PERFORMANCE SPECIFICATIONS

DrJ TER No. 2010-02
Construction Screw Properties

DIAMETER	ALLOWABLE WITHDRAWAL (W) AND HEAD PULL-THROUGH (W_H)[1,2,3,4]					
	SOUTHERN PINE (SG=0.55)		DOUGLAS-FIR (SG=0.50)		HEM FIR & SPRUCE-PINE-FIR (SG=0.42)	
	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)
#6	140	179	133	150	105	125
#8	175	157	133	157	127	123
#10	190	315	176	238	144	177

DIAMETER	ALLOWABLE WITHDRAWAL (W) AND HEAD PULL-THROUGH (W_H)[1,2]											
	PLYWOOD 15/32" (0.39)		PLYWOOD 19/32" (0.39)		PLYWOOD 23/32" (0.50)		OSB 15/32" (0.50)		OSB 19/32" (0.50)		OSB 23/32" (0.50)	
	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)	WITHDRAWAL W (lbs./inch)	HEAD PULL-THROUGH W_H (lbs.)
#6	51	-	83	-	134	-	29	-	36	-	52	-
#8	51	120	83	120	162	212	36	68	48	78	52	110
#10	90	151	92	177	186	293	54	78	54	78	66	110

1. Tabulated withdrawal and head pull-through design values (W) and (W_H) are shown at a C_D = 1.0. Tabulated withdrawal and head pull-through values shall be adjusted by all applicable adjustment factors per *NDS Table 11.3.1.*
2. Full withdrawal strength is calculated by multiplying the length of thread embedded in the main member by the tabulated reference withdrawal values.
3. Head pull-through values for #6 diameter and larger in Souther pine, Douglas-Fir, Hem Fir and Spruce-Pine-Fir are minimum 1.0" side member thickness.
4. Head pull-through values for #8 diameter and larger in Southern Pine, Douglas-Fir, Hem-Fir and Spruce-Pine-Fir are minimum 1.5" side member thickness.
5. For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with an assigned specific gravity between 0.50 and 0.55, use the tabulated values for specific gravity of 0.50. For wood species with an assigned specific gravity greater than or equal to 0.55, use the tabulated values for specific gravity of 0.55.

INTERIOR

DIAMETER	BENDING YIELD STRENGTH[1] , f_{yb} (psi)	ALLOWABLE STEEL STRENGTH (lbs)	
		TENSILE	SHEAR[2]
#6	198,000	310	265
#8	187,000	460	345
#10	187,000	690	545

1. Bending yield strength, f_{yb}, is determined in accordance with *ASTM F1575* using minor thread diameter when fastener is tested in thread section.
2. Shear strength is determined in accordance withh *AISI S904* using minor thread diameter when fastener is tested in threaded section.

DIAMETER	REFERENCE LATERAL SHEAR VALUE[4,5,6], Z (lbf)				
	MINIMUM MAIN MEMBER PENETRATION[1] (in)	MINIMUM SIDE MEMBER THICKNESS (in)	WOOD SPECIES (SPECIFIC GRAVITY[2,3])		
			SP (0.55)	DF-L (0.50)	SPF/HF (0.42)
#8 x 1-1/2"	3/4"	3/4"	70	59	43
#8 x 2"	1-1/4"	3/4"	80	70	55
#8 x 2-1/2"	1"	1-1/2"	84	75	58
#10 x 2"	1-1/4"	3/4"	112	99	73
#10 x 2-1/2"	1"	1-1/2"	115	101	81
#10 x 3"	1-1/2"	1-1/2"	132	121	103

SI: 1 in = 25.4 mm, 1 lbf = 4.45 N

1. Penetration depth includes the length of tapered tip.
2. The species applies to both the main and the side members. Where the Members are different specific gravities, use the lower of the two.
3. For wood species with an assigned specific gravity between 0.42 and 0.50, use the tabulated values for specific gravity of 0.42. For wood species with an assigned specific gravity between 0.50 and 0.55, use the tabulated values for specific gravity of 0.50. For wood species with an assigned specific gravity greater than or equal to 0.55, use the tabulated values for specific gravity of 0.55.
4. The fastener orientation shall be perpendicular to the grain, and the underside of the fastener head shall be installed flush with the surface of the side member.
5. Lateral design values apply to both perpendicular grain ($Z_\perp$) and parallel to grain ($Z_\parallel$) orientations.
6. Tabulated lateral design values shall be adjusted by all applicable adjustment factors per *NDS 11.3.1.*

