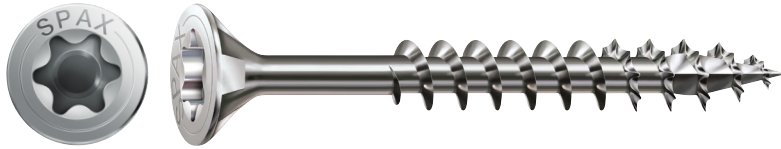




T-STAR *plus* Flat Head HCR-X™

Exterior / Decking / Framing



MADE IN USA
WITH GLOBALLY
SOURCED MATERIALS

DESCRIPTION

SPAX® T-STAR *plus* Flat Head fasteners with HCR-X™ coating are designed for use in multiple material connections often found outside residential domains. These “work horse” construction fasteners are designed to countersink in treated lumber for a clean-flush finish and provides a quick and easy installation. In addition, they provide long-lasting, “contractor proven” secure connections.

MATERIALS & COATING

Cold-rolled “carbon steel” wire, heat treated and plated with a HCR-X™ finish to prevent red rust. “HCR-X™” is tested and recognized for use in ground contact pressure treated lumber for exterior, freshwater general construction applications (e.g., AWPA UC1-UC4A, UCFA). SPAX® recommends stainless steel for cedar and redwood attachment applications.

EXTERIOR



Patented **MULTI-Head**

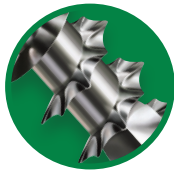
Countersinks screw head flush with material.

U.S. Patent No. 7,334,976



Unique **4CUT™** Point

Prevents splitting and requires no pre-drilling in wood.



Patented **Serrations**

Allow for quicker, easier fastening.

U.S. Patent No. 7,101,133



T-STAR *plus* Drive

“The PRO’s Choice” drive system provides superior bit engagement, eliminates camming out and facilitates overhead driving.



TYPICAL EXTERIOR APPLICATIONS

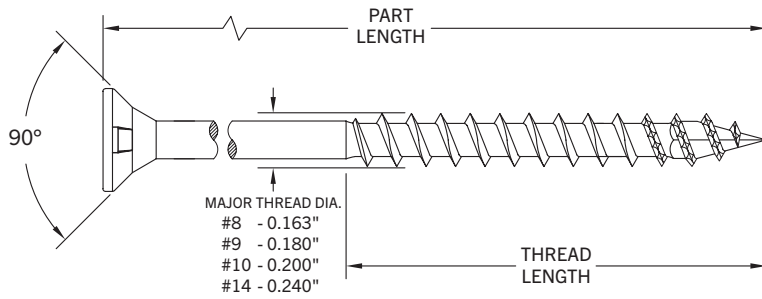
- 2-by framing connections - treated lumber
- Deck board finishing installation
- Deck railing 2x2 baluster
- Stair treads - treated lumber deck
- Exterior fencing
- Shed construction
- Outdoor furniture



T-STAR plus Flat Head HCR-X™



Exterior / Decking / Framing



PRODUCT SELECTION

PART LENGTH	THREAD LENGTH		HEAD SIZE	DRIVE/BIT SIZE	APPROX. QTY.	PKG. TYPE	MASTER QTY.	PART NO.
	FULL	PARTIAL						
#8 x 1-1/4"	N/A	0.670"	0.320"	T20+	230	1 lb. Box	5	4191670400324
					2500	Bulk Pail	N/A	3191670400320
#8 x 1-1/2"	N/A	0.870"	0.320"	T20+	25	Retail Pax**	10	4191670400402
					195	1 lb. Box	5	4191670400404
					550	3 lb. Box	3	41916704004045
					2500	Bulk Pail	N/A	3191670400400
#8 x 2"	N/A	1.240"	0.320"	T20+	154	1 lb. Box	5	4191670400504
					465	3 lb. Box	3	41916704005045
					1500	Bulk Pail	N/A	3191670400500
#8 x 2-1/2"	N/A	1.340"	0.320"	T20+	124	1 lb. Box	5	4191670400604
					375	3 lb. Box	3	41916704006045
					1500	Bulk Pail	N/A	3191670400600
#9 x 2-1/2"	N/A	1.655"	0.340"	T20+	109	1 lb. Box	5	4191670450604
					310	3 lb. Box	3	41916704506045
					1500	Bulk Pail	N/A	3191670450600
#9 x 3-1/4"	N/A	1.810"	0.340"	T20+	83	1 lb. Box	5	4191670450804
					245	3 lb. Box	3	41916704508045
					1500	Bulk Pail	N/A	3191670450800
#10 x 1-1/2"	N/A	1.000"	0.390"	T20+	125	1 lb. Box	5	4191670500404
					2500	Bulk Pail	N/A	3191670500400
#10 x 2"	N/A	1.250"	0.390"	T20+	99	1 lb. Box	5	4191670500504
					277	3 lb. Box	3	41916705005045
					1500	Bulk Pail	N/A	3191670500500
#10 x 2-1/2"	N/A	1.600"	0.390"	T20+	81	1 lb. Box	5	4191670500604
					235	3 lb. Box	3	41916705006045
					1500	Bulk Pail	N/A	3191670500600

