



DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES

Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

EUROTEC GmbH

EVALUATION SUBJECT:

EUROTEC STRUCTURAL WOOD SCREWS

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015 and 2012 *International Building Code*® (IBC)
- 2021, 2018, 2015 and 2012 *International Residential Code*® (IRC)

Properties evaluated:

- Structural

2.0 USES

EuroTec Structural Wood Screws are used for wood-to-wood connections that are designed in accordance with the IBC. For structures regulated under the IRC, the screws may be used where an engineered design is submitted in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION

3.1 EuroTec Structural Wood Screws:

The EuroTec Structural Wood Screws are dowel-type threaded fasteners designed to be installed in wood without drilling a lead hole. The screws are manufactured from carbon steel wire and are hardened and galvanized in accordance with the manufacturer’s specifications, which are included in the approved quality documentation. The screws are available in packages of loose fasteners.

3.1.1 Paneltwistec Screws: The Paneltwistec screws are typically partial thread screws, with very short screws being fully-threaded. See Table 1 for applicable thread lengths. The screws have either a countersunk head with ribs (designated SK) or a washer head (designated TK), which both have a star shaped driving recess. The partial thread screws have a reamer knurl between the smooth shank and the threads and a sharp point. Two tip designs are available, designated AG and DAG. The AG tip has a short double thread. For the DAG tip, there is a secondary thread which runs at a sharp angle to the primary thread for a length equal to roughly 5 times the thread pitch. See Figures 1 through 4 for images of these screws. See Table 1 for screw dimensions.

3.1.2 SawTec Screws: The SawTec screws are partially threaded screws, which have a stepped, flat head, with teeth under the head, and a star shaped driving recess. The screws have a reamer knurl between the smooth shank and the threads and a DAG tip design, described in Section 3.1.1. See Figure 5 for an image of these screws. See Table 1 for screw dimensions.

3.1.3 KonstruX ST Screws: The KonstruX ST screws are fully threaded screws, which have a cylindrical head or a ribbed countersunk head. Both head styles have a star shaped driving recess. The screws have a self drilling tip with a secondary thread which runs at a sharp angle to the primary thread for a short length near the tip. See Figures 6 and 7 for images of these screws. See Table 2 for screw dimensions.

3.2 Wood Members:

For purposes of connection design, sawn lumber members must have an assigned specific gravity as indicated in the tables in this report. Assigned specific gravity for sawn lumber must be determined in accordance with Table 12.3.3A of the ANSI/AWC National Design Specification for Wood Construction® (NDS) (Table 11.3.3A of the NDS for the 2012 IBC). Unless otherwise noted, sawn lumber members must have a moisture content of 19 percent or less.

For the purposes of connection design, structural glued laminated timber (GL) must have a Specific Gravity for Fastener Design (addressed in Tables 5A through 5D of the NDS Supplement), as indicated in the tables in this report. Unless otherwise noted, GL must have a moisture content of less than 16 percent.

When designing connections with screws installed into the face of cross-laminated timber (CLT) panels fabricated with sawn lumber laminations, all of the laminations must have a minimum assigned specific gravity in accordance with the NDS as indicated in the tables in this report. Moisture content must be less than 16 percent.

Use of the screws in engineered wood products (EWP) other than those addressed above is outside the scope of this report.

For wood-to-wood connections, the tabulated side member thickness is an absolute value (not a minimum or maximum value). The thickness of the wood main member must be equal to or greater than the screw length less the thickness of the side member.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The design values in this report are intended to aid the designer in meeting the requirements of IBC Section 1604.2. For connections not completely described in this report,

determination of the suitability of the EuroTec Structural Wood Screws for the specific application is the responsibility of the designer and is outside the scope of this report. The designer is responsible for determining the available strengths for the connection, considering all applicable limit states, and for considering serviceability issues.

4.1.1 Screw Strength: Allowable screw shear and tension strengths (ASD) and design screw shear and tension strengths (LRFD), as well as the average measured bending yield strengths for the screws are shown in Table 3.

