

# LOAD CAPACITY

Wood screw -W (WAF) 6.0 - 10.0 mm. CorrSeal

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## Conditions for tabulated load capacity

The tabulated values are calculated in accordance with Eurocode 5 (EN 1995-1-1:2004 incl. AC:2006, A1:2008 and A2:2014). The calculation assumes that the entire threaded part B is screwed into the underlying timber part and that it has at minimum the same thickness, i.e.  $t_2 \geq B$ . Furthermore it is assumed the two timber parts are made of the same timber quality class (e.g. C24). If the screw is subjected to both axial and shear load the total load capacity must be verified. The tabulated loads are for one screw, if more screws are used a reduction may be needed depending on spacing. The final design should consider edge and spacing distances.

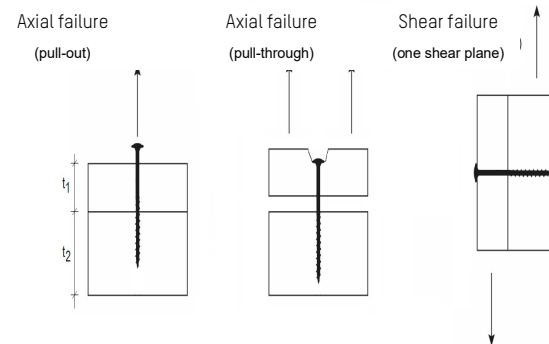
## Recommended load

The recommended load given in unit [kg] can be applied directly since all safety factors have been considered incl. a factor on the applied load ( $\gamma = 1.4$ ). It is calculated for a permanent load and service class 3 (acc. to Eurocode 5).

## Characteristic resistance

The characteristic resistance given in unit [kN] is intended for an engineer that wants to do a detailed analysis of the timber connection using the appropriate partial coefficients for design resistance based on load duration and service class in accordance with Eurocode 5 eq. (2.17):

$$R_d = k_{mod} \frac{R_k}{\gamma_M}$$



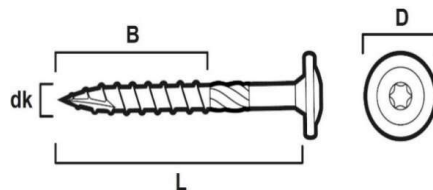
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*All advice given by ESSVE should only be seen as guidance and does not mean that ESSVE can be held responsible for the advice provided. It is always the customer's own responsibility to decide on the choice of product, usage, application, etc. The supplier's advice is only a part of the customer's basis for decision making.*

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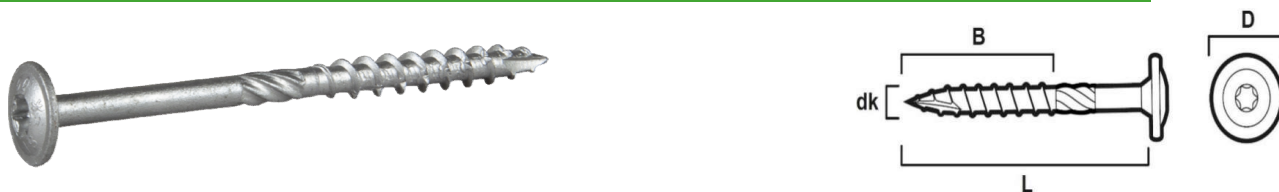
Intended for craftsmen

Art. No.	CE-marking EN 14592	Dimension dk × L [mm]	Thread length B [mm]	Inner thread diameter d <sub>1</sub> [mm]	Head diameter D [mm]	Timber tickness at screw head t <sub>1</sub> [mm]	Timber tickness at screw tip t <sub>2</sub> [mm]	Axial direction (pull-out/-through)		Shear direction (one shear plane)	
								F <sub>ax,rec</sub> [kg]		F <sub>v,rec</sub> [kg]	
								C14	C24	C14	C24
113 103	✓	6.0 × 50	40	3,9	15,3	10	40	50	60	15	20
113 105	✓	6.0 × 60	40	3,9	15,3	20	40	50	60	35	40
113 107	✓	6.0 × 70	40	3,9	15,3	30	40	50	60	40	45
113 109	✓	6.0 × 80	40	3,9	15,3	40	40	50	60	40	50
113 111	✓	6.0 × 90	50	3,9	15,3	40	50	65	75	45	55
113 113	✓	6.0 × 100	50	3,9	15,3	50	50	65	75	50	55
113 115	✓	6.0 × 120	75	3,9	15,3	45	75	80	95	55	60
113 117	✓	6.0 × 140	75	3,9	15,3	65	75	80	95	55	60
113 119	✓	6.0 × 160	75	3,9	15,3	85	75	80	95	55	60
113 121	✓	6.0 × 180	75	3,9	15,3	105	75	80	95	55	60
113 123	✓	6.0 × 200	75	3,9	15,3	125	75	80	95	55	60
113 127	✓	6.0 × 220	75	3,9	15,3	145	75	80	95	55	60

