ICC-ES Evaluation Report

ESR-3046

Reissued August 2026

This report remains under an active continuous compliance program through the end of August 2027.

This report also contains:

- City of LA Supplement
- FL Supplement w/HVHZ

For references to other reports.

See ESR-3046-CA for Canadian Code

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

Copyright © 2026 ICC Evaluation Service, LLC. All rights reserved.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES Section: 06 05 23 – Wood, Plastic, and Composite Fastenings Section: 06 05 23.20 – Screws	REPORT HOLDER: SIMPSON STRONG-TIE COMPANY INC.	EVALUATION SUBJECT: SIMPSON STRONG-TIE® STRONG-DRIVE SCREWS USED IN WOOD	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018, 2015 and 2012 *International Building Code®* (IBC)
- 2024, 2021, 2018, 2015 and 2012 *International Residential Code®* (IRC)

Properties evaluated:

- Structural
- Corrosion resistance

2.0 USES

The Simpson Strong-Tie® Strong-Drive screws described in this report, except for the SDWF screws, are dowel-type threaded, self-drilling fasteners used for steel-to-wood and wood-to-wood connections that are designed in accordance with the IBC and IRC. These structural wood fasteners deviate from ANSI B18.2.1 and B18.6.1 standards.

The Simpson Strong-Tie® Strong-Drive SDWF screws described in this report are dowel-type threaded, self-drilling fasteners used with the Simpson Take-Up Washer (TUW) as depicted in the SDWF installation diagram shown in Figure 3. These structural fasteners deviate from ANSI B18.2.1 and B18.6.1 standards.

The Simpson Strong-Tie Strong-Drive SD, SD9SS, SDWF, SDCP8, SDCP10, SDCF8, SDCF10, SDCF12, SDCFC8, SDCFC10, SDHR10 and SDHR12 screws may be used where fasteners are required to exhibit corrosion resistance when exposed to adverse environmental conditions and/or in chemically treated wood (subject to the limitations of Sections 4.2 and 5.5 and Table 1D). The SD and SDWF screws are alternates to hot-dip zinc galvanized fasteners with a coating weight in compliance with ASTM A153, Class D. The SD and SDWF screws have been evaluated for use with wood chemically treated with waterborne alkaline copper quaternary, Type D (ACQ-D).

For structures regulated under the IRC, the Strong-Drive screws may be used where an engineered design is submitted in accordance with IRC Section R301.1.3.

3.0 DESCRIPTION

3.1 Notation and Symbols:

C_M	=	Wet-service factor
D	=	Outside thread diameter
D_H	=	Diameter of fastener head or integral washer
D_r	=	Minor thread (root) diameter
D_s	=	Unthreaded shank diameter
F_u	=	Minimum specified tensile strength of steel material
$F_{yb,spec}$	=	Minimum specified bending yield strength, determined in accordance with ASTM F1575 using D_r.
L	=	Fastener length measured from the bottom of the head or integral washer to the tip or from the top of the head to tip for embedded head designs, as shown in Figures 1, 3, 4, 6, 8 and 10 and in Figures A1, A3 and A5.
$L_{eff,m}$	=	Effective embedded thread length in the wood main member (See Section 4.1.2.)
$L_{eff,s}$	=	Effective embedded thread length in the wood side member (See Section 4.1.2.)
$L_{eff,min}$	=	Minimum effective embedded thread length applicable to tabulated withdrawal design values
$L_{emb,l}$	=	Minimum required embedded thread length in main member, including tip, applicable to tabulated lateral design values
$L_{emb,w}$	=	Minimum required embedded length in holding member, including the tip, applicable to tabulated withdrawal design values
L_{thread}	=	Length of thread including tip
L_{tip}	=	Length of tip
N_a	=	Allowable tension strength of the fastener for use in ASD
R_α	=	Reduction factor for withdrawal resistance of inclined fasteners (See Section 4.1.3.)
SG_{eq}	=	Equivalent specific gravity for structural composite lumber, as reported by ICC-ES
SG_{NDS}	=	Assigned specific gravity (See Section 3.3.6.1.)
$t_{s,w}$	=	Thickness of wood side member
$t_{s,s}$	=	Base metal thickness of steel side member
V_a	=	Allowable shear strength of the fastener for use in ASD
W	=	Reference unit withdrawal design value for fasteners installed perpendicular to face of the wood
W_H	=	Reference head pull-through design value
Z	=	Reference lateral design value
α	=	Angle between the axis of the fastener and the grain of the applicable wood member, degrees

3.2 Strong-Drive Screws:

3.2.1 SD and SD9SS Screws: The screws have rolled threads, spaced 8.5 threads per inch (0.335 thread per millimeter) for the SD9 and SD9SS screws and spaced 10 threads per inch (0.393 thread per millimeter) for the SD10 screws. The screws have a plain (unslotted) $^1/_4$-inch (6.35 mm) hex washer head and a sharp point, except for the SD9112WDBB screw which has a wafer head. The length of the threaded portion of the shank is approximately 1 inch (25.4 mm). See Table 1 and Figure 1 for more information.

3.2.2 SDWF Screws: The SDWF screws have rolled $^3/_8$-inch threads spaced 0.041 inch (1.05 mm) near the head, and $^5/_{16}$-inch threads spaced 0.083 inch (2.1 mm) near the point. The length of threads near the point is approximately 5 inches (127 mm). The screws have a plain (unslotted) $^5/_{16}$-inch (7.94 mm) hex washer head and Type-17 point. See Table 2 and Figure 3 for more information.

3.2.3 SDCP Screws: The SDCP screws have rolled threads, spaced 0.216 inch (5.5 mm) for the SDCP8 and SDCP22 screws, and 0.260 inch (6.6 mm) for the SDCP10 and SDCP27 screws. They have a ribbed countersinking head with a six-lobe drive recess, and a Type-17 point with notched threads. The screws are partially threaded and have a reamer knurl between the primary threads and the smooth shank. See Table 3 and Figure 4 for more information regarding the SDCP8 and SDCP10 screws. See Table A1 and Figure A1A in Appendix A to this report for more information regarding the SDCP22 and SDCF27 screws.

3.2.4 SDCF Screws: The SDCF screws are fully threaded with rolled threads, spaced 0.15 inch (3.8 mm) for SDCF8 and SDCF22 screws, 0.177 inch (4.5 mm) for SDCF10 and SDCF27 screws, and 0.244 inch (6.2 mm) for SDCF12 screws. They have a ribbed countersinking head with a six-lobe drive recess, and a proprietary point. See Table 4 and Figure 6 for more information regarding the SDCF8, SDCF10 and SDCF12 screws. See Table A2 and Figure A2A in Appendix A to this report for more information regarding the SDCF22 and SDCF27 screws.

3.2.5 SDCFC Screws: The SDCFC screws are fully threaded with rolled threads, spaced 0.15 inch (3.8 mm) for SDCFC8 screws and 0.177 inch (4.5 mm) for SDCFC10 and SDCFC27 screws. They have a cylinder head with a six-lobe drive recess, and a proprietary point. See Table 5 and Figure 8 for more information regarding the SDCFC8 and SDCFC10 screws. See Table A3 and Figure A3A in Appendix A to this report for more information regarding the SDCFC27 screws.

3.2.6 SDHR Screws: The SDHR screws are partially threaded screws, with rolled threads spaced 0.177 inch (4.5 mm) for SDHR10 and SDHR27 screws and 0.236 inch (6 mm) for SDHR12 and SDHR31 screws, and a knurl between the primary threads and the smooth shank. They have a large hex head with a six-lobe drive recess, under-head shoulder, and a Type-17 point. See Table 6 and Figure 10 for more information regarding the SDHR10 and SDHR12 screws. See Table A4 and Figure A4A in Appendix A to this report for more information regarding the SDHR27 and SDHR31 screws.

3.3 Materials:

3.3.1 SD and SD9SS Screws: The SD screws are manufactured from ASTM A510, Grade 10B18, steel wire. The screws are mechanically galvanized per ASTM B695, Class 55 with a chromium conversion layer, or have a proprietary corrosion-resistant coating indicated by "DBB" in the fastener designation. The SD9SS are manufactured from stainless steel Type 316 using a standard cold-forming process.

3.3.2 SDWF Screws: The SDWF screws are manufactured from ASTM A510, Grade 10B21, steel wire. The screws are coated with a proprietary black electrocoat base coat.

3.3.3 SDCP Screws: The SDCP screws are manufactured from ASTM A510, Grade C10B21, steel wire. The SDCP8 and SDCP10 screws are coated with a proprietary black electrocoat base coat and have a maximum core hardness of 36 HRC. The SDCP22 and SDCP27 screws have a yellow zinc coating.

3.3.4 SDCF and SDCFC Screws: The SDCF and SDCFC screws are manufactured from ASTM A510, Grade 10B21, steel wire. The SDCF8, SDCF10, SDCF12, SDCFC8 and SDCFC10 screws are coated with a proprietary black electrocoat base coat and have a maximum core hardness of 36 HRC. The SDCF22, SDCF27 and SDCFC27 screws have a yellow zinc coating.

3.3.5 SDHR Screws: The SDHR screws are manufactured from ASTM A510, Grade 10B21, steel wire. The SDHR10 and SDHR12 screws are coated with a proprietary black electrocoat base coat and have a maximum core hardness of 36 HRC. The SDHR27 and SDHR31 screws have either a blue-zinc coating or zinc-nickel coating.

3.3.6 Wood Members:

3.3.6.1 General: Wood members may be sawn lumber; structural glued laminated timber (glulam); wood structural panels and structural composite lumber (SCL). Screws may also be used in the face of cross-laminated timber (CLT) panels. Use of the screws in engineered wood products (EWP) other than those addressed above is outside the scope of this report.

For the purposes of connection design, solid-sawn wood members, glulam, CLT members and wood structural panels must have SG_{NDS} as indicated in the tables in this report, and the moisture content must be less than or equal to 19 percent at the time of screw installation and while in service, unless otherwise noted. SG_{NDS} for solid-sawn lumber must be determined in accordance with Table 12.3.3A of the ANSI/AWC National Design Specification (NDS) for Wood Construction® (Table 11.3.3A of NDS-12 for the 2012 IBC) or the latest NDS Supplement. SG_{NDS} for glulam members is the Specific Gravity for Fastener Design addressed in Tables 5A through 5D of the NDS Supplement. When designing connections with screws installed into CLT panels, all of the laminations must have a minimum SG_{NDS} as indicated in the tables in this report.

Wood structural panels must comply with DOC PS1 or PS2. For purposes of lateral connection design, wood structural panels have SG_{NDS} of 0.42 or 0.50 in accordance with Table 12.3.3B of the NDS (Table 11.3.3B of NDS-12).

Structural composite lumber (SCL) is defined in the IBC and includes products such as LVL, PSL and LSL. For the purposes of connection design, SCL must be addressed in an ICC-ES evaluation report and must have *SGeq* of 0.50. The minimum grade must be in accordance with Sections 3.3.6.2 and 3.3.6.4 through 3.3.6.6, as applicable. The moisture content at the time of screw installation and in service must be in accordance with the applicable ICC-ES evaluation report on the SCL.

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 sufficient to ensure that the tip of the screw is fully embedded in the wood.

3.3.6.2 Wood Members Used with SD and SD9SS Screws: Wood main members must be either solid-sawn lumber, GL, CLT or SCL. Wood side members must be either solid-sawn lumber or wood structural panel (OSB or plywood). Moisture content of solid-sawn lumber may exceed 19 percent, but requires the application of the C_M factor in the NDS. SCL must have a minimum grade of 0.8E for lateral loading and a minimum grade of 1.55E for withdrawal loading.

3.3.6.3 Wood Members Used with SDWF Screws: Wood top plates into which the SDWF screws are installed are solid-sawn lumber. See ESR-2320 for additional requirements.

3.3.6.4 Wood Members Used with SDCP Screws: Wood main members must be solid-sawn wood, GL, CLT or SCL. Wood side members must be either solid-sawn lumber or plywood. SCL must have a minimum grade of 1.3E for both lateral and withdrawal loading.

3.3.6.5 Wood Members Used with SDCF and SDCFC Screws: Wood main and side members must be solid-sawn wood, GL, CLT or SCL. SCL must be a minimum grade of 1.3E for both lateral and withdrawal loading.

3.3.6.6 Wood Main Members used with SDHR Screws: Wood main members must be solid-sawn wood, GL, CLT or SCL. SCL must be a minimum grade of 1.3E for both lateral and withdrawal loading.

3.3.7 Steel Members:

3.3.7.1 General: Steel side plates must be designed in accordance with AISI S100 or AISC 360, as applicable. If the connection capacity is controlled by the steel member, the design values must not be increased by the adjustment factors described in Section 4.1.5.

3.3.7.2 Steel Side Members Used with SD and SD9SS Screws: For connections using the SD and SD9SS screws, steel side members must have a minimum tensile strength, F_u, equal to 45 ksi (310.1 MPa), and design thickness (base-metal thickness exclusive of any coatings) ranging from 0.0352 inch to 0.1026 inch (0.894 mm to 2.606 mm), i.e., No. 20 gage to No. 12 gage. The hole in the steel side member for the SD and SD9SS screws must be predrilled or prepunched, and must have a standard round hole no greater than 0.156 inch (3.962 mm) in diameter for the SD9 and SD9SS screws, and no greater than 0.171 inch (4.343 mm) in diameter for the SD10 screws. Hole sizes may deviate from these limitations when the screws are specified in a current ICC-ES evaluation report for use with a specific steel member with larger holes.

3.3.7.3 Steel Side Members Used with SDCP Screws: For connections using the SDCP screws, steel side members must have a minimum tensile strength, F_u, equal to 58 ksi (400 MPa). For lateral loading, the minimum design thickness (base-metal thickness exclusive of any coatings) must be 0.360 inch (9.1 mm). For pull-over loading, the minimum design thickness must be 0.2405 inch (6.1 mm).The hole in the steel side member for the SDCP screw must be predrilled or pre-punched. For SDCP8 and SDCP22 screws, the top of the hole must have a diameter of between 0.605 and 0.625 inch (15.4 and 15.9 mm) and be countersunk with an angle of 90 degrees centered on the axis of the screw, with a 10 degree tolerance, with the remainder of the hole having a constant diameter of 0.375 inch (9.5 mm). For SDCP10 and SDCP27 screws, the top of the hole must have a diameter of between 0.731 and 0.750 inch (18.6 and 19.1 mm) and be countersunk with an angle of 90 degrees centered on the axis of the screw, with a 10 degree tolerance, with the remainder of the hole having a constant diameter of 0.472 inch (12 mm).

3.3.7.4 Steel Side Members Used with SDHR Screws: For connections using the SDHR screws, steel side members must have a minimum tensile strength, F_u, equal to 45 ksi (310 MPa), and design thickness (base-metal thickness exclusive of any coatings) ranging from 0.0566 inch to 0.2405 inch (1.438 mm to 6.109 mm), i.e., No. 16 gage to No. 3 gage. The hole in the steel side member for the SDHR screw must be predrilled or pre-punched, and must be a standard round hole no greater than 0.4375 inch (11.11 mm) in diameter for the SDHR10 and SDHR27 screws, and no greater than 0.500 inch (12.7 mm) in diameter for the SDHR12 and SDHR31 screws.

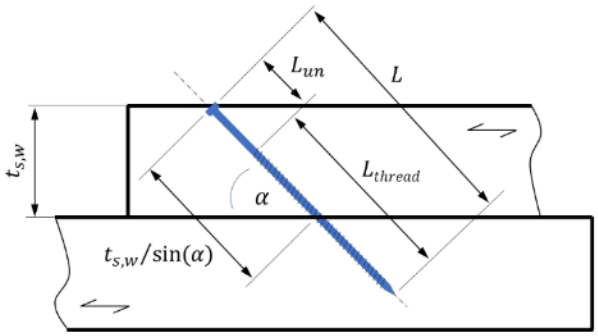
4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: 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 Strong-Drive 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. The designer is responsible for determining the required spacing, edge distance and end distance for the screws, based on the characteristics of the connected building materials. This report provides the following design information:

1. SD and SD9SS screw strengths and reference design values for SD and SD9SS screws used in wood-to-wood and steel-to-wood connections. See Table 1 for N_a, V_a, $F_{yb,spec}$ and reference to the applicable tables for other design information.
2. SDWF screw tension strength (N_a) and reference withdrawal design values (W) for SDWF screws. See Table 2 for N_a and reference to the applicable tables for other design information.
3. SDCP8 and SDCP10 screw strengths and reference design values for these screws used in steel-to-wood and wood-to-wood connections. See Table 3 for N_a, V_a, $F_{yb,spec}$ and reference to the applicable tables for other design information.
4. SDCF8, SDCF10 and SDCF12 screw strengths and reference design values for these screws used in wood-to-wood connections. See Table 4 for N_a, V_a, $F_{yb,spec}$ and reference to the applicable tables for other design information.
5. SDCFC8 and SDCFC10 screw strengths and reference design values for these screws used in wood-to-wood connections. See Table 5 for N_a, V_a, $F_{yb,spec}$ and reference to the applicable tables for other design information.
6. SDHR10 and SDHR12 screw strengths and reference design values for these screws used in two-member steel-to-wood connections. See Table 6 for N_a, V_a, $F_{yb,spec}$ and reference to applicable tables for other design information.
7. SDCP22 and SDCP27 screw strengths and reference design values for these screws used in wood-to-wood connections. See Table A1 in Appendix A to this report for N_a, V_a, $F_{yb,spec}$ and reference to the applicable tables for other design information.
8. SDCF22 and SDCF27 screw strengths and reference design values for these screws used in wood-to-wood connections. See Table A2 in Appendix A to this report for N_a, V_a, $F_{yb,spec}$ and reference to the applicable tables for other design information.
9. SDCFC27 screw strengths and reference design values for these screws used in wood-to-wood connections. See Table A3 in Appendix A to this report for N_a, V_a, $F_{yb,spec}$ and reference to the applicable tables for other design information.
10. SDHR27 and SDHR31 screw strengths and reference design values for these screws used in two-member steel-to-wood connections. See Table A4 in Appendix A to this report for N_a, V_a, $F_{yb,spec}$ and reference to the applicable tables for other design information.

4.1.2 Effective Embedded Thread Length: The effective embedded thread length is the length of fastener thread in a wood member that is completely surrounded by the wood. For example, for a wood-to-wood connection the effective lengths in the side and main members are determined as follows:



$$L_{eff,s} = \left(\frac{t_{s,w}}{\sin(\alpha)}\right) - L_{un} \quad \text{(Eq. 4.1.3-1)}$$

$$L_{eff,m} = \left(L - \left(\frac{t_{s,w}}{\sin(\alpha)}\right) - L_{tip}\right) \leq L_{thread} \quad \text{(Eq. 4.1.3-2)}$$

4.1.3 Reference Withdrawal Design Values: Reference withdrawal (*W*) design values in pounds per inch of thread penetration are shown in tables in this report. The tabulated *W* values must be multiplied by the embedded thread length, including or excluding the tip length (as indicated in the footnotes to the withdrawal design value tables), to determine the total reference withdrawal design value in lbf (N). Tabulated reference withdrawal design values apply to screws installed into the side grain of the wood main member with the screw axis at a 90-degree angle to the surface of the wood. Spacing, edge and end distance for axially loaded screws must be in accordance with the footnotes to the applicable load table and as needed to prevent splitting of the wood.