4.1.2 Reference Withdrawal and Pull-through Design Values: Reference withdrawal (W) design values in pounds per inch of thread penetration, for screws installed perpendicular to the face of the wood member are shown in Table 4. Reference head pull-through values (W_H) are shown in Table 5.

4.1.3 Reference Lateral Design Values Based on Testing: Reference lateral design values based on wood-to-wood testing are shown in Table 6.

4.1.4 Adjustments to Reference Design Values: The reference design values must be adjusted in accordance with the requirements for dowel-type fasteners in Section 11.3 of the NDS (Section 10.3 of the NDS for the 2012 IBC), to determine allowable loads for use with ASD and/or design loads for use with LRFD. The reference design values must also be adjusted in accordance with Section 12.5 of the NDS (Section 11.5 of the NDS for the 2012 IBC), as applicable. When the capacity of a connection is controlled by the fastener strength, the allowable connection strength must not be increased by the adjustment factors specified in the NDS.

4.1.5 Capacity Requirements for Wood Members: When designing a connection, the structural members must be checked for load-carrying capacity in accordance with Section 11.1.2 of the NDS (Section 10.1.2 of the NDS for the 2012 IBC), and local stresses within multiple-fastener connections must be checked against Appendix E of the NDS to ensure the capacity of the connection and fastener group.

4.1.6 Connections with Multiple Screws: Connections made with multiple screws must be designed in accordance with Sections 11.2.2 and 12.6 of the NDS (Sections 10.2.2 and 11.6 of the NDS for the 2012 IBC).

4.1.7 Governing Design Values: The allowable lateral load for a two-member, single-screw connection is the lesser of: (a) the reference lateral design value given in Table 6, adjusted by all applicable adjustment factors, and (b) the allowable screw shear strength given in Table 3. The allowable load for a two-member, single-screw connection in which the screw is subject to tension is the least of: (a) the reference withdrawal design load value given in Table 4, multiplied by the embedded thread length, and adjusted by all applicable adjustment factors; (b) the reference head pull-through design value given in Table 5, adjusted by all applicable factors; and (c) the allowable screw tension strength given in Table 3.

4.1.8 Combined Loading: Where the screws are subjected to combined lateral and withdrawal loads, connections shall be designed in accordance with Section 12.4.1 of the NDS (Section 11.4.1 of the NDS for the 2012 IBC).

4.2 Installation:

The Eurotec Structural Wood Screws must be installed in accordance with the report holder's published installation

instructions and this report. The screws must be installed perpendicular to the face of the wood member. Screws must be installed with the minimum spacing, end distances, and edge distances needed to prevent splitting of the wood or as noted in Table 7, whichever is more restrictive. For the Paneltwistec TK and SawTec screws, the underside of the integral washer or flat head must bear against the surface of the wood side member. For the Paneltwistec SK and KonstruX screws, the top of the screw head must be flush with the surface of the wood side member. Screws must not be overdriven. Installation must be performed without predrilling. The screws must be installed by turning with a power driver, not by driving with a hammer.

5.0 CONDITIONS OF USE

The Eurotec Structural Wood Screws described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

- 5.1 The screws must be installed in accordance with the report holder's published installation instructions and this report. In the case of a conflict between this report and the report holder's instructions, this report governs.
- 5.2 Design loads for the screws must not exceed the available strengths described in Section 4.1.
- 5.3 Calculations and details demonstrating compliance with this report must be submitted to the code official. The calculations and details must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.
- 5.4 The screws have only been evaluated for use in dry service applications. Use in wet service conditions is outside the scope of this report.
- 5.5 Use of fasteners in locations exposed to saltwater or saltwater spray is outside the scope of this evaluation report.
- 5.6 Use of the screws in contact with preservative-treated or fire-retardant-treated wood is outside the scope of this report.
- 5.7 The screws are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

Data in accordance with the ICC-ES Acceptance Criteria for Dowel-type Threaded Fasteners Used in Wood (AC233), dated October 2020 (editorially revised December 2020).