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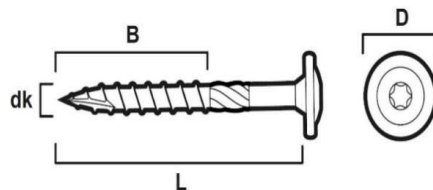
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								F <sub>ax,rec</sub> [kg]		F <sub>v,rec</sub> [kg]	
								C14	C24	C14	C24
113 131	✓	8.0 × 50	45	5,3	22,0	5	45	90	105	10	10
113 133	✓	8.0 × 60	50	5,3	22,0	10	50	100	115	20	25
113 135	✓	8.0 × 70	50	5,3	22,0	20	50	100	115	45	55
113 137	✓	8.0 × 80	50	5,3	22,0	30	50	100	115	65	75
113 139	✓	8.0 × 90	50	5,3	22,0	40	50	100	115	65	80
113 141	✓	8.0 × 100	50	5,3	22,0	50	50	100	115	70	85
113 143	✓	8.0 × 120	80	5,3	22,0	40	80	125	145	75	85
113 147	✓	8.0 × 140	80	5,3	22,0	60	80	125	145	85	100
113 151	✓	8.0 × 160	80	5,3	22,0	80	80	125	145	90	100
113 152	✓	8.0 × 180	80	5,3	22,0	100	80	125	145	90	100
113 153	✓	8.0 × 200	100	5,3	22,0	100	100	125	145	90	100
113 154	✓	8.0 × 220	100	5,3	22,0	120	100	125	145	90	100
113 155	✓	8.0 × 240	100	5,3	22,0	140	100	125	145	90	100
113 097	✓	8.0 × 280	100	5,3	22,0	180	100	125	145	90	100
113 157	✓	8.0 × 300	100	5,3	22,0	200	100	125	145	90	100
113 099	✓	8.0 × 320	100	5,3	22,0	220	100	125	145	90	100

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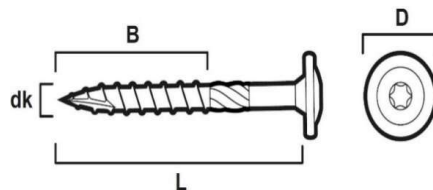
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								F <sub>ax,rec</sub> [kg]		F <sub>v,rec</sub> [kg]	
								C14	C24	C14	C24
113 161	✓	10.0 × 50	45	6,4	25,0	5	45	95	110	10	15
113 163	✓	10.0 × 60	55	6,4	25,0	5	55	120	140	10	15
113 165	✓	10.0 × 70	60	6,4	25,0	10	60	130	150	25	35
113 166	✓	10.0 × 80	60	6,4	25,0	20	60	130	150	55	70
113 167	✓	10.0 × 100	60	6,4	25,0	40	60	130	150	100	115
113 169	✓	10.0 × 120	80	6,4	25,0	40	80	175	200	110	125
113 171	✓	10.0 × 140	80	6,4	25,0	60	80	175	200	125	145
113 173	✓	10.0 × 160	80	6,4	25,0	80	80	175	200	135	150
113 175	✓	10.0 × 180	80	6,4	25,0	100	80	175	200	135	150
113 177	✓	10.0 × 200	100	6,4	25,0	100	100	205	235	145	160
113 179	✓	10.0 × 220	100	6,4	25,0	120	100	205	235	145	160
113 181	✓	10.0 × 240	100	6,4	25,0	140	100	205	235	145	160

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## Characteristic resistance