For inclined fastening with the SDCP, SDCF and SDCFC screws, the minimum embedment depth and the applicable reduction factor from the following table must be applied. Use of other screws in this report for inclined fastening is outside the scope of this report.

Screw Type and Size	Minimum Embedment (inches)
SDCP8 and SDCP10	3.2
SDCF8, SDCF10, SDCFC8, SDCFC10	3.5
SDCF12	3.8

α	R_α
90	1.00
85	1.00
80	0.99
75	0.99
70	0.98
65	0.97
60	0.95
55	0.94
50	0.92
45	0.91
40	0.89
35	0.84
30	0.77

For SI: 1 inch = 25.4 mm.

4.1.4 Reference Pull-through Design Values: For screws used with wood side members, reference head pull-through values (W_H) are shown in tables in this report. The tabulated values apply to screws installed into the side grain of the wood side member with the screw axis at an angle between 30° and 90° to the grain. For screws with threads embedded in the side member, the reference pull-through design value is the greater of the tabulated pull-through value and the reference withdrawal design value in the side member. Spacing, edge and end distance for axially loaded screws must be in accordance with the footnotes to the applicable load table and as needed to prevent splitting of the wood.

4.1.5 Lateral Connections in Accordance with the NDS – SD and SD9SS Screws: The reference lateral design strength for connections of two or more wood members using the Strong-Drive SD and SD9SS screws may be designed in accordance with the NDS, subject to the following conditions:

1. The applicable $F_{yb,spec}$ from the tables in this report must be used for design.
2. D_r, must be used where 'D' is referenced in Tables 12.3.1A, 12.3.1B and 12.3.3 of the NDS (Tables 11.3.1A, 11.3.1B and 11.3.3 of the 2012 NDS for the 2012 IBC).
3. Wood must have SG_{NDS} of 0.55 or less.
4. Wood side members must have a thickness equal to or greater than the minimum side member thickness shown in Table 1A.
5. The screw penetration into the main member must be a minimum of 6*D*.
6. The dowel bearing length in the main member is the length of fastener penetration less *E*/2, where *E* is 2 times the major thread diameter of the screw.
7. Spacing, edge and end distance must be in accordance with Table 7A or the connection geometry table applicable to the screw model, whichever is smaller, and as needed to prevent splitting of the wood.

4.1.6 Lateral Connections in Accordance with the NDS – SDCP, SDCF, SDCFC and SDHR Screws: The reference lateral design strength for connections of two or more wood members using the SDCP, SDCF and SDCFC screws and for steel-to-wood connection using the SDCP or SDHR screws may be determined in accordance with the NDS, subject to the following conditions:

1. The applicable $F_{yb,spec}$ from the tables in this report must be used for design.
2. D_r, must be used where 'D' is referenced in Tables 12.3.1A, 12.3.1B and 12.3.3 of the NDS (Tables 11.3.1A, 11.3.1B and 11.3.3 of the 2012 NDS for the 2012 IBC).
3. Wood must have SG_{NDS} of 0.55 or less.
4. For wood-to-wood connections with the SDCP, SDCF and SDCFC screws, the side member must have a thickness equal to or greater than 5*D*, and the screw penetration into the main member must be a minimum of 6*D*.
5. For steel-to-wood connections with SDCP or SDHR screws, steel side members must comply with Section 3.3.7, and the screw penetration into the main member must be a minimum of 6*D*.
6. For the SDCP, SDCF, SDCFC and SDHR screws, the dowel bearing length in the main member is the length of fastener penetration less the tip length, L_{tip}, given in Tables 3, 4, 5 and 6, respectively.
7. Spacing, edge and end distance must be in accordance with Table 7B and as needed to prevent splitting of the wood.

4.1.7 Two-member Wood-to-wood and Steel-to-wood Connections Based on Testing: For select connection configurations with SD, SD9SS, SDCP, SDCF, SDCFC and SDHR screws, testing has been conducted to determine reference lateral design values. These reference lateral design values based on testing are shown in tables in this report, as referenced in Tables 1, 3, 4, 5 and 6 and Tables A1, A2, A3 and A4 and must be adjusted by all applicable adjustment factors. Tabulated reference lateral design values apply to screws installed into the side grain of the wood main member with the screw axis at a 90-degree angle to the surface of the wood. Tabulated values apply to wood side and main members of the same assigned or equivalent specific gravity (*SG*). When the *SG* of the main and side members are different, the tabulated design values applicable to wood with the lower *SG* must be used.

4.1.8 Adjustments to Reference Design Values: Reference design values must be adjusted in accordance with the NDS provisions for dowel-type fasteners, including the wet service factor, C_M, where applicable, to determine allowable strengths for use with ASD and/or design strengths for use with LRFD. For the SDWF, SDCP, SDCF, SDCFC and SDHR screws, use is limited to dry in-service conditions, such that the wet service factor, C_M, is 1.0 in accordance with the NDS.

4.1.9 Connections with Multiple Screws: See Sections 11.1.2, 11.2.2 and 12.6 of the NDS (Sections 10.1.2, 10.2.2 and 11.6 of NDS-12 for the 2012 IBC) regarding multiple fastener connections and consideration of local stresses in the wood member.

4.1.10 Combined Loading: Where the screws are subjected to combined lateral and withdrawal loads, connections must be designed in accordance with Section 12.4.1 of the NDS (Section 11.4.1 of NDS-12 for the 2012 IBC).

4.1.11 Available Pull-over Strengths: For screws used with steel side members, available (ASD and LRFD) design values are shown in tables in this report.

4.1.12 Design Provisions for SDWF Screws: Connections utilizing SDWF screws have allowable tension design values that are limited by the lesser of: (a) the reference withdrawal design value multiplied by the length of thread penetration within the wall top plate and adjusted by all applicable adjustment factors; (b) the allowable load for the TUW, as given in ESR-2320, and (c) the allowable screw tension strength. The SDWF screws must be limited to applications in which they will be loaded in direct axial withdrawal/tension only (within a tolerance of ±2 degrees). Structural members forming the connection must be designed in accordance with the code.

4.2 Corrosion Resistance:

The SD, SDWF, SDCP8, SDCP10, SDCF8, SDCF10, SDCF12, SDCFC8, SDCFC10, SDHR10 and SDHR12 screws, which have a black e-coating, may be used in southern pine and other species groups grown and commercially available in the United States, when treated with waterborne alkaline copper quaternary, Type D (ACQ-D), preservatives with a maximum retention of 0.40 pcf (6.4 kg/m³)], subject to the limitations described in Table 1D. They may be used in other treated wood products that have been demonstrated to have lower levels of corrosivity. The SD9SS stainless steel screws may be used as prescribed in IBC Section 2304.10.6 (2018 and 2015 IBC Section 2304.10.5, 2012 IBC 2304.9.5) and 2024 IRC Section R304.3 (2021, 2018, 2015 and 2012 IRC Section R317.3).

4.3 Installation:

4.3.1 General: The Strong-Drive 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, the more restrictive requirements govern. The screws must be installed at the angle required by the construction documents, with the minimum spacing, end distances, and edge distances needed to prevent

splitting of the wood or as noted in this report, whichever is more restrictive. When use is in engineered wood products, the minimum fastener end and edge distances and spacing must be in accordance with the applicable table of this report or in accordance with the recommendations of the engineered wood product manufacturer, whichever is more restrictive. The screws must not be overdriven. The screws must be installed with the applicable type of driver listed in the table below:

Screw Series	Driver
SD, SD9SS	1/4-inch (6.35 mm) hex head driver
SD9112WDBB	6-lobe T15
SDWF	5/16-inch (7.94 mm) hex head driver
SDHR10, SDHR27	6-lobe T40, or 19/32-inch (15mm) hex head driver
SDHR12, SDHR31	6-lobe T40, or 11/16-inch (17mm) hex head driver
SDCP8, SDCP22, SDCF8, SDCFC8	6-lobe T40
SDCP10, SDCP27, SDCF10, SDCF12, SDCFC10, SDCFC12	6-lobe T50

Installation may be performed without predrilling. When predrilling is desired to facilitate installation, mitigate the potential for splitting or to achieve reduced connection geometry requirements, it must be performed in accordance with the table below:

Screw Model Series	Pre-drill Bit Diameter (inch)
SD9, SD10	3/32
SDCP8, SDCP22, SDCF8, SDCF22, SDCFC8	3/16
SDCP10, SDCP27, SDCF10, SDCF27, SDCFC10, SDCFC27, SDHR10, SDHR27	7/32
SDCF12, SDHR12, SDHR31	15/64

Screws installed at an angle must be driven along a straight, consistent axis using a suitable guide or jig to maintain the specified installation angle. Where straight installation cannot be reliably achieved, predrilling is recommended to ensure proper alignment. Predrilled holes shall be oriented along the intended installation angle and drill bit sizes shall be as indicated in the table above.

4.3.2 SD and SD9SS Screws: When installing SD and SD9SS screws, the bottom of the screw head must be flush to the surface of the member being connected. SD and SD9SS screws must be installed such that the threaded portion of the shank is fully embedded within the main member.

4.3.3 SDWF Screws: The SDWF screw must be installed through the hole in the center of the TUW, normal to the plane of the TUW, through the sole plate and floor cavity, and into the top plate of the floor below, until the head of the SDWF screw pulls the TUW side tabs downward, thereby engaging the shank of the screw. The go/no-go gage, supplied with the TUW, must be used in accordance with the manufacturer's installation instructions to ensure proper installation. See Figure 3 for a typical installation detail of the SDWF.

4.3.4 SDCP Screws: When installing SDCP screws, the top of the screw head must be flush to the surface of the member being connected. SDCP screws must be installed such that the threaded portion of the shank is fully embedded within the main member. For inclined installation, a predrilled countersink may be provided to allow the screw head to be installed flush with or slightly below the wood surface.

4.3.5 SDCF and SDCFC Screws: When installing SDCF and SDCFC screws, the top of the screw head must be flush to the surface of the member being connected. The portion of the screw length less the side member thickness must be fully embedded in the main member.

4.3.6 SDHR Screws: When installing SDHR screws, the bottom of the screw head must bear on the surface of the steel side member.

5.0 CONDITIONS OF USE:

The Simpson Strong-Drive 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 Strong-Drive screws must be installed in accordance with the manufacturer's published installation instructions, this evaluation report and the applicable code. The most restrictive governs if there are any conflicts between the manufacturer's published installation instructions and this report.

5.2 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.

5.3 Connection design for lateral loading applications using inclined fasteners is outside the scope of this report.

5.4 Connection geometry for inclined fastening must be justified to the satisfaction of the code official, including the minimum required wood thickness between crossing fasteners.

5.5 The SD, SD9SS, SDWF, SDCP8, SDCP10, SDCF8, SDCF10, SDCF12, SDCFC8, SDCFC10, SDHR10 and SDHR12 screws may used in treated wood and corrosion conditions as described in section 4.2. Except for the SD9SS screws, use of fasteners in locations exposed to saltwater or saltwater spray is outside the scope of this evaluation report.

5.6 The SDWF screws are limited to use with the Simpson Take-Up Washer (TUW), as described in ESR-2320.

5.7 The SDWF, SDCP, SDCF, SDCFC and SDHR screws must be limited to use in dry conditions, with wood having a moisture content of 19 percent or less at the time of screw installation and while in service.

5.8 The Strong-Drive screws are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Dowel-type Threaded Fasteners Used in Wood (AC233), dated June 2023 (editorially revised June 2024).

6.2 Data in accordance with the ICC-ES Acceptance Criteria for Corrosion-resistant Fasteners and Evaluation of Corrosion Effects of Wood Treatments (AC257), dated June 2023 (editorially revised May 2024).

6.3 Provisions related to steel pull-over strength in the ICC-ES Acceptance Criteria for Tapping Screw Fasteners Used in Steel-to-steel Connections (AC118) dated January 2018 (editorially revised February 2024).

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-3046) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, packages of fasteners are labeled with the fastener designation and the fastener size. Each SD, SD9SS, SDWF, SDCF22 and SDCF27 screw head is marked with the No-Equal® symbol (≠), and an alpha-numeric designation for the screw size and length, as shown in Tables 1, 2 and 4 and Table A2. Each SDCP screw head is marked with a "G" and an "X" and numbers designating the screw length (mm), as shown in Table 3. Each SDCF8, SDCF10 and SDCF12 screw head is marked with a "G", the No-Equal® symbol (≠), a number designating the screw size (mm) and numbers designating the screw length (mm), as shown in Table 4. The SDCFC27 screw head is unmarked. The SDCFC8 and SDCFC10 screw head is marked with the No-Equal® symbol (≠), and numbers designating the screw length (mm), as shown in Table 5. Each SDHR screw head is marked with a "G", the No-Equal® symbol (≠), and numbers designating the screw length (mm), as shown in Table 6 or Table A4, as applicable. The SDWF screw is packaged with the Take-Up Washer (TUW) and a go/no-go gage for use in installation.

7.3 The report holder's contact information is the following:

SIMPSON STRONG-TIE COMPANY INC.
5956 WEST LAS POSITAS BOULEVARD
PLEASANTON, CALIFORNIA 94588
(800) 999-5099
www.strongtie.com

TABLE 1—SCREW SPECIFICATIONS AND FASTENER STRENGTHS FOR SD AND SD9SS SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING	SCREW DIMENSIONS (inches)						$F_{yb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H	L	L_{thread}	D_s	D	D_r		N_a	V_a
SD9112 / SD9112DBB / SD9112WDBB	915	0.378	1.5	1.0	0.132	0.177	0.113	188,000	510	425
SD9212 / SD9212DBB	925		2.5							
SD9112SS	915		1.5		0.139	0.169	0.121	155,000	530	440
SD9212SS	925		2.5							
SD10112/SD10112DBB	1015		1.5		0.161	0.200	0.126	188,000	555	445
SD10212	1025		2.5							

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

[1]Refer to Table 1A for reference lateral (Z) design values for steel-to-wood and wood-to-wood connections determined from testing. For connections not addressed in Table 1A, refer to Section 4.1.3 for determination of reference lateral design values in accordance with the NDS. Refer to Table 1B for reference withdrawal (W) design values. Reference head pull-through design values (W_H) must be determined in accordance with Section 12.2.5 of the 2024 and 2018 NDS. Refer to Table 1D for applicable exposure conditions for the SD screws.

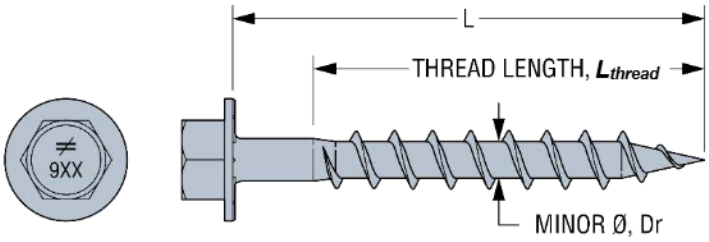


FIGURE 1—SD AND SD9SS SCREWS

TABLE 1A—REFERENCE LATERAL DESIGN VALUES (Z) DETERMINED FROM TESTING FOR SINGLE SHEAR STEEL-TO-WOOD AND WOOD-TO-WOOD CONNECTIONS WITH SD AND SD9SS SCREWS[1,2,3,6]

FASTENER DESIGNATION	REFERENCE LATERAL DESIGN VALUE, Z (lbf)							
	Steel-to-Wood[4]		Wood-to-Wood[5]					
			$0.42 \le SG_{NDS} < 0.50$			$SG_{NDS} \ge 0.50$		
	$0.42 \le SG_{NDS} < 0.50$	$SG_{NDS} \ge 0.50$	15/32" Side Member	23/32" Side Member	$1^1/_2$" Side Member	15/32" Side Member	23/32" Side Member	$1^1/_2$" Side Member
SD9112 / SD9112DBB / SD9112WDBB / SD9112SS	112	171	93	—	—	105	—	—
SD9212 / SD9212DBB / SD9212SS	112	200	99	94	109	118	133	130
SD10112/SD10112DBB	138	173	102	—	—	127	—	—
SD10212	165	215	106	126	123	147	168	152

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 ksi = 6.89 MPa.

[1]Unless otherwise noted, the main member and wood side members must be solid-sawn wood, GL or CLT. Main members must have a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.2.
[2]Minimum fastener penetration must be equal to the screw length less the thickness of the metal side plate or wood side member.
[3]Tabulated reference lateral design values apply to both parallel- and perpendicular-to-grain loading.
[4]See Section 3.3.7.2 for steel side member requirements.
[5]The nominal $^{15}/_{32}$- and $^{23}/_{32}$-inch-thick side members must be plywood or OSB with SG_{NDS} of either 0.42 or 0.50, as indicated in the table above.
[6]Refer to Table 1C for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE 1B—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SD AND SD9SS SCREWS[1,2]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inch)	$L_{emb,w}$ (inch)	REFERENCE WITHDRAWAL DESIGN VALUE, *W* (lbf/inch)[3]	
				$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SD9112 / SD9112DBB / SD9112WDBB / SD9112SS	1.5	1.0	1	122	173
SD9212 / SD9212DBB / SD9212SS	2.5				
SD10112/SD10112DBB	1.5			122	173
SD10212	2.5				

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 0.175 N/mm.

[1]Wood main members must have a minimum SG_{NDS} as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into engineered wood products described in Sections 3.3.6.1 and 3.3.6.2.
[2]Refer to Table 7A for connection geometry parameters associated with the tabulated values for axially loaded screws.
[4]Reference withdrawal design values, *W*, must be multiplied by the embedded thread length, including the tip length, to determine the total withdrawal capacity.

TABLE 1C—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SD AND SD9SS SCREWS ADDRESSED IN TABLE 1A

CONDITION	DIRECTION OF LOAD TO GRAIN	ID	MINIMUM DISTANCE OR SPACING (in.)	
			Main Member	Wood Side Member
Edge Distance	Perpendicular	①	1	1
	Parallel	①	1/2	1/2
End Distance	Perpendicular	②	2	2 7/16
	Parallel	②	2	2 7/16
Spacing Between Fasteners in a Row	Perpendicular	③	2	2 7/16
	Parallel	④	2	2 7/16
Spacing Between Rows of Fasteners	Perpendicular	⑤	1/2	13/16
	Parallel	⑥	1/2	13/16
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	1/2	1/2

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure 2 for a depiction of the required geometry.

