KOP

COACH SCREW DIN571

CE
EN 14592

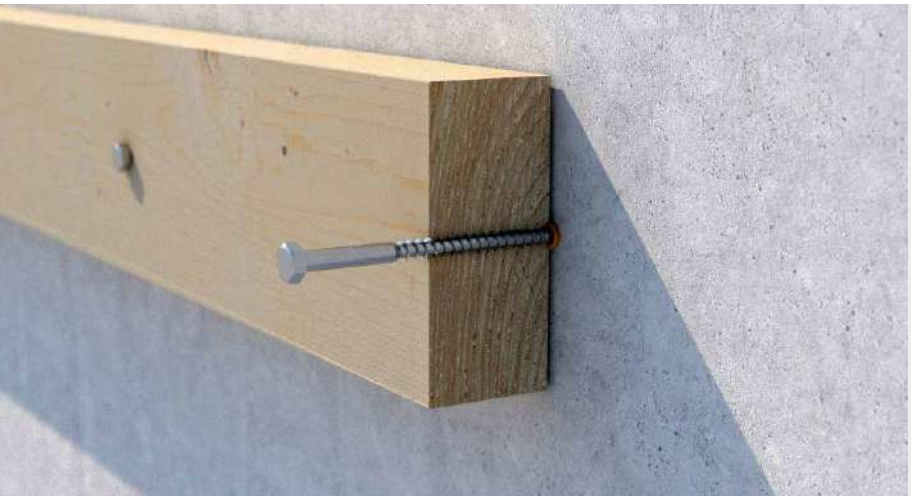
CE MARKING
Screws with the CE mark, in accordance with EN 14592.

HEXAGONAL HEAD
Appropriate for use on plates in steel-to-timber applications, thanks to its hexagonal head.

OUTDOOR VERSION
Also available in stainless steel A2 | AISI304 for outdoor use (service class 3).

CHARACTERISTICS

FOCUS	coach screw with CE marking
HEAD	hexagonal
DIAMETER	from 8,0 to 16,0 mm
LENGTH	from 50 to 400 mm

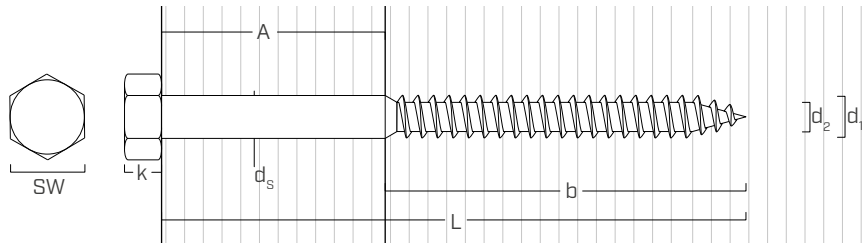


MATERIAL
Available in carbon steel with bright zinc plated and in stainless steel A2.

FIELDS OF USE
- timber based panels
- fibre board and MDF panels
- solid timber
- glulam (Glued Laminated Timber)
- CLT, LVL

Service classes 1 and 2.

GEOMETRY AND MECHANICAL CHARACTERISTICS



Nominal diameter	**d_1**	**[mm]**	**8**	**10**	**12**	**16**
Wrench size	SW	[mm]	13	17	19	24
Head thickness	k	[mm]	5,50	7,00	8,00	10,00
Tip diameter	d_2	[mm]	5,60	7,00	9,00	12,00
Shank diameter	d_S	[mm]	8,00	10,00	12,00	16,00
Diameter pre-drilling hole - smooth part	d_{V1}	[mm]	8,0	10,0	12,0	16,0
Diameter pre-drilling hole - threaded part	d_{V2}	[mm]	5,5	7,0	8,5	11,0
Thread length	b	[mm]		≥ 0,6 L		
Characteristic yield moment	$M_{y,k}$	[Nm]	16,9	32,2	65,7	138,0
Characteristic withdrawal-resistance parameter	$f_{ax,k}$	[N/mm²]	12,9	10,6	10,2	10,0
Associated density	ρ_a	[kg/m³]	400	400	440	360
Characteristic head-pull-through parameter	$f_{head,k}$	[N/mm²]	22,8	19,8	16,4	16,5
Associated density	ρ_a	[kg/m³]	440	420	430	430
Characteristic tensile strength	$f_{tens,k}$	[kN]	15,7	23,6	37,3	75,3

