD}$	$F_{v,Rk}$	$F_{v,ASD}$	$F_{V,Rk,thin}$	$F_{V,Rk,thick}$	$F_{v,ASD}$
[mm]	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]
LVL BEECH ρ_k=730kg/m³											
8.0	**160/100**	60	29.43	-	32.80	-	10.78	-	10.78	15.25	-
C24 ρ_k=350kg/m³											
8.0	**160/100**	60	9.87	2.42	10.48	4.00	5.75	1.09	6.35	7.90	1.36

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.

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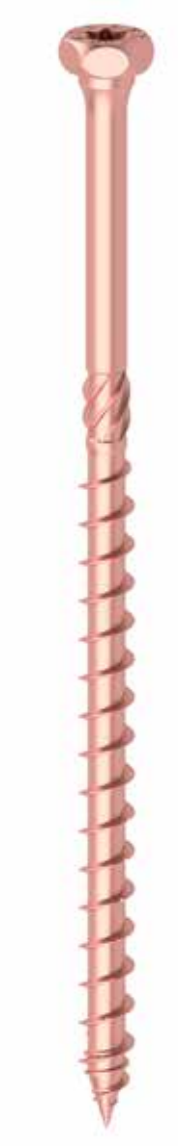
RAPID® T-Con

For timber/concrete composite systems

Characteristics



Flexible tool selection

> Higher force transfer with hexagonal recess possible - important for particularly hard woods in the refurbishment of old buildings

> Additional customary T-slot (T40)

Screw-in marking

> The friction part serves as a practical marking for the remaining length, which must protrude out from the wood.

Fast screwing processes

> Coarse thread including patented follower thread, rolled out to the tip

> Low screw-in torque

Patented follower thread tip – no pre-drilling necessary

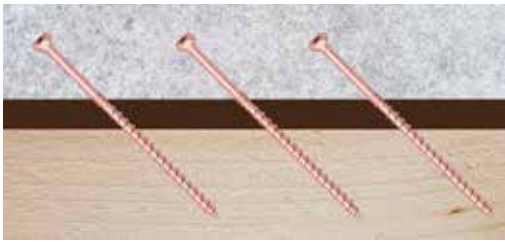
> 35° tip to bite quickly - especially for 45° pitch

T-Con		
		
Ø 8.0	Drive	T 40/SW12
	Length	155–205 mm
	Thread	Coarse thread
	Underhead	Shoulder
	Surface	RedWin, Cr[VI] free

Advantages of the timber-concrete composite system

> Higher ultimate limit state for low structure height

> Especially when it comes to refurbishing old buildings, the existing ceiling can still be used - which is more economical, sustainable and affordable



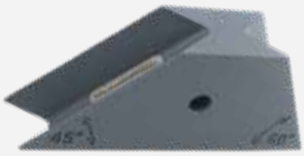
Compared to purely wooden ceilings

> Higher ultimate limit state and stiffness

> Fire prevention: The risk of transferring fire is greatly reduced

> Concrete ceiling panels reduce vibrations and improve noise insulation

Accessories



SCREW-IN TOOL

Compared to purely concrete ceilings

> Better environmental balance: 2/3 of timber is built in

> Lower dead load

Dimensioning software

> The dimensioning software for timber/concrete composite systems is available in the following languages: German, English, French, Italian and Czech

> Concrete thickness starts at 50 mm (DE: 70 mm)

> Calculation for supported/non-supported ceilings

> Concrete cracked/not cracked

> Screw fitting 45°/90° or crosswise 45°/135° and supports 90°/135°

> With/without support

> The gusset concrete weight is factored into the dowel beam cross section

ETA-18/0829

RAPID® Top-2-Roof

For on-roof insulation systems

Characteristics

Cylinder head

> Reduced splitting so that wood surface does not splinter

> Improved force transfer thanks to deeper drive

Fast screwing processes

> Coarse thread rolled out to the tip

> Low screw-in torque

Lower screw-in resistance

> The friction part reduces the screw-in resistance by reaming the wood around the shaft

Patented follower thread tip – no pre-drilling necessary

> Ensures that screw bites quickly with low splitting

Top-2-Roof		
		
Ø 8.0	Drive	T 40
	Length	240–520 mm
	Thread	Coarse thread
	Underhead	-
	Surface	BlueWin, Cr[VI] free