7.0 IDENTIFICATION

- 7.1 The packaging for the screws is labeled with the report holder name (Eurotec), the fastener type (such as Paneltwistec); the tip type (AG or DAG) and head style, as applicable; the nominal screw diameter and length, an image of the screw and the ICC-ES evaluation report number (ESR-3942). Except for the cylindrical head KonstruX screws, each screw head is marked with an oval and the screw length as shown in the figures in this report.
- 7.2 The report holder's contact information is the following:

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TABLE 1—PANELTWISTEC AND SAWTEC SCREW DIMENSIONS

NOMINAL DIAMETER, mm (inch)	OVERALL LENGTH, L, mm (inches)	THREAD LENGTH ³ , T, inches	HEAD DIAMETER, inch (Drive Size)	UNTHREADED SHANK DIAMETER (inch)	MINOR THREAD (ROOT) DIAMETER D _r (inch)	OUTSIDE DIAMETER, D (inch)
Paneltwistec AG with Countersunk Head w/ribs (SK)¹						
6 (0.24)	50 (1 ¹⁵ / ₁₆)	1.18	0.463 (TX30)	0.173	0.157	0.234
	60 (2 ³ / ₈)	1.42				
	70 (2 ³ / ₄)	1.65				
	80 (3 ¹ / ₈)	1.89				
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆)	2.36				
	110 to 300 (4 ⁵ / ₁₆ to 11 ¹³ / ₁₆)	2.76				
8 (0.32)	80 (3 ¹ / ₈)	1.97	0.571 (TX40)	0.228	0.209	0.311
	100 (3 ¹⁵ / ₁₆)	2.36				
	120 (4 ³ / ₄)	2.76				
	140 (5 ¹ / ₂)	3.15				
	160 (6 ⁵ / ₁₆)	3.54				
	180 to 600 (5 ¹ / ₈ to 23 ⁵ / ₈)	3.94				
10 (0.39)	80 (3 ¹ / ₈)	1.97	0.701 (TX50)	0.276	0.246	0.394
	100 (3 ¹⁵ / ₁₆)	2.36				
	120 (4 ³ / ₄)	2.76				
	140 (5 ¹ / ₂)	3.15				
	160 (6 ⁵ / ₁₆)	3.54				
	180 to 400 (5 ¹ / ₈ to 15 ³ / ₄)	3.94				
Paneltwistec AG with Washer Head (TK)²						
6 (1/4)	30 (1 ³ / ₁₆)	Full	0.551 (TX30)	0.169	0.161	0.234
	40 (1 ⁹ / ₁₆)	Full				
	50 (1 ¹⁵ / ₁₆)	1.18				
	57 (2 ¹ / ₄), 60 (2 ³ / ₈)	1.42				
	70 (2 ³ / ₄)	1.65				
	80 (3 ¹ / ₈)	1.89				
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆)	2.36				
	110 to 300 (4 ⁵ / ₁₆ to 11 ¹³ / ₁₆)	2.76				
8 (5/16)	60 (2 ³ / ₈)	Full	0.866 (TX40)	0.228	0.216	0.315
	80 (3 ¹ / ₈)	1.97				
	100 (3 ¹⁵ / ₁₆)	2.36				
	120 (4 ³ / ₄)	2.76				
	140 (5 ¹ / ₂)	3.15				
	160 (6 ⁵ / ₁₆)	3.54				
	180 to 400 (7 ¹ / ₁₆ to 15 ³ / ₄)	3.94				
10 (3/8)	60 (2 ³ / ₈)	Full	0.984 (TX50)	0.276	0.246	0.394
	80 (3 ¹ / ₈)	1.97				
	100 (3 ¹⁵ / ₁₆)	2.36				
	120 (4 ³ / ₄)	2.76				
	140 (5 ¹ / ₂)	3.15				
	160 (6 ⁵ / ₁₆)	3.54				
	180 to 400 (7 ¹ / ₁₆ to 15 ³ / ₄)	3.94				

TABLE 1—PANELTWISTEC AND SAWTEC SCREW DIMENSIONS (cont.)

