K

Hex head wood screw

Diameters: ⌀6 mm | ⌀8 mm | ⌀10 mm | ⌀12 mm
Length range: from 60 to 260 mm

Screw for fastening of wooden, steel and PVC elements to timber

HEX HEAD

Zn
WHITE

CE
PN-EN 14592:2008
+A1:2012

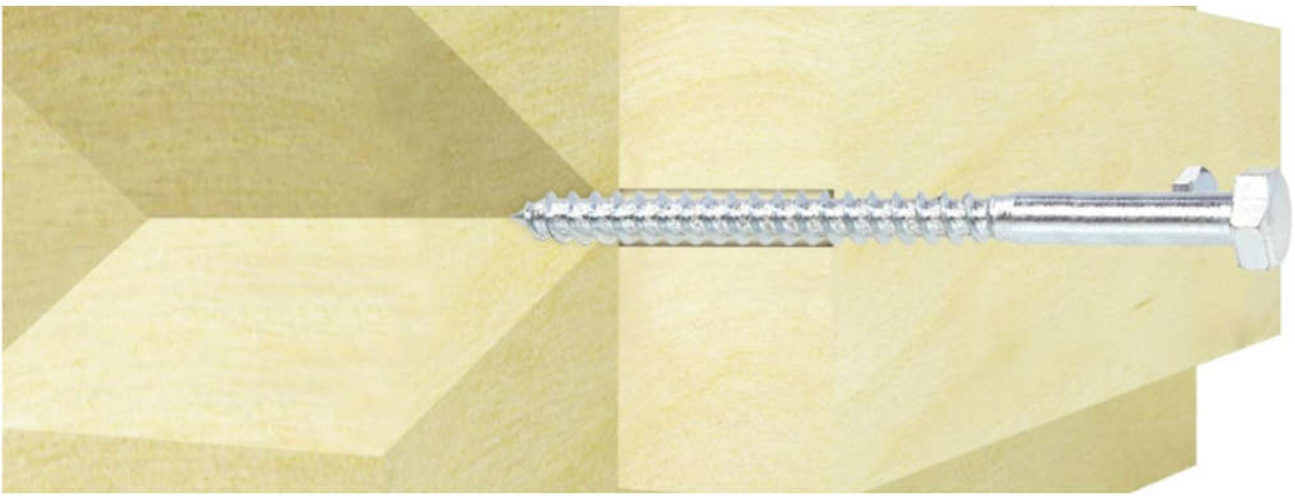
SCREW MATERIAL - Carbon steel
ANTI-CORROSION PROTECTION - Galvanized steel (white or yellow)

PRODUCT ADVANTAGES:

HEX HEAD - Hex head improves pull-through resistance of joint and allows steel-wood applications.

PARTIAL THREAD - Partial thread prevents splitting of elements being installed and guarantees their tight fastening.

EXAMPLES OF APPLICATIONS:



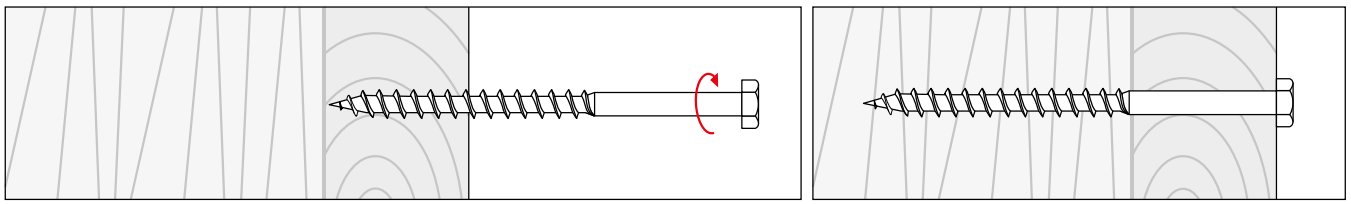
SUBSTRATES

Solid timber

Glued laminated timber
CLT, KVH, BSH/GLT

Laminated Veneer Lumber - LVL

INSTALLATION INSTRUCTIONS



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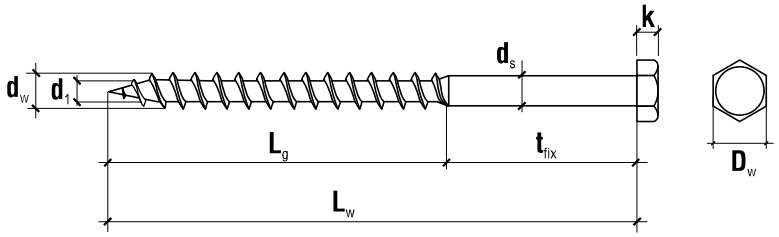