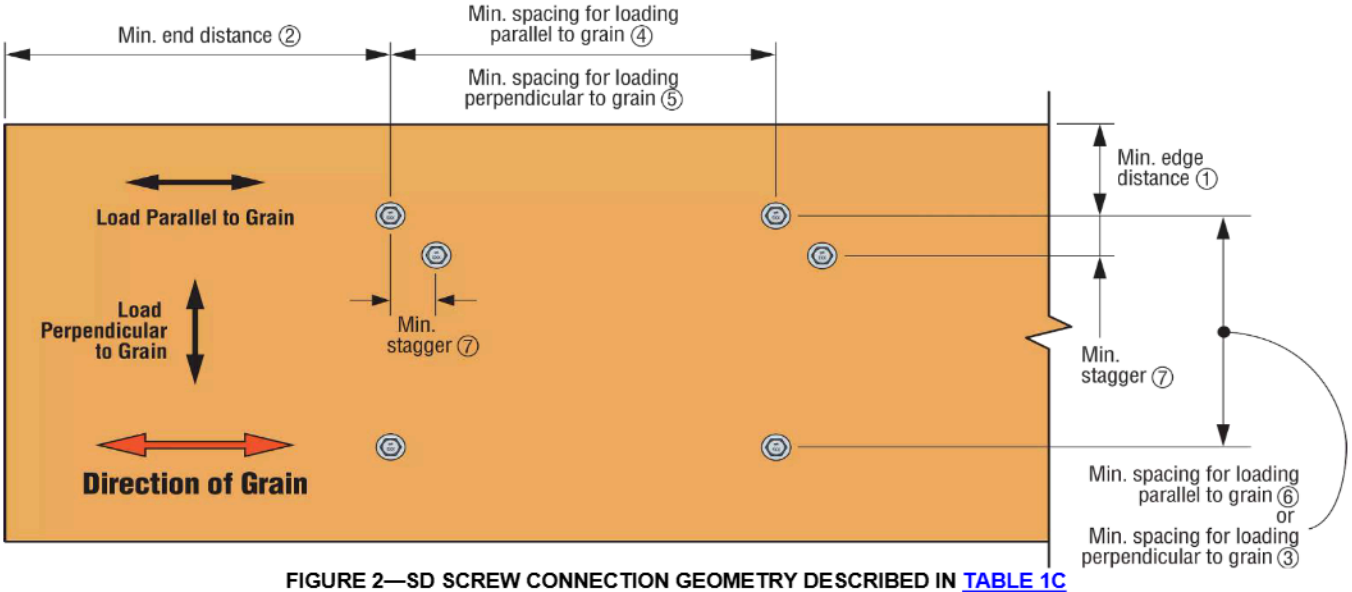


FIGURE 2—SD SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE 1C

TABLE 1D—APPLICABLE EXPOSURE CONDITIONS FOR SIMPSON STRONG-TIE SD, SDWF, SDCF8, SDCF10, SDCF12, SDCFC8, SDCFC10, SDHR10 AND SDHR12 SCREWS

EXPOSURE CONDITION	TYPICAL APPLICATIONS	APPLICATION LIMITATIONS[1]
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 with occasional exposure to high humidity.
3	General construction	Limited to freshwater and chemically treated wood exposure, without saltwater exposure

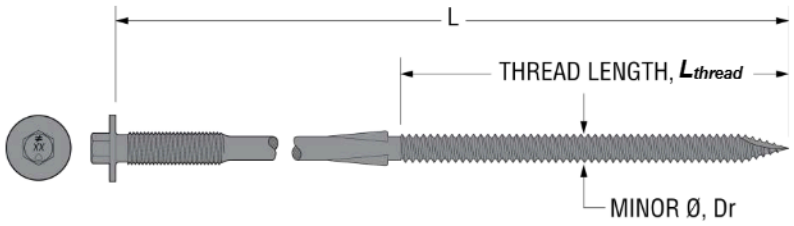
[1]Treated wood refers to the specific wood species, treatment and retention level described in Section 4.2.

TABLE 2—SCREW SPECIFICATIONS AND FASTENER STRENGTH FOR SDWF SCREWS[1]

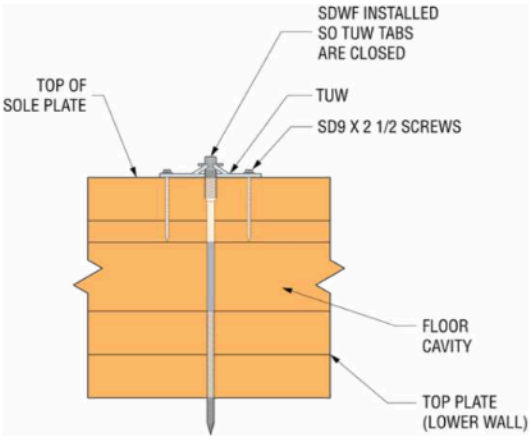
FASTENER DESIGNATION	HEAD MARKING	SCREW SPECIFICATIONS (inches)						FASTENER ALLOWABLE STEEL TENSION STRENGTH, N_a (lbf)
		D_H	L	L_{thread}	Unthreaded Shank Length, $L - L_{thread}$	D	D_r	
SDWF2716	16	0.750	16.0	5.0	11.0	0.322	0.245	2685
SDWF2720	20		20.0		15.0			
SDWF2724	24		24.0		19.0			
SDWF2726	26		26.0		21.0			
SDWF2730	30		30.0		25.0			

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

[1]Refer to Table 2A for reference withdrawal (W) design values. Refer to Table 1D for applicable exposure conditions.



U.S. Patent 8,276,323



SDWF Screw Installation

FIGURE 3—SDWF SCREWS AND INSTALLATION

TABLE 2A—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDWF SCREWS[1]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	$L_{emb,w}$ (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, W (lbf/inch)[3]		
				$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS} < 0.55$	$SG_{NDS} \ge 0.55$
SDWF2716	16.0	5.0	3	180	250	295
SDWF2720	20.0					
SDWF2724	24.0					
SDWF2726	26.0					
SDWF2730	30.0					

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 0.175 N/mm.

[1]Wood main members must have a minimum SG_{NDS} as indicated in the table above. See Section 3.3.6.3 for additional wood material requirements.
[2]Refer to Table 2B for connection geometry parameters associated with the tabulated values for axially loaded screws.
[3]Reference withdrawal design values, *W*, must be multiplied by the embedded thread length, including the tip length, to determine the total withdrawal capacity.

TABLE 2B—CONNECTION GEOMETRY FOR AXIALLY-LOADED SDWF SCREWS ADDRESSED IN TABLE 2A[1,2]

CONDITION[1]		MINIMUM DISTANCE OR SPACING (inches)
		Main Member
Edge distance	Withdrawal loading	1
End distance	Withdrawal loading	4
Spacing	Between fasteners in a row	8

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive.
[2]The SDWF screws must be used with the Take-Up Washer (TUW), as described in ESR-2320.

TABLE 3—SCREW SPECIFICATIONS AND FASTENER STRENGTHS FOR SDCP8 AND SDCP10 SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING 'LLL'	SCREW SPECIFICATIONS (inches)							$F_{yb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H	*L*	L_{thread}	D_s	*D*	D_r	L_{tip}		N_a	V_a
SDCP8X80	80	0.577	3.15	1.97	0.228	0.309	0.208	0.388	180,000	1960	1270
SDCP8X120	120		4.72	3.15							
SDCP8X140	140		5.51	3.15							
SDCP8X160	160		6.30	3.15							
SDCP8X180	180		7.09	3.15							
SDCP8X220	220		8.66	3.15							
SDCP8X240	240		9.45	3.15							
SDCP8X280	280		11.02	3.15							
SDCP8X300	300		11.81	3.15							
SDCP10X100	100	0.701	3.94	1.97	0.276	0.394	0.246	0.459	185,000	2605	1730
SDCP10X160	160		6.30	3.15							
SDCP10X200	200		7.87	3.15							
SDCP10X240	240		9.45	3.15							
SDCP10X280	280		11.02	3.15							
SDCP10X320	320		12.60	3.15							
SDCP10X360	360		14.17	3.15							

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

[1]Refer to Table 3A for reference lateral (*Z*) design values for steel-to-wood connections and Table 3B for reference lateral (*Z*) design values for wood-to-wood connections determined from testing. For connections not addressed in Table 3A or 3B, refer to Section 4.1.4 for determination of reference lateral design values in accordance with the NDS. Refer to Table 3C for reference withdrawal (*W*) design values. Refer to Table 3D for reference pull-through (W_H) design values.

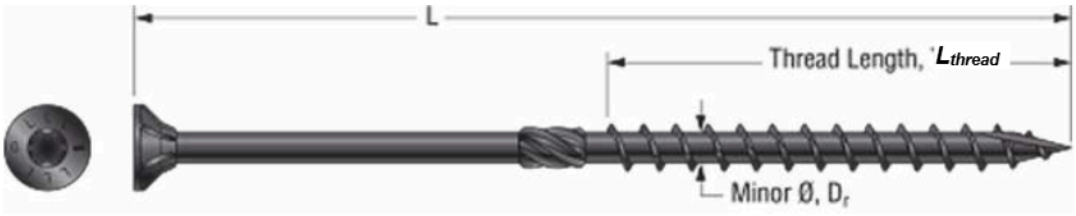


FIGURE 4—SDCP8 AND SDCP10 SCREWS

TABLE 3A—REFERENCE LATERAL DESIGN VALUES (Z) DETERMINED FROM TESTING FOR SINGLE SHEAR STEEL-TO-WOOD CONNECTIONS FOR SDCP8 SCREWS[1,2,3,4]

FASTENER DESIGNATION	REFERENCE LATERAL DESIGN VALUE, *Z* (lbf)	
	0.50 ≤ SG	0.42 ≤ SG < 0.50
SDCP8X80	525	365

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

[1]The main member must be solid-sawn wood, GL or CLT with a minimum assigned specific gravity (SG) of either 0.42 or 0.50, as indicated in the table above. Values for SG ≥ 0.50 are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.4.
[2]See Section 3.3.7.3 for steel side member requirements.
[3]Minimum fastener penetration must be equal to the screw length less the thickness of the metal side plate.
[4]Refer to Table 3E for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE 3B—REFERENCE LATERAL DESIGN VALUES (*Z*) DETERMINED FROM TESTING FOR SINGLE SHEAR WOOD-TO-WOOD CONNECTIONS FOR SDCP8 AND SDCP10 SCREWS[1,2,3,4]

FASTENER DESIGNATION	REFERENCE LATERAL DESIGN VALUE, *Z* (lbf)							
	$t_{s,w}$ (inches)							
	1.5	3	3.5	4.125	5.5	6.875	7.25	9.625
$0.42 \le SG_{NDS} < 0.50$								
SDCP8X80	245	—	—	—	—	—	—	—
SDCP8X120	255	—	—	—	—	—	—	—
SDCP8X140	255	300	—	—	—	—	—	—
SDCP8X160	255	300	300	—	—	—	—	—
SDCP8X180	255	300	300	300	—	—	—	—
SDCP8X220	255	300	300	300	300	—	—	—
SDCP8X240	255	300	300	300	300	—	—	—
SDCP8X280	255	300	300	300	300	300	300	—
SDCP8X300	255	300	300	300	300	300	300	—
SDCP10X100	255	—	—	—	—	—	—	—
SDCP10X160	255	390	390	—	—	—	—	—
SDCP10X200	255	390	390	390	—	—	—	—
SDCP10X240	255	390	390	390	390	—	—	—
SDCP10X280	255	390	390	390	390	390	390	—
SDCP10X320	255	390	390	390	390	390	390	—
SDCP10X360	255	390	390	390	390	390	390	390
$0.50 \le SG_{NDS}$								
SDCP8X80	340	—	—	—	—	—	—	—
SDCP8X120	360	—	—	—	—	—	—	—
SDCP8X140	360	450	—	—	—	—	—	—
SDCP8X160	360	450	480	—	—	—	—	—
SDCP8X180	360	450	480	480	—	—	—	—
SDCP8X220	360	450	480	480	480	—	—	—
SDCP8X240	360	450	480	480	480	—	—	—
SDCP8X280	360	450	480	480	480	480	480	—
SDCP8X300	360	450	480	480	480	480	480	—
SDCP10X100	360	—	—	—	—	—	—	—
SDCP10X160	360	565	600	—	—	—	—	—
SDCP10X200	360	565	600	600	—	—	—	—
SDCP10X240	360	565	600	600	600	—	—	—
SDCP10X280	360	565	600	600	600	600	600	—
SDCP10X320	360	565	600	600	600	600	600	—
SDCP10X360	360	565	600	600	600	600	600	600

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

[1]The main member and side members must be solid-sawn wood, GL or CLT with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.4.
[2]Minimum fastener penetration, $L_{emb,l}$, must be equal to the screw length less the thickness of the wood side member.
[3]Tabulated reference lateral design values apply to loading either parallel or perpendicular to the grain of the side member and either parallel or perpendicular to the grain of the main member.
[4]Refer to Table 3E for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE 3C—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDCP8 AND SDCP10 SCREWS[1,2]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	$L_{eff,min}$ (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, *W* (lbf/inch)[3]	
				$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCP8X80	3.15	1.97	1.58	228	232
SDCP8X120	4.72	3.15	1.81	235	246
SDCP8X140	5.51	3.15			
SDCP8X160	6.30	3.15			
SDCP8X180	7.09	3.15			
SDCP8X220	8.66	3.15			
SDCP8X240	9.45	3.15			
SDCP8X280	11.02	3.15			
SDCP8X300	11.81	3.15			
SDCP10X100	3.94	1.97	1.51	237	243
SDCP10X160	6.30	3.15	2.69	235	275
SDCP10X200	7.87	3.15			
SDCP10X240	9.45	3.15			
SDCP10X280	11.02	3.15			
SDCP10X320	12.60	3.15			
SDCP10X360	14.17	3.15			

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 175 N/m.

[1]Wood main members must have a minimum SG_{NDS} as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.4.
[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.
[3]Reference withdrawal design values, *W,* must be multiplied by the effective embedded thread length, L_{eff}, defined in Section 4.1.2, to determine the total withdrawal capacity.

TABLE 3D—REFERENCE HEAD PULL-THROUGH DESIGN VALUES (W_H) AND PULL-OVER VALUES FOR SDCP8 AND SDCP10 SCREWS [1,2]

FASTENER DESIGNATION	REFERENCE PULL-THROUGH DESIGN VALUE, W_H (lbf)					AVAILABLE PULL-OVER STRENGTHS		
	Sawn Lumber, Glulam and Similar Material[1,2]			Plywood[2]		Steel[3]		
	$t_{s,w}$ (inches)	$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$	$t_{s,w}$ (inches)	Rated Plywood	$t_{s,s}$ (inch)	ASD	LRFD
SDCP8	1.5	220	330	$1^1/_8$	285	0.2405	1960	3610
	3.0	220	340					
SDCP10	1.5	290	420	$1^1/_8$	355	0.2405	2605	4800
	3.0	290	465					

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 ksi = 6.89 MPa.

[1]The side member must be solid-sawn lumber or similar material with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above.
[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.
[3]Steel must have a minimum tensile strength of F_u = 58 ksi and must comply with Section 3.3.7.3.

TABLE 3E—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SDCP8 AND SDCP10 SCREWS ADDRESSED IN TABLES 3A AND 3B[1]

CONDITION	DIRECTION OF LOAD TO GRAIN	ID	MINIMUM DISTANCEOR SPACING (in.)
Edge Distance	Perpendicular	①	1 3/4
	Parallel	①	1 3/4
End Distance	Perpendicular	②	6
	Parallel	②	6
Spacing Between Fasteners in a Row	Perpendicular	③	4
	Parallel	④	8
Spacing Between Rows of Fasteners	Perpendicular	⑤	4
	Parallel	⑥	4
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	5/8

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure 5 for a depiction of the required geometry.

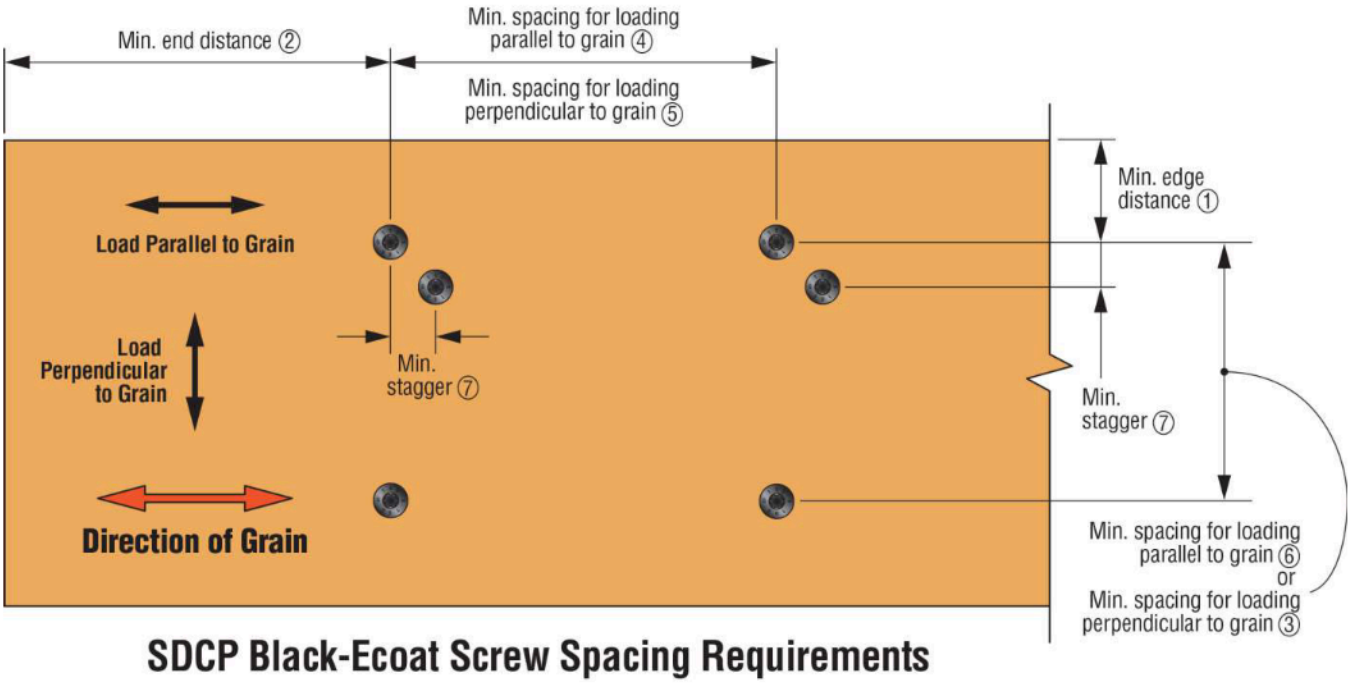


FIGURE 5—SDCP8 AND SDCP10 SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE 3E

TABLE 4—SCREW SPECIFICATIONS AND FASTENER STRENGTHS FOR SDCF8, SDCF10 and SDCF12 SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING	SCREW SPECIFICATIONS (inches)						$F_{yb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H	L	L_{thread}	D	D_r	L_{tip}		N_a	V_a
SDCF8X120	120	0.591	4.72	4.33	0.315	0.205	0.383	185,000	1,710	1,025
SDCF8X140	140		5.51	5.12						
SDCF8X160	160		6.30	5.91						
SDCF8X180	180		7.09	6.69						
SDCF8X200	200		7.87	7.48						
SDCF8X220	220		8.66	8.27						
SDCF8X240	240		9.45	9.06						
SDCF8X260	260		10.24	9.84						
SDCF8X300	300		11.81	11.42						
SDCF8X350	350		13.78	13.39						
SDCF10X100	100	0.728	3.94	3.47	0.394	0.245	0.457	190,000	2,735	1,545
SDCF10X160	160		6.30	5.83						
SDCF10X200	200		7.87	7.40						
SDCF10X240	240		9.45	8.98						
SDCF10X280	280		11.02	10.55						
SDCF10X360	360		14.17	13.70						
SDCF10X400	400		15.75	15.28						
SDCF10X450	450		17.72	16.77						
SDCF12X200	200	0.874	7.87	7.09	0.472	0.268	0.500	190,000	2,895	1,715
SDCF12X240	240		9.45	8.66						
SDCF12X280	280		11.02	10.24						
SDCF12X350	350		13.78	12.99						
SDCF12X450	450		17.72	16.73						
SDCF12X600	600		23.62	22.64						

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

[1]Refer to Table 4A for reference lateral (Z) design values for wood-to-wood connections determined from testing. For connections not addressed in Table 4A, refer to Section 4.1.4 for determination of reference lateral design values in accordance with the NDS. Refer to Table 4B for reference withdrawal (W) design values. Refer to Table 4C for reference pull-through (W_H) design values.