CODES AND DIMENSIONS

d_1 [mm] *[in]*	CODE	L [mm]	L *[in]*	pcs
8 *0.32* **SW 13**	**KOP850(*)**	50	*1 15/16*	100
	KOP860	60	*2 3/8*	100
	KOP870	70	*2 3/4*	100
	KOP880	80	*3 1/8*	100
	KOP8100	100	*4*	50
	KOP8120	120	*4 3/4*	50
	KOP8140	140	*5 1/2*	50
	KOP8160	160	*6 1/4*	50
	KOP8180	180	*7 1/8*	50
	KOP8200	200	*8*	50
10 *0.40* **SW 17**	**KOP1050(*)**	50	*1 15/16*	50
	KOP1060(*)	60	*2 3/8*	50
	KOP1080	80	*3 1/8*	50
	KOP10100	100	*4*	50
	KOP10120	120	*4 3/4*	50
	KOP10140	140	*5 1/2*	50
	KOP10150	150	*6*	50
	KOP10160	160	*6 1/4*	50
	KOP10180	180	*7 1/8*	50
	KOP10200	200	*8*	50
	KOP10220	220	*8 5/8*	50
	KOP10240	240	*9 1/2*	50
	KOP10260	260	*10 1/4*	50
	KOP10280	280	*11*	50
	KOP10300	300	*11 3/4*	50
12 *0.48* **SW 19**	**KOP1250(*)**	50	*1 15/16*	50
	KOP1260(*)	60	*2 3/8*	50
	KOP1270(*)	70	*2 3/4*	50
	KOP1280	80	*3 1/8*	50
	KOP1290	90	*3 1/2*	25
	KOP12100	100	*4*	25
	KOP12120	120	*4 3/4*	25
	KOP12140	140	*5 1/2*	25

d_1 [mm] *[in]*	CODE	L [mm]	L *[in]*	pcs
12 *0.48* **SW 19**	**KOP12150**	150	*6*	25
	KOP12160	160	*6 1/4*	25
	KOP12180	180	*7 1/8*	25
	KOP12200	200	*8*	25
	KOP12220	220	*8 5/8*	25
	KOP12240	240	*9 1/2*	25
	KOP12260	260	*10 1/4*	25
	KOP12280	280	*11*	25
	KOP12300	300	*11 3/4*	25
	KOP12320	320	*12 5/8*	25
	KOP12340	340	*13 3/8*	25
	KOP12360	360	*14 1/4*	25
	KOP12380	380	*15*	25
	KOP12400	400	*15 3/4*	25
16 *0.63* **SW 24**	**KOP1680(*)**	80	*3 1/8*	25
	KOP16100(*)	100	*4*	25
	KOP16120	120	*4 3/4*	25
	KOP16140	140	*5 1/2*	25
	KOP16150	150	*6*	25
	KOP16160	160	*6 1/4*	25
	KOP16180	180	*7 1/8*	25
	KOP16200	200	*8*	25
	KOP16220	220	*8 5/8*	25
	KOP16240	240	*9 1/2*	25
	KOP16260	260	*10 1/4*	25
	KOP16280	280	*11*	25
	KOP16300	300	*11 3/4*	25
	KOP16320	320	*12 5/8*	25
	KOP16340	340	*13 3/8*	25
	KOP16360	360	*14 1/4*	25
	KOP16380	380	*15*	25
	KOP16400	400	*15 3/4*	25

(*) Not holding CE marking.

