

# SCHEDA TECNICA - TECHNICAL SHEET

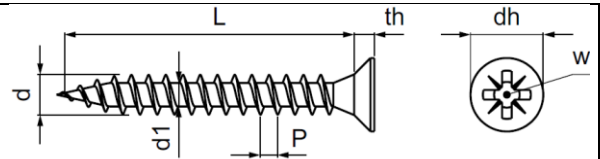
**VBU**

Vite TPS truciolare  
Countersunk head chipboard screw

Rev: 08  
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## GEOMETRIA PRODOTTO - PRODUCT GEOMETRY

VBU cod. 07101b / 07101d / 07101i  
Vite TPS truciolare – interamente filettata  
Countersunk head chipboard screw – fully threaded



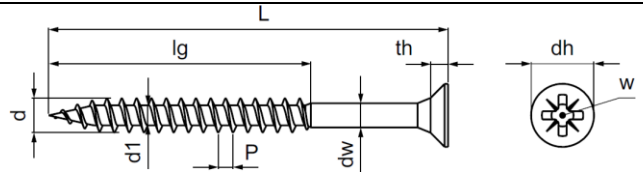
Vite Screw d x L	P [mm]	d1	w	dh [mm]	th [mm]	Cod. Zincato bianco White zinc plated	Cod. Zincato giallo Yellow passivated	Cod. Bronzato Bronzed
2,5x10	1,2	1,5	PZ1	5	1,7	07101b25010	07101d25010	07101i25010
2,5x12						07101b25012	07101d25012	07101i25012
2,5x16						07101b25016	07101d25016	07101i25016
2,5x20						07101b25020	07101d25020	07101i25020
2,5x25						07101b25025	07101d25025	07101i25025
3x10	1,2	1,9	PZ1	5,8	2,0	07101b30010	07101d30010	07101i30010
3x12						07101b30012	07101d30012	07101i30012
3x16						07101b30016	07101d30016	07101i30016
3x18						07101b30018	07101d30018	07101i30018
3x20						07101b30020	07101d30020	07101i30020
3x25						07101b30025	07101d30025	07101i30025
3x30						07101b30030	07101d30030	07101i30030
3x35						07101b30035	07101d30035	07101i30035
3x40						07101b30040	07101d30040	07101i30040
3x45						07101b30045	07101d30045	07101i30045
3,5x12	1,5	2,2	PZ2	6,7	2,5	07101b35012	07101d35012	07101i35012
3,5x16						07101b35016	07101d35016	07101i35016
3,5x18						07101b35018	07101d35018	07101i35018
3,5x20						07101b35020	07101d35020	07101i35020
3,5x25						07101b35025	07101d35025	07101i35025
3,5x30						07101b35030	07101d35030	07101i35030
3,5x35						07101b35035	07101d35035	07101i35035
3,5x40						07101b35040	07101d35040	07101i35040
3,5x45						07101b35045	07101d35045	07101i35045
3,5x50						07101b35050	07101d35050	07101i35050
4x16	1,8	2,5	PZ2	7,7	2,9	07101b40016	07101d40016	07101i40016
4x18						07101b40018	07101d40018	07101i40018
4x20						07101b40020	07101d40020	07101i40020
4x25						07101b40025	07101d40025	07101i40025
4x30						07101b40030	07101d40030	07101i40030
4x35						07101b40035	07101d40035	07101i40035
4x40						07101b40040	07101d40040	07101i40040
4x45						07101b40045	07101d40045	07101i40045
4x50						07101b40050	07101d40050	07101i40050
4x60						07101b40060	07101d40060	07101i40060
4x70	07101b40070	07101d40070	07101i40070					
4,5x20	2,0	2,7	PZ2	8,6	3,4	07101b45020	07101d45020	07101i45020
4,5x25						07101b45025	07101d45025	07101i45025
4,5x30						07101b45030	07101d45030	07101i45030
4,5x35						07101b45035	07101d45035	07101i45035
4,5x40						07101b45040	07101d45040	07101i45040
4,5x45						07101b45045	07101d45045	07101i45045
4,5x50						07101b45050	07101d45050	07101i45050
4,5x60						07101b45060	07101d45060	07101i45060
4,5x70						07101b45070	07101d45070	07101i45070
5x20						2,2	3	PZ2
5x25	07101b50025	07101d50025	07101i50025					
5x30	07101b50030	07101d50030	07101i50030					
5x35	07101b50035	07101d50035	07101i50035					
5x40	07101b50040	07101d50040	07101i50040					
5x45	07101b50045	07101d50045	07101i50045					
5x50	07101b50050	07101d50050	07101i50050					
5x60	07101b50060	07101d50060	07101i50060					
5x70	07101b50070	07101d50070	07101i50070					
6x30	3,1	3,7	PZ3	11,4	3,8			
6x40						07101b60040	07101d60040	07101i60040
6x50						07101b60050	07101d60050	07101i60050
6x60						07101b60060	07101d60060	07101i60060
6x70						07101b60070	07101d60070	07101i60070

