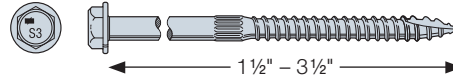


Structural and General Fastening

Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw

Heavy-Duty Simpson Strong-Tie® Connectors, Indoor/Outdoor Projects

For more information, see p. 60, C-F-2019 Fastening Systems Catalog



SDS — Allowable Shear Loads — Douglas Fir-Larch and Southern Pine Lumber

Size (in.)	Model No.	Reference DFL/SP Allowable Shear Loads (lb.)													
		Wood Side Plate Thickness (in.)													
		1/2	5/8	3/4	1	1 1/8	1 1/4	1 1/2	1 3/4	2 1/2	3	3 1/2	4	4 1/2	
1/4 x 2	SDS25200	145	—	—	—	—	—	—	—	—	—	—	—	—	
1/4 x 2 1/2	SDS25212	165	165	170	165	—	—	190 ¹	—	—	—	—	—	—	
1/4 x 3	SDS25300	165	165	170	185	195	205	280 ¹	—	—	—	—	—	—	
1/4 x 3 1/2	SDS25312	165	165	170	185	195	205	340 ¹	340 ¹	—	—	—	—	—	
1/4 x 4 1/2	SDS25412	165	165	170	185	195	205	350 ¹	340 ¹	230	200	—	—	—	
1/4 x 5	SDS25500	165	165	170	185	195	205	350 ¹	340 ¹	230	230	200	—	—	
1/4 x 6	SDS25600	165	165	170	185	195	205	350 ¹	340 ¹	340 ¹	340 ¹	340 ¹	230	200	
1/4 x 8	SDS25800	165	165	170	185	195	205	350 ¹	340 ¹	340 ¹	340 ¹	340 ¹	230	230	

SDS — Allowable Shear Loads — Spruce-Pine-Fir and Hem-Fir

Size (in.)	Model No.	Reference SPF/HF Allowable Shear Loads (lb.)													
		Wood Side Plate Thickness (in.)													
		1/2	5/8	3/4	1	1 1/8	1 1/4	1 1/2	1 3/4	2 1/2	3	3 1/2	4	4 1/2	
1/4 x 2	SDS25200	105	—	—	—	—	—	—	—	—	—	—	—	—	
1/4 x 2 1/2	SDS25212	130	135	130	120	—	—	135 ¹	—	—	—	—	—	—	
1/4 x 3	SDS25300	130	140	140	150	150	145	200 ¹	—	—	—	—	—	—	
1/4 x 3 1/2	SDS25312	130	140	140	150	155	165	245 ¹	245 ¹	—	—	—	—	—	
1/4 x 4 1/2	SDS25412	130	140	140	150	155	165	250 ¹	245 ¹	190	160	—	—	—	
1/4 x 5	SDS25500	130	140	140	150	155	165	250 ¹	245 ¹	190	190	160	—	—	
1/4 x 6	SDS25600	130	140	140	150	155	165	250 ¹	245 ¹	245 ¹	245 ¹	245 ¹	190	160	
1/4 x 8	SDS25800	130	140	140	150	155	165	250 ¹	245 ¹	245 ¹	245 ¹	245 ¹	195	195	

1. Noted loads are based on testing per ICC-ES AC233 and assume a minimum main member thickness of the screw length minus the side member thickness. All other allowable loads are based on the NDS and a minimum penetration of $6D = 1.45"$ into the main member.
2. Values are valid for a connection involving only two members. Where the side and main members have different specific gravities, the lower specific gravity shall be used.
3. Allowable loads are also applicable to structural composite lumber (e.g., LVL, PSL, and LSL) having an equivalent specific gravity of 0.50 or greater.
4. Allowable loads are shown at the wood load duration factor of $C_D = 1.00$. Loads may be increased for load duration by the building code up to a $C_D = 1.60$. The Designer shall apply all adjustment factors required per NDS.
5. Loads are based on perpendicular installation into the side grain of the wood members.
6. Loads apply to corresponding stainless-steel models.
7. For in-service moisture greater than 19% use $C_M = 0.7$.