A2 | AISI304 VERSION CODES AND DIMENSIONS

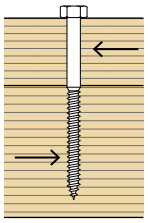
A2 AISI 304

d_1 [mm] [in]	CODE	L [mm]	L [in]	pcs
8 0.32 SW 13	AI571850	50	1 15/16	100
	AI571860	60	2 3/8	100
	AI571880	80	3 1/8	100
	AI5718100	100	4	50
	AI5718120	120	4 3/4	50
10 0.40 SW 17	AI5711050	50	1 15/16	50
	AI5711060	60	2 3/8	50
	AI5711080	80	3 1/8	50
	AI57110100	100	4	50
	AI57110120	120	4 3/4	50
	AI57110140	140	5 1/2	50
	AI57110160	160	6 1/4	50
	AI57110180	180	7 1/8	50
	AI57110200	200	8	50

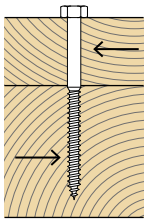
d_1 [mm] [in]	CODE	L [mm]	L [in]	pcs
12 0.48 SW 19	AI57112100	100	4	25
	AI57112120	120	4 3/4	25
	AI57112140	140	5 1/2	25
	AI57112160	160	6 1/4	25
	AI57112180	180	7 1/8	25

The stainless steel screws have not been granted the CE mark.

MINIMUM DISTANCES FOR SHEAR LOADS



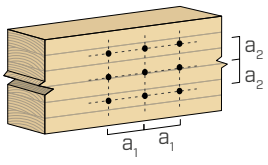
Load-to-grain angle α = 0°



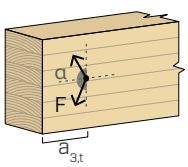
Load-to-grain angle α = 90°

		SCREWS INSERTED WITH PRE-DRILLING HOLE					SCREWS INSERTED WITH PRE-DRILLING HOLE				
d_1	[mm]		8	10	12	16		8	10	12	16
a_1	[mm]	5·d	40	50	60	80	4·d	32	40	48	64
a_2	[mm]	4·d	32	40	48	64	4·d	32	40	48	64
$a_{3,t}$	[mm]	7·d (min. 80 mm)	80	80	84	112	7·d (min. 80 mm)	80	80	84	112
$a_{3,c}$	[mm]	4·d	32	40	48	64	7·d	56	70	84	112
$a_{4,t}$	[mm]	3·d	24	30	36	48	4·d	32	40	48	64
$a_{4,c}$	[mm]	3·d	24	30	36	48	3·d	24	30	36	48

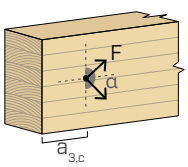
d = nominal nail diameter



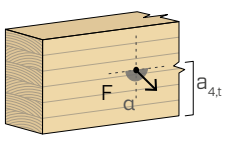
stressed end
-90° < α < 90°



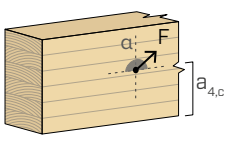
unloaded end
90° < α < 270°



stressed edge
0° < α < 180°



unload edge
180° < α < 360°

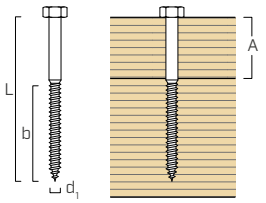
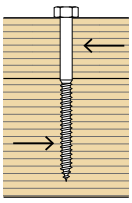
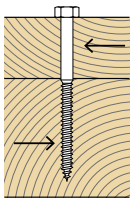
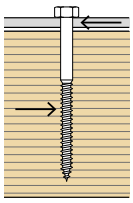
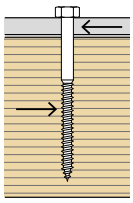
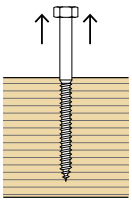
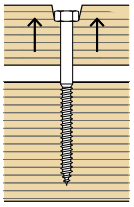


NOTES:

- Minimum distances in accordance with EN 1995:2014.
- For KOP screws with a diameter of d > 6 mm, a pre-drill is required as per EN 1995:2014:
  - pre-drill hole for smooth part of the shank, dimensions matching that of the shank itself, depth equal to the length of the shank.
  - pre-drill hole for the threaded portion, equal to approximately 70% of the shank diameter.

