

# RAPID<sup>®</sup> 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

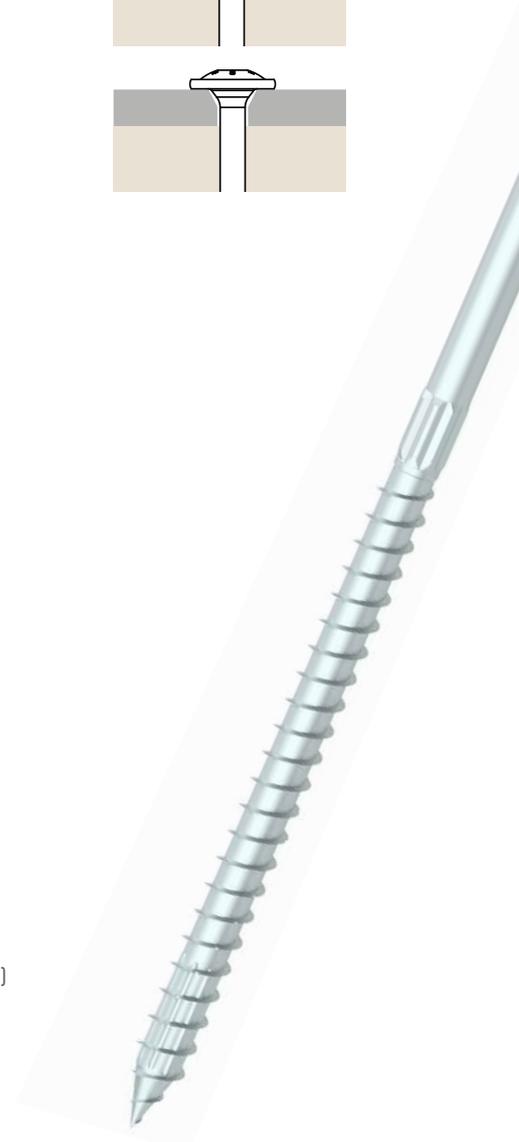
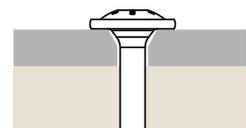
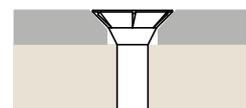
- > The patented friction part greatly reduces screw-in resistance
- > Less effort required to screw in
- > Faster screwing processes
- > Suitable for cordless screwdrivers

### 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° bis 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  $\varnothing$  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 10mm wood construction screw

# Dimensions & surfaces

		Countersunk head*	Washer head*
			
$\varnothing$ 8,0	Drive	T 40	T 40
	Length	80–440 mm	160 mm
	Thread	Single thread	Single thread
	Underhead	Milling pockets	Cone
<b>Surface</b>		BlueWin 700+ 	



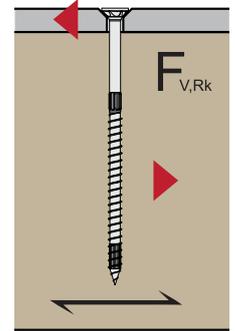
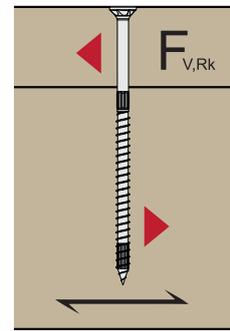
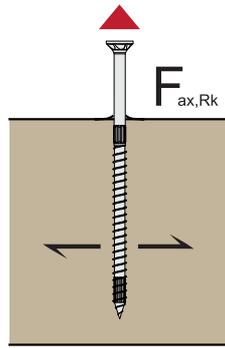
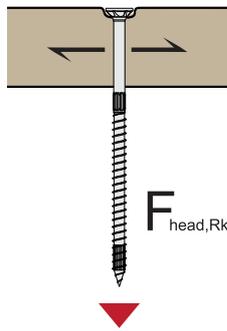
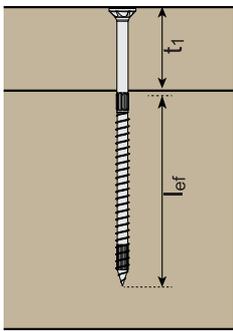
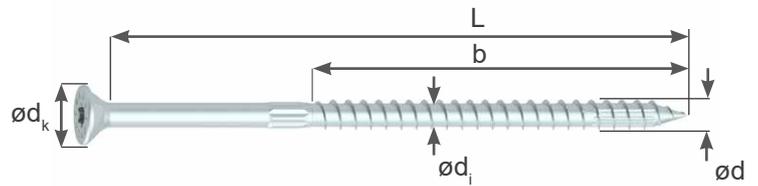
\*Special lengths and other surfaces available by request



# RAPID<sup>®</sup> Hardwood partial thread countersunk head

## Characteristics and values

		LVL beech	C 24
<b>d</b>	[mm]	ø 8	ø 8
<b>d<sub>k</sub></b>	[mm]	15.0	15.0
<b>d<sub>i</sub></b>	[mm]	6.10	6.10
<b>f<sub>ax,90,k</sub></b>	[N/mm <sup>2</sup> ]	49.2	13.1
<b>f<sub>head,k</sub></b>	[N/mm <sup>2</sup> ]	46	12.4
<b>F<sub>tens,k</sub></b>	[kN]	32.8	32.8
<b>M<sub>y,k</sub></b>	[Nmm]	42 800	42 800



