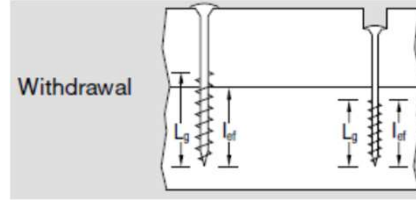
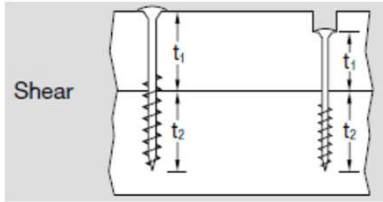


Characteristic Loads According to SPAX ETA and EC5



SPAX Washer Head



Head pull-through
 Thread pull-out

Product			Wood - Wood, $\alpha = 90^\circ$						Sheet Steel - Wood, $\alpha = 90^\circ$					
Dimensions (mm)			Shear			Withdrawal			Shear			Withdrawal		
Thread Diam. d_1	Screw Length L_s	Thread Length L_g	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)
6	60	56	24	36	1.92	24	36	2.88	6	54	2.76	6	54	4.24
	80	61	32	48	2.23	24	56	3.17	6	74	2.92	6	61	4.89
	100	61	40	60	2.49	41	59	4.12	6	94	2.92	6	61	4.89
	120	68	50	70	2.73	52	68	4.12	6	114	3.06	6	68	5.45
	140	68	70	70	2.73	72	38	4.12	6	134	3.06	6	68	5.45
	160	65	90	70	2.73	95	65	4.12	6	154	3.00	6	65	5.21
	180	65	110	70	2.73	115	65	4.12	6	174	3.00	6	65	5.21
8	80	70	30	50	3.19	30	50	5.34	6	74	4.60	6	70	7.47
	100	80	40	60	3.27	40	60	5.78	10	90	4.86	10	80	8.54
	120	80	50	70	4.60	50	70	5.78	10	110	4.86	10	80	8.54
	140	80	60	80	4.86	60	80	7.52	10	130	4.86	10	80	8.54
	160	80	80	80	4.86	80	80	7.52	10	150	4.86	10	80	8.54
	180	80	100	80	4.86	100	80	7.52	10	170	4.86	10	80	8.54
	200	80	120	80	4.86	120	80	7.52	10	190	4.86	10	80	8.54
	220	80	140	80	4.86	140	80	7.52	10	210	4.86	10	80	8.54
	240	80	160	80	4.86	160	80	7.52	10	230	4.86	10	80	8.54
	260	80	180	80	4.86	180	80	7.52	10	250	4.86	10	80	8.54
	280	80	200	80	4.86	200	80	7.52	10	270	4.86	10	80	8.54
	300	80	220	80	4.86	220	80	7.52	10	290	4.86	10	80	8.54
320-450	80	240-370	80	4.86	240-370	80	7.52	10	310-440	4.86	10	80	8.54	
10	80	70	40	40	4.00	30	50	6.40	10	70	6.18	6	70	8.96
	100	80	40	60	4.64	40	60	7.68	10	90	6.50	10	80	10.24
	120	80	50	70	5.40	50	70	8.00	10	110	6.50	10	80	10.24
	140	80	60	80	5.94	60	80	8.00	10	130	6.50	10	80	10.24
	160	80	80	80	6.50	80	80	10.24	10	150	6.50	10	80	10.24
	180	80	100	80	6.50	100	80	10.24	10	170	6.50	10	80	10.24
	200	80	120	80	6.50	120	80	10.24	10	190	6.50	10	80	10.24
	220	80	140	80	6.50	140	80	10.24	10	210	6.50	10	80	10.24
	240	80	160	80	6.50	160	80	10.24	10	230	6.50	10	80	10.24
	260	80	180	80	6.50	180	80	10.24	10	250	6.50	10	80	10.24
	280	80	200	80	6.50	200	80	10.24	10	270	6.50	10	80	10.24
	300	80	220	80	6.50	220	80	10.24	10	290	6.50	10	80	10.24
320 - 450	80	240-370	80	6.50	240-370	80	10.24	10	310-440	6.50	10	80	10.24	

NOTES:

Load at an angle of 90° between load direction and grain direction.