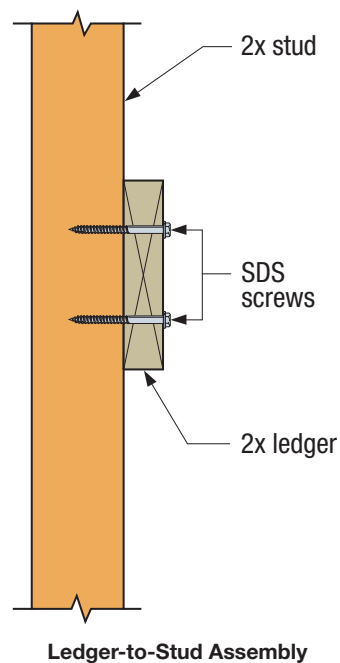
Ledger Structural Fastening Applications

Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw

SDS — Allowable Shear Loads — Installations into the Narrow Face of 2X SPF, HF, DFL, SP Lumber

Size (in.)	Model No.	Wood Side Member Actual Thickness (in.)	Minimum Main Member Penetration ⁵ (in.)	Reference DFL/SP Allowable Shear Loads (lb.)	Reference SPF/HF Allowable Shear Loads (lb.)
¼ x 3½	SDS25312	1½	2	250	190
¼ x 4½	SDS25412			250	190

- Allowable loads are based on testing per ICC AC233 and are limited to parallel-to-grain loaded solid-sawn main members (2" nominal). Wood side members may be loaded parallel or perpendicular to grain (see footnote 4).
- DFL/SP allowable loads are based on wood members having a minimum specific gravity of 0.50, and SPF/HF allowable loads are based on wood members having a minimum specific gravity of 0.42. Where the side and main members have different specific gravities, the lower values shall be used.
- Allowable loads are shown at the wood load duration factor of $C_D = 1.00$. Loads may be increased for load duration by the building code up to a $C_D = 1.60$.
- Minimum spacing of fasteners is 3" o.c., minimum end distance is 3" for all parallel-to-grain loaded members, or 4" for all perpendicular-to-grain loaded members, and minimum edge distance is ¾" for all parallel-to-grain loaded members, or 1½" for perpendicular-to-grain loaded side members.
- Screws may be installed with an intermediate layer of wood structural panel between the side and main member provided the wood structural panel is fastened to the main member per code and the minimum penetration of the screw into the main member (excluding the wood structural panel) is met.



Sole / Top Plate-to-Rim Fastening

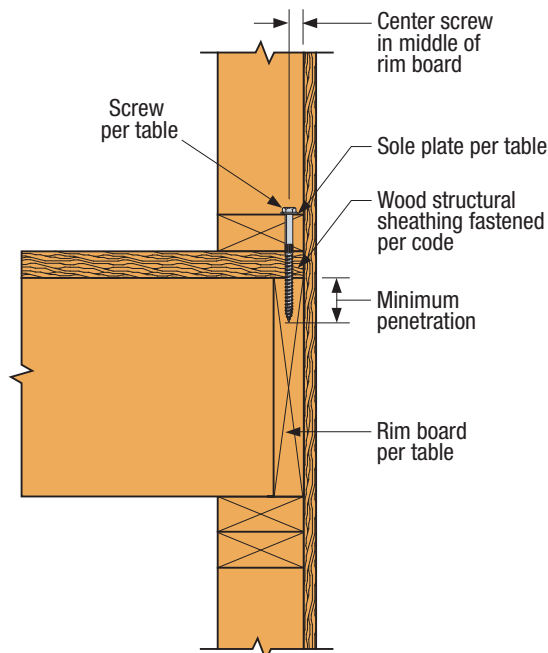
Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw

For more information, see p. 60, C-F-2019 Fastening Systems Catalog

SDS — Allowable Shear Values for Sole-to-Rim Connections

Size (in.)	Model No.	Sole Plate Nominal Thickness (in.)	Minimum Penetration into Rim Board (in.)	Reference Allowable Loads (lb.)							
				2x DFL/SP Rim Board		2x SPF/HF Rim Board		1 ¼" Min. LVL Rim Board		1 ¼" Min. LSL Rim Board	
				DFL/SP Sole Plate	SPF/HF Sole Plate	DFL/SP Sole Plate	SPF/HF Sole Plate	DFL/SP Sole Plate	SPF/HF Sole Plate	DFL/SP Sole Plate	SPF/HF Sole Plate
¼ x 4.5	SDS25412	2x	2	250	190	190	190	190	190	220	190
¼ x 5	SDS25500	2x	2	250	190	190	190	190	190	220	190
¼ x 6	SDS25600	2x, 3x, (2)-2x	2	250	190	190	190	190	190	220	190