STATIC VALUES

CHARACTERISTIC VALUES
EN 1995:2014

geometry				SHEAR				TENSION	
				timber-to-timber α = 0°(1)	timber-to-timber α = 90°(2)	thin steel-timber plate(3)	thick steel-timber plate(4)	thread withdrawal(5)	head pull-through(6)
									
d_1 [mm]	L [mm]	b(7) [mm]	A [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]
8	50	30	20	2,96	2,23	2,64	3,75	2,78	3,54
	60	36	24	3,28	2,68	3,22	4,38	3,34	3,54
	70	42	28	3,55	2,87	3,51	4,56	3,90	3,54
	80	48	32	3,78	3,01	3,65	4,70	4,45	3,54
	100	60	40	3,96	3,32	3,93	4,98	5,56	3,54
	120	72	48	3,96	3,42	4,20	5,25	6,68	3,54
	140	84	56	3,96	3,42	4,48	5,53	7,79	3,54
	160	96	64	3,96	3,42	4,76	5,81	8,90	3,54
	180	108	72	3,96	3,42	5,04	6,09	10,02	3,54
	200	120	80	3,96	3,42	5,07	6,37	11,13	3,54
10	50	30	20	3,48	2,56	3,10	4,65	2,86	5,45
	60	36	24	4,18	3,07	3,79	5,30	3,43	5,45
	80	48	32	5,01	4,01	4,97	6,56	4,57	5,45
	100	60	40	5,78	4,56	5,26	6,84	5,72	5,45
	120	72	48	6,05	4,92	5,54	7,13	6,86	5,45
	140	84	56	6,05	5,19	5,83	7,42	8,00	5,45
	150	90	60	6,05	5,19	5,97	7,56	8,57	5,45
	160	96	64	6,05	5,19	6,12	7,70	9,14	5,45
	180	108	72	6,05	5,19	6,40	7,99	10,29	5,45
	200	120	80	6,05	5,19	6,69	8,27	11,43	5,45
	220	132	88	6,05	5,19	6,97	8,56	12,57	5,45
	240	144	96	6,05	5,19	7,26	8,85	13,72	5,45
	260	156	104	6,05	5,19	7,54	9,13	14,86	5,45
	280	168	112	6,05	5,19	7,66	9,42	16,00	5,45
	300	180	120	6,05	5,19	7,66	9,70	17,15	5,45

$S_{PLATE} = 4$ mm

$S_{PLATE} = 8$ mm

$S_{PLATE} = 5$ mm

$S_{PLATE} = 10$ mm

NOTES:

(1) The characteristic shear resistance values are calculated using an angle α between the strength and the grain of 0°.

(2) The characteristic shear resistance values are calculated using an angle α between the strength and the grain of 90°.

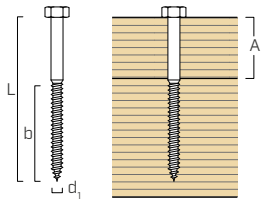
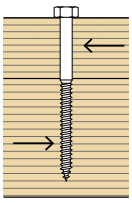
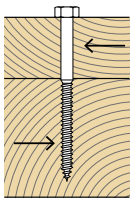
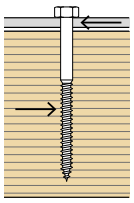
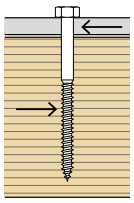
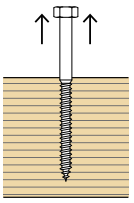
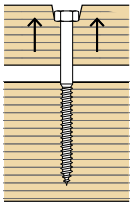
(3) The shear resistance characteristics are calculated considering the case of a thin plate ($S_{PLATE} \leq 0,5\ d_1$).