The above characteristic loads relate to the failure mode with the lowest value.

They are for Radiata Pine timber with a characteristic density of 400 kg/m^3 (design density of 550 kg/m^3).

Minimum edge distance and spacing must comply with local standards or the SPAX Design Guide.

The specified characteristic values must be lowered by safety factor coefficients to the design values for load-carrying capacity.

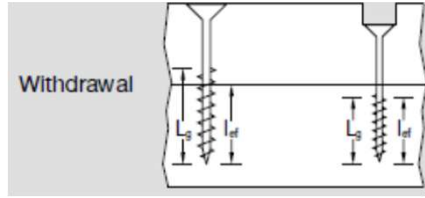
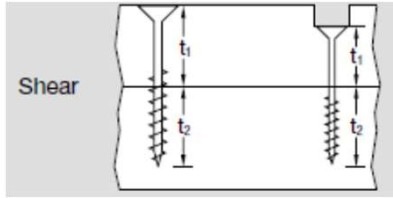
The safety factor coefficients depend on the environmental conditions (k_{mod}) and the load effect duration class (γ_m)

Refer to the SPAX Design Guide and ETA 12/0114 for more detailed design.

Characteristic Loads According to SPAX ETA and EC5



SPAX Countersunk Head



Head pull-through
Thread pull-out

Product			Wood - Wood, $\alpha = 90^\circ$						Sheet Steel - Wood, $\alpha = 90^\circ$					
Dimensions (mm)			Shear			Withdrawal			Shear			Withdrawal		
Thread Diam. d_1	Screw Length L_s	Length Partial Thread L_g	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)
8	80	47	30	50	2.49	30	47	3.01	6	70	3.98	6	47	5.02
	100	57	40	60	3.07	40	57	3.01	10	90	4.25	10	57	6.08
	120	70	50	70	3.71	50	70	3.92	10	110	4.60	10	70	7.47
	140	80	60	80	3.71	60	80	3.92	10	130	4.87	10	80	8.54
	160	80	80	80	3.71	80	80	3.92	10	150	4.87	10	80	8.54
	180	80	100	80	3.71	100	80	3.92	10	170	4.87	10	80	8.54
	200	80	120	80	3.71	120	80	3.92	10	190	4.87	10	80	8.54
	220	80	140	80	3.71	140	80	3.92	10	210	4.87	10	80	8.54
	240	80	160	80	3.71	160	80	3.92	10	230	4.87	10	80	8.54
	260	80	180	80	3.71	180	80	3.92	10	250	4.87	10	80	8.54
	280	80	200	80	3.71	200	80	3.92	10	270	4.87	10	80	8.54
	300	80	220	80	3.71	220	80	3.92	10	290	4.87	10	80	8.54
320-450	80	240-370	80	3.71	240-370	80	3.92	10	310-440	4.87	10	80	8.54	
10	80	50	40	40	3.73	30	50	4.03	10	70	5.54	10	50	6.40
	100	60	40	60	4.17	40	60	4.03	10	90	5.86	10	60	7.68
	120	80	50	70	4.59	50	70	4.03	10	110	6.50	10	80	10.24
	140	80	60	80	5.25	60	80	5.24	10	130	6.50	10	80	10.24
	160	80	80	80	5.25	80	80	5.24	10	150	6.50	10	80	10.24
	180	80	100	80	5.25	100	80	5.24	10	170	6.50	10	80	10.24
	200	80	120	80	5.25	120	80	5.24	10	190	6.50	10	80	10.24
	220	80	140	80	5.25	140	80	5.24	10	210	6.50	10	80	10.24
	240	80	160	80	5.25	160	80	5.24	10	230	6.50	10	80	10.24
	260	80	180	80	5.25	180	80	5.24	10	250	6.50	10	80	10.24
	280	80	200	80	5.25	200	80	5.24	10	270	6.50	10	80	10.24
	300	80	220	80	5.25	220	80	5.24	10	290	6.50	10	80	10.24
320 - 450	80	240-370	80	5.25	240-370	80	5.24	10	310-440	6.50	10	80	10.24	

NOTES:

Load at an angle of 90° between load direction and grain direction.

The above characteristic loads relate to the failure mode with the lowest value.