1. Allowable loads are based on testing per ICC-ES AC233 and are limited to parallel-to-grain loading.
2. Allowable loads are shown at the wood load duration factor of $C_D = 1.00$. Loads may be increased for load duration by the building code up to a $C_D = 1.60$.
3. Minimum spacing of the SDS for sawn lumber applications is 3" o.c., minimum end distance is 3", and minimum edge distance is ½".
4. Minimum spacing of the SDS for LVL and LSL applications is 6" o.c., minimum end distance is 6", and minimum edge distance is ½".
5. Wood structural panel up to 1 ½" thick is permitted between the sole plate and rim board provided it is fastened to the rim board per code and the minimum penetration of the screw into the rim board is met.
6. A double 2x sole/top plate is permitted provided it is independently fastened per the code and the minimum screw penetration per the table is met.
7. Minimum rim board height shall be 9¼" when using SDS screws for sole and top plate fastening.
8. Sole-to-rim loads can be achieved without a wall below.

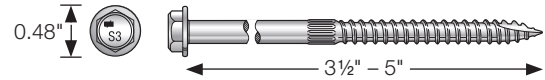


Sole-to-Rim Board Assembly
(Other fasteners not shown for clarity)

Deck Construction — Ledgers

Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw

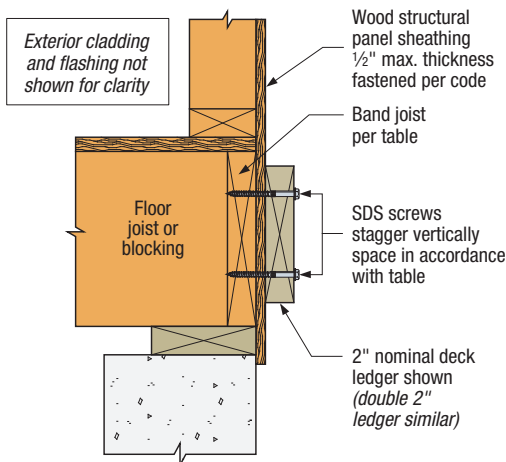
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2015 and 2018 IRC Compliant Spacing for a Sawn Lumber Deck Ledger-to-Rim Board

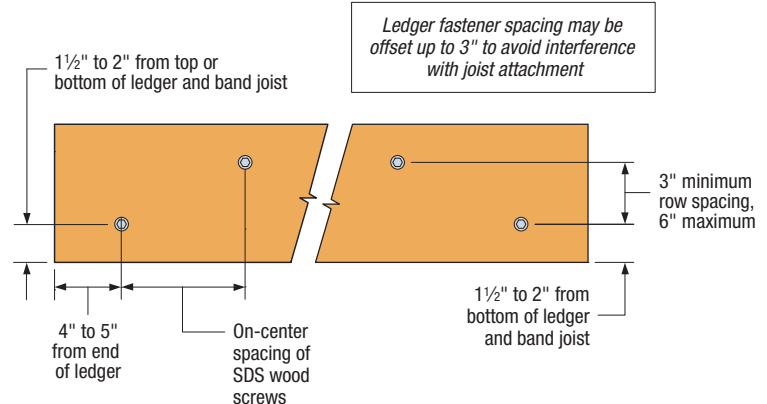
Loading Condition	Ledger Nominal Size (in.)	SDS Screw Length (in.)	Rim Board Material and Size	Maximum Deck Joist Span						
				Up to 6 ft.	Up to 8 ft.	Up to 10 ft.	Up to 12 ft.	Up to 14 ft.	Up to 16 ft.	Up to 18 ft.
				Maximum On-Center Spacing of Fasteners (in.)						
40 psf Live 10 psf Dead	2x	3 1/2	2" nominal sawn lumber	13	10	8	6	5	5	4
	(2) 2x ³	5								
	2x	3 1/2	1" min. oriented strand board (OSB) rim board	12	9	7	6	5	4	4
60 psf Live 10 psf Dead	2x	3 1/2	1 1/8" min. oriented strand board (OSB) rim board or 1 1/4" min. structural composite lumber	15	11	9	7	6	5	5
	2x	3 1/2	2" nominal sawn lumber	9	7	5	4	4	3	3
	(2) 2x ³	5								
	2x	3 1/2	1" min. oriented strand board (OSB) rim board	8	6	5	4	3	3	2
2x	3 1/2	1 1/8" min. oriented strand board (OSB) rim board or 1 1/4" min. structural composite lumber	10	8	6	5	4	4	4	3

