

FASTENER TECHNICAL DATA

R4™, Trim™

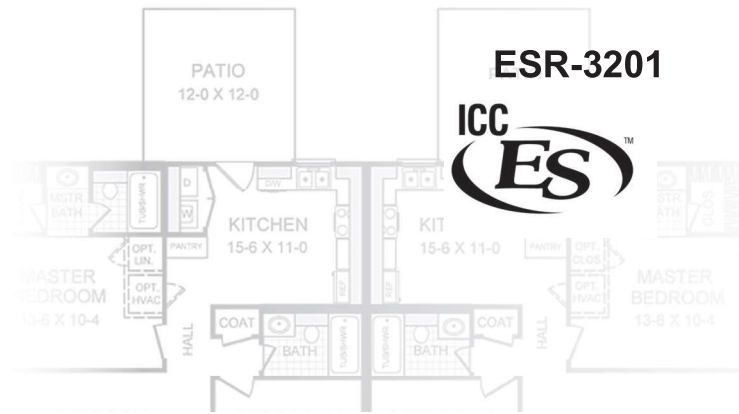


TABLE 1A—CARBON STEEL FASTENER SPECIFICATIONS

FASTENER DESIGNATION		OVERALL LENGTH ¹ (inches)	THREAD LENGTH ² (inches)	HEAD DIAMETER (inch)	HEAD RECESS	ROOT DIAMETER (inch)	SHANK DIAMETER (inch)	OUTSIDE THREAD DIAMETER (inch)	BENDING YIELD STRENGTH ³ F _y (psi)	ALLOWABLE STEEL STRENGTH	
										Tensile (lbf)	Shear (lbf)
R4	9x2"	2	1 1/4	0.329	Star drive T-25	0.112	0.128	0.173	158,800	627	428
	9x2 1/2"	2 1/2	1 1/2								
	9x2 3/4"	2 3/4	1 1/2								
	9x3 1/8"	3 1/8	1 5/8 (2 1/8)								
	10x2 1/2"	2 1/2	1 1/2	0.368	Star drive T-25	0.124	0.142	0.193	143,590	846	542
	10x2 3/4"	2 3/4	1 1/2								
	10x3 1/8"	3 1/8	1 5/8 (2 1/8)								
	10x3 1/2"	3 1/2	2 (2 1/8)								
	10x4"	3 1/8	2 1/2	0.439	Star drive T-25	0.148	0.171	0.234	134,280	1134	655
	10x4 1/2"	4 1/8	3								
	12x4 1/2"	4 1/8	3								
	12x5 1/8"	5 1/2	3								
	12x6 1/8"	6 1/4	3								
	12x7 1/4"	7	3								
FIN/TRIM	12x8"	7 1/8	3	0.197	Star drive T-10	0.100	0.111	0.156	148,410	499	360
	12x10"	9 1/4	3								
	12x12"	11 1/4	3								
	8x2 1/2"	2 1/2	1 1/2	0.230	Star drive T-15	0.112	0.128	0.175	147,280	576	425
	8x2 3/4"	2 3/4	1 1/2								
	8x3 1/8"	3 1/8	2 1/8								
KAMELEON	9x2 1/2"	2 1/2	1 1/2	0.258	Star drive T-20	0.112	0.134	0.173	160,210	634	437
	9x2 3/4"	2 3/4	1 1/4								
	9x3"	3	1 1/4								

TABLE 1B—PHEINOX™ FASTENER SPECIFICATIONS

FASTENER DESIGNATION		OVERALL LENGTH ¹ (inches)	THREAD LENGTH ² (inches)	HEAD DIAMETER (inch)	DRIVER SIZE	ROOT DIAMETER (inch)	SHANK DIAMETER (inch)	OUTSIDE THREAD DIAMETER (inch)	BENDING YIELD STRENGTH ³ F _y (psi)	ALLOWABLE STEEL STRENGTH	
										Tensile (lbf)	Shear (lbf)
R4	9x2"	2	1 1/4	0.329	Star drive T-25	0.112	0.128	0.173	113,340	467	334
	10x2 1/2"	2 1/2	1 1/2	0.368	Star drive T-25	0.124	0.142	0.193	170,220	490	424
	10x2 3/4"	2 3/4	1 1/2								
	10x3 1/8"	3 1/8	1 5/8 (2 1/8)								
FIN/TRIM RT COMPOSITE	10x4"	3 1/8	2 1/2	0.197	Star drive T-10	0.100	0.111	0.156	117,540	350	267
	8x2 1/2"	2 1/2	1 1/2								
	8x2 3/4"	2 3/4	1 1/2								
	8x3 1/8"	3 1/8	2 1/8								
	9x2 1/2"	2 1/2	1 1/2	0.230	Star drive T-15	0.112	0.128	0.175	66,340	394	319
	9x2 3/4"	2 3/4	1 1/2								
	9x3 1/8"	3 1/8	2 1/8								

For SI: 1 inch = 25.4 mm; 1 psi = 6.9 kPa.