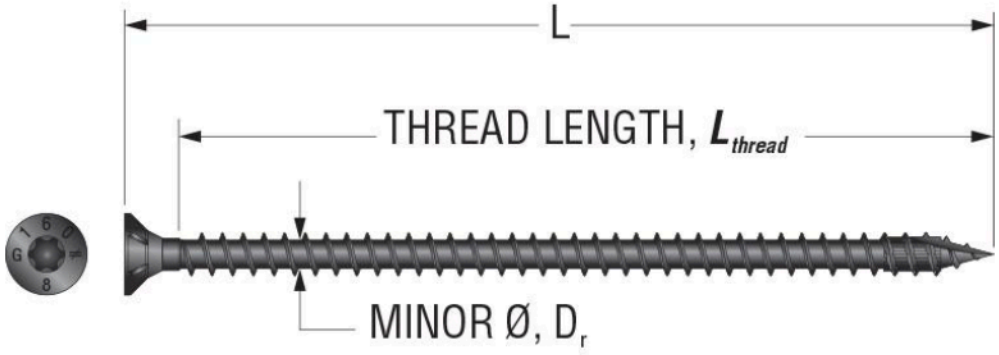


FIGURE 6—SDCF8, SDCF10 AND SDCF12 SCREWS (SDCF8X160 Shown)

TABLE 4A—REFERENCE LATERAL DESIGN VALUES (*Z*) DETERMINED FROM TESTING FOR SINGLE SHEAR WOOD-TO-WOOD CONNECTIONS WITH SDCF8, SDCF10 AND SDCF12 SCREWS[1,2,3,4]

FASTENER DESIGNATION	L_{inches}	REFERENCE LATERAL DESIGN VALUE, *Z* (lbf)							
		$t_{s,w}$ (inches)							
		1.5	3	3.5	4.125	5.5	6.875	7.25	9.625
$0.42 \le SG_{NDS} < 0.50$									
SDCF8X120	4.72	325	–	–	–	–	–	–	–
SDCF8X140	5.51	325	325	–	–	–	–	–	–
SDCF8X160	6.30	325	325	325	–	–	–	–	–
SDCF8X180	7.09	325	325	325	325	–	–	–	–
SDCF8X200	7.87	325	325	325	325	–	–	–	–
SDCF8X220	8.66	325	325	325	325	325	–	–	–
SDCF8X240	9.45	325	325	325	325	325	–	–	–
SDCF8X260	10.24	325	325	325	325	325	–	–	–
SDCF8X300	11.81	325	325	325	325	325	325	325	–
SDCF8X350	13.78	325	325	325	325	325	325	325	325
SDCF10X100	3.94	325	–	–	–	–	–	–	–
SDCF10X160	6.30	325	400	400	–	–	–	–	–
SDCF10X200	7.87	325	400	400	400	–	–	–	–
SDCF10X240	9.45	325	400	400	400	400	–	–	–
SDCF10X280	11.02	325	400	400	400	400	400	400	–
SDCF10X360	14.17	325	400	400	400	400	400	400	–
SDCF10X400	15.75	325	400	400	400	400	400	400	–
SDCF10X450	17.72	325	400	400	400	400	400	400	–
SDCF12X200	7.87	435	690	420	420	–	–	–	–
SDCF12X240	9.45	435	690	690	690	420	–	–	–
SDCF12X280	11.02	435	690	690	690	690	420	420	–
SDCF12X350	13.78	435	690	690	690	690	690	690	420
SDCF12X450	17.72	435	690	690	690	690	690	690	690
SDCF12X600	23.62	435	690	690	690	690	690	690	690

(continued on next page)

TABLE 4A—REFERENCE LATERAL DESIGN VALUES (*Z*) DETERMINED FROM TESTING FOR SINGLE SHEAR WOOD-TO-WOOD CONNECTIONS WITH SDCF8, SDCF10 AND SDCF12 SCREWS[1,2,3,4] (cont.)

FASTENER DESIGNATION	L_{inches}	REFERENCE LATERAL DESIGN VALUE, *Z* (lbf)							
		$t_{s,w}$ (inches)							
		1.5	3	3.5	4.125	5.5	6.875	7.25	9.625
		$0.50 \le SG_{NDS}$							
SDCF8X120	4.72	425	-	-	-	-	-	-	-
SDCF8X140	5.51	425	425	-	-	-	-	-	-
SDCF8X160	6.30	425	425	425	-	-	-	-	-
SDCF8X180	7.09	425	425	425	550	-	-	-	-
SDCF8X200	7.87	425	425	425	550	-	-	-	-
SDCF8X220	8.66	425	425	425	550	550	-	-	-
SDCF8X240	9.45	425	425	425	550	550	550	-	-
SDCF8X260	10.24	425	425	425	550	550	550	-	-
SDCF8X300	11.81	425	425	425	550	550	550	550	-
SDCF8X350	13.78	425	425	425	550	550	550	550	550
SDCF10X100	3.94	425	-	-	-	-	-	-	-
SDCF10X160	6.30	425	650	650	-	-	-	-	-
SDCF10X200	7.87	425	650	650	650	-	-	-	-
SDCF10X240	9.45	425	650	650	650	650	-	-	-
SDCF10X280	11.02	425	650	650	650	650	650	650	-
SDCF10X360	14.17	425	650	650	650	650	650	650	-
SDCF10X400	15.75	425	650	650	650	650	650	650	-
SDCF10X450	17.72	425	650	650	650	650	650	650	–
SDCF12X200	7.87	585	870	550	550	-	-	-	-
SDCF12X240	9.45	585	870	870	870	550	-	-	-
SDCF12X280	11.02	585	870	870	870	870	550	550	-
SDCF12X350	13.78	585	870	870	870	870	870	870	550
SDCF12X450	17.72	585	870	870	870	870	870	870	870
SDCF12X600	23.62	585	870	870	870	870	870	870	870

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

[1]The main member and side members must be solid-sawn wood, GL or CLT with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.5.

[2]Minimum fastener penetration, $L_{emb,l}$, must be equal to the screw length less the thickness of the wood side member.

[3]Tabulated reference lateral design values for two member connections apply to the following combinations of grain orientations in the side and main members: side parallel-main parallel, side parallel-main perpendicular, and side perpendicular-main parallel. For SDCF12 loaded with side perpendicular-main parallel, a ratio of 0.85 shall be applied.

[4]Refer to Table 4D for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE 4B—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDCF8, SDCF10 AND SDCF12 SCREWS[1,2,3]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	L_{tip} (inches)	$L_{eff,min}$ (inches)	REFERENCE UNIT WITHDRAWAL DESIGN VALUE, *W* (lbf/inch)[4]	
					$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCF8X120	4.72	4.33	0.383	2.5	200	275
SDCF8X140	5.51	5.12				
SDCF8X160	6.30	5.91				
SDCF8X180	7.09	6.69				
SDCF8X200	7.87	7.48				
SDCF8X220	8.66	8.27				
SDCF8X240	9.45	9.06				
SDCF8X260	10.24	9.84				
SDCF8X300	11.81	11.42				
SDCF8X350	13.78	13.39				
SDCF10X100	3.94	3.47	0.457	3.5	200	290
SDCF10X160	6.30	5.83				
SDCF10X200	7.87	7.40				
SDCF10X240	9.45	8.98				
SDCF10X280	11.02	10.55				
SDCF10X360	14.17	13.70				
SDCF10X400	15.75	15.28				
SDCF10X450	17.72	16.77				
SDCF12X200	7.87	7.09	0.500	4	230	335
SDCF12X240	9.45	8.66				
SDCF12X280	11.02	10.24				
SDCF12X350	13.78	12.99				
SDCF12X450	17.72	16.73				
SDCF12X600	23.62	22.64				

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 175 N/m.

[1]Wood main members must have a minimum SG_{NDS} as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.5.

[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.

[3]Reference withdrawal design values, *W*, must be multiplied by the effective embedded thread length, L_{eff}, defined in Section 4.1.2, to determine the total withdrawal capacity. This must not exceed the available tension strength of the screw.

TABLE 4C—REFERENCE HEAD PULL-THROUGH DESIGN VALUES (W_H) FOR SDCF8, SDCF10 AND SDCF12 SCREWS[1,2,3]

FASTENER DESIGNATION	*L* *(inches)*	$t_{s,w}$ (inches)	REFERENCE PULL-THROUGH DESIGN VALUE, W_H (lbf)	
			$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCF8X120	4.72	1.5	320	360
SDCF8X140	5.51			
SDCF8X160	6.30			
SDCF8X180	7.09			
SDCF8X200	7.87			
SDCF8X220	8.66			
SDCF8X240	9.45			
SDCF8X260	10.24			
SDCF8X300	11.81			
SDCF8X350	13.78			
SDCF10X100	3.94	1.5	320	360
SDCF10X160	6.30			
SDCF10X200	7.87			
SDCF10X240	9.45			
SDCF10X280	11.02			
SDCF10X360	14.17			
SDCF10X400	15.75			
SDCF10X450	17.72			
SDCF12X200	7.87	1.5	380	595
SDCF12X240	9.45			
SDCF12X280	11.02			
SDCF12X350	13.78			
SDCF12X450	17.72			
SDCF12X600	23.62			
SDCF12X200	7.87	3	755	1,000
SDCF12X240	9.45			
SDCF12X280	11.02			
SDCF12X350	13.78			
SDCF12X450	17.72			
SDCF12X600	23.62			

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

[1]The side member must be solid-sawn lumber with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above.
[2]See Section 4.1.2 for additional design provisions.
[3]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.

TABLE 4D—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SDCF8, SDCF10 AND SDCF12 SCREWS ADDRESSED IN TABLE 4A[1]

CONDITION	DIRECTION OF LOADTO GRAIN	ID	MINIMUM DISTANCEOR SPACING (in.)	
			SDCF8 and SDCF10	SDCF12
Edge Distance	Perpendicular	①	1 3/4	2 3/4
	Parallel	①	1 3/4	2 3/4
End Distance	Perpendicular	②	6	9
	Parallel	②	6	6
Spacing Between Fasteners in a Row	Perpendicular	③	4	6
	Parallel	④	8	12
Spacing Between Rows of Fasteners	Perpendicular	⑤	4	6
	Parallel	⑥	4	6
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	5/8	1

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure 7 for a depiction of the required geometry.

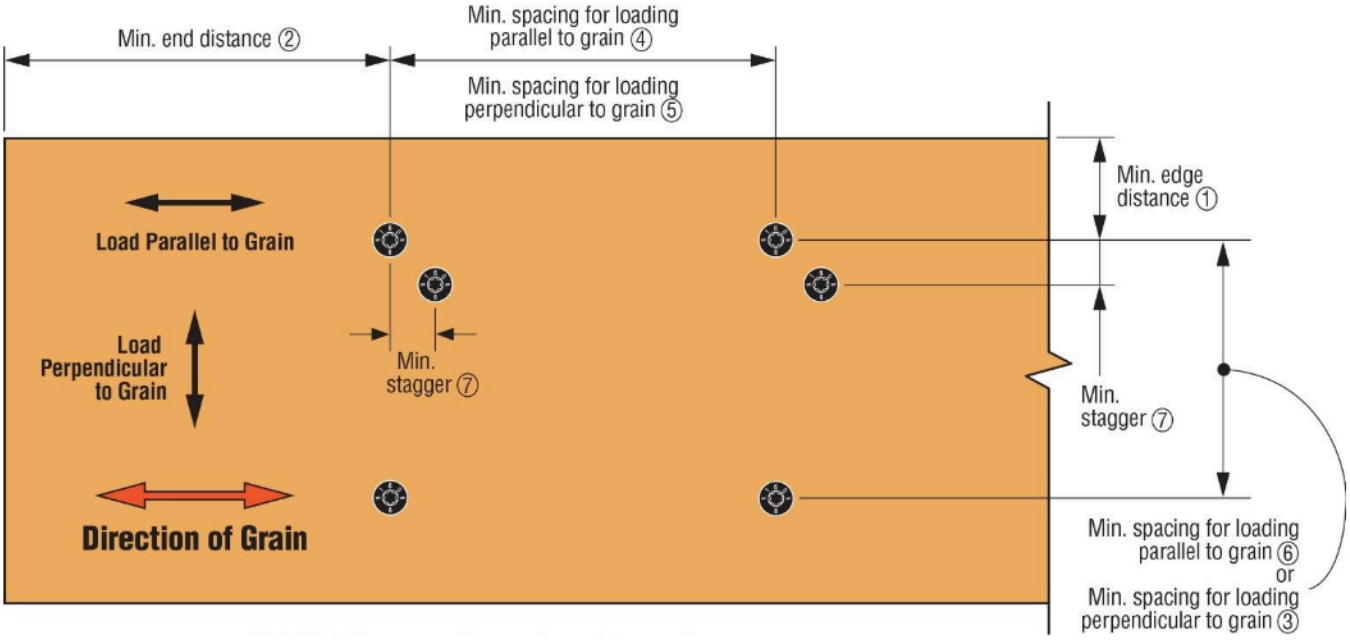


FIGURE 7—SDCF8, SDCF10 AND SDCF12 SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE 4D

TABLE 5—SPECIFICATIONS AND FASTENER STRENGTHS FOR SDCFC8 AND SDCFC10 SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING	SCREW SPECIFICATIONS (inches)						$F_{yb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H	L	L_{thread}	D	D_r	L_{tip}		N_a	V_a
SDCFC8X120	120	0.402	4.72	4.33	0.315	0.205	0.383	185,000	1,710	1,025
SDCFC8X160	160		6.30	5.91						
SDCFC8X200	200		7.87	7.48						
SDCFC8X240	240		9.45	9.06						
SDCFC8X280	280		11.02	10.63						
SDCFC8X330	330		12.99	12.60						
SDCFC8X350	350		13.78	13.39						
SDCFC8X380	380		14.96	14.57						
SDCFC8X430	430		16.93	16.02						
SDCFC8X580	580		22.84	21.93						
SDCFC10X240	240	0.528	9.45	8.98	0.394	0.245	0.457	190,000	2,735	1,545
SDCFC10X300	300		11.81	11.34						
SDCFC10X320	320		12.60	12.13						
SDCFC10X380	380		14.96	14.49						
SDCFC10X500	500		19.69	18.74						
SDCFC10X600	600		23.62	22.68						
SDCFC10X800	800		31.50	29.61						
SDCFC10X1000	1000		39.37	37.48						

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

[1]Refer to Table 5A for reference lateral (Z) design values for wood-to-wood connections determined from testing. For connections not addressed in Table 5A, refer to Section 4.1.4 for determination of reference lateral design values in accordance with the NDS. Refer to Table 5B for reference withdrawal (W) design values. Refer to Table 5C for reference pull-through (W_H) design values.

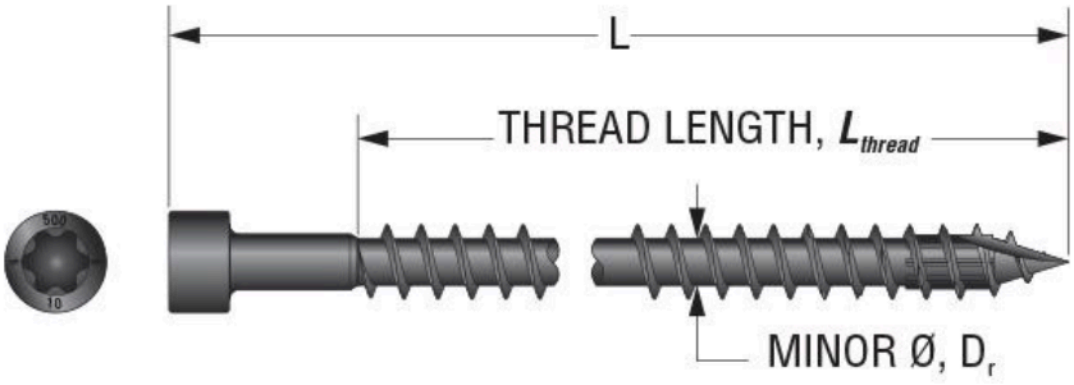


FIGURE 8—SDCFC8 AND SDCFC10 SCREWS

TABLE 5A—REFERENCE LATERAL DESIGN VALUES (Z) DETERMINED FROM TESTING FOR SINGLE SHEAR WOOD-TO-WOOD CONNECTIONS WITH SDCFC8 AND SDCFC10 SCREWS[1,2,3,4]

FASTENER DESIGNATION	L (inches)	MINIMUM $t_{s,w}$ (inches)	$L_{emb,l}$ (inches)	REFERENCE LATERAL DESIGN VALUE, Z (lbf)	
				$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCFC8X120	4.72	1.5	3	325	425
SDCFC8X160	6.30	3	3		
SDCFC8X200	7.87				
SDCFC8X240	9.45				
SDCFC8X280	11.02				
SDCFC8X330	12.99				
SDCFC8X350	13.78				
SDCFC8X380	14.96				
SDCFC8X430	16.93				
SDCFC8X580	22.84				
SDCFC10X240	9.45	3	3	400	650
SDCFC10X300	11.81				
SDCFC10X320	12.60				
SDCFC10X380	14.96				
SDCFC10X500	19.69				
SDCFC10X600	23.62				
SDCFC10X800	31.50				
SDCFC10X1000	39.37				

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

[1]The main member and side members must be solid-sawn wood, GL or CLT with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.5.