Application

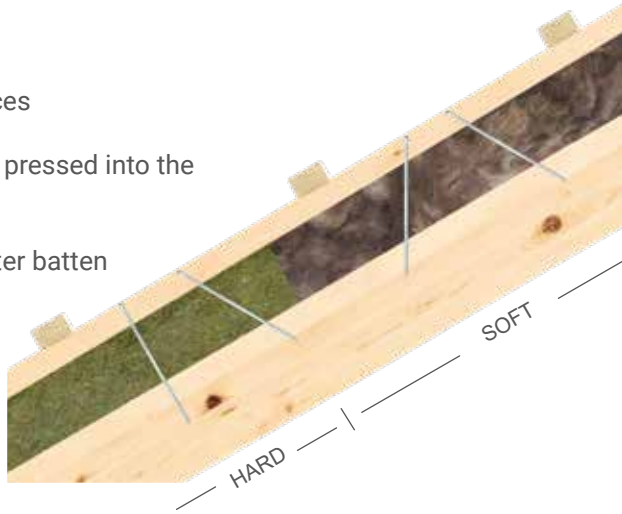
> Approved for hard and soft insulation

> Optimal for non-pressure-resistant (soft) insulation

> Especially for on-roof insulation: Absorbs thrust and compression forces

> The absorption of compression forces causes the insulation not to be pressed into the substrate nearly as much, which improves insulating capacity

> The second threaded part underneath the screw head keeps the counter batten optimally fixed in place



ON-ROOF AND EXTERIOR WALL INSULATION

> Counter batten verification incl. screwing

> Gabled and monopitch roofs

> Wall insulation 90°

Dimensioning software

> Easy and intuitive to operate - the EXCEL table calculation program does not require any special software knowledge

> Takes much less time to calculate

> Screw types and pre-defined insulations can be selected or you can customise by adding your own insulation

> The software takes national regulations into account and is available in German, English, French and Italian

RAPID® Secure: Screw-in tool

The RAPID® Secure screw-in tool represents a completely novel technology for secure screw fittings in timber construction.
This solution enables long wood construction screws and hardwood screws to be screwed securely and quickly with all screwdrivers (13 mm drill chuck) without a problem.
The screw head is held securely in place and is firmly connected with the RAPID® Secure. There is no way for the bit to slip off and no need to press down.
With the RAPID® Secure screw-in tool, screwing with wood construction screws is extra secure and simple. The tool can be used with conventional screwdrivers and gives your workers security even in inconvenient screwing positions.

Benefits from using the RAPID® Secure:

> Increased work safety for employees

> After being locked into place, the screw cannot be loosened and fits tightly on the bit - no pressing down while screwing in and less wear - bit holds for much longer

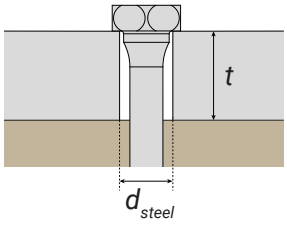
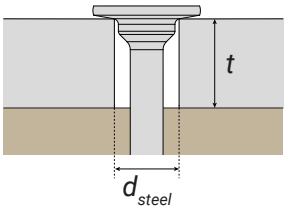
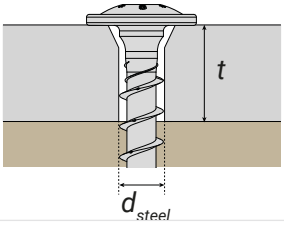
> Easier to screw in difficult and dangerous work positions and situations

USE THE RAPID® SECURE WITH RAPID® AND STARDRIVE GPR SCREWS FROM SCHMID SCHRAUBEN:	
RAPID® SECURE L, T 40	ø 8 mm RAPID®/GPR countersunk head ø 8 mm RAPID® cylinder head ø 10 mm RAPID® Dual ø 8 mm RAPID® T-Con
RAPID® SECURE L special bit T50	ø 10 mm RAPID® cylinder head
RAPID® SECURE XL, T 40	ø 8 mm RAPID®/GPR washer head ø 8 mm RAPID® SuperSenkFix ø 12 mm RAPID® Dual ø 12 mm RAPID® T-Lift
RAPID® SECURE XL, T 50	ø 10 mm RAPID®/GPR countersunk head ø 12 mm RAPID®/GPR countersunk head ø 10 mm RAPID® SuperSenkFix