# SCHEDA TECNICA - TECHNICAL SHEET

**VBU** Vite TPS truciolare  
Countersunk head chipboard screw

Rev: 08  
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**VBU cod. 07001b / 07001d / 07001i**  
Vite TPS truciolare – parzialmente filettata  
Countersunk head chipboard screw – partially threaded



Vite Screw d x L	lg [mm]	P [mm]	d1 [mm]	dw [mm]	w	dh [mm]	th [mm]	Cod. Zincato bianco White zinc plated	Cod. Zincato giallo Yellow passivated	Cod. Bronzato Bronzed
3,5x30	18	1,5	2,2	2,5	PZ2	6,7	2,5	07001b35030	07001d35030	07001i35030
3,5x35	21							07001b35035	07001d35035	07001i35035
3,5x40	25							07001b35040	07001d35040	07001i35040
3,5x45	28							07001b35045	07001d35045	07001i35045
3,5x50	30							07001b35050	07001d35050	07001i35050
4x30	18	1,8	2,5	2,8	PZ2	7,7	2,9	07001b40030	07001d40030	07001i40030
4x35	21							07001b40035	07001d40035	07001i40035
4x40	25							07001b40040	07001d40040	07001i40040
4x45	28							07001b40045	07001d40045	07001i40045
4x50	30							07001b40050	07001d40050	07001i40050
4x60	35							07001b40060	07001d40060	07001i40060
4x70	45							07001b40070	07001d40070	07001i40070
4x80	48							07001b40080	07001d40080	07001i40080
4,5x35	21	2,0	2,7	3,1	PZ2	8,5	3,4	07001b45035	07001d45035	07001i45035
4,5x40	25							07001b45040	07001d45040	07001i45040
4,5x45	28							07001b45045	07001d45045	07001i45045
4,5x50	30							07001b45050	07001d45050	07001i45050
4,5x60	35							07001b45060	07001d45060	07001i45060
4,5x70	45							07001b45070	07001d45070	07001i45070
4,5x80	48							07001b45080	07001d45080	07001i45080
4,5x100	64							07001b45100	07001d45100	07001i45100
4,5x120	70	07001b45120	07001d45120	07001i45120						
5x40	25	2,2	3	3,5	PZ2	9,5	3,4	07001b50040	07001d50040	07001i50040
5x45	28							07001b50045	07001d50045	07001i50045
5x50	30							07001b50050	07001d50050	07001i50050
5x60	35							07001b50060	07001d50060	07001i50060
5x70	45							07001b50070	07001d50070	07001i50070
5x80	48							07001b50080	07001d50080	07001i50080
5x90	54							07001b50090	07001d50090	07001i50090
5x100	64							07001b50100	07001d50100	07001i50100
5x120	70	07001b50120	07001d50120	07001i50120						
6x50	30	3,1	3,7	4,2	PZ3	11,4	3,8	07001b60050	07001d60050	07001i60050
6x60	35							07001b60060	07001d60060	07001i60060
6x70	45							07001b60070	07001d60070	07001i60070
6x80	48							07001b60080	07001d60080	07001i60080
6x90	54							07001b60090	07001d60090	07001i60090
6x100	64							07001b60100	07001d60100	07001i60100
6x110	70							07001b60110	07101d60110*	07101i60110*
6x120	70							07001b60120	07101d60120*	07101i60120*
6x130	70							07001b60130	07001d60130	07001i60130
6x140	70							07001b60140	07101d60140*	07101i60140*
6x150	70							07001b60150	07001d60150	07001i60150
6x160	70							07001b60160	07101d60160*	07101i60160*
6x180	70							07001b60180	07101d60180*	07101i60180*
6x200	70	07001b60200	07101d60200*	07101i60200*						

\* Attenzione: codici 07101 (non 07001). / Note: codes 07101 (not 07001).

# SCHEDA TECNICA - TECHNICAL SHEET

**VBU** Vite TPS truciolare  
Countersunk head chipboard screw

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## CARATTERISTICHE PRODOTTO - PRODUCT FEATURES

Tipo / Type	Materiale / Material	Rivestimento / Coating
Vite - acciaio Screw - steel	acciaio cementato (cl.9.8~*) cemented steel (gr.9.8~*)	zincatura bianca-gialla $\geq 5\mu\text{m}$ ISO 4042 / white-yellow zinc plated $\geq 5\mu\text{m}$ EN ISO 4042 bronzato / bronzed