(4) The shear resistance characteristics are calculated considering the case of a thick plate ($S_{PLATE} \geq d_1$).

(5) The axial thread withdrawal resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.

(6) The axial resistance to head pull-through was calculated using timber elements. In the case of steel-to-timber connections, generally the steel tensile strength is binding with respect to head separation or pull-through.

(7) During calculation, a thread length of b = 0,6 L is used, with the exception of the measures (*).

geometry				SHEAR				TENSION	
				timber-to-timber α = 0° (1)	timber-to-timber α = 90° (2)	thin steel-timber plate(3)	thick steel-timber plate(4)	thread withdrawal(5)	head pull-through(6)
									
d_1 [mm]	L [mm]	b(7) [mm]	A [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]
12	50	30	20	4,01	2,89	3,49 (S_PLATE = 6 mm)	6,10 (S_PLATE = 12 mm)	3,06	5,54
	60	36	24	4,81	3,46	4,28	6,67	3,67	5,54
	70	42	28	5,61	4,04	5,07	7,36	4,28	5,54
	80	48	32	6,42	4,62	5,86	8,12	4,89	5,54
	90	54	36	6,92	5,19	6,66	8,94	5,50	5,54
	100	60	40	7,20	5,63	7,40	9,78	6,12	5,54
	120	72	48	7,82	6,02	7,70	10,13	7,34	5,54
	140	84	56	8,50	6,41	8,01	10,44	8,56	5,54
	150	90	60	8,64	6,62	8,16	10,59	9,17	5,54
	160	96	64	8,64	6,84	8,31	10,74	9,78	5,54
	180	108	72	8,64	7,25	8,62	11,05	11,01	5,54
	200	120	80	8,64	7,25	8,92	11,36	12,23	5,54
	220	132	88	8,64	7,25	9,23	11,66	13,45	5,54
	240	144	96	8,64	7,25	9,54	11,97	14,68	5,54
	260	156	104	8,64	7,25	9,84	12,27	15,90	5,54
	280	168	112	8,64	7,25	10,15	12,58	17,12	5,54
	300	180	120	8,64	7,25	10,45	12,88	18,35	5,54
	320	192	128	8,64	7,25	10,76	13,19	19,57	5,54
	340	195 *	145	8,64	7,25	10,84	13,27	19,88	5,54
	360	195 *	165	8,64	7,25	10,84	13,27	19,88	5,54
	380	195 *	185	8,64	7,25	10,84	13,27	19,88	5,54
	400	195 *	205	8,64	7,25	10,84	13,27	19,88	5,54

NOTES:

(1) The characteristic shear resistance values are calculated using an angle α between the strength and the grain of 0°.

(2) The characteristic shear resistance values are calculated using an angle α between the strength and the grain of 90°.

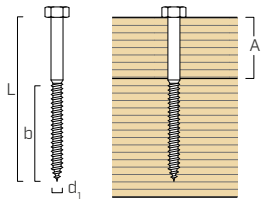
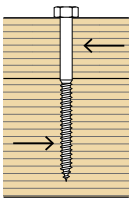
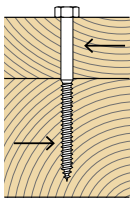
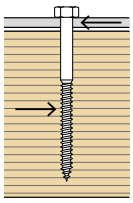
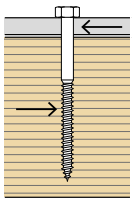
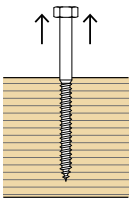
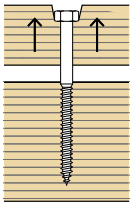
(3) The shear resistance characteristics are calculated considering the case of a thin plate ($S_{PLATE} \leq 0,5\ d_1$).