Codes and dimensions						
	Product code	Dimensions	Thread length	Max. usable length	Head type	Quantity
	Galvanized - white	d_w x L_w [mm]	L_g [mm]	t_{fix} [mm]	[-]	[kg]
			K-6			
ø6	K-06060(X5)	6x60	36	24	SW 10	5
	K-06070(X5)	6x70	42	28	SW 10	5
	K-06080(X5)	6x80	48	32	SW 10	5
	K-06090(X5)	6x90	54	36	SW 10	5
	K-06100(X5)	6x100	60	40	SW 10	5
	K-06120(X5)	6x120	72	48	SW 10	5
	K-06140(X5)	6x140	84	56	SW 10	5
			K-8			
ø8	K-08060(X5)	8x60	36	24	SW 13	5
	K-08070(X5)	8x70	42	28	SW 13	5
	K-08080(X5)	8x80	48	32	SW 13	5
	K-08090(X5)	8x90	54	36	SW 13	5
	K-08100(X5)	8x100	60	40	SW 13	5
	K-08120(X5)	8x120	72	48	SW 13	5
	K-08140(X5)	8x140	84	56	SW 13	5
	K-08160(X5)	8x160	96	64	SW 13	5
	K-08180(X5)	8x180	108	72	SW 13	5
	K-08200(X5)	8x200	120	80	SW 13	5
			K-10			
ø10	K-10080(X5)	10x80	48	32	SW 17	5
	K-10100(X5)	10x100	60	40	SW 17	5
	K-10120(X5)	10x120	72	48	SW 17	5
	K-10140(X5)	10x140	84	56	SW 17	5
	K-10160(X5)	10x160	96	64	SW 17	5
	K-10180(X5)	10x180	108	72	SW 17	5
	K-10200(X5)	10x200	120	80	SW 17	5
			K-12			
ø12	K-12120(X5)	12x120	72	48	SW 19	5
	K-12140(X5)	12x140	84	56	SW 19	5
	K-12160(X5)	12x160	96	64	SW 19	5
	K-12180(X5)	12x180	108	72	SW 19	5
	K-12200(X5)	12x200	120	80	SW 19	5
	K-12220(X5)	12x220	132	88	SW 19	5
	K-12240(X5)	12x240	144	96	SW 19	5
	K-12260(X5)	12x260	156	104	SW 19	5

Geometry						
Product	Outer thread diameter	Inner thread diameter	Unthreaded part diameter	Head diameter	Head thickness	Length range
	d_w [mm]	d_1 [mm]	d_S [mm]	D_w [mm]	k [mm]	L_w [mm]
K ø6	6	4,20	5,40	10	4,00	60-140
K ø8	8	5,60	7,30	13	5,50	60-200
K ø10	10	7,20	9,50	17	7,00	80-200
K ø12	12	9,20	11,50	19	8,00	120-260

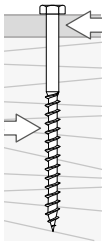
Mechanical characteristics					
Product	Characteristic yield moment	Characteristic withdrawal resistance parameter	Characteristic head-pull-through resistance parameter	Characteristic tensile strength	Characteristic torsional strength
	$M_{y,k}$ [N*m]	$f_{ax,k}$ [N/mm^2]	$f_{head,k}$ [N/mm^2]	$f_{tens,k}$ [kN]	$f_{tor,k}$ [N*m]
K ø6	11,9	21,9	22,7	9,2	7,7
K ø8	25,0	21,0	20,9	13,5	11,4
K ø10	44,7	18,3	21,8	20,7	16,4
K ø12	71,9	15,8	22,9	25,1	19,7

1. Characteristic withdrawal resistance based on reference density of timber ρ_a = 370 kg/m^3
2. Characteristic head-pull-through resistance based on reference density of timber ρ_a = 350 kg/m^3

TIMBER

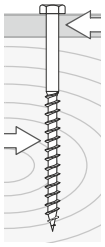
Minimum distances for laterally loaded screws - timber