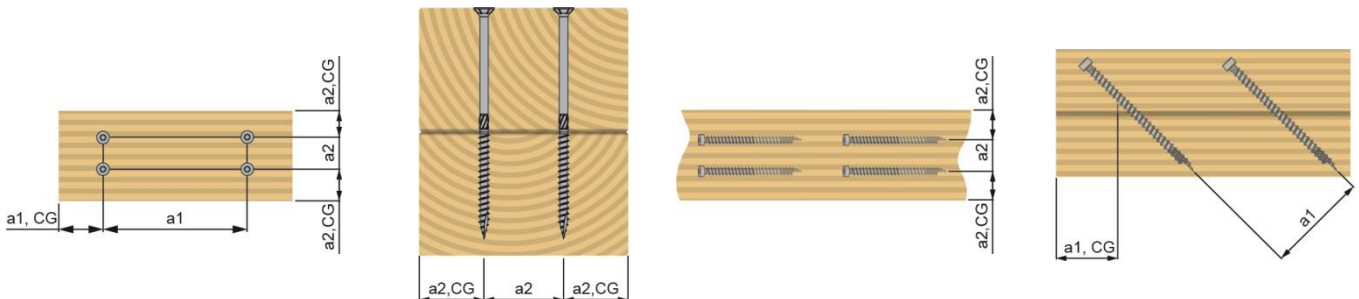
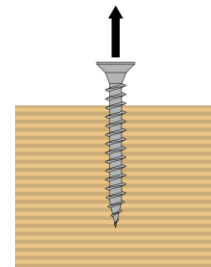
\*Caratteristiche meccaniche secondo tabella sotto / For mechanical characteristics, see table below.

## Prestazioni - Performances EN14592:2008+A1:2012

		d	2,5	3	3,5	4	4,5	5	6
Momento di snervamento caratteristico Characteristic yield moment	$M_{y,k}$ [Nmm]		1044	2195	2918	3506	5215	7111	11585
Resistenza caratteristica a Trazione Characteristic tensile capacity	$f_{\text{tens},k}$ [kN]		2,16	3,83	4,34	5,88	7,19	8,84	13,32
Resistenza caratteristica a Torsione Characteristic strenght in torsion capacity	$f_{\text{tor},k}$ [Nm]		0,66	1,89	2,18	3,09	4,43	6,59	11,81
Parametro caratteristico a estrazione Characteristic withdrawal parameter	$f_{\text{ax},k}$ [N/mm <sup>2</sup> ]		18,27	18,12	17,21	16,90	16,76	15,79	15,01
Densità caratteristica legno associata ad $f_{\text{ax},k}$ Associated wood density for $f_{\text{ax},k}$	$\rho_{a,\text{fax},k}$ [kg/m <sup>3</sup> ]		350						
Parametro caratteristico all'attraversamento della testa Characteristic head pull-through parameter	$f_{\text{head},k}$ [N/mm <sup>2</sup> ]		29,32	28,68	26,74	24,62	23,78	21,72	20,39
Densità caratteristica legno associata ad $f_{\text{head},k}$ Associated wood density for $f_{\text{head},k}$	$\rho_{a,\text{fhead},k}$ [kg/m <sup>3</sup> ]		350						
Durabilità Durability EN1995:2014 [EC5]			Classe di servizio 1 e 2 Corrosion protection class1 and 2						

## DISTANZE MINIME DI INSTALLAZIONE PER VITI SOLLECITATE A TRAZIONE MINIMUM INSTALLATION DISTANCES FOR AXIALLY LOADED SCREWS

d	2,5	3	3,5	4	4,5	5	6
$a_1$ [mm]	21	21	25	28	32	35	42
$a_2$ [mm]	15	15	18	20	23	25	30
$a_{1,\text{CG}}$ [mm]	30	30	35	40	45	50	60
$a_{2,\text{CG}}$ [mm]	12	12	14	16	18	20	24



NOTE: Le distanze minime per le viti caricate a trazione sono determinate secondo EN 1995-1-1 :2014, e sono indipendenti dall'angolo di inserimento della vite rispetto alle fibre.

Minimum distances for axially loaded screws are determined according to EN 1995-1-1 :2014, and they are independent from the angle between the screw and the fibre.

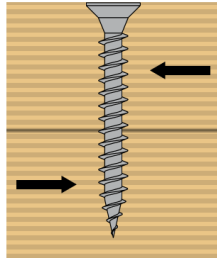
# SCHEDA TECNICA - TECHNICAL SHEET

**VBU**

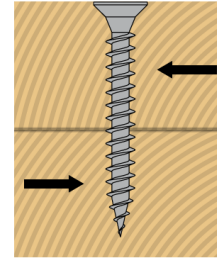
Vite TPS truciolare  
Countersunk head chipboard screw

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## DISTANZE MINIME INSTALLAZIONE PER VITI SOLLECITATE A TAGLIO MINIMUM INSTALLATION DISTANCES FOR LATERALLY LOADED SCREWS



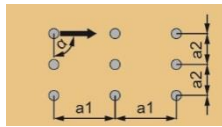
Angolo tra forza e fibre del legno  
Angle between force and the wood fibres  
 $\alpha=0^\circ$