¹Overall length of fastener is measured from the top of the head to bottom of the tip. See Figure 1.

²Length of thread includes tip. Where two thread lengths are shown, the first refers to thread length of screws marked with "GRK" on the fastener head, and the one in parentheses refers to screws which do not have this marking on the head. See detailed illustrations in Figure 1.

³Bending yield strength determined in accordance with ASTM F1575 using the root diameter.

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TABLE 2A— REFERENCE WITHDRAWAL DESIGN VALUES (W) FOR CLIMATE™ COATED FASTENERS^{1,2}

FASTENER DESIGNATION	THREAD LENGTH ³ (inches)	W (lbf/in.) FOR SPECIFIC GRAVITIES (SG) OF:			
		SG ≥ 0.67 ⁴	0.58 ≥ SG ≥ 0.55	0.55 > SG ≥ 0.49	0.49 > SG ≥ 0.42
R4	9x2"	179	221	172	124
	9x2 1/2"				
	9x2 3/4"				
	9x3 1/8"				
	10x2 1/2"	249	228	155	133
	10x2 3/4"				
	10x3 1/8"				
	10x3 1/2"				
	10x4"	255	217	209	141
	10x4 1/2"				
	12x4 1/2"				
	12x5 1/8"				
	12x6 1/8"				
	12x7 1/2"				
FIN/TRIM	12x8"	175	n/a	n/a	n/a
	12x10"				
	12x12"				
	8x2 1/2"				
	8x2 3/4"	221	n/a	n/a	n/a
	8x3 1/8"				
	9x2 1/2"				
	9x2 3/4"				
	9x3 1/8"				
	9x3 1/2"				

For SI: 1 inch = 25.4 mm; 1 lbf/in = 175 N/m.

¹Tabulated reference withdrawal design values (W) are in pounds per inch of thread penetration into side grain of main member.

²Values must be multiplied by applicable adjustment factors, in accordance with the NDS, and must be multiplied by the length of thread penetration in the main member, including tip.

³Where two thread lengths are shown, the first refers to thread length of screws marked with "GRK" on the fastener head, and the second refers to screws which do not have this marking on the head.

⁴Pilot holes equal to 70% of the root diameter of the screw are required, and the tabulated values are applicable to connections subject to tension load only, due to differing pilot hole requirements for lateral connections.

TABLE 2B — REFERENCE WITHDRAWAL DESIGN VALUES (W) FOR PHEINOX™ STAINLESS STEEL FASTENERS^{1,2}

FASTENER DESIGNATION	THREAD LENGTH ³ (inches)	W (lbf/in.) FOR SPECIFIC GRAVITIES (SG) OF:			
		SG ≥ 0.67 ⁴	0.58 ≥ SG ≥ 0.55	0.55 > SG ≥ 0.49	0.49 > SG ≥ 0.42
R4	9x2"	213	215	179	125
	10x2 1/2"				
	10x2 3/4"				
	10x3 1/8"				
	10x4"	123	240	193	144
FIN/TRIM RT COMPOSITE	8x2 1/2"				
	8x2 3/4"				
	8x3 1/8"	106	n/a	n/a	n/a
	9x2 1/2"				
	9x2 3/4"				
	9x3 1/8"				
	9x3 1/2"	115	n/a	n/a	n/a
	9x3 3/4"				

For SI: 1 inch = 25.4 mm; 1 lbf/in = 175 N/m.

¹Tabulated reference withdrawal design values (W) are in pounds per inch of thread penetration into side grain of main member.

²Values must be multiplied by applicable adjustment factors, in accordance with the NDS, and must be multiplied by the length of thread penetration in the main member, including tip.

³Where two thread lengths are shown, the first refers to thread length of screws marked with "GRK" on the fastener head, and the second refers to screws which do not have this marking on the head.

⁴Pilot holes equal to 70% of the root diameter of the screw are required, and the tabulated values are applicable to connections subject to tension load only, due to differing pilot hole requirements for lateral connections.