[2]Minimum fastener penetration, $L_{emb,l}$, must be equal to the screw length less the thickness of the wood side member.

[3]Tabulated reference lateral design values for two member connections apply to the following combinations of grain orientations in the side and main members: side parallel-main parallel, side parallel-main perpendicular, and side perpendicular-main parallel.

[4]Refer to Table 5D for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE 5B—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDCFC8 AND SDCFC10 SCREWS[1,2,3]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	L_{tip} (inches)	$L_{eff,min}$ (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, *W* (lbf/inch)[3]	
					$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCFC8X120	4.72	4.33	0.383	2.5	200	275
SDCFC8X160	6.30	5.91				
SDCFC8X200	7.87	7.48				
SDCFC8X240	9.45	9.06				
SDCFC8X280	11.02	10.63				
SDCFC8X330	12.99	12.60				
SDCFC8X350	13.78	13.39				
SDCFC8X380	14.96	14.57				
SDCFC8X430	16.93	16.02				
SDCFC8X580	22.84	21.93				
SDCFC10X240	9.45	8.98	0.457	3.5	200	290
SDCFC10X300	11.81	11.34				
SDCFC10X320	12.60	12.13				
SDCFC10X380	14.96	14.49				
SDCFC10X500	19.69	18.74				
SDCFC10X600	23.62	22.68				
SDCFC10X800	31.50	29.61				
SDCFC10X1000	39.37	37.48				

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 175 N/m.

[1]Wood main members must have a minimum SG_{NDS} as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.5.

[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.

[3]Reference withdrawal design values, *W*, are to be multiplied by the effective embedded thread length, L_{eff}, defined in Section 4.1.2 to determine the total withdrawal capacity. This must not exceed the available tension strength of the screw.

TABLE 5C—REFERENCE HEAD PULL-THROUGH DESIGN VALUES (W_H) FOR SDCFC8 AND SDCFC10 SCREWS [1,2,3]

FASTENER DESIGNATION	L (inches)	$t_{s,w}$ (inches)	REFERENCE PULL-THROUGH DESIGN VALUE, W_H (lbf)	
			$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCFC8X120	4.72	1.5	275	380
SDCFC8X160	6.30			
SDCFC8X200	7.87			
SDCFC8X240	9.45			
SDCFC8X280	11.02			
SDCFC8X330	12.99			
SDCFC8X350	13.78			
SDCFC8X380	14.96			
SDCFC8X120	4.72	3	540	805
SDCFC8X160	6.30			
SDCFC8X200	7.87			
SDCFC8X240	9.45			
SDCFC8X280	11.02			
SDCFC8X330	12.99			
SDCFC8X350	13.78			
SDCFC8X380	14.96			
SDCFC8X430	16.93			
SDCFC8X580	22.84			
SDCFC10X240	9.45	1.5	210	290
SDCFC10X300	11.81			
SDCFC10X320	12.60			
SDCFC10X380	14.96			
SDCFC10X500	19.69			
SDCFC10X600	23.62			
SDCFC10X800	31.50			
SDCFC10X1000	39.37			

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

[1]The side member must be solid-sawn lumber with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above.
[2]See Section 4.1.2 for additional design provisions.
[3]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.

TABLE 5D—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SDCFC8 AND SDCFC10 SCREWS ADDRESSED IN TABLE 5A[1]

CONDITION	DIRECTION OF LOADTO GRAIN	ID	MINIMUM DISTANCEOR SPACING (in.)
Edge Distance	Perpendicular	①	1 3/4
	Parallel	①	1 3/4
End Distance	Perpendicular	②	6
	Parallel	②	6
Spacing Between Fasteners in a Row	Perpendicular	③	4
	Parallel	④	8
Spacing Between Rows of Fasteners	Perpendicular	⑤	4
	Parallel	⑥	4
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	5/8

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure 9 for a depiction of the required geometry.

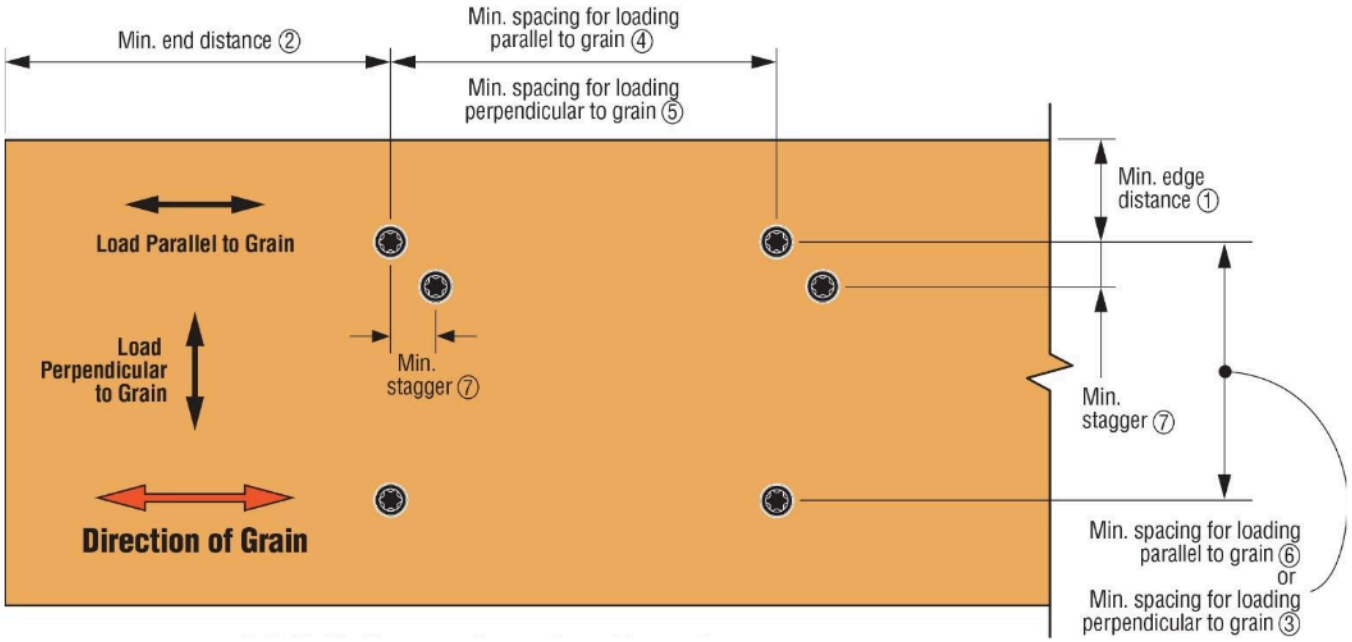


FIGURE 9—SDCFC8 AND SDCFC10 SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE 5D

TABLE 6—SPECIFICATIONS AND FASTENER STRENGTHS FOR SDHR10 AND SDHR12 SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING	SCREW SPECIFICATIONS (inches)								$F_{vb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H[2]	D_{sh}	L	L_{thread}	L_{tip}	D_s	D	D_r		N_a	V_a
SDHR10X100	100	0.587	0.397	3.94	2.17	0.415	0.280	0.394	0.242	185,000	2385	1535
SDHR10X160	160			6.30	4.33							
SDHR12X100	100	0.665	0.475	3.94	2.17	0.452	0.319	0.472	0.264	190,000	2970	1720
SDHR12X160	160			6.30	4.33							

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

[1]Refer to Table 6A for reference lateral (Z) design values for steel-to-wood connections determined from testing. For connections not addressed in Table 6A, refer to Section 4.1.3 for determination of reference lateral design values in accordance with the NDS. Refer to Table 6B for reference withdrawal (W) design values. Refer to Table 6C for pull-over design values.
[2]Measured across flats, as shown in Figure 10.

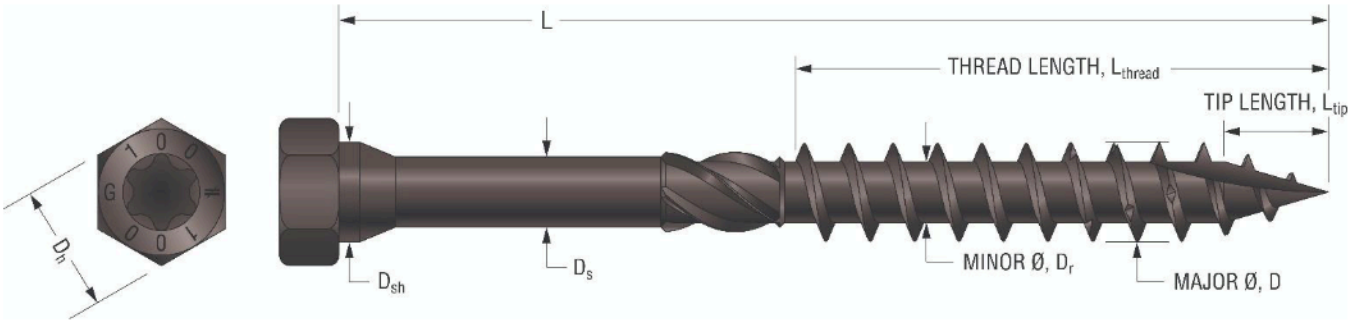


FIGURE 10—SDHR10 AND SDHR12 SCREW

TABLE 6A—REFERENCE LATERAL DESIGN VALUES (*Z*) FOR SINGLE SHEAR STEEL-TO-WOOD CONNECTIONS WITH SDHR10 AND SDHR12 SCREWS[1,2,3,4,5]

FASTENER DESIGNATION	*L* (inches)	REFERENCE LATERAL DESIGN VALUE, *Z* (lbf)					
		Side Member Thickness, ga (mils)					
		16 (54)	14 (68)	12 (97)	10 (118)	7 (171)	3 (229)
SDHR10X100	3.94	390	390	390	390	390	485
SDHR10X160	6.30	390	390	390	390	390	485
SDHR12X100	3.94	440	440	440	440	440	565
SDHR12X160	6.30	440	440	440	440	440	565

For **SI:** 1 inch = 25.4 mm, 1 mil = 0.001 inch, 1 lbf = 4.45 N.

[1]The main member must be solid-sawn wood, GL or CLT with a minimum SG_{NDS} of 0.42 or an engineered wood product with a minimum grade of 1.3E and SG_{eq} of at least 0.50.
[2]Steel side members must have the tabulated thickness and must comply with Section 3.3.7.4.
[3]Minimum fastener penetration must be equal to the screw length less the thickness of the side member.
[4]Tabulated reference lateral design values apply to parallel-to-grain and perpendicular-to-grain loading.
[5]Refer to Table 6D for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE 6B—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDHR10 AND SDHR12 SCREWS IN A WOOD MAIN MEMBER[1,2]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	L_{tip} (inches)	$L_{eff,min}$ (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, W (lbf/inch)[3]	
					$0.42 \le SG_{NDS} < 0.50$	$SG_{NDS} \ge 0.5$
SDHR10X100	3.94	2.17	0.415	1.78	233	277
SDHR10X160	6.30	4.33				
SDHR12X100	3.94	2.17	0.452	1.72	290	292
SDHR12X160	6.30	4.33				

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 175 N/m.

[1]The wood member must be solid-sawn wood, GL or CLT with SG_{NDS} as shown in the table. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.6.
[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.
[3]Reference withdrawal design values, *W*, must be multiplied by the effective embedded thread length, L_{eff}, defined in Section 4.1.2, to determine the total withdrawal capacity. This must not exceed the available tension strength of the screw.

TABLE 6C—ALLOWABLE HEAD PULL-OVER DESIGN VALUES FOR SDHR SCREWS[1]

FASTENER DESIGNATION	ALLOWABLE PULL-OVER DESIGN VALUE (lbf)		
	$t_{s,s} \ge$ 16ga (54 mils)	$t_{s,s} \ge$ 10ga (135 mils)	$t_{s,s} \ge$ 3ga (241 mils)
SDHR10X100	500	1,765	2,385
SDHR10X160			
SDHR12X100	570	1,765	2,935
SDHR12X160			

For **SI:** 1 inch = 25.4 mm, 1 mil = 0.001 inch; 1 lbf = 4.45 N.

[1]Steel side members must have the tabulated thickness and must comply with Section 3.3.7.4.
[2]Connection geometry requirements are governed by the requirements for installation in the wood main member, given in Table 7B.

TABLE 6D—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SDHR SCREWS ADDRESSED IN TABLE 6A[1,2]

CONDITION	DIRECTION OF LOAD TO GRAIN	ID	MINIMUM DISTANCE OR SPACING (in.)
Edge Distance	Perpendicular	①	1 3/4
	Parallel	①	1 3/4
End Distance	Perpendicular	②	6
	Parallel	②	6
Spacing Between Fasteners in a Row	Perpendicular	③	3
	Parallel	④	4
Spacing Between Rows of Fasteners	Perpendicular	⑤	3
	Parallel	⑥	3
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	1 1/2

For **SI:** 1 inch = 25.4 mm.

[1]Wood edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure 11 for a depiction of the required geometry.
[2]Minimum steel edge distances, end distances and spacing of the screws must be determined in accordance with AISC 360.

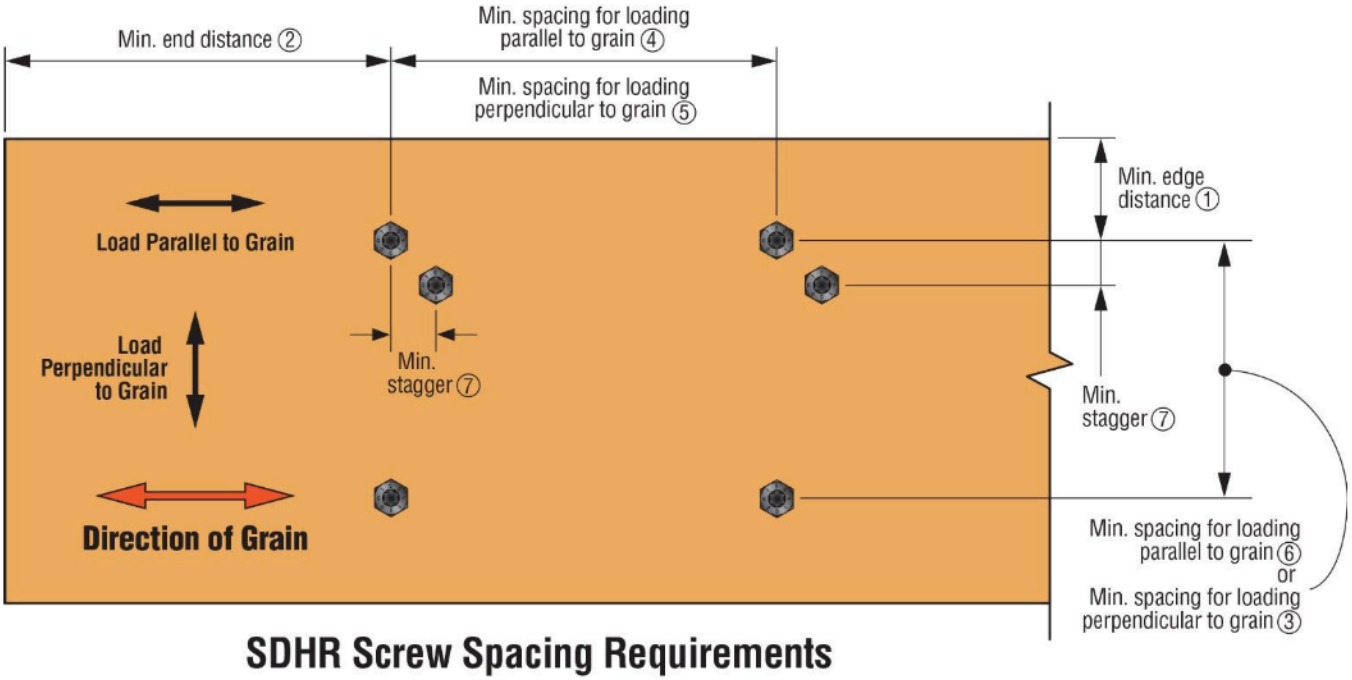


FIGURE 11—SDHR SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE 6D

TABLE 7A—CONNECTION GEOMETRY REQUIREMENTS FOR SD AND SD9SS FASTENERS INSTALLED PERPENDICULAR TO THE FACE OF WOOD MEMBERS AND INCLINED FASTENERS[1,2,3,4]

CONDITION[5]		ID	MINIMUM DISTANCE OR SPACING		
			Self-drilled		Predrilled Hole[6]
			$SG_{NDS} < 0.50$	$SG_{NDS} \geq 0.50$	
For alternate dowel-type threaded fasteners with $D_r < 0.23$ inch, installed into sawn lumber, structural glued laminated timber (GL) and cross laminated timber (CLT) panels					
End distance (see Figures 12 and 14)	Loading toward end, $a_{end,1}$	1	15D	20D	12D
	Loading perpendicular to grain or away from end, $a_{end,2}$	2	10D	15D	7D
	Axial loading, a_{end}	3	10D	10D	7D
	Inclined fastener, $a_{end,CG}$	4			
Edge distance (see Figures 12 and 14)	Loading toward edge, $a_{edge,1}$	5	10D	12D	7D
	Loading parallel to grain or away from edge, $a_{edge,2}$	6	5D	7D	3D
	Axial Loading, a_{edge}	7	4D	4D	3D
	Inclined fastener, $a_{edge,CG}$	8			
Spacing between fasteners, parallel to grain (see Figures 13 and 14)	Loading parallel to grain, a_1	9	15D	15D	10D
	Loading perpendicular to grain, a_1	10	10D	10D	5D
	Axial loading, a_1	11	7D	7D	7D
	Inclined fastener, a_1	12			
Spacing between fasteners, perpendicular to grain (see Figures 13 and 14)	Loading parallel to grain, a_2	13	5D	7D	4D
	Loading perpendicular to grain, a_2	14	5D	7D	4D
	Axial loading, a_2	15	4D	4D	3D
	Inclined fastener, a_2	16			
	Inclined fastener, crossed screws, $a_{2,cross}$	17	1.5D	1.5D	1.5D

For **SI:** 1 inch = 25.4 mm.