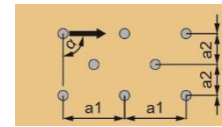
Angolo tra forza e fibre del legno  
Angle between force and the wood fibres  
 $\alpha=90^\circ$

d	Senza preforo Without pilot hole												Con preforo With pilot hole															
	$\alpha=0^\circ$						$\alpha=90^\circ$						$\alpha=0^\circ$						$\alpha=90^\circ$									
	2,5	3	3,5	4	4,5	5	6	2,5	3	3,5	4	4,5	5	6	2,5	3	3,5	4	4,5	5	6	2,5	3	3,5	4	4,5	5	6
$a_1$ [mm]	30	30	35	40	45	60	72	15	15	18	20	23	25	30	15	15	18	20	23	25	30	12	12	14	16	18	20	24
$a_2$ [mm]	15	15	18	20	23	25	30	15	15	18	20	23	25	30	9	9	11	12	14	15	18	12	12	14	16	18	20	24
$d_p$ [mm]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2,5	3	3	4	2	2	2	2,5	3	3	4

$d_p$  = diametro preforo - pilot hole diameter



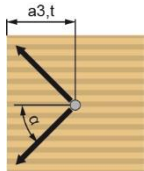
$0^\circ \leq \alpha \leq 90^\circ$



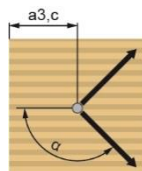
$0^\circ \leq \alpha \leq 90^\circ$

d	Senza preforo Without pilot hole												Con preforo With pilot hole															
	$\alpha=0^\circ$						$\alpha=90^\circ$						$\alpha=0^\circ$						$\alpha=90^\circ$									
	2,5	3	3,5	4	4,5	5	6	2,5	3	3,5	4	4,5	5	6	2,5	3	3,5	4	4,5	5	6	2,5	3	3,5	4	4,5	5	6
$a_{3,t}$ [mm]	45	45	53	60	68	75	90	30	30	35	40	45	50	60	36	36	42	48	54	60	72	21	21	25	28	32	35	42
$a_{3,c}$ [mm]	30	30	35	40	45	50	60	30	30	35	40	45	50	60	21	21	25	28	32	35	42	21	21	25	28	32	35	42
$a_{4,t}$ [mm]	15	15	18	20	23	25	30	21	21	25	28	32	50	60	9	9	11	12	14	15	18	15	15	18	20	23	35	42
$a_{4,c}$ [mm]	15	15	18	20	23	25	30	15	15	18	20	23	25	30	9	9	11	12	14	15	18	9	9	11	12	14	15	18
$d_p$ [mm]	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	2	2	2,5	3	3	4	2	2	2	2,5	3	3	4

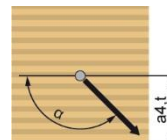
$d_p$  = diametro preforo - pilot hole diameter



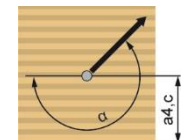
$-90^\circ \leq \alpha \leq 90^\circ$



$90^\circ \leq \alpha \leq 270^\circ$



$0^\circ \leq \alpha \leq 180^\circ$



$180^\circ \leq \alpha \leq 360^\circ$

NOTE: Le distanze minime per viti caricate a taglio sono determinate secondo EN 1995-1-1:2014 con densità caratt. del legno  $\rho_k \leq 420 \text{ kg/m}^3$   
The minimum distances for laterally loaded screws are calculated according to EN 1995-1-1:2014 with wood characteristic density  $\rho_k \leq 420 \text{ kg/m}^3$ .

# SCHEDA TECNICA - TECHNICAL SHEET

**VBU** Vite TPS truciolare  
Countersunk head chipboard screw

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## RESISTENZE CARATTERISTICHE - CHARACTERISTIC RESISTANCES Metodo di calcolo - Design Method EN1995-1-1:2014