NOMINAL DIAMETER, mm (inch)	OVERALL LENGTH, L, mm (inches)	THREAD LENGTH ³ , T, inches	HEAD DIAMETER, inch (Drive Size)	UNTHREADED SHANK DIAMETER (inch)	MINOR THREAD (ROOT) DIAMETER D _r (inch)	OUTSIDE DIAMETER, D (inch)
Paneltwistec DAG with Countersunk Head w/ribs (SK)¹						
6 (1/4)	50 (1 ¹⁵ / ₁₆)	1.18	0.472 (TX30)	0.173	0.157	0.236
	60 (2 ³ / ₈)	1.42				
	70 (2 ³ / ₄)	1.65				
	80 (3 ¹ / ₈)	1.89				
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆)	2.36				
	110 (4 ⁵ / ₁₆)	2.60				
	120 (4 ³ / ₄) to 300 (to 11 ¹³ / ₁₆)	2.76				
8 (5/16)	80 (3 ¹ / ₈)	1.89	0.571 (TX40)	0.228	0.209	0.315
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆)	2.36				
	110 (4 ⁵ / ₁₆), 120 (4 ³ / ₄)	2.60				
	130 to 500 (5 ¹ / ₈ to 19 ¹¹ / ₁₆)	3.74				
10 (3/8)	80 (3 ¹ / ₈)	1.89	0.709 (TX50)	0.276	0.246	0.394
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆)	2.36				
	110 (4 ⁵ / ₁₆), 120 (4 ³ / ₄)	2.60				
	130 to 500 (5 ¹ / ₈ to 19 ¹¹ / ₁₆)	3.74				
Paneltwistec DAG with Washer Head (TK)²						
6 (1/4)	50 (1 ¹⁵ / ₁₆)	1.18	0.551 (TX30)	0.169	0.157	0.236
	60 (2 ³ / ₈)	1.42				
	70 (2 ³ / ₄)	1.65				
	80 (3 ¹ / ₈)	1.89				
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆)	2.36				
	110 (4 ⁵ / ₁₆)	2.60				
	120 (4 ³ / ₄) to 300 (to 11 ¹³ / ₁₆)	2.76				
8 (5/16)	50 (1 ¹⁵ / ₁₆)	Full	0.866 (TX40)	0.224	0.209	0.315
	60 (2 ³ / ₈), 80 (3 ¹ / ₈)	1.89				
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆)	2.36				
	110 (4 ⁵ / ₁₆), 120 (4 ³ / ₄)	2.60				
	130 to 400 (5 ¹ / ₈ to 15 ³ / ₄)	3.74				
10 (3/8)	80 (3 ¹ / ₈)	1.89	0.984 (TX50)	0.272	0.246	0.394
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆)	2.36				
	110 (4 ⁵ / ₁₆), 120 (4 ³ / ₄)	2.60				
	130 to 400 (5 ¹ / ₈ to 15 ³ / ₄)	3.74				

TABLE 1—PANELTWISTEC AND SAWTEC SCREW DIMENSIONS (cont.)