Metal/wood connections according to ETA-12/0373

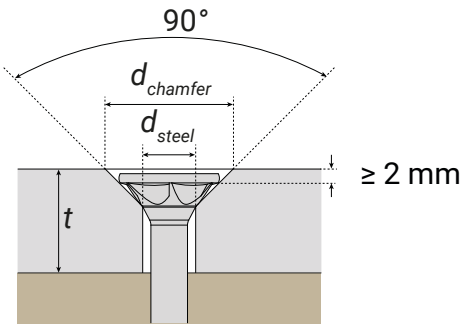
Characteristic values for the calculation of steel-to-timber connections can be taken from the tables in this brochure or determined in accordance with Eurocode 5 and ETA-12/0373.
Is defined according to Eurocode 5 (EN1995-1-1):
- thin metal sheet: sheet thickness t ≤ 0.5d
- thick metal sheet: sheet thickness t ≥ d
- sheet thicknesses between t ≤ 0.5d and t ≥ d should be interpolated linearly

The capacity of the steel elements must be verified separately according to corresponding standards.
We recommend drilling a cylindrical hole in the metal with a diameter of dsteel, where the diameter should be a maximum of d_{steel} +1 mm.
The RAPID® Dual, RAPID® SuperSenkFix and StarDrive GPR PS are designed especially for application in metal-to-timber connections. The screw automatically centres in the hole during screwing in and results in a perfect fit.

	RAPID® Dual (Dual)	RAPID® SuperSenkFix (SSF)	
			
screw size d	**d_{steel}**	**d_{steel}**	**d_{steel}**
6 mm	–	8 mm	-
8 mm	8 mm	10 mm	8 mm
10 mm	10 mm	13 mm	-
12 mm	12 mm	–	-

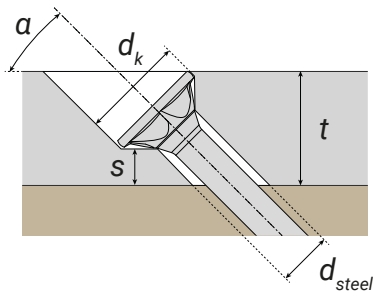
90° countersunk bore holes: provide the RAPID®/StarDrive GPR countersunk head with sufficient support on the chamfer. The screw automatically centres while screwing in.

RAPID®/StarDrive GPR countersunk head (CS)
recommended cylindrical bore hole diameter d_{steel} ≥ d
and chamfer diameter $d_{chamfer}$



screw size d	min. $d_{chamfer}$	d_{steel}
6 mm	15 mm	6 mm
8 mm	19 mm	8 mm
10 mm	23 mm	10 mm
12 mm	25 mm	12 mm

RAPID®/StarDrive GPR countersunk head (CS)
recommended cylindrical bore hole diameter d_{steel} ≥ d
and chamfer diameter $d_{chamfer} \geq d_k$



screw size d	d_k	d_{steel}
6 mm	12 mm	6 mm
8 mm	15 mm	8 mm
10 mm	18.5 mm	10 mm
12 mm	21 mm	12 mm

s ≥ 3 mm for α > 45° | s ≥ 2 mm for 30°≤ α ≤ 45°
45° oblique drilled holes are suitable for metals t ≥ 10 mm.