TABLE 3A— REFERENCE PULL-THROUGH DESIGN VALUES (P) FOR CLIMATE™ COATED FASTENERS¹

FASTENER DESIGNATION	MINIMUM SIDE MEMBER THICKNESS (inch)	P (lbf) FOR SPECIFIC GRAVITIES (SG) OF:			
		SG ≥ 0.67 ²	0.58 ≥ SG ≥ 0.55	0.55 > SG ≥ 0.49	0.49 > SG ≥ 0.42
R4	9x2"	162	119	107	83
	9x2 1/2"				
	9x2 3/4"				
	9x3 1/8"				
	10x2 1/2"	275	140	126	103
	10x2 3/4"				
	10x3 1/8"				
	10x3 1/2"				
	10x4"	407	176	171	126
	10x4 1/2"				
	12x4 1/2"				
	12x5 1/8"				
	12x6 1/8"				
	12x7 1/2"				
FIN/TRIM	12x8"	61	n/a	n/a	n/a
	12x10"				
	12x12"				
	8x2 1/2"				
	8x2 3/4"	94	n/a	n/a	n/a
	8x3 1/8"				
	9x2 1/2"				
	9x2 3/4"				
	9x3 1/8"				
	9x3 1/2"				

For SI: 1 inch = 25.4 mm; 1 lbf = 4.45 N.

¹Values must be multiplied by applicable adjustment factors, in accordance with the NDS.

²Pilot holes equal to 90% of the root diameter of the screw are required, and the tabulated values are applicable to connections subject to tension load only.

TABLE 3B— REFERENCE PULL-THROUGH DESIGN VALUES (P) FOR PHEINOX™ STAINLESS STEEL FASTENERS¹

FASTENER DESIGNATION	MINIMUM SIDE MEMBER THICKNESS (inch)	P (lbf) FOR SPECIFIC GRAVITIES (SG) OF:			
		SG ≥ 0.67 ²	0.58 ≥ SG ≥ 0.55	0.55 > SG ≥ 0.49	0.49 > SG ≥ 0.42
R4	9x2"	184	119	107	83
	10x2 1/2"				
	10x2 3/4"				
	10x3 1/8"				
	10x4"	220	140	126	103
FIN/TRIM RT COMPOSITE	8x2 1/2"				
	8x2 3/4"				
	8x3 1/8"	70	n/a	n/a	n/a
	9x2 1/2"				
	9x2 3/4"				
	9x3 1/8"				
	9x3 1/2"	124	n/a	n/a	n/a
	9x3 3/4"				

For SI: 1 inch = 25.4 mm; 1 lbf = 4.45 N.

¹Values must be multiplied by applicable adjustment factors, in accordance with the NDS.

²Pilot holes equal to 90% of the root diameter of the screw are required, and the tabulated values are applicable to connections subject to tension load only.

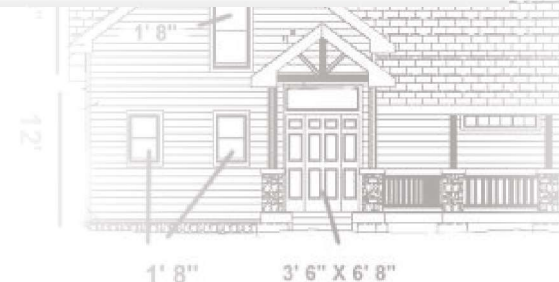


TABLE 4A— REFERENCE LATERAL DESIGN VALUES (Z) FOR WOOD-TO-WOOD CONNECTIONS USING CLIMATEK™ COATED FASTENERS¹

FASTENER DESIGNATION		SIDE MEMBER THICKNESS (inch)	MINIMUM MAIN MEMBER PENETRATION (inches)	Z (lbf) FOR SPECIFIC GRAVITIES (SG) OF:			
				SG ≥ 0.67 ²	0.58 ≥ SG ≥ 0.55	0.55 > SG ≥ 0.49	0.49 > SG ≥ 0.42
R4	9x2"	3/4	1 1/4	175	103	89	75
	9x2 1/2"						
	9x2 3/4"						
	9x3 1/8"						
	10x2 1/2"	3/4	1 3/4	203	121	97	95
	10x2 3/4"						
	10x3 1/8"						
	10x3 1/2"						
	10x4"						
	10x4 3/4"						
	12x4 3/4"	3/4	4	242	122	119	110
	12x5 5/8"						
	12x6 3/8"						
	12x7 1/4"						
	12x8"						
	12x10"						
	12x12"						
FIN/TRIM	8x2 1/2"	3/4	1 3/4	84	—	—	—
	8x2 3/4"						
	8x3 1/8"						
	9x2 1/2"	3/4	1 3/4	104	—	—	—
	9x2 3/4"						
	9x3 1/8"						

For SI: 1 inch = 25.4 mm; 1 lbf = 4.45 N.

¹Values must be multiplied by applicable adjustment factors, in accordance with the NDS.

²Pilot holes equal to 90% of the root diameter of the screw are required, and the tabulated values are applicable to connections subject to lateral load only, due to differing pilot hole requirements for tension connections.