NOMINAL DIAMETER, mm (inch)	OVERALL LENGTH, L, mm (inches)	THREAD LENGTH ³ , T, inches	HEAD DIAMETER, inch (Drive Size)	UNTHREADED SHANK DIAMETER (inch)	MINOR THREAD (ROOT) DIAMETER D _r (inch)	OUTSIDE THREAD DIAMETER, D (inch)
SawTec Flat Head¹						
6 (1/4)	50 (1 ⁵ / ₁₆)	1.18	0.512 (TX30)	0.169	0.157	0.236
	60 (2 ³ / ₈)	1.42				
	70 (2 ³ / ₄)	1.65				
	80 (3 ¹ / ₈)	1.89				
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆) to 120 (4 ³ / ₄)	2.36				
	130 to 300 (5 ¹ / ₈ to 11 ¹³ / ₁₆)	2.76				
8 (5/16)	80 (3 ¹ / ₈)	1.89	0.709 (TX40)	0.222	0.209	0.315
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆) to 120 (4 ³ / ₄)	2.36				
	130 to 600 (5 ¹ / ₈ to 23 ⁵ / ₈)	3.74				
10 (3/8)	80 (3 ¹ / ₈)	1.89	0.866 (TX50)	0.272	0.246	0.394
	90 (3 ⁹ / ₁₆)	2.13				
	100 (3 ¹⁵ / ₁₆) to 120 (4 ³ / ₄)	2.36				
	130 to 400 (5 ¹ / ₈ to 15 ³ / ₄)	3.74				

For SI: 1 inch = 25.4 mm.

¹Overall length is measured from the top of the head to the tip.

²Overall length is measured from the underside of the integral washer to the tip.

³Length of thread includes tip.

TABLE 2—KONSTRUX ST SCREW DIMENSIONS

HEAD STYLE	NOMINAL DIAMETER, mm (inch)	OVERALL LENGTH, L, mm (inches)	HEAD DIAMETER, inch (Drive Size)	MINOR THREAD (ROOT) DIAMETER D _r (inch)	OUTSIDE THREAD DIAMETER (inch)	TIP LENGTH, E (inch)
Cylindric (ZK) ¹	6.5 (1/4)	80 to 195 (3 ¹ / ₈ to 7 ¹¹ / ₁₆)	0.315 (TX30)	0.177	0.256	0.197
	8 (5/16)	155 to 580 (6 ¹ / ₈ to 22 ⁷ / ₈)	0.394 (TX40)	0.205	0.315	0.236
	10 (3/8)	100 to 600 (3 ¹⁵ / ₁₆ to 23 ⁵ / ₈)	0.512 (TX50)	0.232	0.394	0.315
Countersunk w/ribs (SK) ¹	6.5 (1/4)	80 to 195 (3 ¹ / ₈ to 7 ¹¹ / ₁₆)	0.453 (TX30)	0.177	0.256	0.197
	8 (5/16)	95 to 545 (3 ³ / ₄ to 21 ⁷ / ₁₆)	0.571 (TX40)	0.205	0.315	0.236
	10 (3/8)	100 to 600 (3 ¹⁵ / ₁₆ to 23 ⁵ / ₈)	0.701 (TX50)	0.232	0.394	0.315

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lbf = 4.45 N.

¹Overall length is measured from the top of the head to the tip.

TABLE 3—SCREW STEEL STRENGTHS

SCREW TYPE	NOMINAL DIAMETER, mm (inch)	BENDING YIELD STRENGTH ¹ F _{yb} (psi)	ALLOWABLE STEEL STRENGTHS (ASD)		DESIGN STEEL STRENGTHS (LRFD)	
			Tension (lbf)	Shear (lbf)	Tension (lbf)	Shear (lbf)
Paneltwistic and SawTec	6 (1/4)	152,000	1,160	833	1,740	1,250
	8 (5/16)	165,000	2,030	1,570	3,050	2,350
	10 (3/8)	177,000	2,350	1,780	3,530	2,680
KonstruX ST	6.5 (1/4)	229,000	1,840	1,200	2,760	1,800
	8 (5/16)	235,000	2,300	1,560	3,450	2,340
	10 (3/8)	203,000	2,880	1,910	4,310	2,870

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa, 1 lbf = 4.45 N.

¹Bending yield strength determined in accordance with ASTM F1575 using the minor thread (root) diameter, D_r.