Vite TPS truciolare interamente filettata - Chipboard screw fully threaded

Dati di posa - Installation data				TAGLIO - SHEAR	TRAZIONE - TENSILE		
				Legno - Legno Timber - Timber	Estrazione parziale filetto Partial thread pull-out	Estrazione totale filetto Total thread pull-out	Penetrazione testa Head pull-through
d [mm]	L [mm]	l <sub>ef</sub> [mm]	h <sub>w1</sub> [mm]	F <sub>V,Rk</sub> <sup>1)</sup> [kN] $\alpha=0^\circ - 0^\circ / 90^\circ - 90^\circ$	F <sub>ax,Rk</sub> [kN]	F <sub>ax,Rk</sub> [kN]	F <sub>head,Rk</sub> [kN]
2,5	10	5	5	0,25 <sub>a</sub> / 0,18 <sub>a</sub>	0,24	0,40	0,78
	12	6	6	0,30 <sub>a</sub> / 0,22 <sub>a</sub>	0,29	0,50	
	16	8	8	0,35 <sub>d</sub> / 0,29 <sub>a</sub>	0,39	0,70	
	20	10	10	0,40 <sub>d</sub> / 0,34 <sub>d</sub>	0,49	0,89	
	25	15	10	0,46 <sub>d</sub> / 0,37 <sub>a</sub>	0,73	1,14	
3	10	5	5	0,30 <sub>a</sub> / 0,22 <sub>a</sub>	0,29	0,46	1,03
	12	6	6	0,36 <sub>a</sub> / 0,26 <sub>a</sub>	0,35	0,58	
	16	8	8	0,48 <sub>a</sub> / 0,35 <sub>a</sub>	0,46	0,81	
	18	9	9	0,52 <sub>d</sub> / 0,39 <sub>a</sub>	0,52	0,93	
	20	10	10	0,55 <sub>d</sub> / 0,44 <sub>a</sub>	0,58	1,05	
	25	15	10	0,60 <sub>a</sub> / 0,44 <sub>a</sub>	0,87	1,34	
	30	15	15	0,67 <sub>d</sub> / 0,58 <sub>d</sub>	0,87	1,63	
	35	20	15	0,75 <sub>d</sub> / 0,65 <sub>d</sub>	1,16	1,92	
	40	20	20	0,82 <sub>d</sub> / 0,70 <sub>d</sub>	1,16	2,21	
3,5	12	6	6	0,42 <sub>a</sub> / 0,30 <sub>a</sub>	0,39	0,61	1,28
	16	8	8	0,56 <sub>a</sub> / 0,41 <sub>a</sub>	0,51	0,87	
	18	9	9	0,63 <sub>d</sub> / 0,46 <sub>a</sub>	0,58	1,00	
	20	10	10	0,65 <sub>d</sub> / 0,51 <sub>a</sub>	0,64	1,13	
	25	15	10	0,70 <sub>a</sub> / 0,51 <sub>a</sub>	0,96	1,45	
	30	15	15	0,79 <sub>d</sub> / 0,68 <sub>d</sub>	0,96	1,77	
	35	20	15	0,87 <sub>d</sub> / 0,76 <sub>a</sub>	1,29	2,09	
	40	20	20	0,96 <sub>d</sub> / 0,82 <sub>d</sub>	1,29	2,41	
	45	25	20	1,04 <sub>d</sub> / 0,90 <sub>d</sub>	1,61	2,73	
4	16	8	8	0,64 <sub>a</sub> / 0,46 <sub>a</sub>	0,58	0,97	1,56
	18	9	9	0,72 <sub>a</sub> / 0,52 <sub>a</sub>	0,65	1,09	
	20	10	10	0,75 <sub>d</sub> / 0,58 <sub>a</sub>	0,72	1,23	
	25	15	10	0,80 <sub>d</sub> / 0,58 <sub>a</sub>	1,60	1,08	
	30	15	15	0,91 <sub>d</sub> / 0,78 <sub>d</sub>	1,08	1,96	
	35	20	15	1,00 <sub>d</sub> / 0,86 <sub>a</sub>	1,44	2,32	
	40	20	20	1,09 <sub>d</sub> / 0,93 <sub>d</sub>	1,44	2,68	
	45	25	20	1,18 <sub>d</sub> / 1,02 <sub>d</sub>	1,80	3,04	
	50	25	25	1,29 <sub>d</sub> / 1,09 <sub>d</sub>	1,80	3,40	
	60	30	30	1,40 <sub>f</sub> / 1,26 <sub>d</sub>	2,17	4,12	
70	35	35	1,49 <sub>f</sub> / 1,36 <sub>f</sub>	2,53	4,84		

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**VBU** Vite TPS truciolare  
Countersunk head chipboard screw