Angle between force and fiber direction α = 0 °



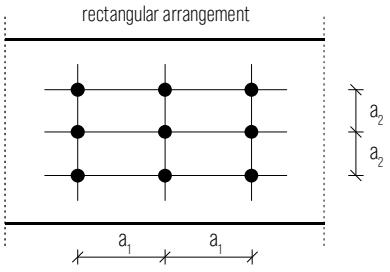
WITH PRE-DRILLED HOLE				
d_w [mm]	**Ø 6**	**Ø 8**	**Ø 10**	**Ø 12**
d_0 [mm]	4	5,5	7	8,5
$d_{0,steel}$ [mm]	6,5	8,5	10,5	12,5
a_1 [mm]	21	28	35	42
a_2 [mm]	17	22	28	34
$a_{3,t}$ [mm]	80	80	80	84
$a_{3,c}$ [mm]	24	32	40	48
$a_{4,t}$ [mm]	18	24	30	36
$a_{4,c}$ [mm]	18	24	30	36

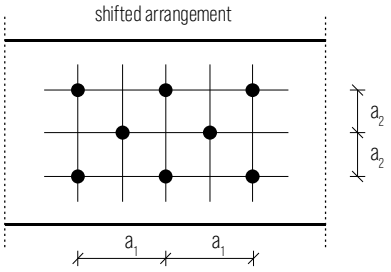
Angle between force and fiber direction α = 90 °

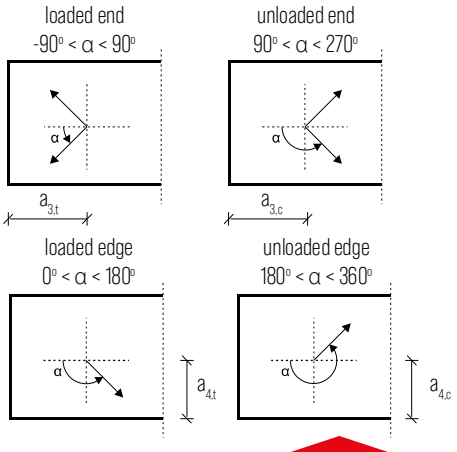


WITH PRE-DRILLED HOLE				
d_w [mm]	**Ø 6**	**Ø 8**	**Ø 10**	**Ø 12**
d_0 [mm]	4	5,5	7	8,5
$d_{0,steel}$ [mm]	6,5	8,5	10,5	12,5
a_1 [mm]	17	22	28	34
a_2 [mm]	17	22	28	34
$a_{3,t}$ [mm]	80	80	80	84
$a_{3,c}$ [mm]	42	56	70	84
$a_{4,t}$ [mm]	24	32	40	48
$a_{4,c}$ [mm]	18	24	30	36

1. Minimum distances in accordance with EN 1995
2. Minimum distances is valid for timber characteristic density of $\rho_k \leq$ 420 kg/m^3
3. In case of connection timber-timber minimum distances (a_1, a_2) should be multiplied by a factor of 1,45
4. For screws K with a diameter of d > 6 mm a pre-drill is required
5. Hole diameter d_0 is valid for softwood
6. Hole diameter $d_{0,steel}$ is valid for steel plate







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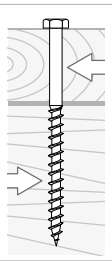
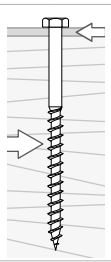
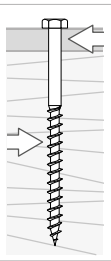
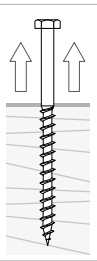
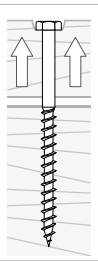
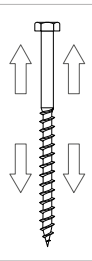
TIMBER

Characteristic resistances for laterally and axially loaded screws - timber

DIMENSIONS				SHEAR					TENSION		
Diameter	Length	Thread length	Usable length	timber-timber	steel-timber (thin plate)		steel-timber (thick plate)		Withdrawal	Head pull-through	Tension
											