[1]Tabulated requirements are applicable to lateral connections designed in accordance with the NDS and to axially-loaded screws. Connection geometry requirements associated with lateral load values determined by testing are shown in Table 1C.
[2]End 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.
[3]Wood 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.
[4]Tabulated values are applicable to wood-to-wood and steel-to-wood connections.
[5]For CLT products, parallel and perpendicular-to-grain descriptions apply to the grain orientation at the shear plane for lateral loading and to the face grain orientation for withdrawal loading.
[6]Tabulated geometry is applicable to fasteners installed in holes predrilled in accordance with Section 4.3.1.

TABLE 7B—CONNECTION GEOMETRY REQUIREMENTS FOR SDCP, SDCF, SDCFC AND SDHR SCREWS INSTALLED PERPENDICULAR TO THE FACE OF WOOD MEMBERS AND INCLINED FASTENERS[1,2,3,4,6]

CONDITION[7]		ID	MINIMUM DISTANCE OR SPACING	
			SDCP	SDCF, SDCFC, SDHR[5]
End distance (see Figures 12 and 14)	Loading toward end, $a_{end,1}$	1	7D[9]	7D
	Loading perpendicular to grain or away from end, $a_{end,2}$	2	7D[9]	7D
	Axial loading, a_{end}	3	7D	7D
	Inclined fastener, $a_{end,CG}$	4		
Edge distance (see Figures 12 and 14)	Loading toward edge, $a_{edge,1}$	5	4D[9]	4D
	Loading parallel to grain or away from edge, $a_{edge,2}$	6	3D[9]	3D
	Axial Loading, a_{edge}	7	3D	3D
	Inclined fastener, $a_{edge,CG}$	8		
Spacing between fasteners, parallel to grain (see Figures 13 and 14)	Loading parallel to grain, a_1	9	5D[9]	5D
	Loading perpendicular to grain, a_1	10		
	Axial loading, a_1	11	5D	5D
	Inclined fastener, a_1	12		
Spacing between fasteners, perpendicular to grain (see Figures 13 and 14)	Loading parallel to grain, a_2	13	5D[9]	5D
	Loading perpendicular to grain, a_2	14		
	Axial loading, a_2	15	5D(3D)[8]	5D(3D)[8]
	Inclined fastener, a_2	16		
	Inclined fastener, crossed screws, $a_{2,cross}$	17	1.5D	1.5D

[1]Tabulated requirements are applicable to lateral connections designed in accordance with the NDS and to axially-loaded screws. Connection geometry requirements associated with lateral load values determined by testing are shown in Tables 3E, 4D, 5D and 6D for the SDCP, SDCF, SDCFC and SDHR screws, respectively.
[2]End 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.
[3]Wood 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.
[4]Tabulated values are generally applicable to wood-to-wood connections, and are applicable to steel-to-wood connections with SDHR screws.
[5]Tabulated geometry is applicable to SDCF, SDCFC and SDHR screws in wood when installed without predrilled holes or in holes predrilled in accordance with Section 4.3.1.
[6]Tabulated geometry is applicable to screws in wood with $SG_{NDS} \leq 0.55$.
[7]For CLT products, parallel and perpendicular-to-grain descriptions apply to the grain orientation at the shear plane for lateral loading and to the face grain orientation for withdrawal loading.
[8]For SDCP, SDCF and SDCFC screws (except for SDCP8, SDCP22, SDCF8, SDCF22 and SDCFC8 screws), the spacing must be a minimum of 5D. For the SDCP8, SDCP22, SDCF8, SDCF22 and SDCFC8 screws, the spacing must be a minimum of 3D.
[9]Predrilling is required for SDCP in accordance with Section 4.3.1, with the head depth predrilled using a $^3/_8$" diameter drill bit for SDCP8 and a $^{13}/_{32}$" diameter drill bit for SDCP10.

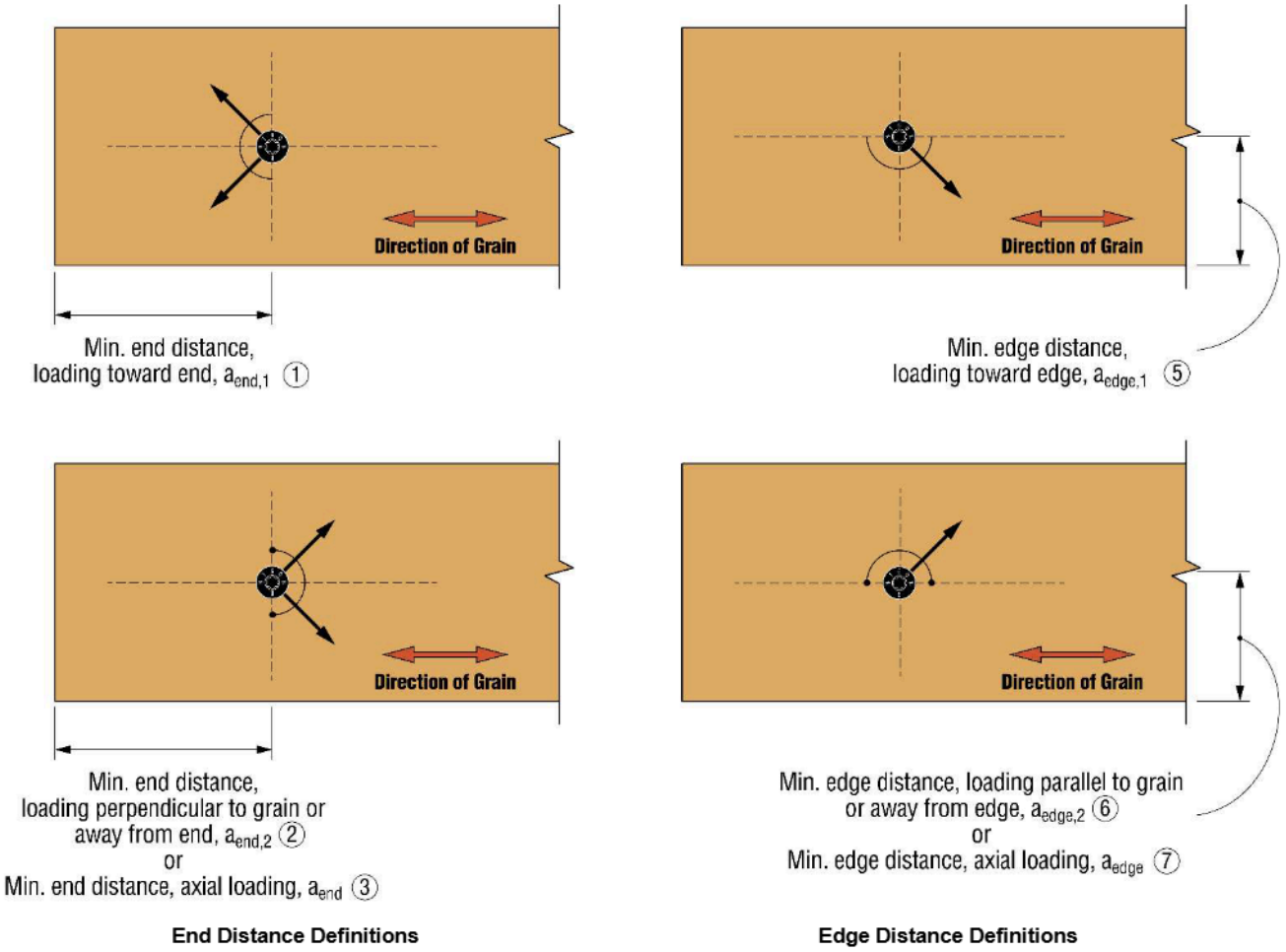


FIGURE 12—END AND EDGE DISTANCE DEFINITIONS FOR SCREWS INSTALLED PERPENDICULAR TO GRAIN

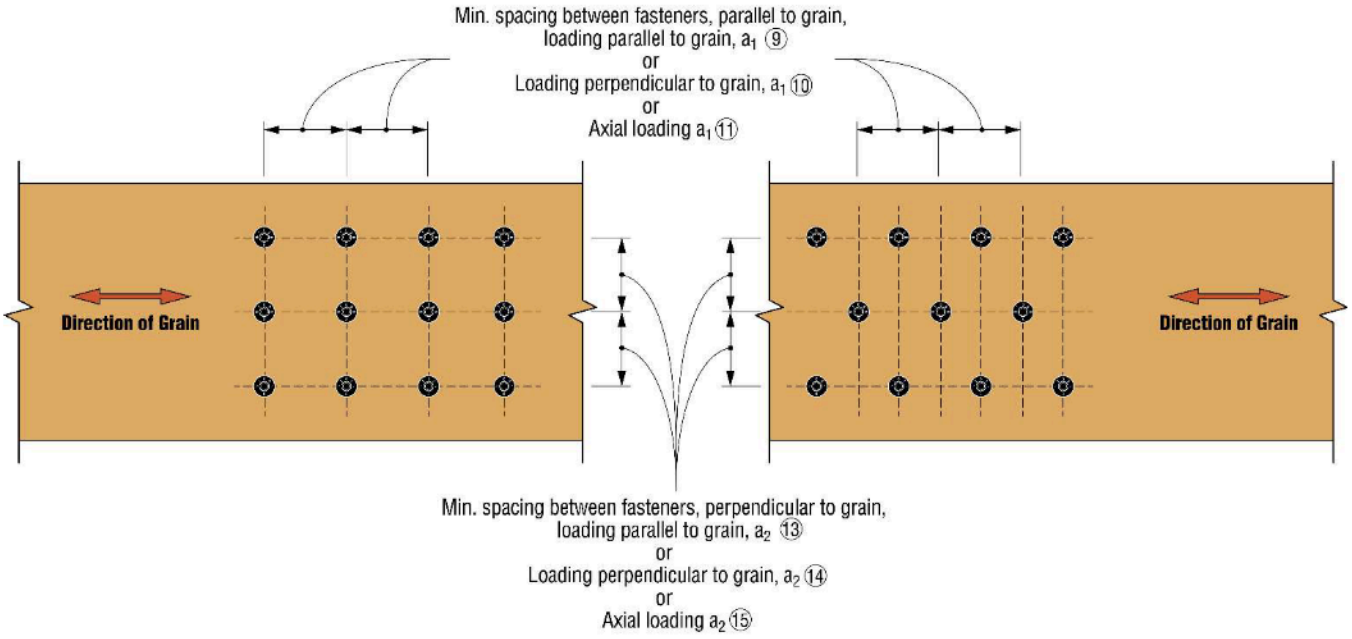


FIGURE 13—SPACING DEFINITIONS FOR SCREWS INSTALLED PERPENDICULAR TO GRAIN

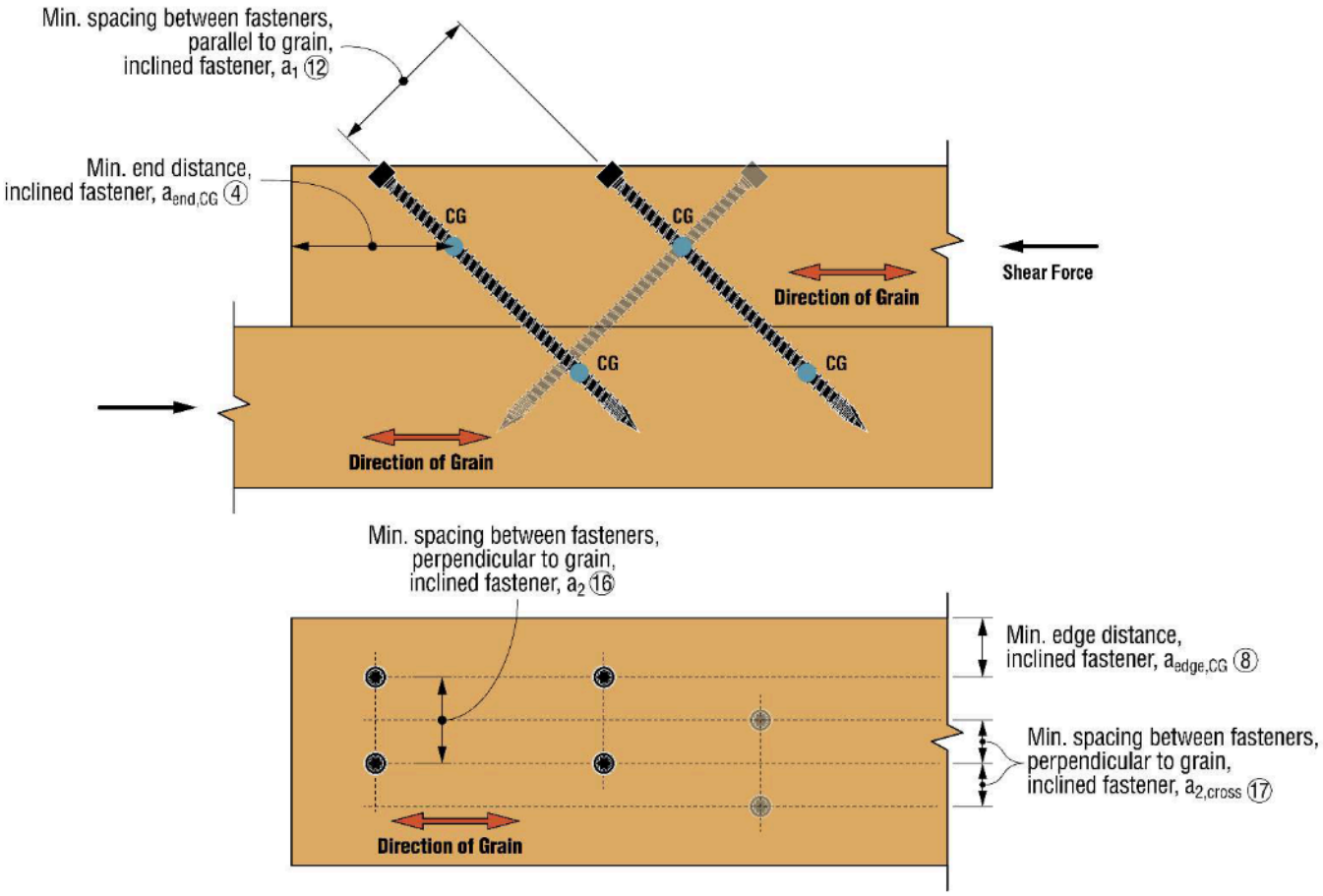


FIGURE 14—SPACING DEFINITIONS FOR INCLINED AND CROSSED SCREWS

APPENDIX A

TABLE A1—SCREW SPECIFICATIONS AND FASTENER STRENGTHS FOR SDCP22 AND SDCP27 SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING 'LLL'	SCREW SPECIFICATIONS (inches)						$F_{yb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H	L	L_{thread}	D_s	D	D_r		N_a	V_a
SDCP22318	80	0.577	3.15	1.97	0.228	0.309	0.208	185,000	2045	1335
SDCP22434	120		4.72	3.15						
SDCP22512	140		5.51	3.15						
SDCP22614	160		6.30	3.15						
SDCP22700	180		7.09	3.15						
SDCP22858	220		8.66	3.15						
SDCP22912	240		9.45	3.15						
SDCP221100	280		11.02	3.15						
SDCP221134	300		11.81	3.15						
SDCP27400	100	0.701	3.94	1.97	0.276	0.394	0.246	195,000	2885	1860
SDCP27614	160		6.30	3.15						
SDCP27778	200		7.87	3.15						
SDCP27912	240		9.45	3.15						
SDCP271100	280		11.02	3.15						
SDCP271212	320		12.60	3.15						
SDCP271400	360		14.17	3.15						

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

[1]Refer to Table A1A for reference lateral (Z) design values for steel-to-wood connections and Table A1B for reference lateral (Z) design values for wood-to-wood connections determined from testing. For connections not addressed in Table A1A or A1B, refer to Section 4.1.4 for determination of reference lateral design values in accordance with the NDS. Refer to Table A1C for reference withdrawal (W) design values. Refer to Table A1D for reference pull-through (W_H) design values.

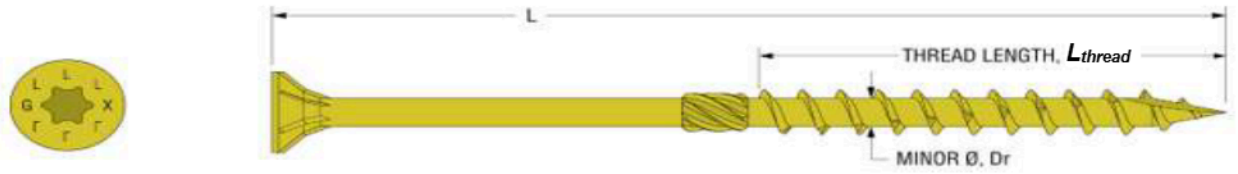


FIGURE A1A—SDCP SCREWS

TABLE A1A—REFERENCE LATERAL DESIGN VALUES (Z) DETERMINED FROM TESTING FOR SINGLE SHEAR STEEL-TO-WOOD CONNECTIONS FOR SDCP22 SCREWS[1,2,3,4]

FASTENER DESIGNATION	REFERENCE LATERAL DESIGN VALUE, Z (lbf)	
	0.50 ≤ SG	0.42 ≤ SG < 0.50
SDCP22318	535	410

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

[1]The main member must be solid-sawn wood, GL or CLT with a minimum assigned specific gravity (SG) of either 0.42 or 0.50, as indicated in the table above. Values for SG ≥ 0.50 are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.4.
[2]See Section 3.3.7.3 for steel side member requirements.
[3]Minimum fastener penetration must be equal to the screw length less the thickness of the metal side plate.
[4]Refer to Table A1E for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE A1B—REFERENCE LATERAL DESIGN VALUES (*Z*) DETERMINED FROM TESTING FOR SINGLE SHEAR WOOD-TO-WOOD CONNECTIONS FOR SDCP22 AND SDCP27 SCREWS[1,2,3,4]

FASTENER DESIGNATION	REFERENCE LATERAL DESIGN VALUE, *Z* (lbf)							
	$t_{s,w}$ (inches)							
	1.5	3	3.5	4.125	5.5	6.875	7.25	9.625
$0.42 \le SG_{NDS} < 0.50$								
SDCP22318	245	—	—	—	—	—	—	—
SDCP22434	255	—	—	—	—	—	—	—
SDCP22512	255	320	—	—	—	—	—	—
SDCP22614	255	320	320	—	—	—	—	—
SDCP22700	255	320	320	320	—	—	—	—
SDCP22858	255	320	320	320	320	—	—	—
SDCP22912	255	320	320	320	320	—	—	—
SDCP221100	255	320	320	320	320	320	320	—
SDCP221134	255	320	320	320	320	320	320	—
SDCP27400	255	—	—	—	—	—	—	—
SDCP27614	255	415	415	—	—	—	—	—
SDCP27778	255	415	415	415	—	—	—	—
SDCP27912	255	415	415	415	415	—	—	—
SDCP271100	255	415	415	415	415	415	415	—
SDCP271212	255	415	415	415	415	415	415	—
SDCP271400	255	415	415	415	415	415	415	415
$0.50 \le SG_{NDS}$								
SDCP22318	340	—	—	—	—	—	—	—
SDCP22434	360	—	—	—	—	—	—	—
SDCP22512	360	480	—	—	—	—	—	—
SDCP22614	360	480	480	—	—	—	—	—
SDCP22700	360	480	480	480	—	—	—	—
SDCP22858	360	480	480	480	480	—	—	—
SDCP22912	360	480	480	480	480	—	—	—
SDCP221100	360	480	480	480	480	480	480	—
SDCP221134	360	480	480	480	480	480	480	—
SDCP27400	360	—	—	—	—	—	—	—
SDCP27614	360	600	600	—	—	—	—	—
SDCP27778	360	600	600	600	—	—	—	—
SDCP27912	360	600	600	600	600	—	—	—
SDCP271100	360	600	600	600	600	600	600	—
SDCP271212	360	600	600	600	600	600	600	—
SDCP271400	360	600	600	600	600	600	600	600

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

[1]The main member and side members must be solid-sawn wood, GL or CLT with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.4.