TABLE 4B— REFERENCE LATERAL DESIGN VALUES (Z) FOR WOOD-TO-WOOD CONNECTIONS USING PHEINOX™ STAINLESS STEEL FASTENERS¹

FASTENER DESIGNATION		SIDE MEMBER THICKNESS (inch)	MINIMUM MAIN MEMBER PENETRATION (inches)	Z (lbf) FOR SPECIFIC GRAVITIES (SG) OF:			
				SG ≥ 0.67 ²	0.67 > SG ≥ 0.55	0.55 > SG ≥ 0.49	0.49 > SG ≥ 0.42
R4	9x2"	3/4	1 1/4	212	128	110	87
	10x2 1/2"	3/4	1 3/4	235	135	110	102
	10x2 3/4"						
	10x3 1/8"						
	10x4"						
FIN/TRIM	8x2 1/2"	3/4	1 3/4	78	—	—	—
	8x2 3/4"						
	8x3 1/8"						
	9x2 1/2"	3/4	1 3/4	108	—	—	—
	9x2 3/4"						
	9x3 1/8"						
RT COMPOSITE	8x2 1/2"	3/4	1 3/4	107	—	—	—
	8x2 3/4"						
	8x3 1/8"						
	9x2 1/2"	3/4	1 3/4	151	—	—	—
	9x2 3/4"						
	9x3 1/8"						

For SI: 1 inch = 25.4 mm; 1 lbf = 4.45 N.

¹Values must be multiplied by applicable adjustment factors, in accordance with the NDS.

²Pilot holes equal to 90% of the root diameter of the screw are required, and the tabulated values are applicable to connections subject to lateral load only, due to differing pilot hole requirements for tension connections.

FASTENER TECHNICAL DATA

R4™, Trim™

TABLE 5—CONNECTION GEOMETRY REQUIREMENTS^{1,2}

CONDITION		MINIMUM DISTANCE OR SPACING (inches)			
		D = 0.111"	D = 0.128-0.134"	D = 0.142"	D = 0.171"
End distance	Loading toward end	2	2	2 ¹ / ₈	2 ⁵ / ₈
	Loading away from end	1 ¹ / ₈	1 ¹ / ₄	1 ³ / ₈	1 ³ / ₄
	Loading perpendicular to grain	NA ³	NA ³	NA ³	NA ³
Edge distance	Loading parallel to grain	1	1	1 ¹ / ₈	1 ³ / ₈
	Loading perpendicular to grain	NA ³	NA ³	NA ³	NA ³
Spacing between fasteners in a row	Loading parallel to grain	1 ³ / ₄	2	2 ¹ / ₈	2 ⁵ / ₈
	Loading perpendicular to grain	NA ³	NA ³	NA ³	NA ³
Spacing between rows	In-line rows	⁵ / ₈	⁵ / ₈	³ / ₄	⁷ / ₈
	Staggered rows ⁴	¹ / ₄	³ / ₈	³ / ₈	³ / ₈

For SI: 1 inch = 25.4 mm.

¹End distances, edge distances and screw spacing must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Section 4.2.

²The term *D* is the shank diameter, as specified in Table 1.

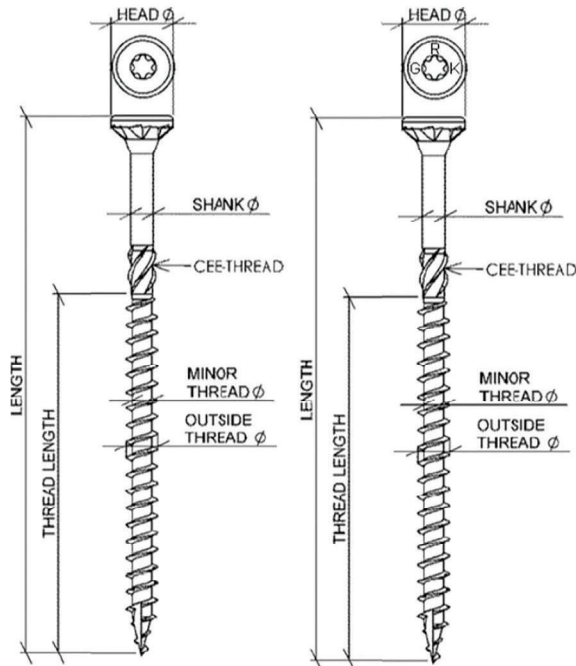
³Loading perpendicular to grain is outside the scope of this evaluation report.

⁴Values for spacing between staggered rows apply where screws in adjacent rows are offset by half of the spacing between screws in a row.

TABLE 6—EXPOSURE CONDITIONS FOR FASTENERS WITH INTENDED USE AND LIMITATIONS OF RECOGNITION

EXPOSURE CONDITION	TYPICAL APPLICATIONS	RECOGNITION LIMITATIONS
Corrosion Resistance of Fasteners		
1	Treated wood in dry use applications	Limited to use where equilibrium moisture content of the chemically treated wood meets the dry service conditions as described in the NDS.
3	General construction	Limited to freshwater and chemically treated wood exposure, i.e., no saltwater exposure.

R4



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