NOTE: Only sold in master cartons.
* Bit not included.

EXTERIOR

PRODUCT SELECTION

PART LENGTH	THREAD LENGTH		HEAD SIZE	DRIVE/BIT SIZE	APPROX. QTY.	PKG. TYPE	MASTER QTY.	PART NO.
	FULL	PARTIAL						
#10 x 3"	N/A	1.600"	0.390"	T20+	16	Retail Pax**	10	4191670500752
					67	1 lb. Box	5	4191670500754
					200	3 lb. Box	3	41916705007545
					225	Mini Pail	3	4191670500758
					1500	Bulk Pail	N/A	3191670500750
#10 x 3-1/2"	N/A	2.375"	0.390"	T20+	59	1 lb. Box	5	4191670500904
					177	3 lb. Box	3	41916705009045
					1500	Bulk Pail	N/A	3191670500900
#14 x 1"	Full	N/A	0.450"	T30+	115	1 lb. Box	5	4191670600254
					1500	Bulk Pail	N/A	3191670600250
#14 x 1-1/4"	Full	N/A	0.450"	T30+	97	1 lb. Box	5	4191670600324
					1500	Bulk Pail	N/A	3191670600320
#14 x 1-1/2"	Full	N/A	0.450"	T30+	90	1 lb. Box	5	4191670600404
					1500	Bulk Pail	N/A	3191670600400
#14 x 2"	Full	N/A	0.450"	T30+	65	1 lb. Box	5	4191670600504
					1500	Bulk Pail	N/A	3191670600500
#14 x 2-1/2"	N/A	1.600"	0.450"	T30+	55	1 lb. Box	5	4191670600604
					1000	Bulk Pail	N/A	3191670600600
#14 x 3"	N/A	1.600"	0.450"	T30+	10	Retail Pax**	10	4191670600752
					1000	Bulk Pail	N/A	3191670600750
#14 x 3-1/2"	N/A	2.400"	0.450"	T30+	10	Retail Pax**	10	4191670600902
					1000	Bulk Pail	N/A	3191670600900
#14 x 4"	N/A	2.400"	0.450"	T30+	8	Retail Pax**	10	4191670601002
					1000	Bulk Pail	N/A	3191670601000
#14 x 4-3/4"	N/A	2.650"	0.450"	T30+	8	Retail Pax**	10	4191670601202
					750	Bulk Pail	N/A	3191670601200

NOTE: Only sold in master cartons.
* Bit not included.

EXTERIOR



1 and 3 lb. Boxes



Retail Pax®



Project Pax®



Mini and Bulk Pails



T-STAR plus Bit

BIT SELECTION

DRIVE BIT	BIT SIZE	MASTER QTY.	PART NO.
T20+	1"	10	5000009185209
	2"	10	5000009285209
T30+	1"	10	5000009185309
	2"	10	5000009285309



NOTE: Only sold in master cartons. Made in Taiwan.