TABLE 4—REFERENCE WITHDRAWAL DESIGN VALUES (W) FOR INSTALLATION INTO THE FACE OF THE WOOD MEMBER^{1,2,3}

SCREW TYPE	NOMINAL DIAMETER, mm (inch)	MINIMUM EMBEDDED THREAD LENGTH ⁴ , T (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, W (lbf/in)	
			G ≥ 0.42	G ≥ 0.55
Paneltwistic SawTec	6 (1/4)	7/8	75	—
	8 (5/16)	1 1/4	75	—
	10 (3/8)	1 1/2	135	—
KonstruX ST	6.5 (1/4)	7/8	80	—
	8 (5/16)	1 1/4	88	92
	10 (3/8)	1 1/2	92	115

For SI: 1 inch = 25.4 mm, 1 lbf/in = 175N/m; 1 lbf = 4.45 N.

¹ Tabulated values must be multiplied by all adjustment factors included in the NDS for dowel-type fasteners to determine allowable loads for use with ASD and/or design loads for use with LRFD.

² Tabulated values are applicable to screws installed perpendicular to the faces of the wood members.

³ The tabulated reference withdrawal design value is in pounds-force per inch of thread embedment into the main member.

⁴ Embedded thread length is that portion of the screw held in the main member including the screw tip.

TABLE 5—REFERENCE HEAD PULL THROUGH DESIGN VALUES (W_H)^{1,2}

SCREW TYPE	HEAD STYLE	NOMINAL DIAMETER, mm (inch)	MINIMUM SIDE MEMBER THICKNESS (inches)	REFERENCE PULL-THROUGH DESIGN VALUE, W _H (lbf)	
				G ≥ 0.42	G ≥ 0.55
Paneltwistic	Countersunk w/ribs (SK)	6 (1/4)	1	111	168
		8 (5/16)	1 1/2	195	256
		10 (3/8)	1 1/2	286	315
	Washer Head (TK)	6 (1/4)	1	236	351
		8 (5/16)	1 1/2	436	853
		10 (3/8)	1 1/2	466	984
SawTec	Flat Head	6 (1/4)	1	202	226
		8 (5/16)	1 1/2	335	404
		10 (3/8)	1 1/2	444	511
KonstruX ST	Countersunk (SK)	6.5 (1/4)	1 1/2	263	323
		8 (5/16)	1 1/2	263	323
		10 (3/8)	1 1/2	263	323

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

¹ Tabulated values must be multiplied by all adjustment factors included in the NDS for dowel-type fasteners to determine allowable loads for use with ASD and/or design loads for use with LRFD.

² Tabulated values are applicable to screws installed perpendicular to the faces of the wood members.

TABLE 6—REFERENCE LATERAL DESIGN VALUES (Z) FOR TWO MEMBER WOOD-TO-WOOD CONNECTIONS^{1,2,3,4}

SCREW TYPE	HEAD STYLE	NOMINAL DIAMETER, mm (inch)	MINIMUM OVERALL LENGTH, L mm (inches)	SIDE MEMBER THICKNESS t_s (inches)	MINIMUM PENETRATION IN MAIN MEMBER (inches)	$Z_{ }$ (lbf) FOR SPECIFIC GRAVITIES (G) OF:	
						G ≥ 0.42	G ≥ 0.55
Paneltwistec	Countersunk w/ribs (SK), Washer Head (TK)	6 ($1/4$)	60 ($2^{3/8}$)	1	$1^{3/8}$	78	80
		8 ($5/16$)	80 ($3^{1/8}$)	$1^{1/2}$	$1^{5/8}$	144	169
		10 ($3/8$)	80 ($3^{1/8}$)	$1^{1/2}$	$1^{5/8}$	154	199
SawTec	Flat Head	6 ($1/4$)	60 ($2^{3/8}$)	1	$1^{3/8}$	78	80
		8 ($5/16$)	80 ($3^{1/8}$)	$1^{1/2}$	$1^{5/8}$	144	169
		10 ($3/8$)	80 ($3^{1/8}$)	$1^{1/2}$	$1^{5/8}$	154	199
KonstruX ST	Cylinder (ZK), Countersunk w/ribs (SK)	6.5 ($1/4$)	120 ($4^{3/4}$)	$2^{1/4}$	$2^{1/2}$	101	123
		8 ($5/16$)	95 ($3^{3/4}$)	$1^{3/4}$	2	126	194
		10 ($3/8$)	125 ($4^{7/8}$)	$2^{1/4}$	$2^{5/8}$	207	254

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

¹ Tabulated values must be multiplied by all adjustment factors included in the NDS for dowel-type fasteners to determine allowable loads for use with ASD and/or design loads for use with LRFD.