1. Solid-sawn rim board shall be spruce-pine-fir, hem-fir, Douglas fir-larch, or southern pine species. Ledger shall be hem-fir, Douglas fir-larch, or southern pine species.
2. Fastener spacings are based on single fastener testing of the Strong-Drive SDS screw with a safety factor of 5.0 and include NDS wet service adjustment factor.
3. Multiple ledger plies shall be fastened together per code independent of the SDS screws.
4. SDS screw spacing values (above) are equivalent to 2018 IRC Table R507.9.1.3(1) and 2015 IRC Table R507.2, based on testing of the Strong-Drive SDS screw with a factor of safety of 5.0. The table above also provides SDS screw spacing for a wider range of materials commonly used for rim board, and an alternate loading condition as required by some jurisdictions.
5. Screw models SDS25312, SDS25312SS and SDS25500.



Ledger-to-Rim Board Assembly

(wood-framed lower floor acceptable, concrete wall shown for illustration purposes; other fasteners not shown for clarity.)



SDS Screw Spacing Detail for Ledgers

Connector/Steel-to-Wood Fastening

Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw

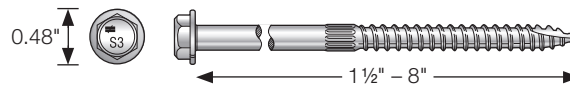
Heavy-Duty Simpson Strong-Tie® Connectors

The Simpson Strong-Tie Strong-Drive SDS screw is a ¼"-diameter high-strength structural wood screw ideal for various connector installations as well as wood-to-wood, general metal-to-wood and EWP fastening applications.

Install Tips: A low-speed ½" drill with a ⅜" hex driver (BITHEXR38-134) is the recommended tool for installation.

Codes/Standards: ICC-ES ESR-2236; City of L.A. RR25711, State of Florida FL9589

For more information, see p. 60, C-F-2019 Fastening Systems Catalog



SDS — Allowable Shear Loads — Steel Side-Plate Applications

Size (in.)	Model No.	Thread Length (in.)	Coating/Material	Reference DFL/SP Allowable Shear Loads (lb.)			Reference SPF/HF Allowable Shear Loads (lb.)		
				Steel Side Plate Thickness, mil (ga.)			Steel Side Plate Thickness, mil (ga.)		
				54 (16)	68 and 97 (14 and 12)	123 (10) or greater	54 (16)	68 and 97 (14 and 12)	123 (10) or greater
¼ x 1½	SDS25112	1	Double-barrier coating	250	250	250	180	180	180
¼ x 2	SDS25200	1½		250	290	290	180	210	210
¼ x 2½	SDS25212	1½		250	390	420	180	280	300
¼ x 3	SDS25300	2		250	420	420	180	300	300
¼ x 3½	SDS25312	2¼		250	420	420	180	300	300
¼ x 4½	SDS25412	2¾		250	420	420	180	300	300
¼ x 5	SDS25500	2¾		250	420	420	180	300	300
¼ x 6	SDS25600	3¼		250	420	420	180	300	300
¼ x 8	SDS25800	3¼	250	420	420	180	300	300	
¼ x 1½	SDS25112SS	1	Type 316 stainless steel	250	250	250	180	180	180
¼ x 2½	SDS25212SS	1½		250	390	420	180	280	300
¼ x 3	SDS25300SS	2		250	420	420	180	300	300
¼ x 3½	SDS25312SS	2¼		250	420	420	180	300	300

1. Allowable loads are shown at the wood load duration factor of $C_D = 1.00$. Loads may be increased for load duration up to a $C_D = 1.60$.
2. Allowable withdrawal load for DFL/SP/SCL is 172 lb./in. and for SPF/HF withdrawal is 121 lb./in. Total withdrawal load is based on actual thread penetration into the main member.
3. LSL wood-to-wood applications that require 4½", 5", 6" and 8" SDS screws are limited to interior-dry use only.
4. Minimum spacing requirements are listed in ICC-ES ESR-2236.