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1kN  $\cong$  100 kgf

Dati di posa - Installation data				TAGLIO - SHEAR	TRAZIONE - TENSILE		
				Legno - Legno Timber - Timber	Estrazione parziale filetto Partial thread pull-out	Estrazione totale filetto Total thread pull-out	Penetrazione testa Head pull-through
d [mm]	L [mm]	l <sub>ef</sub> [mm]	h <sub>w1</sub> [mm]	F <sub>v,Rk</sub> <sup>1)</sup> [kN] $\alpha=0^\circ - 0^\circ / 90^\circ - 90^\circ$	F <sub>ax,Rk</sub> [kN]	F <sub>ax,Rk</sub> [kN]	F <sub>head,Rk</sub> [kN]
4,5	20	10	10	0,87 <sub>a</sub> / 0,62 <sub>a</sub>	0,81	1,34	1,88
	25	15	10	0,87 <sub>a</sub> / 0,62 <sub>a</sub>	1,21	1,74	
	30	15	15	1,07 <sub>d</sub> / 0,93 <sub>d</sub>	1,21	2,14	
	35	20	15	1,17 <sub>d</sub> / 0,93 <sub>a</sub>	1,61	2,55	
	40	20	20	1,26 <sub>d</sub> / 1,08 <sub>d</sub>	1,61	2,95	
	45	25	20	1,36 <sub>d</sub> / 1,18 <sub>d</sub>	2,01	3,35	
	50	25	25	1,47 <sub>d</sub> / 1,25 <sub>d</sub>	2,01	3,75	
	60	30	30	1,69 <sub>d</sub> / 1,43 <sub>d</sub>	2,42	4,56	
5	20	10	10	0,96 <sub>a</sub> / 0,69 <sub>a</sub>	0,84	1,40	2,18
	25	15	10	0,96 <sub>a</sub> / 0,69 <sub>a</sub>	1,26	1,82	
	30	15	15	1,23 <sub>d</sub> / 1,03 <sub>a</sub>	1,26	2,24	
	35	20	15	1,34 <sub>a</sub> / 1,03 <sub>a</sub>	1,69	2,66	
	40	20	20	1,43 <sub>d</sub> / 1,22 <sub>d</sub>	1,69	3,09	
	45	25	20	1,53 <sub>d</sub> / 1,33 <sub>d</sub>	2,11	3,51	
	50	25	25	1,65 <sub>d</sub> / 1,40 <sub>d</sub>	2,11	3,93	
	60	30	30	1,88 <sub>d</sub> / 1,59 <sub>d</sub>	2,53	4,77	
6	30	15	15	1,63 <sub>d</sub> / 1,26 <sub>a</sub>	1,44	2,52	2,83
	40	20	20	1,84 <sub>d</sub> / 1,57 <sub>d</sub>	1,92	3,48	
	50	25	25	2,08 <sub>d</sub> / 1,76 <sub>d</sub>	2,40	4,44	
	60	30	30	2,34 <sub>d</sub> / 1,97 <sub>d</sub>	2,89	5,41	
	70	35	35	2,62 <sub>d</sub> / 2,19 <sub>d</sub>	3,37	6,37	

1kN  $\cong$  100 kgf

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## Vite TPS truciolare parzialmente filettata - Chipboard screw partially threaded

Dati di posa - Installation data				TAGLIO - SHEAR		TRAZIONE - TENSILE		
				Legno - Legno Timber - Timber	Acciaio - Legno Steel - Timber	Estrazione filetto Thread pull-out	Penetrazione testa / estrazione filetto Head pull-through / pull-out	
d [mm]	L [mm]	l <sub>ef</sub> = l <sub>g</sub> [mm]	h <sub>w1</sub> [mm]	F <sub>V,Rk</sub> <sup>(1)</sup> [kN]	F <sub>V,Rk</sub> <sup>(2)</sup> [kN]		F <sub>ax,Rk</sub> [kN]	F <sub>head,Rk</sub> [kN]
				α=0° - 0° / 90° - 90°	ts	α=0° / 90°		
3,5	30	18	12	0,80 <sub>d</sub> / 0,61 <sub>a</sub>	2 [mm]	0,89 <sub>b</sub> / 0,78 <sub>b</sub>	1,16	1,28
	35	21	14	0,86 <sub>d</sub> / 0,71 <sub>a</sub>			1,35	
	40	25	15	0,87 <sub>d</sub> / 0,76 <sub>a</sub>			1,61	
	45	28	17	0,90 <sub>d</sub> / 0,78 <sub>d</sub>			1,80	
	50	30	20	0,96 <sub>d</sub> / 0,82 <sub>d</sub>			1,93	
4	30	18	12	0,92 <sub>d</sub> / 0,69 <sub>a</sub>	2 [mm]	1,05 <sub>b</sub> / 0,92 <sub>b</sub>	1,30	1,56
	35	21	14	1,00 <sub>d</sub> / 0,81 <sub>a</sub>			1,52	
	40	25	15	1,03 <sub>d</sub> / 0,86 <sub>a</sub>			1,80	
	45	28	17	1,06 <sub>d</sub> / 0,92 <sub>d</sub>			2,02	
	50	30	20	1,12 <sub>d</sub> / 0,96 <sub>d</sub>			2,17	
	60	35	25	1,23 <sub>d</sub> / 1,03 <sub>d</sub>			2,53	
	70	45	25	1,25 <sub>f</sub> / 1,12 <sub>f</sub>			3,25	
4,5	35	21	14	1,17 <sub>d</sub> / 0,87 <sub>a</sub>	2,5 [mm]	1,32 <sub>b</sub> / 1,16 <sub>b</sub>	1,69	1,88
	40	25	15	1,24 <sub>d</sub> / 0,93 <sub>a</sub>			2,01	
	45	28	17	1,27 <sub>d</sub> / 1,06 <sub>a</sub>			2,26	
	50	30	20	1,32 <sub>d</sub> / 1,15 <sub>d</sub>			2,42	
	60	35	25	1,43 <sub>d</sub> / 1,21 <sub>d</sub>			2,82	
	70	45	25	1,56 <sub>f</sub> / 1,33 <sub>d</sub>			3,62	
	80	48	32	1,56 <sub>f</sub> / 1,40 <sub>f</sub>			3,87	
	100	64	36	1,56 <sub>f</sub> / 1,40 <sub>f</sub>			5,16	
5	40	25	15	1,44 <sub>a</sub> / 1,03 <sub>a</sub>	2,5 [mm]	1,64 <sub>b</sub> / 1,43 <sub>b</sub>	2,11	2,18
	45	28	17	1,50 <sub>d</sub> / 1,17 <sub>a</sub>			2,36	
	50	30	20	1,55 <sub>d</sub> / 1,35 <sub>d</sub>			2,53	
	60	35	25	1,66 <sub>d</sub> / 1,42 <sub>d</sub>			2,95	
	70	45	25	1,66 <sub>d</sub> / 1,42 <sub>d</sub>			3,79	
	80	48	32	1,85 <sub>d</sub> / 1,53 <sub>d</sub>			4,05	
	90	54	36	1,89 <sub>f</sub> / 1,61 <sub>d</sub>			4,55	
	100	64	36	1,89 <sub>f</sub> / 1,61 <sub>d</sub>			5,40	
120	70	50	1,89 <sub>f</sub> / 1,68 <sub>f</sub>	5,90				