(4) The shear resistance characteristics are calculated considering the case of a thick plate ($S_{PLATE} \geq d_1$).

(5) The axial thread withdrawal resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.

(6) The axial resistance to head pull-through was calculated using timber elements. In the case of steel-to-timber connections, generally the steel tensile strength is binding with respect to head separation or pull-through.

(7) During calculation, a thread length of b = 0,6 L is used, with the exception of the measures (*).

				SHEAR				TENSION	
geometry				timber-to-timber α = 0° (1)	timber-to-timber α = 90° (2)	thin steel-timber plate(3)	thick steel-timber plate(4)	thread withdrawal(5)	head pull-through(6)
									
d_1 [mm]	L [mm]	b(7) [mm]	A [mm]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{V,k}$ [kN]	$R_{ax,k}$ [kN]	$R_{head,k}$ [kN]
16	80	48	32	8,49	6,03	6,99 (S_{PLATE} = 8 mm)	11,17 (S_{PLATE} = 16 mm)	7,51	8,89
	100	60	40	10,48	7,42	8,93	13,02	9,39	8,89
	120	72	48	11,43	8,46	10,87	15,10	11,26	8,89
	140	84	56	12,18	9,28	12,70	16,59	13,14	8,89
	150	90	60	12,58	9,50	12,93	16,83	14,08	8,89
	160	96	64	12,99	9,72	13,16	17,06	15,02	8,89
	180	108	72	13,86	10,20	13,63	17,53	16,89	8,89
	200	120	80	14,09	10,72	14,10	18,00	18,77	8,89
	220	132	88	14,09	11,26	14,57	18,47	20,65	8,89
	240	144	96	14,09	11,63	15,04	18,94	22,53	8,89
	260	156	104	14,09	11,63	15,51	19,41	24,40	8,89
	280	168	112	14,09	11,63	15,98	19,88	26,28	8,89
	300	180	120	14,09	11,63	16,45	20,35	28,16	8,89
	320	192	128	14,09	11,63	16,92	20,82	30,04	8,89
	340	204	136	14,09	11,63	17,39	21,29	31,91	8,89
	360	205 *	155	14,09	11,63	17,43	21,33	32,07	8,89
	380	205 *	175	14,09	11,63	17,43	21,33	32,07	8,89
	400	205 *	195	14,09	11,63	17,43	21,33	32,07	8,89

NOTES:

(1) The characteristic shear resistance values are calculated using an angle α between the strength and the grain of 0°.

(2) The characteristic shear resistance values are calculated using an angle α between the strength and the grain of 90°.

(3) The shear resistance characteristics are calculated considering the case of a thin plate ($S_{PLATE} \leq 0,5\ d_1$).

(4) The shear resistance characteristics are calculated considering the case of a thick plate ($S_{PLATE} \geq d_1$).

(5) The axial thread withdrawal resistance was calculated considering a 90° angle between the grain and the connector and for a fixing length of b.

(6) The axial resistance to head pull-through was calculated using timber elements. In the case of steel-to-timber connections, generally the steel tensile strength is binding with respect to head separation or pull-through.

(7) During calculation, a thread length of b = 0,6 L is used, with the exception of the measures (*).

GENERAL PRINCIPLES:

- Characteristic values according to EN 1995:2014.
- Design values can be obtained from characteristic values as follows:

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

The coefficients γ_M and k_{mod} should be taken according to the current regulations used for the calculation.

- For the calculation process a timber characteristic density ρ_k = 350 kg/m^3 has been considered.
- Values were calculated considering the minimum threaded part as being completely inserted into the wood.
- Dimensioning and verification of timber elements and steel plates must be carried out separately.
- The characteristic shear resistance values are calculated for screws inserted with pre-drilling hole.