[2]Minimum fastener penetration, $L_{emb,l}$, must be equal to the screw length less the thickness of the wood side member.

[3]Tabulated reference lateral design values apply to loading parallel to the grain of the side member and either parallel or perpendicular to the grain of the main member.

[4]Refer to Table A1E for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE A1C—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDCP22 AND SDCP27 SCREWS[1,2]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	$L_{emb,w}$ (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, *W* (lbf/inch)[3]	
				$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCP22318	3.15	1.97	1.97	179	184
SDCP22434	4.72	3.15	2.2	185	200
SDCP22512	5.51	3.15			
SDCP22614	6.30	3.15			
SDCP22700	7.09	3.15			
SDCP22858	8.66	3.15			
SDCP22912	9.45	3.15			
SDCP221100	11.02	3.15			
SDCP221134	11.81	3.15			
SDCP27400	3.94	1.97	1.97	179	184
SDCP27614	6.30	3.15	3.15	200	200
SDCP27778	7.87	3.15			
SDCP27912	9.45	3.15			
SDCP271100	11.02	3.15			
SDCP271212	12.60	3.15			
SDCP271400	14.17	3.15			

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 175 N/m.

[1]Wood main members must have a minimum SG_{NDS} as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.4.

[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.

[3]Reference withdrawal design values, *W*, must be multiplied by the embedded thread length, including the tip length, to determine the total withdrawal capacity.

TABLE A1D—REFERENCE HEAD PULL-THROUGH DESIGN VALUES (W_H) FOR SDCP22 AND SDCP27 SCREWS [1,2]

FASTENER DESIGNATION	REFERENCE PULL-THROUGH DESIGN VALUE, W_H (lbf)				AVAILABLE PULL-OVER STRENGTHS	
	Sawn Lumber, Glulam and Similar Material[1,2]			$1^1/_8$ inch Rated Plywood[2]	3 ga. (0.2405 inch) Steel[3]	
	$t_{s,w}$ (inches)	$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$		ASD	LRFD
SDCP22318	1.5	220	330	285	1960	3610
SDCP22434						
SDCP22512						
SDCP22614						
SDCP22700						
SDCP22858						
SDCP22912						
SDCP221100						
SDCP221134						
SDCP27400	1.5	290	420	355	2605	4800
SDCP27614						
SDCP27778						
SDCP27912						
SDCP271100						
SDCP271212						
SDCP271400						

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

[1]The side member must be solid-sawn lumber with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above.

[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.

TABLE A1E—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SDCP22 AND SDCP27 SCREWS ADDRESSED IN TABLES A1A AND A1B[1]

CONDITION	DIRECTION OF LOAD TO GRAIN	ID	MINIMUM DISTANCEOR SPACING (in.)
Edge Distance	Perpendicular	①	1 3/4
	Parallel	①	1 3/4
End Distance	Perpendicular	②	6
	Parallel	②	6
Spacing Between Fasteners in a Row	Perpendicular	③	4
	Parallel	④	8
Spacing Between Rows of Fasteners	Perpendicular	⑤	4
	Parallel	⑥	4
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	5/8

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure A1B for a depiction of the required geometry.

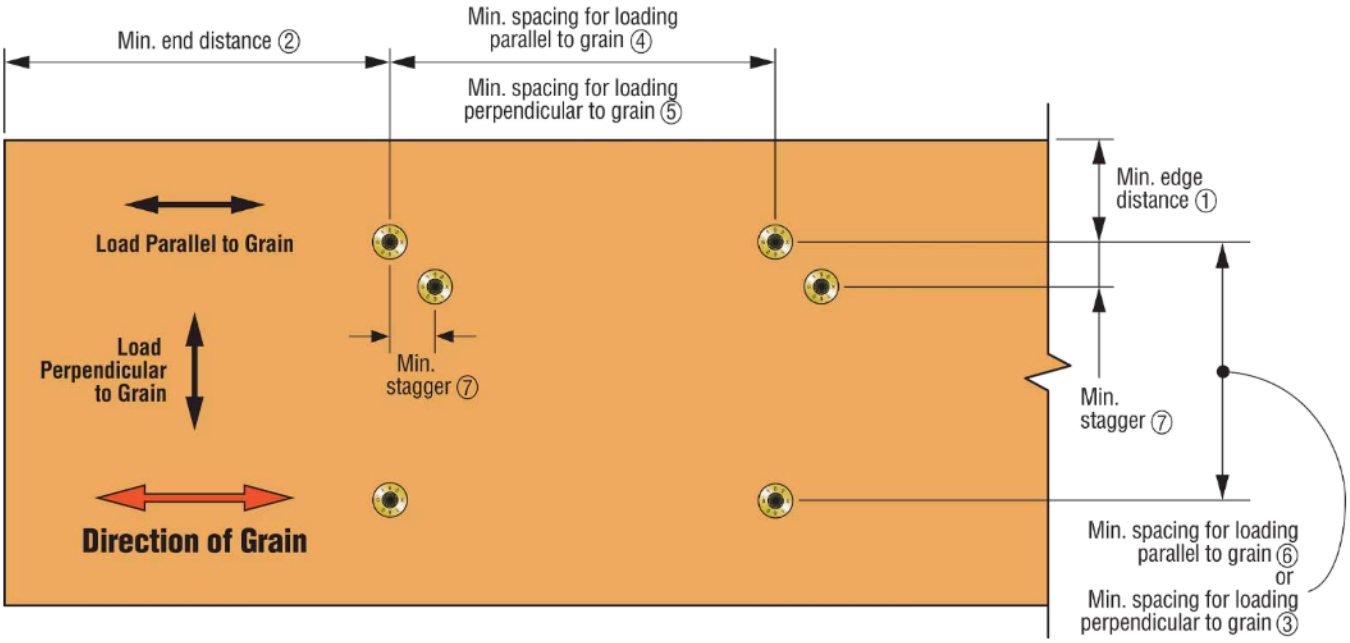


FIGURE A1B—SDCP SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE A1E

TABLE A2—SCREW SPECIFICATIONS AND FASTENER STRENGTHS FOR SDCF22 AND SDCF27 SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING	SCREW SPECIFICATIONS (inches)						$F_{yb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H	L	L_{thread}	D	D_r	L_{tip}		N_a	V_a
SDCF22434	120	0.591	4.72	4.29	0.315	0.205	0.550	185,000	2000	1400
SDCF22512	140		5.51	5.08						
SDCF22614	160		6.30	5.87						
SDCF22700	180		7.09	6.65						
SDCF22858	220		8.66	8.23						
SDCF221014	260		10.24	9.80						
SDCF221134	300		11.81	11.38						
SDCF221334	350		13.78	13.35						
SDCF27400	100	0.728	3.94	3.66	0.394	0.245	0.550	200,000	3200	2300
SDCF27614	160		6.30	6.02						
SDCF27778	200		7.87	7.60						
SDCF27912	240		9.45	9.17						
SDCF271100	280		11.02	10.75						
SDCF271958	500		19.69	18.74						
SDCF272358	600		23.62	22.68						

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

[1]Refer to Table A2A for reference lateral (Z) design values for wood-to-wood connections determined from testing. For connections not addressed in Table A2A, refer to Section 4.1.4 for determination of reference lateral design values in accordance with the NDS. Refer to Table A2B for reference withdrawal (W) design values. Refer to Table A2C for reference pull-through (W_H) design values.

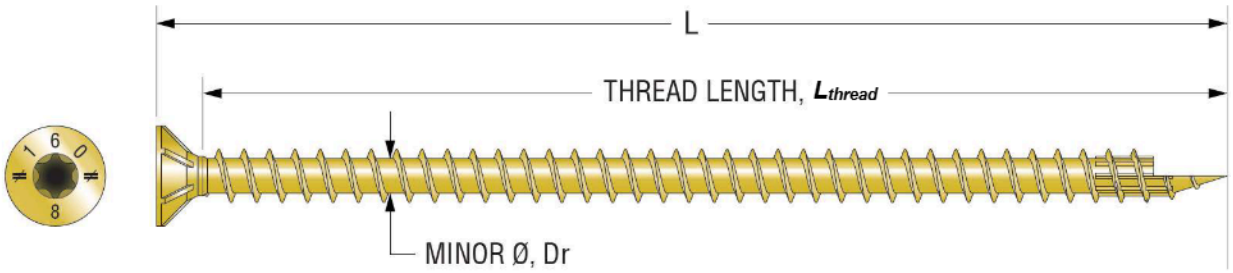


FIGURE A2A—SDCF22 AND SDCF27 SCREWS (SDCF22614 Shown)

TABLE A2A—REFERENCE LATERAL DESIGN VALUES (*Z*) DETERMINED FROM TESTING FOR SINGLE SHEAR WOOD-TO-WOOD CONNECTIONS WITH SDCF22 AND SDCF27 SCREWS[1,2,3,4]

FASTENER DESIGNATION	REFERENCE LATERAL DESIGN VALUE, *Z* (lbf)							
	$t_{s,w}$ (inches)							
	1.5	3	3.5	4.125	5.5	6.875	7.25	9.625
$0.42 \le SG_{NDS} < 0.50$								
SDCF22434	325	—	—	—	—	—	—	—
SDCF22512	325	325	—	—	—	—	—	—
SDCF22614	325	325	325	—	—	—	—	—
SDCF22700	325	325	325	325	—	—	—	—
SDCF22858	325	325	325	325	325	—	—	—
SDCF221014	325	325	325	325	325	—	—	—
SDCF221134	325	325	325	325	325	325	325	—
SDCF221334	325	325	325	325	325	325	325	325
SDCF27400	325	—	—	—	—	—	—	—
SDCF27614	325	400	400	—	—	—	—	—
SDCF27778	325	400	400	400	—	—	—	—
SDCF27912	325	400	400	400	400	—	—	—
SDCF271100	325	400	400	400	400	400	400	—
SDCF271958	325	400	400	400	400	400	400	400
SDCF272358	325	400	400	400	400	400	400	400
$0.50 \le SG_{NDS}$								
SDCF22434	425	—	—	—	—	—	—	—
SDCF22512	425	425	—	—	—	—	—	—
SDCF22614	425	425	425	—	—	—	—	—
SDCF22700	425	425	425	550	—	—	—	—
SDCF22858	425	425	425	550	550	—	—	—
SDCF221014	425	425	425	550	550	550	—	—
SDCF221134	425	425	425	550	550	550	550	—
SDCF221334	425	425	425	550	550	550	550	550
SDCF27400	425	—	—	—	—	—	—	—
SDCF27614	425	650	650	—	—	—	—	—
SDCF27778	425	650	650	650	—	—	—	—
SDCF27912	425	650	650	650	650	—	—	—
SDCF271100	425	650	650	650	650	650	650	—
SDCF271958	425	650	650	650	650	650	650	650
SDCF272358	425	650	650	650	650	650	650	650

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

[1]The main member and side members must be solid-sawn wood, GL or CLT with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.5.

[2]Minimum fastener penetration, $L_{emb,l}$, must be equal to the screw length less the thickness of the wood side member.

[3]Tabulated reference lateral design values for two member connections apply to the following combinations of grain orientations in the side and main members: side parallel-main parallel, side parallel-main perpendicular, and side perpendicular-main parallel.

[4]Refer to Table A2D for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE A2B—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDCF22 AND SDCF27 SCREWS[1,2]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	$L_{emb,w}$ (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, *W* (lbf/inch)[3]	
				$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCF22434	4.72	4.29	3	200	265
SDCF22512	5.51	5.08			
SDCF22614	6.30	5.87			
SDCF22700	7.09	6.65			
SDCF22858	8.66	8.23			
SDCF221014	10.24	9.80			
SDCF221134	11.81	11.38			
SDCF221334	13.78	13.35			
SDCF27400	3.94	3.66	3	200	265
SDCF27614	6.30	6.02			
SDCF27778	7.87	7.60			
SDCF27912	9.45	9.17			
SDCF271100	11.02	10.75			
SDCF271958	19.69	18.74			
SDCF272358	23.62	22.68			

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 175 N/m.

[1]Wood main members must have a minimum SG_{NDS} as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.5.
[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.
[3]Reference withdrawal design values, *W*, must be multiplied by the embedded thread length, including the tip length, to determine the total withdrawal capacity.

TABLE A2C—REFERENCE HEAD PULL-THROUGH DESIGN VALUES (W_H) FOR SDCF22 AND SDCF27 SCREWS[1,2,3]

FASTENER DESIGNATION	$t_{s,w}$ (inches)	REFERENCE PULL-THROUGH DESIGN VALUE, W_H (lbf)	
		$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCF22434	1.5	320	360
SDCF22512			
SDCF22614			
SDCF22700			
SDCF22858			
SDCF221014			
SDCF221134			
SDCF221334			
SDCF27400	1.5	320	360
SDCF27614			
SDCF27778			
SDCF27912			
SDCF271100			
SDCF271958			
SDCF272358			

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

[1]The side member must be solid-sawn lumber with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above.
[2]See Section 4.1.2 for additional design provisions.
[3]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.

TABLE A2D—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SDCF22 AND SDCF27 SCREWS ADDRESSED IN TABLE A2A[1]

CONDITION	DIRECTION OF LOADTO GRAIN	ID	MINIMUM DISTANCEOR SPACING (in.)
Edge Distance	Perpendicular	①	1 3/4
	Parallel	①	1 3/4
End Distance	Perpendicular	②	6
	Parallel	②	6
Spacing Between Fasteners in a Row	Perpendicular	③	4
	Parallel	④	8
Spacing Between Rows of Fasteners	Perpendicular	⑤	4
	Parallel	⑥	4
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	5/8

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure A2B for a depiction of the required geometry.

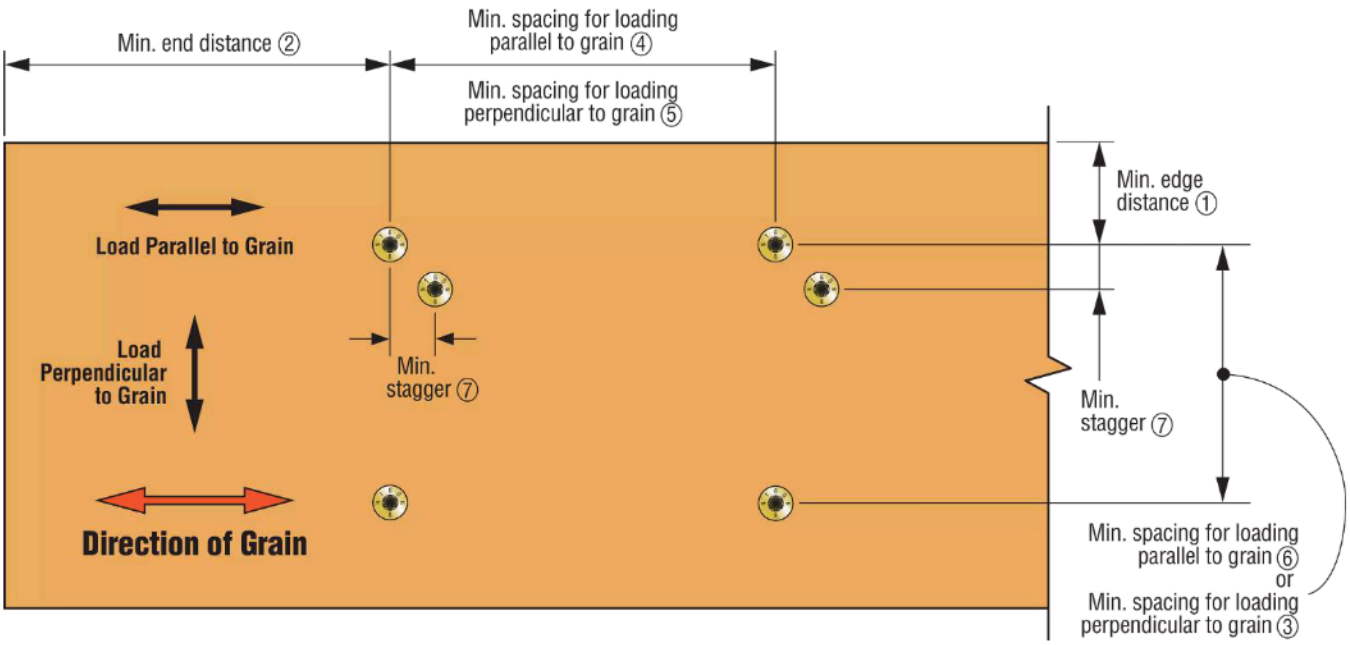


FIGURE A2B—SDCF22 AND SDCF27 SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE A2D

TABLE A3—SPECIFICATIONS AND FASTENER STRENGTHS FOR SDCFC27 SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING	SCREW SPECIFICATIONS (inches)						$F_{yb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H	L	L_{thread}	D	D_r	L_{tip}		N_a	V_a
SDCFC271958	500	0.528	19.69	18.74	0.394	0.245	0.550	200,000	3200	2300
SDCFC272358	600		23.62	22.68						
SDCFC273112	800		31.5	30.55						
SDCFC273938	1000		39.37	38.43						

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

[1]Refer to Table A3A for reference lateral (Z) design values for wood-to-wood connections determined from testing. For connections not addressed in Table A3A, refer to Section 4.1.4 for determination of reference lateral design values in accordance with the NDS. Refer to Table A3B for reference withdrawal (W) design values. Refer to Table A3C for reference pull-through (W_H) design values.