² Tabulated values are applicable to screws installed perpendicular to the faces of the wood members.

³ The wood main member thickness must be equal to or greater than the screw length less the thickness of the wood side member.

⁴ The tabulated lateral design values are based on both wood members having the same specific gravity.

TABLE 7—CONNECTION GEOMETRY REQUIREMENTS FOR FASTENERS INSTALLED PERPENDICULAR TO THE FACE OF WOOD MEMBERS^{1,2,3}

CONDITION		MINIMUM DISTANCE OR SPACING		
		Self-drilled		
		G < 0.50	G ≥ 0.50	
For Paneltwistec, SawTec and KonstruX Screws up to 8 mm				
End distance	Tension loading parallel to grain (fastener bearing toward end)		15D	20D
	Compression loading parallel to grain (fastener bearing away from end)		10D	15D
	Loading perpendicular to grain		10D	15D
	Axial loading (fastener withdrawal or pull-through)		10D	10D
Edge distance	Loading parallel to grain		5D	7D
	Loading perpendicular to grain	Load toward edge	10D	12D
		Load away from edge	5D	7D
	Axial Loading		4D	4D
Spacing between fasteners in a row (parallel to grain of main member)	Loading parallel to grain		15D	15D
	Loading perpendicular to grain		10D	10D
	Axial loading		7D	7D
Spacing between rows (perpendicular to grain of main member)	Lateral loading	In-line rows	5D	7D
		Staggered rows ⁵	2.5D	3D
	Axial loading		4D	4D
For 10 mm Paneltwistec, SawTec and KonstruX Screws				
End distance	Tension loading parallel to grain (fastener bearing toward end)		15D	20D
	Compression loading parallel to grain (fastener bearing away from end)		10D	15D
	Loading perpendicular to grain		10D	15D
	Axial loading		10D	10D
Edge distance	Loading parallel to grain		5D	7D
	Loading perpendicular to grain	Load toward edge	10D	12D
		Load away from edge	5D	7D
	Axial Loading		4D	4D
Spacing between fasteners in a row (parallel to grain of main member)	Loading parallel to grain		15D	15D
	Loading perpendicular to grain		10D	10D
	Axial loading		7D	7D
Spacing between rows (perpendicular to grain of main member)	Loading parallel to grain		5D	7D
	Loading perpendicular to grain		5D	5D
	Axial loading		5D	5D

For SI: 1 inch = 25.4 mm.

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

²Wood member stresses must be checked in accordance with Section 11.1.2 and Appendix E of the NDS, and end distances, edge distances and fastener spacing may need to be increased accordingly.

³D refers to the outside thread diameter.