		AXIAL				SHEAR					
		HEAD PULL THROUGH		WITHDRAWAL		TIMBER-TIMBER		METAL-TIMBER			
ø	L/b	t <sub>1,min</sub>	F <sub>head,Rk</sub>	F <sub>head,ASD</sub>	F <sub>ax,Rk</sub>	F <sub>ax,ASD</sub>	F <sub>v,Rk</sub>	F <sub>v,ASD</sub>	F <sub>v,Rk,thin</sub>	F <sub>v,Rk,thick</sub>	F <sub>v,ASD</sub>
[mm]	[mm]	[mm]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]	[kN]

LVL BEECH ρ <sub>k</sub> =730kg/m <sup>3</sup>												
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 <sub>k</sub> =350kg/m <sup>3</sup>												
ø 8.0	8.0	80*/60	-	2.79	1.13	6.29	2.40	-	-	3.54	6.06	1.36
	8.0	100*/80	-	2.79	1.13	8.38	3.20	-	-	4.53	7.37	1.36
	8.0	120/100	-	2.79	1.13	10.48	4.00	-	-	5.51	7.90	1.36
	8.0	140*/100	40	2.79	1.13	10.48	4.00	3.40	1.09	6.35	7.90	1.36
	8.0	160/100	60	2.79	1.13	10.48	4.00	3.98	1.09	6.35	7.90	1.36
	8.0	200/100	75	2.79	1.13	10.48	4.00	4.43	1.09	6.35	7.90	1.36
	8.0	240/100	75	2.79	1.13	10.48	4.00	4.43	1.09	6.35	7.90	1.36
	8.0	280/100	75	2.79	1.13	10.48	4.00	4.43	1.09	6.35	7.90	1.36
	8.0	320/100	75	2.79	1.13	10.48	4.00	4.43	1.09	6.35	7.90	1.36
	8.0	440*/100	75	2.79	1.13	10.48	4.00	4.43	1.09	6.35	7.90	1.36

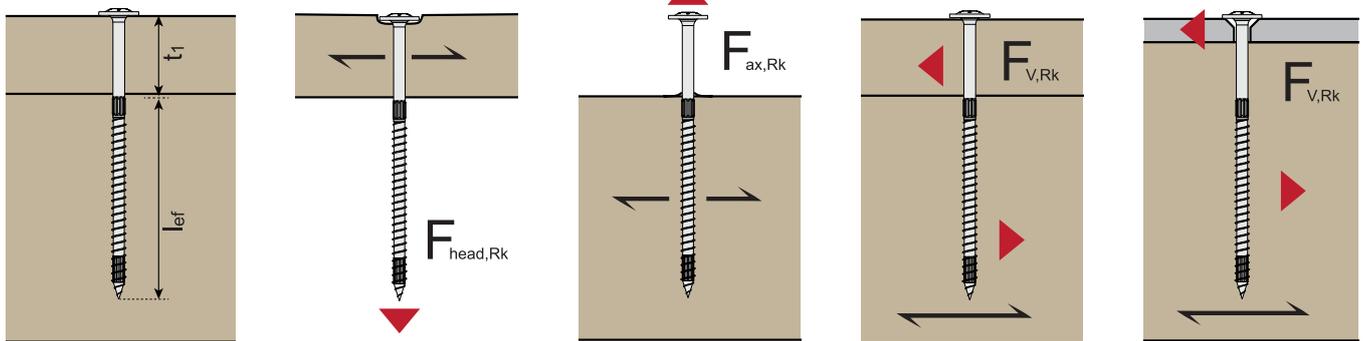
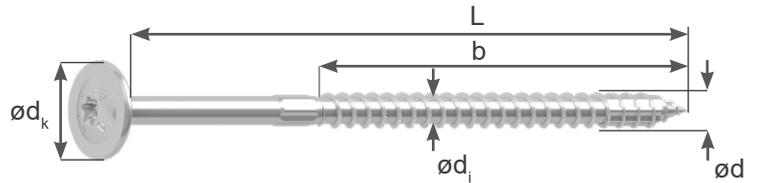
\*available by request



