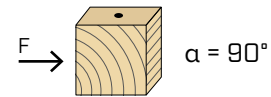
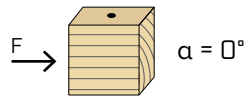


MINIMUM DISTANCES FOR SHEAR LOADS | TIMBER



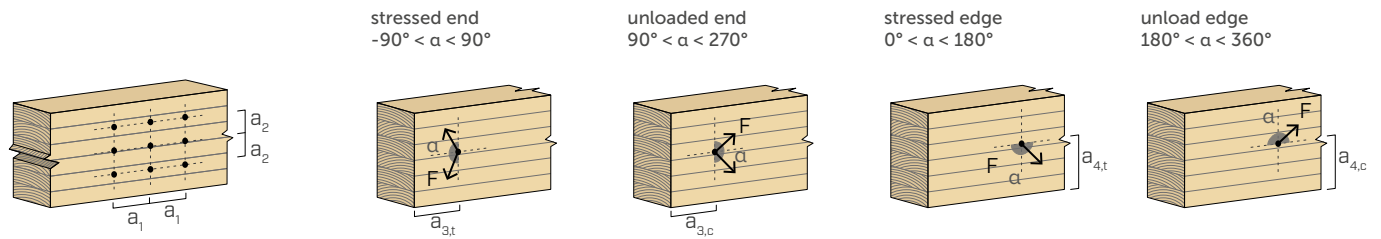
screws inserted **WITH pre-drilled hole**



d_1	[in]		0.16	0.18	0.20	0.24	0.32
	[mm]		4	4,5	5	6	8
a_1	[in]	10·d	1 9/16	1 3/4	1 15/16	2 3/8	3 1/8
a_2	[in]	4·d	5/8	11/16	13/16	15/16	1 1/4
$a_{3,t}$	[in]	12·d	1 7/8	2 1/8	2 3/8	2 13/16	3 3/4
$a_{3,c}$	[in]	7·d	1 1/8	1 1/4	1 3/8	1 5/8	2 3/16
$a_{4,t}$	[in]	7·d	1 1/8	1 1/4	1 3/8	1 5/8	2 3/16
$a_{4,c}$	[in]	3·d	1/2	9/16	9/16	11/16	15/16

		0.16	0.18	0.20	0.24	0.32
		4	4,5	5	6	8
5·d		13/16	7/8	1	1 3/16	1 9/16
4·d		5/8	11/16	13/16	15/16	1 1/4
12·d		1 7/8	2 1/8	2 3/8	2 13/16	3 3/4
7·d		1 1/8	1 1/4	1 3/8	1 5/8	2 3/16
7·d		1 1/8	1 1/4	1 3/8	1 5/8	2 3/16
3·d		1/2	9/16	9/16	11/16	15/16

α = load-to-grain angle
 $d = d_1$ = nominal diameter of the screw



NOTES

- Values in blue are from Table 10 of ESR-4645 (REDUCED CONNECTION GEOMETRY REQUIREMENTS BASED ON TESTING);
- The minimum spacing and distances comply with ESR-4645, where d refers to the nominal diameter of the screw, and are valid for screw installed into sawn lumber, structural glued laminated timber and cross laminated timber;
- Wood member stresses must be checked in accordance with the corresponding Sections of the NDS; end distances, edge distances and fastener spacing may need to be increased accordingly.

REFERENCE LATERAL DESIGN VALUES (Z) | WOOD-TO-WOOD

geometry					$Z_{ }$				$Z_{\perp/ }$				$Z_{\perp}$			
d_1	L	b	A		G				G				G			
[mm] [in]	[mm]	[in]	[in]	[in]	0.35	0.42	0.49	0.55	0.35	0.42	0.49	0.55	0.35	0.42	0.49	0.55
4 0.16	40	1 9/16	15/16	1/2	37	52	65	74	37	52	65	74	37	52	65	74
	50	1 15/16	1 3/16	3/4	45	61	74	86	45	61	74	86	45	61	74	86
	60	2 3/8	1 3/8	3/4	49	61	74	86	49	61	74	86	49	61	74	86
4,5 0.18	45	1 3/4	1 3/16	1/2	48	66	78	88	48	66	78	88	48	66	78	88
	50	1 15/16	1 3/16	3/4	49	68	86	100	49	68	86	100	49	68	86	100
	60	2 3/8	1 3/8	3/4	58	71	86	100	58	71	86	100	58	71	86	100
	70	2 3/4	1 9/16	1	63	80	98	116	63	80	98	116	63	80	98	116
5 0.20	80	3 1/8	1 9/16	1 1/2	76	93	107	119	76	93	107	119	76	93	107	119
	50	1 15/16	15/16	1	57	80	106	131	57	80	106	131	57	80	106	131
	60	2 3/8	1 3/16	1	69	97	127	149	69	97	127	149	69	97	127	149
	70	2 3/4	1 3/8	1 1/4	81	113	143	164	81	113	143	164	81	113	143	164
	80	3 1/8	1 9/16	1 1/2	93	127	147	164	93	127	147	164	93	127	147	164
	90	3 1/2	1 3/4	1 3/4	104	128	147	164	104	128	147	164	104	128	147	164
6 0.24	100	4	1 15/16	1 3/4	107	128	147	164	107	128	147	164	107	128	147	164
	60	2 3/8	1 3/16	1	80	112	148	182	80	112	148	182	80	112	148	182
	70	2 3/4	1 9/16	1	97	129	156	182	97	129	156	182	97	129	156	182
	80	3 1/8	1 9/16	1 1/2	107	149	190	211	107	149	190	211	107	149	190	211
	100	4	1 15/16	1 3/4	129	165	190	211	129	165	190	211	129	165	190	211
	120	4 3/4	2 3/8	2 1/4	139	165	190	211	139	165	190	211	139	165	190	211
	140	5 1/2	2 15/16	2 1/2	139	165	190	211	139	165	190	211	139	165	190	211
	160	6 1/4	2 15/16	3 1/4	139	165	190	211	139	165	190	211	139	165	190	211
	180	7 1/8	2 15/16	4	139	165	190	211	139	165	190	211	139	165	190	211
8 0.32	200	8	2 15/16	4 3/4	139	165	190	211	139	165	190	211	139	165	190	211
	100	4	2 1/16	1 3/4	153	214	270	313	123	171	216	251	123	171	216	251
	120	4 3/4	2 3/8	2 1/4	184	245	282	313	147	196	225	251	147	196	225	251
	140	5 1/2	2 3/8	3	196	245	282	313	157	196	225	251	157	196	225	251
	160	6 1/4	3 1/8	3	207	245	282	313	165	196	225	251	165	196	225	251
	180	7 1/8	3 1/8	3 3/4	207	245	282	313	165	196	225	251	165	196	225	251
	200	8	3 1/8	4 1/2	207	245	282	313	165	196	225	251	165	196	225	251
	220	8 5/8	3 1/8	5 1/2	207	245	282	313	165	196	225	251	165	196	225	251
	240	9 1/2	3 1/8	6 1/4	207	245	282	313	165	196	225	251	165	196	225	251
	260	10 1/4	3 1/8	7	207	245	282	313	165	196	225	251	165	196	225	251
	280	11	3 1/8	7 3/4	207	245	282	313	165	196	225	251	165	196	225	251
	300	11 3/4	4	7 3/4	207	245	282	313	165	196	225	251	165	196	225	251
	320	12 5/8	4	8 1/2	207	245	282	313	165	196	225	251	165	196	225	251

NOTES and GENERAL PRINCIPLES on page 67.