They are for Radiata Pine timber with a characteristic density of 400 kg/m^3 (design density of 550 kg/m^3).

Minimum edge distance and spacing must comply with local standards or the SPAX Design Guide.

The specified characteristic values must be lowered by safety factor coefficients to the design values for load-carrying capacity.

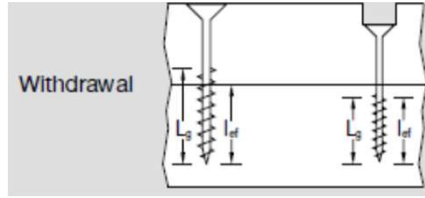
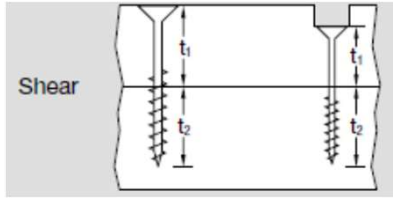
The safety factor coefficients depend on the environmental conditions (k_{mod}) and the load effect duration class (γ_m)

Refer to the SPAX Design Guide and ETA 12/0114 for more detailed design.

Characteristic Loads According to SPAX ETA and EC5



SPAX Countersunk Head



Head pull-through
Thread pull-out

Product			Wood - Wood, $\alpha = 90^\circ$						Sheet Steel - Wood, $\alpha = 90^\circ$					
Dimensions (mm)			Shear			Withdrawal			Shear			Withdrawal		
Thread Diam. d_1	Screw Length L_s	Length Partial Thread L_g	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)
12	100	60	40	60	5.33	40	60	5.50	12	88	7.53	12	60	8.81
	120	80	50	70	5.76	40	80	5.50	12	108	8.26	12	80	11.75
	140	80	60	80	6.25	60	80	5.50	12	128	8.26	12	80	11.75
	160	100	60	100	6.25	60	100	5.50	12	148	9.00	12	100	14.69
	180	100	80	100	7.12	80	100	7.15	12	168	9.00	12	100	14.69
	200	100	100	100	7.12	100	100	7.15	12	188	9.00	12	100	14.69
	220	100	120	100	7.12	120	100	7.15	12	208	9.00	12	100	14.69
	240	100	140	100	7.12	140	100	7.15	12	228	9.00	12	100	14.69
	260	100	160	100	7.12	160	100	7.15	12	248	9.00	12	100	14.69
	280	100	180	100	7.12	180	100	7.15	12	268	9.00	12	100	14.69
	300	100	200	100	7.12	200	100	7.15	12	288	9.00	12	100	14.69
350-600	100	250-500	100	7.12	250-500	100	7.15	12	338-588	9.00	12	100	14.69	

NOTES:

Load at an angle of 90° between load direction and grain direction.

The above characteristic loads relate to the failure mode with the lowest value.

They are for Radiata Pine timber with a characteristic density of 400 kg/m^3 (design density of 550 kg/m^3).

Minimum edge distance and spacing must comply with local standards or the SPAX Design Guide.

The specified characteristic values must be lowered by safety factor coefficients to the design values for load-carrying capacity.

The safety factor coefficients depend on the environmental conditions (k_{mod}) and the load effect duration class (γ_m)

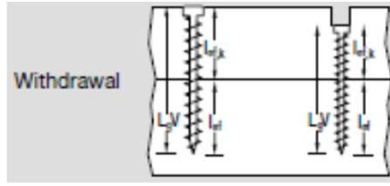
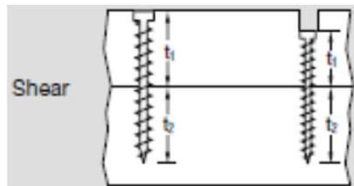
Refer to the SPAX Design Guide and ETA 12/0114 for more detailed design.