FASTENER LENGTHS

PART LENGTH	HEAD	FASTENER	PART LENGTH	HEAD	FASTENER
#8 x 1-1/4"			#10 x 3-1/2"		
#8 x 1-1/2"			#14 x 1"		
#8 x 2"			#14 x 1-1/4"		
#8 x 2-1/2"			#14 x 1-1/2"		
#9 x 2-1/2"			#14 x 2"		
#9 x 3-1/4"			#14 x 2-1/2"		
#10 x 1-1/2"			#14 x 3"		
#10 x 2"			#14 x 3-1/2"		
#10 x 2-1/2"			#14 x 4"		
#10 x 3"			#14 x 4-3/4"		

EXTERIOR

MASONRY & CONCRETE PRE-DRILL SPECIFICATIONS

NOTE: In masonry/concrete, pre-drill a hole at least 1/4" to 1/2" longer than the length of the screw (refer to chart). No anchor required. In sheet metal, no pre-drilling is required up to 24 gauge.

SCREW DIAMETER	DRILL BIT	WEIGHT
#8/9	1/8"	Light
#10	5/32"	Medium
#14	3/16"	Medium



PERFORMANCE SPECIFICATIONS



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	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH
	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)
#8	175	157	133	157	127	123
#9	190	303	146	211	132	177
#10	190	315	176	238	144	177

DIAMETER	ALLOWABLE WITHDRAWAL (W) AND HEAD PULL-THROUGH (W _H) ^{1,2,3,4}					
	SOUTHERN PINE (SG=0.55)		LAMINATED VENEER LUMBER (SG=0.50)		HEM FIR & SPRUCE-PINE-FIR (SG=0.42)	
	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH
	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)
#14 (Dry)	205	240	180	350	130	190
#14 (Wet)	140	155	-	-	95	135

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	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH	WITHDRAWAL	HEAD PULL-THROUGH
	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)	W (lbs./inch)	W _H (lbs.)
#8	51	120	83	120	162	212	36	68	48	78	52	110
#9	51	125	92	145	186	258	54	68	54	78	66	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 C₀ = 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 #8 diameter and larger in Southern Pine, Douglas-Fir, Hem-Fir and Spruce-Pine-Fir are minimum 1.5" side member thickness.
4. 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.

DIAMETER	BENDING YIELD STRENGTH ¹ , f _y (psi)	ALLOWABLE STEEL STRENGTH (lbs)	
		TENSILE	SHEAR ²
#8	187,000	460	345
#9	201,000	540	435
#10	187,000	690	545

1. Bending yield strength, f_y, 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 with *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 ⁴ (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 1-3/4"	1"	3/4"	80	69	50
#8 x 2"	1-1/4"	3/4"	80	70	55
#8 x 2-1/2"	1"	1-1/2"	84	75	58
#9 x 2-1/2"	1"	1-1/2"	105	92	73
#9 x 3-1/4"	1-3/4"	1-1/2"	116	106	90
#10 x 1-1/2"	3/4"	3/4"	86	72	53
#10 x 2"	1-1/4"	3/4"	112	99	73



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)
#10 x 2-1/2"	1"	1-1/2"	115	101	81
#10 x 2-3/4"	1-1/4"	1-1/2"	132	117	91
#10 x 3"	1-1/2"	1-1/2"	132	121	103
#10 x 3-1/2"	1-1/2"	1-1/2"	132	121	103
#14 x 2"	1-1/4"	3/4"	145	121	88
#14 x 2-1/2"	1"	1-1/2"	151	134	109
#14 x 3"	1-1/2"	1-1/2"	187	171	133
#14 x 3-1/2"	2"	1-1/2"	187	172	146
#14 x 4"	3"	1-1/3"	187	172	146
#14 x 4-1/2"	4"	1-1/4"	187	172	146

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*.

EXTERIOR

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)
#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 1-3/4"	1-5/16"	7/16"	53	-
#8 x 1-3/4"	1-9/32"	15/32"	54	46
#8 x 1-3/4"	1-5/32"	19/32"	59	48
#8 x 1-3/4"	1-1/32"	23/32"	58	48
#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"	1-5/16"	7/16"	51	46
#8 x 2-1/2"	1-9/32"	15/32"	52	48
#8 x 2-1/2"	1-5/32"	19/32"	57	51
#9 x 2-1/2"	2-1/16"	7/16"	71	-
#9 x 2-1/2"	2-1/32"	15/32"	71	62
#9 x 2-1/2"	1-29/32"	19/32"	76	63
#9 x 2-1/2"	1-25/32"	23/32"	81	66
#10 x 1-1/4"	13/16"	7/16"	48	-



T-STAR plus Flat Head HCR-X™



Exterior / Decking / Framing

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)
#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 applicable 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.

EXTERIOR