d_w [mm]	L_w [mm]	L_g [mm]	t_{fix} [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]		$R_{V,k}$ [kN]		$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]	$R_{tens,k}$ [kN]
K 6											
ø6	60	36	24	2,40	t = 3 mm	3,10	t = 6 mm	4,03	3,39	2,27	9,19
	70	42	28	2,57		3,24		4,17	3,95	2,27	9,19
	80	48	32	2,75		3,38		4,32	4,52	2,27	9,19
	90	54	36	2,82		3,52		4,46	5,08	2,27	9,19
	100	60	40	2,82		3,66		4,60	5,65	2,27	9,19
	120	72	48	2,82		3,95		4,88	6,78	2,27	9,19
	140	84	56	2,82		4,23		5,16	7,91	2,27	9,19
K 8											
ø8	60	36	24	3,60	t = 4 mm	4,73	t = 8 mm	6,66	5,79	3,53	13,49
	70	42	28	3,80		5,43		6,98	6,75	3,53	13,49
	80	48	32	4,01		5,67		7,22	7,72	3,53	13,49
	90	54	36	4,23		5,91		7,46	8,68	3,53	13,49
	100	60	40	4,46		6,15		7,70	9,65	3,53	13,49
	120	72	48	4,62		6,63		8,18	11,58	3,53	13,49
	140	84	56	4,62		7,11		8,66	13,50	3,53	13,49
	160	96	64	4,62		7,11		8,66	15,43	3,53	13,49
	180	108	72	4,62		7,11		8,66	17,36	3,53	13,49
	200	120	80	4,62		7,11		8,66	19,29	3,53	13,49
K 10											
ø10	80	48	32	5,79	t = 5 mm	7,63	t = 10 mm	9,92	8,41	6,31	20,73
	100	60	40	6,29		8,16		10,44	10,51	6,31	20,73
	120	72	48	6,85		8,68		10,97	12,61	6,31	20,73
	140	84	56	7,11		9,21		11,50	14,71	6,31	20,73
	160	96	64	7,11		9,73		12,02	16,81	6,31	20,73
	180	108	72	7,11		10,26		12,55	18,91	6,31	20,73
	200	120	80	7,11		10,71		13,00	21,02	6,31	20,73

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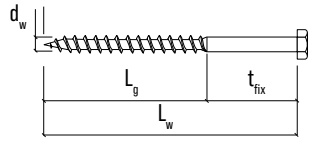
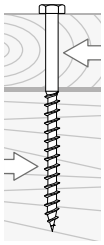
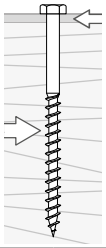
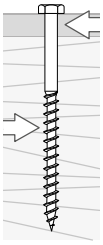
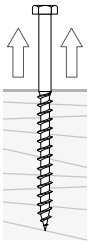
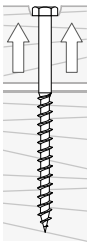
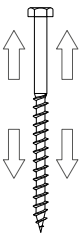
TIMBER

Characteristic resistances for laterally and axially loaded screws - timber

DIMENSIONS				SHEAR			TENSION		
Diameter	Length	Thread length	Usable length	timber-timber	steel-timber (thin plate)	steel-timber (thick plate)	Withdrawal	Head pull-through	Tension
									
d_w [mm]	L_w [mm]	L_g [mm]	t_{fix} [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]	$R_{tens,k}$ [kN]
K 12									
ø12	120	72	48	8,63	t = 6 mm: 10,85	t = 12 mm: 13,99	13,04	8,27	25,06
	140	84	56	9,29	11,39	14,54	15,21	8,27	25,06
	160	96	64	9,66	11,94	15,08	17,39	8,27	25,06
	180	108	72	9,66	12,48	15,62	19,56	8,27	25,06
	200	120	80	9,66	13,02	16,17	21,74	8,27	25,06
	220	132	88	9,66	13,57	16,71	23,91	8,27	25,06
	240	144	96	9,66	13,85	17,00	26,08	8,27	25,06
	260	156	104	9,66	13,85	17,00	28,26	8,27	25,06

NOTES:

1. Characteristic resistances in accordance with EN 1995
2. In order to obtain a design resistance, use the following formula : $R_d = \frac{R_k * k_{mod}}{\gamma_M}$

Factors γ_M and k_{mod} should be taken in accordance with EN 1995

3. Design resistance for tension is smaller value of the following : $R_{ax,d} = min\begin{cases} \frac{R_{ax,k} * k_{mod}}{\gamma_M} \\ \frac{R_{tens,k}}{\gamma_{M2}} \end{cases}$

Factors γ_M and k_{mod} should be taken in accordance with EN 1995. Factor γ_{M2} should be taken in accordance with EN 1993

4. Characteristic resistances were calculated for a characteristic density of timber ρ_k = 350 kg/m^3
5. Characteristic resistances were calculated considering that the threaded part of the screw is fully inserted into timber element
6. Characteristic shear resistances were calculated for connections with pre-drilled holes
7. Characteristic shear resistances for steel-timber connections were calculated for thin steel plate with thickness t ≤ 0,5d_w
8. Characteristic shear resistances for steel-timber connections were calculated for thick steel plate with thickness t ≥ d_w
9. Characteristic withdrawal resistances were calculated assuming an angle of 90° between screw and grain direction and for penetration length equal L_g
10. Characteristic head pull-through resistances were calculated for timber element