Unidrive Combination (PH & SQ) Flat Head Yellow Zinc

Multi-Material Construction

SPAX® ENGINEERED FASTENERS

DIAMETER	REFERENCE LATERAL SHEAR VALUE, Z (lbf)			
	MINIMUM MAIN MEMBER PENETRATION[1] (in)	MINIMUM SIDE MEMBER THICKNESS (in)	REFERENCE LATERAL SHEAR VALUE[1,3,4], Z (lbf)	
			OSB[5] (0.50)	PLYWOOD[5] (0.39)
#6 x 1"	9/16"	7/16"	28	-
#6 x 1"	17/32"	15/32"	28	22
#6 x 1-1/4"	13/16"	7/16"	35	-
#6 x 1-1/4"	25/32"	15/32"	35	29
#6 x 1-1/4"	21/32"	19/32"	36	28
#6 x 1-1/4"	17/32"	23/32"	38	29
#8 x 1-1/4"	13/16"	7/16"	40	-
#8 x 1-1/4"	25/32"	15/32"	40	33
#8 x 1-1/4"	21/32"	19/32"	42	32
#8 x 1-1/2"	1-1/16"	7/16"	51	-
#8 x 1-1/2"	1-1/32"	15/32"	50	44
#8 x 1-1/2"	29/32"	19/32"	49	41
#8 x 1-1/2"	25/32"	23/32"	51	39
#8 x 2"	1-9/16"	7/16"	53	-
#8 x 2"	1-17/32"	15/32"	54	46
#8 x 2"	1-13/32"	19/32"	59	48
#8 x 2"	1-9/32"	23/32"	64	51
#8 x 2-1/2"	1-9/16"	7/16"	53	-
#8 x 2-1/2"	1-17/32"	15/32"	54	46
#8 x 2-1/2"	1-13/32"	19/32"	59	48
#8 x 2-1/2"	1-9/32"	23/32"	64	51
#10 x 1-1/4"	13/16"	7/16"	48	-
#10 x 1-1/4"	25/32"	15/32"	48	40
#10 x 1-1/2"	1-1/16"	7/16"	61	-
#10 x 1-1/2"	1-1/32"	15/32"	60	53
#10 x 1-1/2"	29/32"	19/32"	60	49
#10 x 1-1/2"	25/32"	23/32"	63	48
#10 x 2"	1-9/16"	7/16"	80	-
#10 x 2"	1-17/32"	15/32"	81	70
#10 x 2"	1-13/32"	19/32"	85	72
#10 x 2"	1-9/32"	23/32"	83	71
#10 x 2-1/2"	2-1/16"	7/16"	80	-
#10 x 2-1/2"	1-17/32"	15/32"	81	70
#10 x 2-1/2"	1-29/32"	19/32"	85	72
#10 x 2-1/2"	1-25/32"	23/32"	90	74

SI: 1 in = 25.4 mm, 1 lbf = 4.45 N

1. Reference lateral design values apply to two-member single shear connections where the side member is OSB or plywood, the main member is SPF (SG = 0.42), and the fastener is installed in the face of the member and oriented perpendicular to the grain. The underside of the fastener head shall be installed flush with the surface of the side member.
2. Penetration depth includes the length of the tapered tip.
3. Lateral design values apply to both perpendicular to grain ($Z_{\perp}$) and parallel to grain ($Z_{\parallel}$) orientations.
4. Tabulated lateral design values shall be adjusted by all appplicable adjustment factors per *NDS Table 11.3.1*.
5. OSB shall comply with *DOC PS 2* and have a minimum specific gravity of 0.50. Plywood shall comply with *DOC PS 1* and have a minimum specific gravity of 0.39.