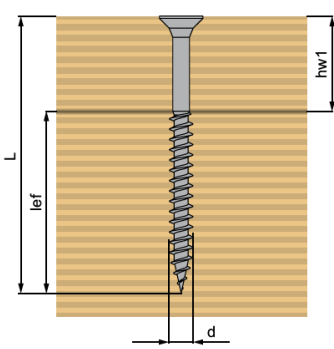
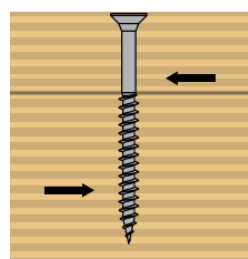
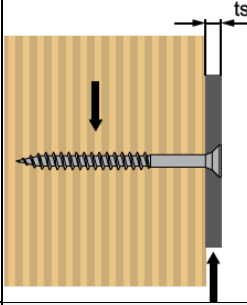
1kN ≅ 100 kgf

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Dati di posa - Installation data				TAGLIO - SHEAR		TRAZIONE - TENSILE	
				Legno - Legno Timber - Timber		Acciaio - Legno Steel - Timber	
							
d [mm]	L [mm]	l <sub>ef</sub> = l <sub>g</sub> [mm]	h <sub>w1</sub> [mm]	F <sub>V,Rk</sub> <sup>(1)</sup> [kN] α=0° - 0° / 90° - 90°	F <sub>V,Rk</sub> <sup>(2)</sup> [kN] ts α=0° / 90°	F <sub>ax,Rk</sub> [kN]	F <sub>head,Rk</sub> [kN]
6	50	30	20	2,06d / 1,68a	3 [mm]	2,89	2,83
	60	35	25	2,18d / 1,87d		3,37	2,83
	70	45	25	2,18d / 1,87d		4,33	2,83
	80	48	32	2,39d / 2,00d		4,62	2,83
	90	54	36	2,52d / 2,08d		5,19	2,83
	100	64	36	2,52d / 2,08d		6,16	2,83
	110	70	40	2,61f / 2,17d		6,73	2,83
	120	70	50	2,61f / 2,31f		6,73	2,83
	130	70	60	2,61f / 2,31f		6,73	2,83
	140	70	70	2,61f / 2,31f		6,73	2,83
	150	70	80	2,61f / 2,31f		6,73	2,83
	160	70	90	2,61f / 2,31f		6,73	2,83
	180	70	110	2,61f / 2,31f		6,73	2,83
200	70	130	2,61f / 2,31f	2,33b / 2,03b	6,73	2,83	

1kN ≅ 100 kgf

<sup>1)</sup> La lettera pedice dopo il valore numerico indica il modo di rottura con riferimento al §8.2.2 della norma EN1995:2014;  
The subscript letter after the numerical value indicates the breaking mode with reference to §8.2.2 of the EN1995: 2014 standard;

<sup>2)</sup> La lettera pedice dopo il valore numerico indica il modo di rottura con riferimento al §8.2.3 della norma EN1995:2014.  
The subscript letter after the numerical value indicates the breaking mode with reference to §8.2.3 of the EN1995: 2014 standard.

Valori di resistenza caratteristica calcolati in base ai requisiti certificati EN14592, nelle seguenti condizioni:

- progettazione e metodo di calcolo norma EN1995-1-1:2014 [Eurocodice 5];
- densità del legno ρ<sub>k</sub> = 380 kg/m<sup>3</sup>, esempio legno massiccio C30 norma EN338:2016 o Lamellare GL24h÷GL28c norma EN14080:2013 <sup>(1)</sup>;
- vite installata a 90° rispetto la direzione delle fibre del legno;
- vite installata senza preforo
- filetto totalmente inserito nel legno

The characteristic resistance values have been calculated based on EN14592 certified requirements, with the following conditions:

- design method according to EN1995-1-1:2014 [Eurocode 5];
- ρ<sub>k</sub> = 380 kg/m<sup>3</sup> timber density, solid timber quality C30 EN338:2016 std or GL24h÷GL28c glued laminated timber EN14080:2013 <sup>(1)</sup> standard;
- screw installed at 90° to the direction of the wood fibres;
- application without pilot hole;
- thread completely inserted into the timber.