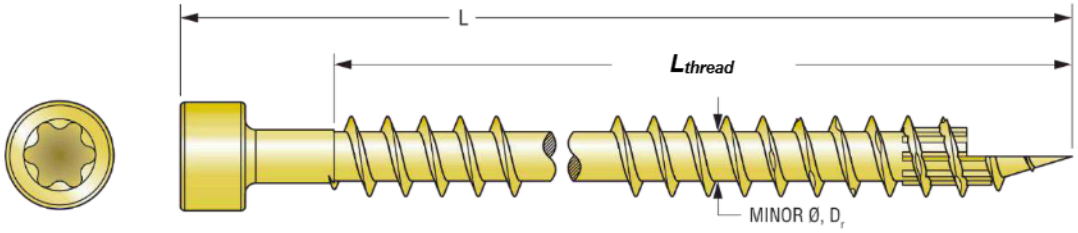


FIGURE A3A—SDCFC27 SCREWS

TABLE A3A—REFERENCE LATERAL DESIGN VALUES (Z) DETERMINED FROM TESTING FOR SINGLE SHEAR WOOD-TO-WOOD CONNECTIONS WITH SDCFC27 SCREWS[1,2,3,4]

FASTENER DESIGNATION	MINIMUM $t_{s,w}$ (inches)	$L_{emb,l}$ (inches)	REFERENCE LATERAL DESIGN VALUE, Z (lbf)	
			$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCFC271958	3	3	400	650
SDCFC272358				
SDCFC273112				
SDCFC273938				

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

[1]The main member and side members must be solid-sawn wood, GL or CLT with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.5.

[2]Minimum fastener penetration, $L_{emb,l}$, must be equal to the screw length less the thickness of the wood side member.

[3]Tabulated reference lateral design values for two member connections apply to the following combinations of grain orientations in the side and main members: side parallel-main parallel, side parallel-main perpendicular, and side perpendicular-main parallel.

[4]Refer to Table A3D for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE A3B—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDCFC27 SCREWS[1,2]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	$L_{emb,w}$ (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, *W* (lbf/inch)[3]	
				$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCFC271958	19.69	18.74	3	200	265
SDCFC272358	23.62	22.67			
SDCFC273112	31.5	30.55			
SDCFC273938	39.37	38.43			

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 175 N/m.

[1]Wood main members must have a minimum SG_{NDS} as indicated in the table above. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.5.
[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.
[3]Reference withdrawal design values, *W*, must be multiplied by the embedded thread length, including the tip length, to determine the total withdrawal capacity.

TABLE A3C—REFERENCE HEAD PULL-THROUGH DESIGN VALUES (W_H) FOR SDCFC27 SCREWS [1,2,3]

FASTENER DESIGNATION	$t_{s,w}$ (inches)	REFERENCE PULL-THROUGH DESIGN VALUE, W_H (lbf)	
		$0.42 \le SG_{NDS} < 0.50$	$0.50 \le SG_{NDS}$
SDCFC271958	1.5	210	290
SDCFC272358			
SDCFC273112			
SDCFC273938			

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

[1]The side member must be solid-sawn lumber with a minimum SG_{NDS} of either 0.42 or 0.50, as indicated in the table above.
[2]See Section 4.1.2 for additional design provisions.
[3]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.

TABLE A3D—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SDCFC27 SCREWS ADDRESSED IN TABLE A3A[1]

CONDITION	DIRECTION OF LOADTO GRAIN	ID	MINIMUM DISTANCEOR SPACING (in.)
Edge Distance	Perpendicular	①	1 3/4
	Parallel	①	1 3/4
End Distance	Perpendicular	②	6
	Parallel	②	6
Spacing Between Fasteners in a Row	Perpendicular	③	4
	Parallel	④	8
Spacing Between Rows of Fasteners	Perpendicular	⑤	4
	Parallel	⑥	4
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	5/8

For **SI:** 1 inch = 25.4 mm.

[1]Edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure A4 for a depiction of the required geometry.

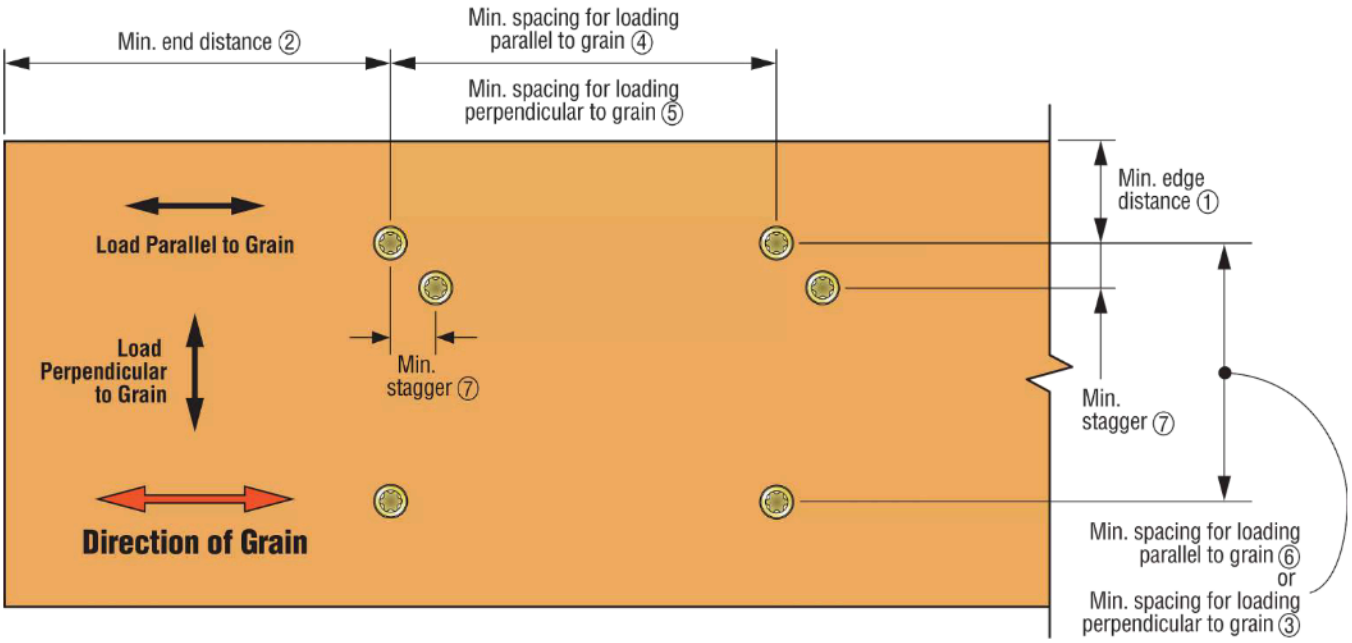


FIGURE A3B—SDCFC27 SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE A3D

TABLE A4—SPECIFICATIONS AND FASTENER STRENGTHS FOR SDHR27 AND SDHR31 SCREWS[1]

FASTENER DESIGNATION	HEAD MARKING	SCREW SPECIFICATIONS (inches)							$F_{yb,spec}$ (psi)	FASTENER ALLOWABLE STEEL STRENGTH (lbf)	
		D_H[2]	D_{sh}	L	L_{thread}	D_s	D	D_r		N_a	V_a
SDHR27400	100	0.587	0.397	3.94	2.17	0.280	0.394	0.242	190,000	2500	1680
SDHR27614	160			6.30	4.33						
SDHR31400	100	0.665	0.475	3.94	2.17	0.319	0.472	0.264	200,000	3075	2150
SDHR31614	160			6.30	4.33						

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

[1]Refer to Table A4A for reference lateral (Z) design values for steel-to-wood connections determined from testing. For connections not addressed in Table A4A, refer to Section 4.1.3 for determination of reference lateral design values in accordance with the NDS. Refer to Table A4B for reference withdrawal (W) design values. Refer to Table A4C for pull-over design values.
[2]Measured across flats, as shown in Figure A4A.

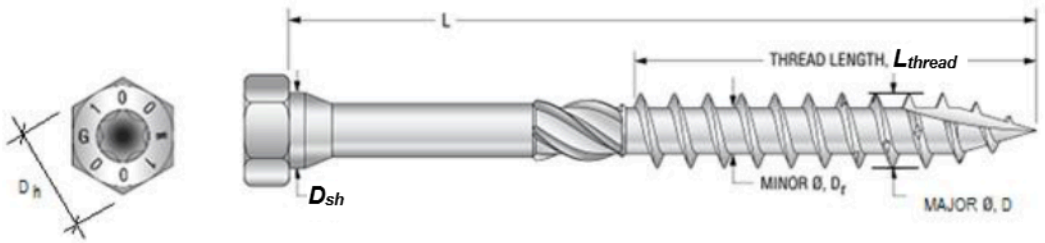


FIGURE A4A—SDHR SCREW

TABLE A4A—REFERENCE LATERAL DESIGN VALUES (*Z*) FOR SINGLE SHEAR STEEL-TO-WOOD CONNECTIONS WITH SDHR27 AND SDHR31 SCREWS[1,2,3,4,5]

FASTENER DESIGNATION	REFERENCE LATERAL DESIGN VALUE, *Z* (lbf)					
	Side Member Thickness, ga (mils)					
	16 (54)	14 (68)	12 (97)	10 (118)	7 (171)	3 (229)
SDHR27400	390	390	390	390	390	485
SDHR27614	390	390	390	390	390	485
SDHR31400	440	440	440	440	440	565
SDHR31614	440	440	440	440	440	565

For **SI:** 1 inch = 25.4 mm, 1 mil = 0.001 inch, 1 lbf = 4.45 N.

[1]The main member must be solid-sawn wood, GL or CLT with a minimum SG_{NDS} of 0.42 or an engineered wood product with a minimum grade of 1.3E and SG_{eq} of at least 0.50.
[2]Steel side members must have the tabulated thickness and must comply with Section 3.3.7.4.
[3]Minimum fastener penetration must be equal to the screw length less the thickness of the side member.
[4]Tabulated reference lateral design values apply to parallel-to-grain and perpendicular-to-grain loading.
[5]Refer to Table A4D for connection geometry parameters associated with the tabulated values for laterally loaded screws.

TABLE A4B—REFERENCE WITHDRAWAL DESIGN VALUES (*W*) FOR SDHR27 AND SDHR31 SCREWS IN A WOOD MAIN MEMBER[1,2]

FASTENER DESIGNATION	*L* (inches)	L_{thread} (inches)	$L_{emb,w}$ (inches)	REFERENCE WITHDRAWAL DESIGN VALUE, *W* (lbf/inch)	
				$0.42 \le SG_{NDS} < 0.50$	$SG_{NDS} \ge 0.5$
SDHR27400	3.94	2.15	2.15	185	195
SDHR27614	6.30	4.30			
SDHR31400	3.94	2.15	2.15	195	195
SDHR31614	6.30	4.30			

For **SI:** 1 inch = 25.4 mm, 1 lbf/inch = 175 N/m.

[1]The wood member must be solid-sawn wood, GL or CLT with SG_{NDS} as shown in the table. Values for $SG_{NDS} \ge 0.50$ are also applicable for fasteners installed into the face of SCL described in Sections 3.3.6.1 and 3.3.6.6.
[2]Refer to Table 7B for connection geometry parameters associated with the tabulated values for axially loaded screws.
[3]Reference withdrawal design values, *W*, must be multiplied by the embedded thread length, including the tip length, to determine the total withdrawal capacity.

TABLE A4C—ALLOWABLE HEAD PULL-OVER DESIGN VALUES FOR SDHR SCREWS[1]

FASTENER DESIGNATION	ALLOWABLE PULL-OVER DESIGN VALUE (lbf)		
	$t_{s,s} \ge$ 16ga (54 mils)	$t_{s,s} \ge$ 10ga (135 mils)	$t_{s,s} \ge$ 3ga (241 mils)
SDHR27400	500	1,765	2,385
SDHR27614			
SDHR31400	570	1,765	2,935
SDHR31614			

For **SI:** 1 inch = 25.4 mm, 1 mil = 0.001 inch; 1 lbf = 4.45 N.

[1]Steel side members must have the tabulated thickness and must comply with Section 3.3.7.4.
[2]Connection geometry requirements are governed by the requirements for installation in the wood main member, given in Table 7B.

TABLE A4D—REQUIRED GEOMETRY FOR LATERAL CONNECTIONS WITH SDHR SCREWS ADDRESSED IN TABLE A4A[1,2]

CONDITION	DIRECTION OF LOAD TO GRAIN	ID	MINIMUM DISTANCE OR SPACING (in.)
Edge Distance	Perpendicular	①	1 3/4
	Parallel	①	1 3/4
End Distance	Perpendicular	②	6
	Parallel	②	6
Spacing Between Fasteners in a Row	Perpendicular	③	3
	Parallel	④	4
Spacing Between Rows of Fasteners	Perpendicular	⑤	3
	Parallel	⑥	3
Spacing Between Staggered Rows	Perpendicular or Parallel	⑦	1 1/2

For **SI:** 1 inch = 25.4 mm.

[1]Wood edge distances, end distances and spacing of the screws must be sufficient to prevent splitting of the wood, or as required by this table, whichever is the more restrictive. See Figure A4B for a depiction of the required geometry.

[2]Minimum steel edge distances, end distances and spacing of the screws must be determined in accordance with AISC 360.

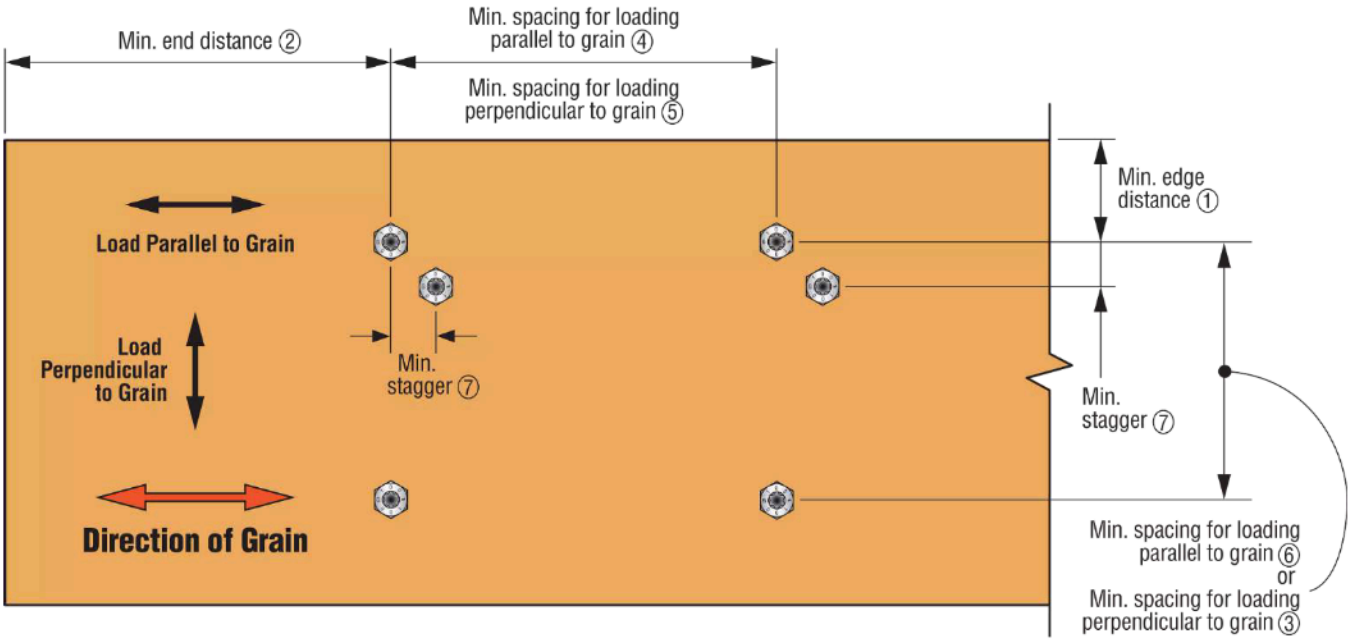


FIGURE A4B—SDHR SCREW CONNECTION GEOMETRY DESCRIBED IN TABLE A4D

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY INC.

EVALUATION SUBJECT:

SIMPSON STRONG-TIE® STRONG-DRIVE SCREWS USED IN WOOD

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that the Simpson Strong-Tie® Strong-Drive screws used in wood, described in ICC-ES evaluation report ESR-3046, have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

Applicable code editions:

- 2026* *City of Los Angeles Building Code* (LABC)
- 2026* *City of Los Angeles Residential Code* (LARC)

*For evaluation for compliance with the anticipated requirements of the 2026 LABC and LARC

2.0 CONCLUSIONS

The Simpson Strong-Tie® Strong-Drive screws used in wood, described in Sections 2.0 through 7.0 of the evaluation report ESR-3046, comply with the LABC Chapter 23 and the LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The Simpson Strong-Tie® Strong-Drive screws used in wood described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-3046.
- The design, installation, conditions of use and identification of the Simpson Strong-Tie® Strong-Drive screws used in wood are in accordance with the 2024 *International Building Code®* (IBC) and 2024 *International Residential Code®* (IRC) provisions, as applicable, noted in the evaluation report ESR-3046.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16, 17 and 23, as applicable.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued August 2026.

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

Copyright © 2026 ICC Evaluation Service, LLC. All rights reserved.

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES
Section: 06 05 23—Wood, Plastic, and Composite Fastenings
Section: 06 05 23.20—Screws

REPORT HOLDER:

SIMPSON STRONG-TIE COMPANY INC.

EVALUATION SUBJECT:

SIMPSON STRONG-TIE® STRONG-DRIVE SCREWS USED IN WOOD

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that Simpson Strong-Tie® Strong-Drive Screws Used in Wood, described in ICC-ES evaluation report ESR-3046, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2023 *Florida Building Code—Building*
- 2023 *Florida Building Code—Residential*

2.0 CONCLUSIONS

The Simpson Strong-Tie® Strong-Drive Screws Used in Wood, described in Sections 2.0 through 7.0 of ICC-ES evaluation report ESR-3046, complies with the *Florida Building Code—Building* and *Florida Building Code—Residential*. The design requirements must be determined in accordance with the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable. The installation requirements noted in ICC-ES evaluation report ESR-3046 for the 2021 *International Building Code®* meet the requirements of the *Florida Building Code—Building* or the *Florida Building Code—Residential,* as applicable.

Use of the Simpson Strong-Tie® Strong-Drive Screws Used in Wood have also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building* and the *Florida Building Code—Residential* with the following condition:

a. For connections subject to uplift, the connection must be designed for no less than 700 pounds (3114 N).

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued August 2026.

ICC-ES Evaluation Reports are not to be construed as representing aesthetics or any other attributes not specifically addressed, nor are they to be construed as an endorsement of the subject of the report or a recommendation for its use. There is no warranty by ICC Evaluation Service, LLC, express or implied, as to any finding or other matter in this report, or as to any product covered by the report.

Copyright © 2026 ICC Evaluation Service, LLC. All rights reserved.