# RAPID<sup>®</sup> Hardwood partial thread washer head

## Characteristics and values

		LVL beech	C 24
<b>d</b>	[mm]	ø 8	ø 8
<b>d<sub>k</sub></b>	[mm]	22.0	22.0
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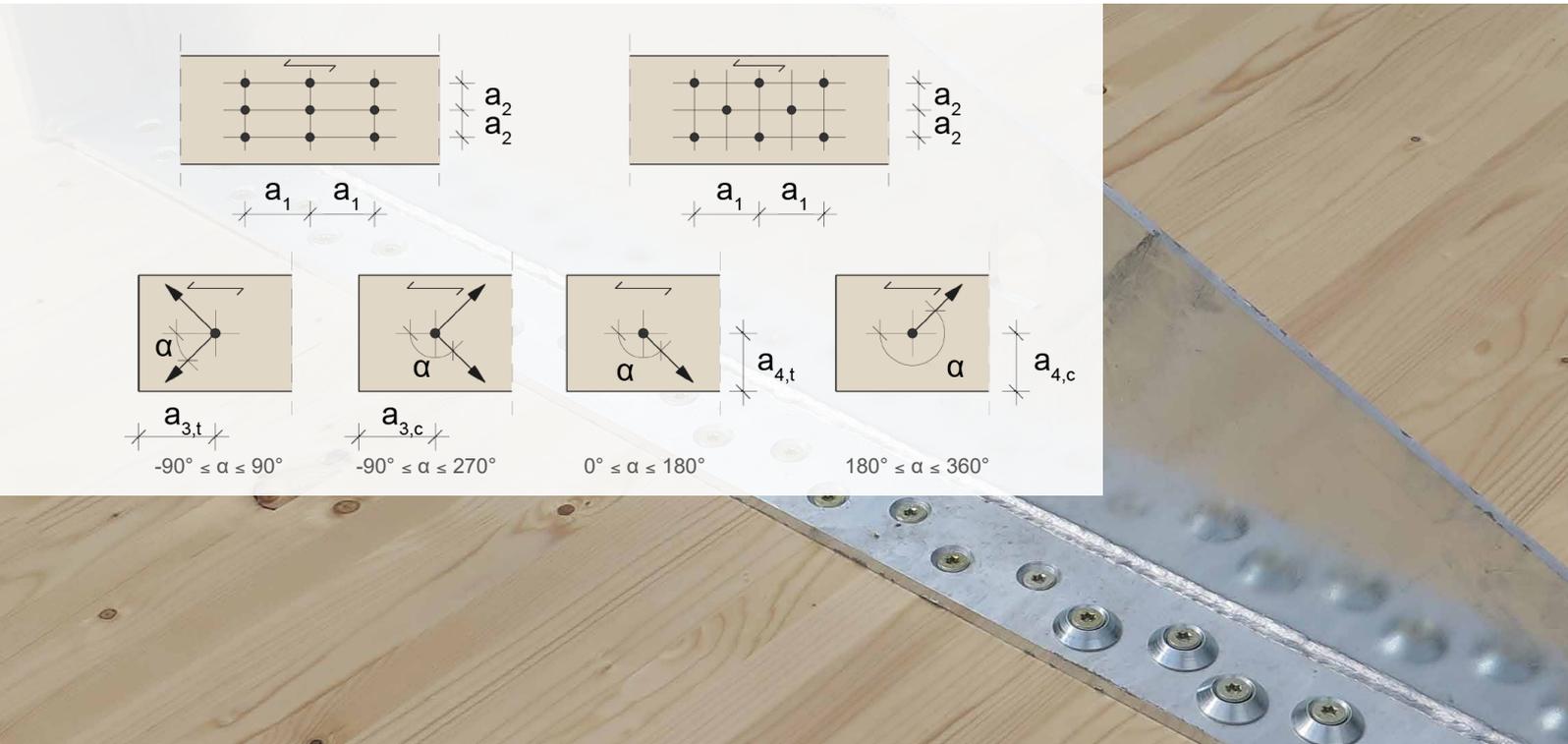


ø	L/b	t <sub>1,min</sub>	AXIAL		SHEAR						
			HEAD PULL THROUGH	WITHDRAWAL	TIMBER-TIMBER	METAL-TIMBER					
[mm]	[mm]	[mm]	F <sub>head,Rk</sub> [kN]	F <sub>head,ASD</sub> [kN]	F <sub>ax,Rk</sub> [kN]	F <sub>ax,ASD</sub> [kN]	F <sub>v,Rk</sub> [kN]	F <sub>v,ASD</sub> [kN]	F <sub>v,Rk,thin</sub> [kN]	F <sub>v,Rk,thick</sub> [kN]	F <sub>v,ASD</sub> [kN]
<b>LVL BEECH</b> ρ <sub>k</sub> =730kg/m <sup>3</sup>											
8.0	160/100	60	29.43	-	32.80	-	10.78	-	10.78	15.25	-
<b>C24</b> ρ <sub>k</sub> =350kg/m <sup>3</sup>											
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<sub>ax,Rk</sub> = thread withdrawal, F<sub>head,Rk</sub> = head pull through, F<sub>v,Rk</sub> = shear (// to grain 0° - ⊥ to grain 90°), wood/steel plate: l<sub>ef</sub> = thread length b, t<sub>1,min</sub> = minimum wood thickness, t<sub>1,max</sub> = maximum wood thickness add-on part (L-b), F<sub>v,Rk,thin</sub> = steel sheet t ≤ d/2, F<sub>v,Rk,thick</sub> = 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.





## 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.
- Permissible values  $F_{ASD}$  load: Design according to DIN 1052:1988 and German licences Z-9.1-564 for RAPID® partial thread, Z-9.1-435 for StarDrive GPR®, Z-9.1-656 for RAPID® full thread, 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