<sup>(1)</sup> Per connessioni in supporti X-LAM i valori di resistenza caratteristica possono differire in base alla conformazione del pannello, su richiesta si possono effettuare test in situ contattando la nostra Area Commerciale. - For connections in X-LAM timbers the reference values can vary according to the shape of the panel, on-site tests can be performed on request by contacting our Sales Area.



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## RESISTENZE di PROGETTO - DESIGN LOADS

Le resistenze di progetto si calcolano mediante i coefficienti parziali di sicurezza  $\gamma$  (ed il fattore  $k_{mod}$ ) definiti dagli Eurocodici pertinenti o dalle normative nazionali-locali in vigore.

Il dimensionamento e la progettazione degli elementi lignei devono essere svolti a parte.

Il valore di progetto finale dell'intera connessione sarà il valore minore tra quelli calcolati come segue relativamente ai diversi componenti del sistema di fissaggio.

The design loads are calculated using the partial safety factors  $\gamma$  (and the factor  $k_{mod}$ ) as reported on the relevant Eurocodes or on the national design codes in use.

The designing of the Timber elements must be carried out separately.

The final design load will be the minimum value among those calculated as follows with respect to the different components of the fixing system.

### Taglio - Shear

$$F_{V,Rd} = \frac{F_{V,Rk}}{\gamma_{M(T)}} \cdot k_{mod}$$

### Trazione - Tensile

$$F_{ax,Rd} = \min \left\{ \begin{array}{l} \frac{F_{ax,Rk}}{\gamma_{M(T)}} \cdot k_{mod} \\ \frac{F_{head,Rk}}{\gamma_{M(T)}} \cdot k_{mod} \\ \frac{f_{tens,k}}{\gamma_{M2}} \end{array} \right.$$

## CODICI DI RIFERIMENTO PER LA PROGETTAZIONE DELLA CONNESSIONE DESIGN METHOD CODES FOR CONNECTION

Progettazione - Design Method	LEGNO - TIMBER		ACCIAIO - STEEL
STATICA - STATIC	EN1995-1-1	[NTC]	EN1993-1-1 [NTC]
Coefficiente parziale di sicurezza Partial safety factor	$\gamma_{M(T)} = 1,3$	$\gamma_{M(T)} = 1,5$	$\gamma_{M2} = 1,25$
Coefficiente di correzione Modification factor	$k_{mod} = 0,7$ <sup>1)</sup>		-
SISMICA - SEISMIC	EN1998-1-1 [NTC]		EN1998-1-1 [NTC]

<sup>1)</sup> Valore riferito ad azione di lunga durata e classe di servizio 1-2, per altri casi vedi norme EN1995-1-1 e [NTC] = Norme Tecniche Costruzioni.  
Value refers to Long term action and Service class 1-2, for other cases see EN1995-1-1.

## RESISTENZE AMMISSIBILI - RECOMMENDED LOADS

Tratto dal documento Norme Italiane per la progettazione, esecuzione e collaudo delle costruzioni in legno NICOLE.  
Taken from the Italian Standards document for the design, execution and testing of NICOLE timber constructions.

I valori di resistenza ammissibili del singolo connettore possono essere calcolati nel seguente modo:  
Recommended loads of singular connector can be calculated as follows:

### Taglio - Shear

$$F_{V,amm} = \frac{F_{V,Rk}}{\gamma_{M(T)} \cdot \gamma_Q} \cdot k_{mod}$$

con - with  $\gamma_Q = 1,5$

### Trazione - Tensile

$$F_{ax,amm} = \min \left\{ \begin{array}{l} \frac{F_{ax,Rk}}{\gamma_{M(T)} \cdot \gamma_Q} \cdot k_{mod} \\ \frac{F_{head,Rk}}{\gamma_{M(T)} \cdot \gamma_Q} \cdot k_{mod} \\ \frac{f_{tens,k}}{\gamma_{M2} \cdot \gamma_Q} \end{array} \right.$$

I valori di carico riportati hanno valore solo se l'installazione è stata eseguita correttamente. Il progettista è responsabile del dimensionamento e del numero dei fissaggi. The load values are only valid if the installation has been carried out correctly. The design engineer is responsible for the designing and calculation of the fixing.

Acquistando il prodotto, l'utilizzatore è tenuto ad osservare scrupolosamente le istruzioni riportate sul packaging e sulla documentazione relativa al prodotto disponibile sul sito internet [www.friulsider.com/download.html](http://www.friulsider.com/download.html). Friulsider S.p.A. non risponderà ad alcun titolo di danni a persone o cose che dovessero essere conseguenza di una conservazione od uso diversi da quelli descritti.

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