Characteristic Loads According to SPAX ETA and EC5

SPAX Cylinder Head



Full Thread



Product			Wood - Wood, $\alpha = 90^\circ$					
Dimensions (mm)			Shear			Withdrawal		
Thread Diam. d_1	Screw Length L_s	Length Partial Thread L_g	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)
6	80	Thread close to head	40	40	2.50	40	40	3.20
	100		50	50	2.70	50	50	4.01
	120		60	60	2.90	60	60	4.81
	140		70	70	3.10	70	70	5.61
	160		80	80	3.30	80	80	6.41
	180		90	90	3.40	90	90	7.21
	200		100	100	3.40	100	100	8.01
8	200	Thread close to head	100	100	5.40	100	100	10.68
	220		110	110	5.46	110	110	11.75
	240		120	120	5.46	120	120	12.82
	260		130	130	5.46	130	130	13.89
	280		140	140	5.46	140	140	14.96
	300		150	150	5.46	150	150	16.02
	350		175	175	5.46	175	175	17.00
	400		200	200	5.46	200	200	17.00
450	225	225	5.46	225	225	17.00		

NOTES:

Load at an angle of 90° between load direction and grain direction.

The above characteristic loads relate to the failure mode with the lowest value.

They are for Radiata Pine timber with a characteristic density of 400 kg/m^3 (design density of 550 kg/m^3).

Minimum edge distance and spacing must comply with local standards or the SPAX Design Guide.

The specified characteristic values must be lowered by safety factor coefficients to the design values for load-carrying capacity.

The safety factor coefficients depend on the environmental conditions (k_{mod}) and the load effect duration class (γ_m)

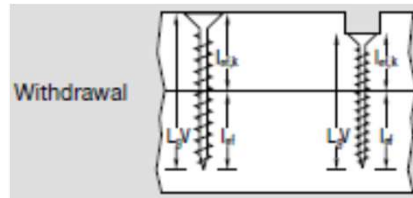
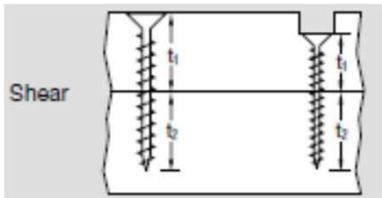
Refer to the SPAX Design Guide and ETA 12/0114 for more detailed design.

Characteristic Loads According to SPAX ETA and EC5

SPAX Countersunk Head



Full Thread



Product			Wood - Wood, $\alpha = 90^\circ$						Sheet Steel - Wood, $\alpha = 90^\circ$					
Dimensions (mm)			Shear			Withdrawal			Shear			Withdrawal		
Thread Diam. d_1	Screw Length L_s	Length Partial Thread L_g	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)
8	160	Thread close to head	80	80	4.87	80	80	8.55	10	150	7.63	10	150	16.02
	180		90	90	5.13	90	90	9.61	10	170	7.63	10	170	17.00
	200		100	100	5.40	100	100	10.68	10	190	7.63	10	190	17.00
	220		110	110	5.46	110	110	11.75	10	210	7.63	10	210	17.00
	240		120	120	5.46	120	120	12.82	10	230	7.63	10	230	17.00
	260		130	130	5.46	130	130	13.89	10	250	7.63	10	250	17.00
	280		140	140	5.46	140	140	14.96	10	270	7.63	10	270	17.00
	300		150	150	5.46	150	150	16.02	10	290	7.63	10	290	17.00
	350		175	175	5.46	175	175	17.00	10	340	7.63	10	340	17.00
	400		200	200	5.46	200	200	17.00	10	390	7.63	10	390	17.00
	450		225	225	5.46	225	225	17.00	10	440	7.63	10	440	17.00
	500		250	250	5.46	250	250	17.00	10	490	7.63	10	490	17.00
550	275	275	5.46	275	275	17.00	10	540	7.63	10	540	17.00		
600	300	300	5.46	300	300	17.00	10	590	7.63	10	590	17.00		
10	200	Thread close to head	100	100	7.15	100	100	12.8	10	190	11.02	10	190	23.57
	220		110	110	7.47	110	110	14.08	10	210	11.02	10	210	26.08
	240		120	120	7.79	120	120	15.36	10	230	11.02	10	230	28.00
	260		130	130	7.89	130	130	16.64	10	250	11.02	10	250	28.00
	280		140	140	7.89	140	140	17.92	10	270	11.02	10	270	28.00
	300		150	150	7.89	150	150	19.19	10	290	11.02	10	290	28.00
	350		175	175	7.89	175	175	22.39	10	340	11.02	10	340	28.00
	400		200	200	7.89	200	200	25.59	10	390	11.02	10	390	28.00
	450		225	225	7.89	225	225	28.00	10	440	11.02	10	440	28.00
	500		250	250	7.89	250	250	28.00	10	490	11.02	10	490	28.00
	550		275	275	7.89	275	275	28.00	10	540	11.02	10	540	28.00
	600		300	300	7.89	300	300	28.00	10	590	11.02	10	590	28.00
800	400	400	7.89	400	400	28.00	10	790	11.02	10	790	28.00		

NOTES:

Load at an angle of 90° between load direction and grain direction.

