

February 28, 2025

Re: Installation Torque and Tools for Simpson Strong-Tie® Strong Drive® SDCF TIMBER-CF Screws, SDCP TIMBER-CP Screws and SDHR COMBO-HEAD Screws

To Whom It May Concern:

The purpose of this letter is to convey recommendations for installation of Strong-Drive SDCF TIMBER-CF Screws, SDCP TIMBER-CP Screws, and SDHR COMBO-HEAD Screws. Simpson Strong-Tie has evaluated the installation seating torque and the effect of driver tools on the screws and connections.

The screws mentioned above are used for wood-to-wood and metal-to-wood connections. In a metal-to-wood connection, the metal (steel or aluminum) is the predrilled side member of the connection. For wood-to-wood installations, the heads of the SDCF and SDCP screws should be countersunk so that the top of the head is flush to the surface of the side member; and for metal-to-wood installations, the metal side member should be pre-machined to a countersunk surface to receive the underside of the screw head. For SDHR screws, holes in metal side members should be pre-punched or predrilled with standard round holes (SDHR27 hole diameter not greater than 0.4375 in. (11 mm) and SDHR31 hole diameter not greater than 0.500 in. (13 mm)), and the bottom of the SDHR screw heads should be driven into contact with the surface of the side member. For the purposes of this letter, the seating torque is the torsional moment on the screw for wood side grain installations when the screw head makes contact with the metal side member. Seating torques shall not exceed the values shown in Tables 1, 2, and 3 as appropriate, and for end-grain installations, the tabulated values shall be multiplied by 0.65. The torque values in this letter may also be applied for screws used in temporary installations, such as lifting devices, where screws with countersunk flat heads are installed with metal side members having non-countersunk holes.

Table 1. Recommended maximum seating torque for SDCF22 and SDCP22 screws driven through metal side members*.			
Model	Nominal Screw Length (in.)	Recommended Maximum Seating Torque, lb-in. (Nm)	
		$0.42 \leq G < 0.50$	$G \geq 0.50$
SDCF22434	4.72	90 (10)	115 (13)
SDCF22512	5.51	105 (12)	135 (15)
SDCF22614	6.30	120 (13.5)	155 (17.5)
SDCF22700	7.09	135 (15)	175 (19.5)
SDCF22858	8.66	165 (18.5)	200 (22.5)
SDCF221014 and longer	≥ 10.24	200 (22.5)	200 (22.5)
SDCP22318	3.15	45 (5)	45 (5)
SDCP22434 and longer	≥ 4.72	65 (7)	70 (7)

*Metal side members could be either a metal plate or an MTW45-8 Timber Washer.

Table 2. Recommended maximum seating torque for SDHR27 and SDHR31 screws driven through metal side members*.			
Model	Nominal Screw Length (in.)	Recommended Maximum Seating Torque, lb-in. (Nm)	
		$0.42 \leq G < 0.50$	$G \geq 0.50$
SDHR27400	3.94	130 (14)	135 (15)
SDHR27614	6.30	195 (22)	195 (22)
SDHR31400	3.94	165 (18.5)	170 (19)
SDHR31614	6.30	220 (24)	220 (24)

*Acceptable hole sizes, as mentioned in the second paragraph.

Table 3. Recommended maximum seating torque for SDCF27 and SDCP27 screws driven through a metal plate side member.

Model	Nominal Screw Length (in.)	Recommended Maximum Seating Torque, lb-in. (Nm)	
		$0.42 \leq G < 0.50$	$G \geq 0.50$
SDCF27400	3.94	170 (19)	210 (23.5)
SDCF27614	6.30	250 (28)	315 (35.5)
SDCF27778	7.87	300 (34)	385 (43.5)
SDCF27912	9.45	355 (40)	450 (51)
SDCF271100	11.02	405 (45.5)	520 (58.5)
SDCF271958 and longer	≥ 19.69	580 (65.5)	580 (65.5)
SDCP27400	3.94	110 (12.5)	110 (12.5)
SDCP27614 and longer	≥ 6.3	155 (17.5)	155 (17.5)

To evaluate the effects of installation tools, wood-to-wood and metal-to-wood connections with SDCF22, SDCP22, SDCF27, SDCP27, SDHR27 and SDHR31 screws were made by installing the screws with either a drill motor or an impact driver tool to the recommended maximum seating torque.

Testing showed that the withdrawal resistance of the connection and the tensile strength of the screws were not affected by the driver tool. When using the impact driver tool to drive screws for wood-to-wood connections, caution must be exercised to prevent countersinking deeper than the top of head being flush to the wood side member surface. For metal-to-wood connections, impact driver tools can set screws at a torque that exceeds the recommended maximum seating torque, and this can strip the wood thread path and damage withdrawal resistance of the screw. Therefore, the impact driver tools should have a clutch setting that is calibrated to prevent exceeding the recommended maximum seating torque.

In summary, SDCF22 and SDCP22 screws up to 10- $\frac{1}{4}$ in., SDCF27 and SDCP27 screws up to 11 in., and SDHR27 and SDHR31 can be driven to the recommended maximum seating torques with either drill motors or impact driver tools in air-dry wood materials. The use of impact driver tools for wood-to-wood connections requires special attention to prevent over driving, and for metal-to-wood connections, caution is needed to prevent exceeding the recommended maximum seating torque. For SDCF22 and SDCP22 screws longer than 10- $\frac{1}{4}$ in. and SDCF27 and SDCP27 screws longer than 11 in., a drill motor should be used for installation.

The information in this letter is valid until **12/31/2025** when it will be re-evaluated by Simpson Strong-Tie. Please visit strongtie.com for additional pertinent information. If you have questions or need further assistance regarding this matter, please contact the Simpson Strong-Tie Engineering Department at 800.999.5099.

Sincerely,

SIMPSON STRONG-TIE COMPANY INC.