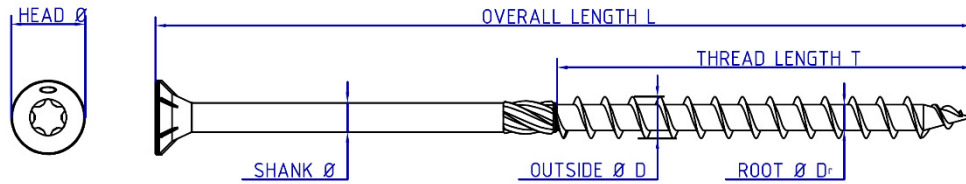


FIGURE 1 - PANELTWISTEC AG SK SCREW

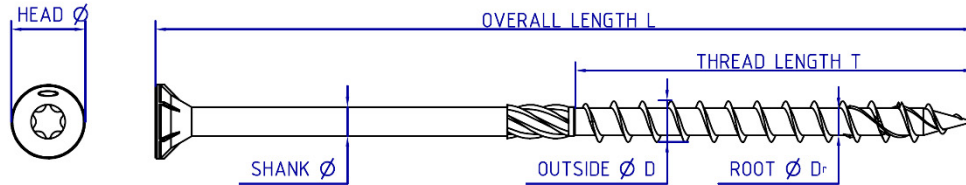


FIGURE 2 - PANELTWISTEC DAG SK SCREW

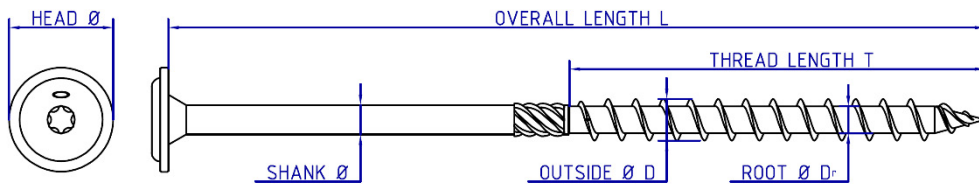


FIGURE 3 - PANELTWISTEC AG TK SCREW

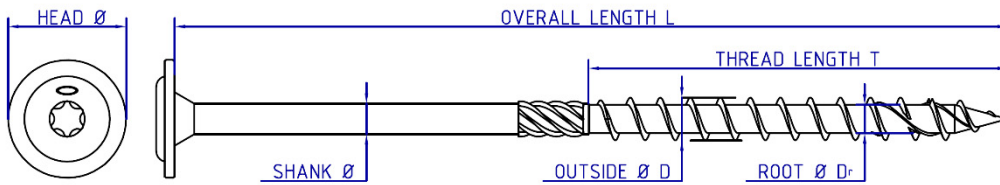


FIGURE 4 - PANELTWISTEC DAG TK SCREW

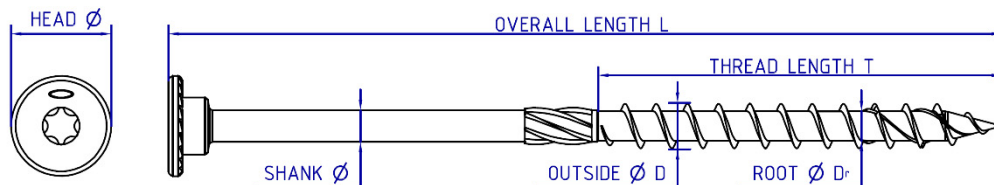


FIGURE 5 - SAWTEC SCREW

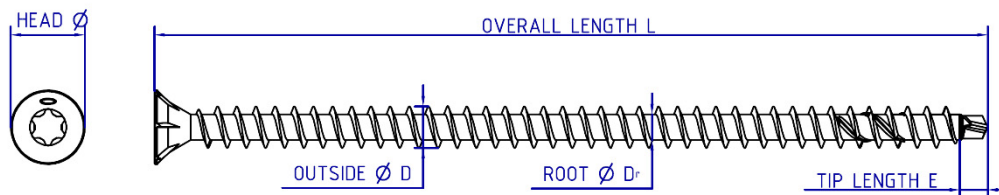


FIGURE 6 - KONSTRUX ST SK SCREW

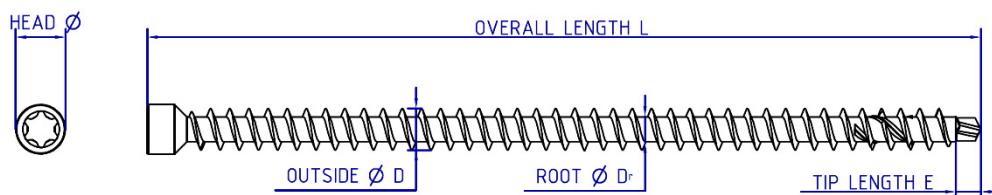


FIGURE 7 - KONSTRUX ST ZK SCREW