Minimum spacing

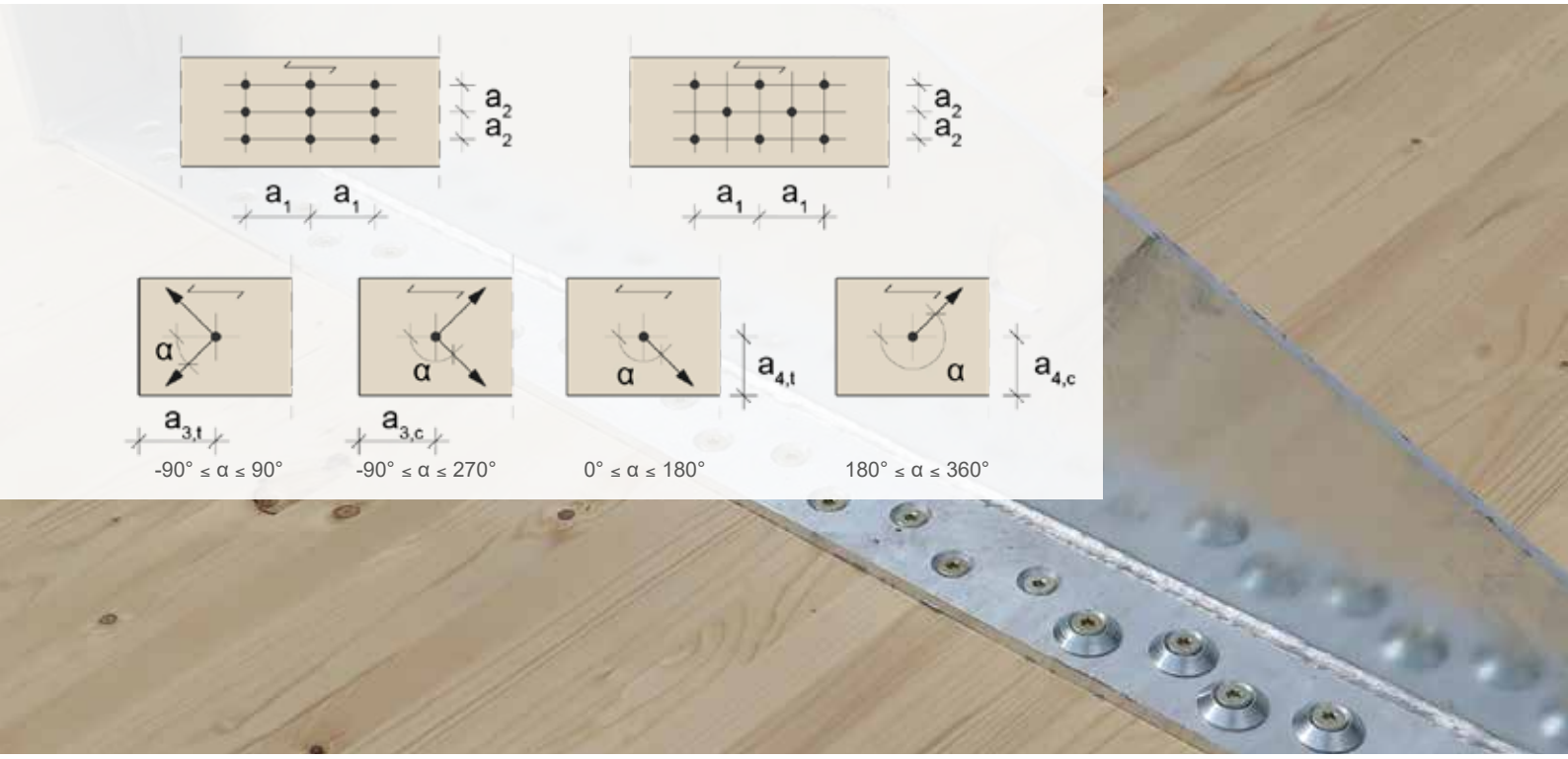
for self-drilling screws RAPID©, StarDrive GPR and for screws with drill bit

		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:

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

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
Y_m , k_{mod} ... Additional values from corresponding national norms

Screw production

FROM WIRE TO SCREW

Our screws are made from special carbon steel wire. The wire is wound onto spools and then drawn to the desired diameter. In a heading machine, the wire material is cut into blanks of the desired length and then cold-formed, shaping them into the basic screw head configuration. After cold heading, the bolts undergo thread rolling to finalise the screw's geometry.

SCAN TO WATCH THE VIDEO:

HARDENING - AN IMPORTANT STEP

The screws are subjected to a special heat treatment process so that they can deliver their high performance. This means that they can withstand high tensile loads, but are still very ductile and tough. Our screws can be bent by more than 45° without cracking or breaking.

COATINGS - NOW IT'S GETTING COLORFUL

After hardening, the screws are sent to electroplating, where different coatings (e.g. YellWin, BlueWin) can be applied. Using an electroplating process, they are galvanised in different layer thicknesses and then the color (eg. yellow, blue) is passivated or thick-film passivated. Each screw is finished with a sliding coating to ensure low-friction screwing.

HYDROGEN EMBRITTLEMENT - NOT WITH US

Thanks to years of experience, we have stable processes for forming, hardening and coating. Together with our partners, we always take care to avoid hydrogen embrittlement in all processes, especially in hardening and electroplating. We are also involved in several projects in partnership with recognised universities, aimed at developing and establishing suitable standards to prevent hydrogen embrittlement.

QUALITY CONTROL

All screws undergo continuous testing during the production process. For example, the geometry is measured, the mechanical properties are checked after hardening and the coating is checked after the electroplating process. The screws are only packaged ready for dispatch once all checks have been passed.