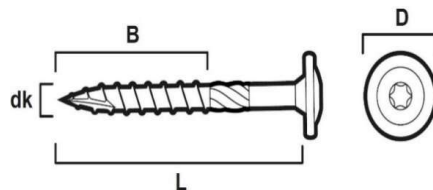
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								C14	C24	C14	C24
113 103	✓	6.0 × 50	40	3,9	14,5	10	40	1,9	2,2	0,7	0,8
113 105	✓	6.0 × 60	40	3,9	14,5	20	40	1,9	2,2	1,3	1,5
113 107	✓	6.0 × 70	40	3,9	14,5	30	40	1,9	2,2	1,4	1,7
113 109	✓	6.0 × 80	50	3,9	14,5	40	40	1,9	2,2	1,6	1,9
113 111	✓	6.0 × 90	50	3,9	14,5	40	50	2,4	2,8	1,8	2,0
113 113	✓	6.0 × 100	75	3,9	14,5	50	50	2,4	2,8	1,9	2,1
113 115	✓	6.0 × 120	75	3,9	14,5	45	75	3,0	3,5	2,0	2,3
113 117	✓	6.0 × 140	75	3,9	14,5	65	75	3,0	3,5	2,1	2,3
113 119	✓	6.0 × 160	75	3,9	14,5	85	75	3,0	3,5	2,1	2,3
113 121	✓	6.0 × 180	75	3,9	14,5	105	75	3,0	3,5	2,1	2,3
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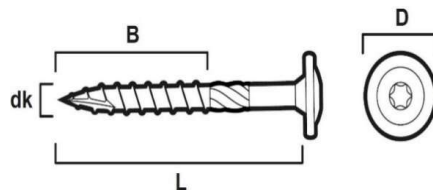
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113 133	✓	8.0 × 60	50	5,3	22,0	10	50	3,6	4,2	0,8	1,0
113 135	✓	8.0 × 70	50	5,3	22,0	20	50	3,6	4,2	1,6	2,0
113 137	✓	8.0 × 80	50	5,3	22,0	30	50	3,6	4,2	2,3	2,8
113 139	✓	8.0 × 90	50	5,3	22,0	40	50	3,6	4,2	2,5	2,9
113 141	✓	8.0 × 100	50	5,3	22,0	50	50	3,6	4,2	2,6	3,1
113 143	✓	8.0 × 120	80	5,3	22,0	40	80	4,5	5,2	2,8	3,2
113 147	✓	8.0 × 140	80	5,3	22,0	60	80	4,5	5,2	3,2	3,7
113 151	✓	8.0 × 160	80	5,3	22,0	80	80	4,5	5,2	3,3	3,7
113 152	✓	8.0 × 180	80	5,3	22,0	100	80	4,5	5,2	3,3	3,7
113 153	✓	8.0 × 200	100	5,3	22,0	100	100	4,5	5,2	3,3	3,7
113 154	✓	8.0 × 220	100	5,3	22,0	120	100	4,5	5,2	3,3	3,7
113 155	✓	8.0 × 240	100	5,3	22,0	140	100	4,5	5,2	3,3	3,7
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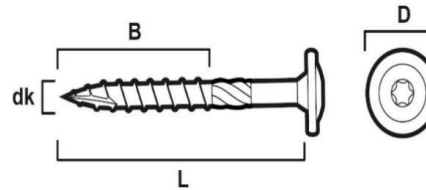
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113 163	✓	10.0 × 60	55	6,4	25,0	5	55	4,3	5,0	0,5	0,6
113 165	✓	10.0 × 70	60	6,4	25,0	10	60	4,7	5,5	1,1	1,3
113 166	✓	10.0 × 80	60	6,4	25,0	20	60	4,7	5,5	2,1	2,6
113 167	✓	10.0 × 100	60	6,4	25,0	40	60	4,7	5,5	3,6	4,1
113 169	✓	10.0 × 120	80	6,4	25,0	40	80	6,3	7,3	4,0	4,6
113 171	✓	10.0 × 140	80	6,4	25,0	60	80	6,3	7,3	4,5	5,3
113 173	✓	10.0 × 160	80	6,4	25,0	80	80	6,3	7,3	4,9	5,5
113 175	✓	10.0 × 180	80	6,4	25,0	100	80	6,3	7,3	4,9	5,5
113 177	✓	10.0 × 200	100	6,4	25,0	100	100	7,4	8,6	5,2	5,8
113 179	✓	10.0 × 220	100	6,4	25,0	120	100	7,4	8,6	5,2	5,8
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## Conversion factors for load-duration and service classes

The conversion factors can be used to re-calculated the recommended load in the tables for other load-durations and service classes. The conversion factors are based on the factor  $k_{mod}$  in Eurocode 5.

Load-duration classes can differ between different countries due to climate-based loads (snow, wind).

## Conversion factors from permanent load duration in service class 3

Load-duration	Examples of loading	Service class 1	Service class 3
Permanent	Self-weight	1.20	1.00
Long-term	Storage	1.40	1.10
Medium-term	Imposed floor load, snow	1.60	1.30
Short-term	Snow, wind	1.80	1.40
Instantaneous	Wind, accidental load	2.20	1.80

## Corrosion protection

Rules and best practice for corrosion protection may differ among European countries. The end-user should ensure that the corrosion protection is suitable for the current application.

## Conversion to different timber quality

Re-calculation of load capacity in the axial direction for a different timber quality (characteristic density) is possible according to the formula below:

$$F_{ax(\rho_{k,1})} \times \left( \frac{\rho_{k,2}}{\rho_{k,1}} \right)^{0,8} = F_{ax(\rho_{k,2})}$$

If for example the load capacity in axial direction is 60 kg in C14-timber the load capacity in C35-timber is increased

$$60kg \times \left( \frac{400}{290} \right)^{0,8} = 75kg$$

Material	Density
	$\rho_k$ [kg/m <sup>3</sup> ]
C14	290
C18	320
C24	350
C30	380
C35	400
C40	420

Re-calculation for load capacity in the shear direction in the same way is however not possible. For guidance please contact ESSVE technical support.