The above characteristic loads relate to the failure mode with the lowest value.

They are for Radiata Pine timber with a characteristic density of 400 kg/m^3 (design density of 550 kg/m^3).

Minimum edge distance and spacing must comply with local standards or the SPAX Design Guide.

The specified characteristic values must be lowered by safety factor coefficients to the design values for load-carrying capacity.

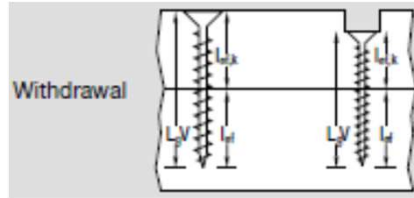
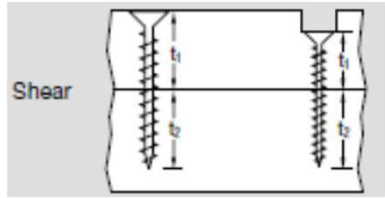
The safety factor coefficients depend on the environmental conditions (k_{mod}) and the load effect duration class (γ_m)

Refer to the SPAX Design Guide and ETA 12/0114 for more detailed design.

Characteristic Loads According to SPAX ETA and EC5

SPAX Countersunk Head

Full Thread



Product			Wood - Wood, $\alpha = 90^\circ$						Sheet Steel - Wood, $\alpha = 90^\circ$					
Dimensions (mm)			Shear			Withdrawal			Shear			Withdrawal		
Thread Diam. d_1	Screw Length L_s	Length Partial Thread L_g	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)	t_1 (mm)	t_2 (mm)	$F_{v,Rk}$ (kN)	t_1 (mm)	l_{ef} (mm)	$F_{ax,Rk}$ (kN)
12	200	Thread close to head	100	100	9.00	100	100	14.69	10	190	14.21	10	190	27.06
	220		110	110	9.37	110	110	16.16	10	210	14.89	10	210	29.93
	240		120	120	9.74	120	120	17.63	10	230	14.89	10	230	32.81
	260		130	130	10.11	130	130	19.09	10	250	14.89	10	250	35.69
	280		140	140	10.47	140	140	20.56	10	270	14.89	10	270	38.00
	300		150	150	10.66	150	150	20.03	10	290	14.89	10	290	38.00
	350		175	175	10.66	175	175	25.70	10	340	14.89	10	340	38.00
	400		200	200	10.66	200	200	29.38	10	390	14.89	10	390	38.00
	450		225	225	10.66	225	225	33.05	10	440	14.89	10	440	38.00
	500		250	250	10.66	250	250	36.72	10	490	14.89	10	490	38.00
550	275	275	10.66	275	275	38.00	10	540	14.89	10	540	38.00		
600	300	300	10.66	300	300	38.00	10	590	14.89	10	590	38.00		

NOTES:

Load at an angle of 90° between load direction and grain direction.

The above characteristic loads relate to the failure mode with the lowest value.

They are for Radiata Pine timber with a characteristic density of 400 kg/m^3 (design density of 550 kg/m^3).

Minimum edge distance and spacing must comply with local standards or the SPAX Design Guide.

The specified characteristic values must be lowered by safety factor coefficients to the design values for load-carrying capacity.

The safety factor coefficients depend on the environmental conditions (k_{mod}) and the load effect duration class (γ_m)

Refer to the SPAX Design Guide and ETA 12/0114 for more detailed design.