Corrosion resistance & intended application

Depending on the designation, the screws are provided with different levels of corrosion resistance. The type of coating for each type of screw can be seen on the pages of the individual products (tables with the technical values).
The corrosion resistance is verified through the salt spray test in accordance with EN ISO 9227. Under standard conditions, the specimens are placed in a test chamber where a saline solution (typically a solution of sodium chloride) is sprayed on them. The examination is limited by a previously determined test period, ranging from a few- to several thousand hours. At the end of the test period, the corrosion phenomena occurring on the test specimens are assessed as white and red rust.
The following illustrates how long the coatings protect the screws against the standardised corrosive salt atmosphere without rusting red on the head:

YELLWIN*
Color: **yellow**
Corrosion-resistant: **approx. 100 h**

YELLWIN 500+
Color: **yellow**
Corrosion-resistant: **approx. 500 h**

BLUEWIN
Color: **blue**
Corrosion-resistant: **approx. 50 h**

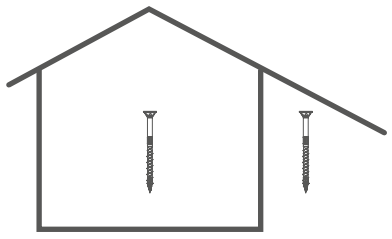
BLUEWIN 700+
Color: **blue**
Corrosion-resistant: **approx. 700 h**

ZNNI 1000+ *
Color: **gray**
Corrosion-resistant: **approx. 1000 h**

ZNNI 1500+ *
Color: **gray**
Corrosion-resistant: **approx. 1500 h**

INTENDED APPLICATION – WHERE CAN RAPID® & STARDRIVE GPR SCREWS BE USED?

All our carbon steel screws can be used in service classes 1 and 2. This means they are suitable for use in dry indoor areas and covered outdoor areas. Additionally, it is important to ensure that the wood used has a moisture content of less than 16 %.
For service class 3, which means use in outdoor areas without cover, we recommend stainless steel screws, such as the StarDrive GPR A2.



Attention! It is important to ensure dry conditions for all materials – such as wood and screws – even during the installation, including transport and storage at construction site. They have to be protected from excessive moisture.

* available on request

Responsibility for the future

FAIR PLAY
We naturally comply with statutory regulations. They are many times more stringent than those of other regions regarding the handling of carbon dioxide, energy, waste and chemicals.

SMALL CARBON FOOTPRINT
Our partners are primarily local European raw material suppliers. This means that our transport routes are shorter than if we were to import raw materials on container ships, which cause high levels of harmful emissions

SOCIAL STANDARDS
It is self-evident that the exploitation of workers and child labour have no place in an Austrian company. However, we ensure that these and other social standards are adhered to in the companies of our suppliers and partners as well.

HIGHEST PRODUCT QUALITY
Our premium products make it possible to implement more efficient application solutions with fewer screws, which helps to conserve resources. Furthermore, our high-quality screws ensure a longer service life along with faster and easier processing.

RECYCLING
Thanks to the good anti-friction coating and geometry of our premium products, they can be removed from the timber without a trace. This allows individual beams and joists to be reassembled into new structures, thus saving resources.

ENERGY-SAVING PRODUCTION
The switch to electrically operated forklifts and LED lights, along with new energy-saving technologies and machinery in production and heat recovery in the hardening process, has helped our production to become more environmentally friendly.

HEALTH IN THE WORKPLACE
We are mindful of our employees' health and rely on healthy, environmentally friendly chemicals and raw materials wherever possible. For example, we have established the use of Cr(VI)-free corrosion protection in our Premium RAPID® screws.

CONTINUAL IMPROVEMENT
We strive to continually improve our carbon footprint. The ISO 50001 energy management system and the ISO 14001 environmental management system help to make sure of this. Suggestions to improve each individual employee's work routine are actively communicated on an ongoing basis.

ONGOING ANALYSES OF ENERGY FLOW
We analyse our energy flow on an ongoing basis, as well as resource consumption, so that we can quickly counteract "energy guzzlers" or wastage. At the same time, we also work actively on developments and optimisations in the area of energy recovery from production.

World of Volvo

The “World of Volvo” in Gothenburg is a pioneering construction project that impresses with its technical refinement and innovative use of wood. Developed by WIEHAG Holding GmbH a long-standing partner of Schmid Schrauben Hainfeld, in close cooperation with renowned architects and engineers, this building represents a perfect symbiosis of aesthetics and functionality.
A technical highlight of the “World of Volvo” is its impressive wood structure, which not only provides a breathtaking architectural appearance, but also meets the highest demands for load-bearing capacity and safety.