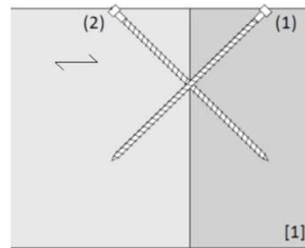
Characteristic Loads According to SPAX ETA and EC5



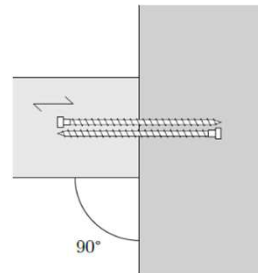
SPAX Full Thread (cylinder head or countersunk head) at 45°

Beam and joist application with 1 pair of screws crossing diagonally with an angle 45° to the grain.

Product		Wood - Wood, $\alpha = 45^\circ$		
Dimensions (mm)		Withdrawal		
Thread Diam. d_1	Screw Length L_s	l_{ef1} (mm)	l_{ef2} (mm)	$F_{ax,Rk}$ (kN)
6 (cylinder head)	100	50	50	3.64
	120	60	60	4.37
	140	70	70	5.10
	160	80	80	5.83
	180	90	90	6.56
	200	100	100	7.28
8	160	80	80	7.77
	180	90	90	8.73
	200	100	100	9.71
	220	110	110	10.68
	240	120	120	11.65
	260	130	130	12.62
	280	140	140	13.59
	300	150	150	14.56
	350	175	175	16.99
	400	200	200	17.00
10 (CSK only)	200	100	100	11.63
	220	110	110	12.79
	240	120	120	13.96
	260	130	130	15.12
	280	140	140	16.28
	300	150	150	17.44
	350	175	175	20.35
	400	200	200	23.26
	450	225	225	26.17
	500	250	250	28.00
	550	275	275	28.00
	600	300	300	28.00
800	400	400	28.00	



CSK only
CSK only



NOTES:

Load at an angle of 45° between load direction and grain direction of joist (2).

The above characteristic loads relate to the failure mode with the lowest value.

They are for Radiata Pine timber with a characteristic density of 400 kg/m³ (design density of 550 kg/m³).

Minimum edge distance and spacing must comply with local standards or the SPAX Design Guide.

The specified characteristic values must be lowered by safety factor coefficients to the design values for load-carrying capacity.

The safety factor coefficients depend on the environmental conditions (k_{mod}) and the load effect duration class (γ_m)

Refer to the SPAX Design Guide and ETA 12/0114 for more detailed design.

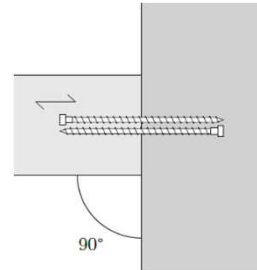
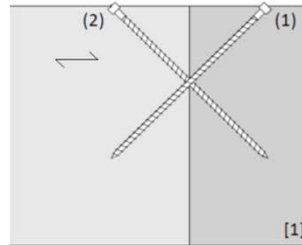
Characteristic Loads According to SPAX ETA and EC5



SPAX Countersunk Head Full Thread at 45°

Beam and joist application with 1 pair of screws crossing diagonally with an angle 45° to the grain.

Product		Wood - Wood, $\alpha = 45^\circ$		
Dimensions (mm)		Withdrawal		
Thread Diam. d_1	Screw Length L_s	l_{ef1} (mm)	l_{ef2} (mm)	$F_{ax,Rk}$ (kN)
12	200	100	100	13.35
	220	110	110	14.68
	240	120	120	16.02
	260	130	130	17.35
	280	140	140	18.68
	300	150	150	18.20
	350	175	175	23.36
	400	200	200	26.70
	450	225	225	30.04
	500	250	250	33.37
	550	275	275	36.72
600	300	300	38.00	



NOTES:

Load at an angle of 45° between load direction and grain direction.

The above characteristic loads relate to the failure mode with the lowest value.

They are for Radiata Pine timber with a characteristic density of 400 kg/m³ (design density of 550 kg/m³).

Minimum edge distance and spacing must comply with local standards or the SPAX Design Guide.

The specified characteristic values must be lowered by safety factor coefficients to the design values for load-carrying capacity.

The safety factor coefficients depend on the environmental conditions (k_{mod}) and the load effect duration class (γ_m)

Refer to the SPAX Design Guide and ETA 12/0114 for more detailed design.