Precise planning and implementation of this structure was made possible by the expertise of Ramboll, a world-leading engineering and consulting company offering innovative solutions for complex construction projects.
For the new Stockholm landmark, WIEHAG supplied 6,000 m³ BSH: 3,600 m³ for pillars and beams, 2,400 m³ for roof and ceiling elements. The three largest timber beams measure 34 m in length each.
In addition to the visitor center, the World of Volvo will also offer space for events and culinary experiences.

Photos © WIEHAG Holding GmbH

Facts & Figures:

Customer:
AB Volvo and Volvo Cars

Architect:
Henning Larsen

Location:
Sweden

Wooden roof construction and engineering:
WIEHAG GmbH

Completion:
2023

Image: Strengths

With innovative services, we don't just strengthen the Schmid Schrauben brand, we want to strengthen your brand too.

SALES TOOLS FROM US TO YOU

We provide professional sales tools branded with your company's logo and design, from any kind of marketing documents to product folders and website.

SPECIAL PROJECTS: OUR EXPERTS SUPPORT YOU

We guide you in our customer service with internationally leading expertise on special topics such as fire prevention, edge distances, corrosion protection and much more.

MARKETING AND ADVERTISING

Schmid Schrauben's consistent market and press work creates trust in our products. In us. And thus in you.

SEMINARS, TRAININGS

SERVICE & SOFTWARE

Give your customers a clear sign of your technical and commercial competence with our calculation service and the calculation software (on-roof, HBV) from Schmid Schrauben.

FAST, ON-TIME DELIVERY

Also when linked to your disposition.

DIRECT ENQUIRY

We're happy to establish stock levels between agents and Schmid Schrauben!

PROCUREMENT

You benefit from our procurement service for non-production parts (trade channel) as well as from direct deliveries to end customers.

Selling power: Increase

Want to realise the full potential of our products in sales? We can help.

The (added) value of Schmid Schrauben has more of an impact when your Sales department knows about it. With training, factory tours and hands-on training events at your site, we bring your consultants up to date. We also offer specialised seminars on special topics with our external partners. (Corrosion, fire prevention, calculations, etc.)

Brands: Develop

We also make “customer-brand screws” from “Schmid-brand screws”.

INDIVIDUALLY ENGINEERED PRODUCT DEVELOPMENTS

The screws you or your customer are looking for are nothing but a drawing so far? Or just an idea? Special projects often require special solutions tailored to the customer. We design or produce for you based on your drawing or model. Our machinery offers a variety of possibilities for production. From rapid prototyping with 3D printers to producing custom parts in small series to hardening and hot-dip galvanising. There is (almost) nothing we can’t solve.

LABELS/PACKAGING/BOX

Labels based on your request, our own packaging and means of shipment - we provide the right solution.

QUALITY

Is measurable and feasible in every nuance here. Our range covers everything from material tests, screw-in tests on our in-house test bench, measurement of layer thicknesses and friction values, to corrosion tests and chemical analysis procedures.

Special production orders

We engineer your ideas into being for you with precision and high quality.

YOUR TOOLS

Milling, turning, eroding, grinding, honing, tempering: Our metal processing possibilities
vary widely and are technologically state of the art. We also produce your tool made to measure, just as precise as screws, according to your requirements. Make use of our well-equipped machinery!

schmid
schrauben hainfeld

Experience
We have been specialists in the manufacture of wood construction screws for over 180 years.

Sustainability
We take care of our environment and manufacture according to ISO 14001 and ISO 50001.

Always available
Our warehouse is always stocked with our extensive range.

Your screw - your brand
We manufacture screws exactly according to your wishes.

Special hardening
Our screws are viscoplastic and bendable by at least 45° - elastic and high-strength.

Service orientation
Whether with calculations, expertise or experience - we are there for our customers.

Statics
Our screws have above-average mechanical values for pull-out and head pull-through.

Safety
Our screws are approved according to ETA 12/0373 and ICC-ESR-4549.

Highest quality
We manufacture according to ISO 9001 and are externally monitored by Holzforschung Austria.

Schmid Schrauben Hainfeld GmbH
Landstal 10 | A-3170 Hainfeld | T +43 (0)2764 2652 | F +43 (0)2764 3149 | E info@schrauben.at