



Engineered  
to Be Stronger

**Strong-Drive**  
SDWS TIMBER Screw

*Structural Wood-to-Wood Connections Including Ledgers*



(800) 999-5099  
strongtie.com

# Engineered to Be Stronger

The Simpson Strong-Tie® Strong-Drive® SDWS Timber screw is specifically designed for structural wood-to-wood applications, including ledgers, and is also ideal for a wide variety of projects where a high-strength attachment is needed. This 0.220"-diameter fastener requires less torque to install than comparable fasteners, making it easier to drive, and the corrosion-resistant coating makes it suitable for many interior or exterior applications.

## Features

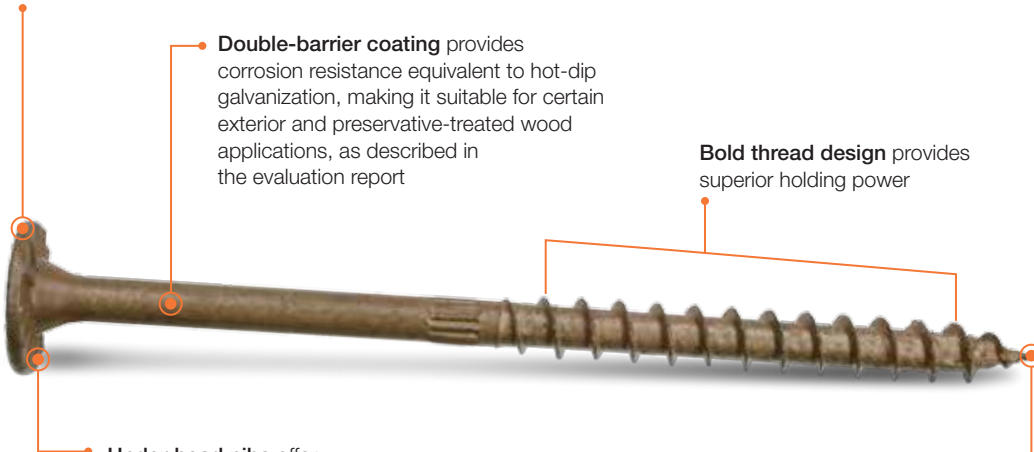
**Large washer head** provides maximum bearing area (0.75" head dia.)

**Double-barrier coating** provides corrosion resistance equivalent to hot-dip galvanization, making it suitable for certain exterior and preservative-treated wood applications, as described in the evaluation report

**Bold thread design** provides superior holding power

**Under-head nibs** offer greater control when seating the head

**Patented 4CUT™ tip** ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications



Size identification on all SDWS screw heads

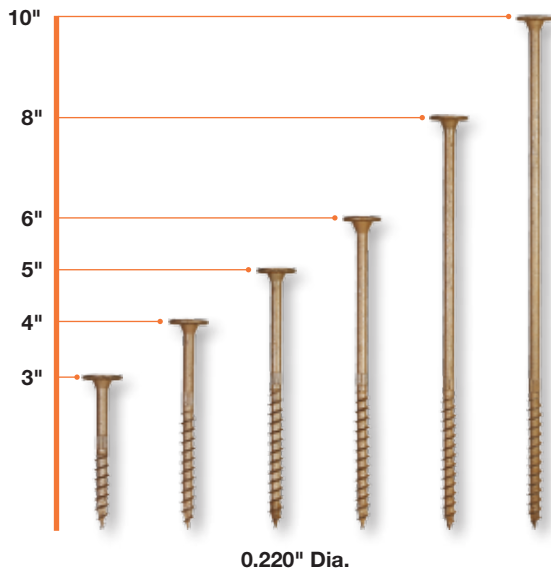
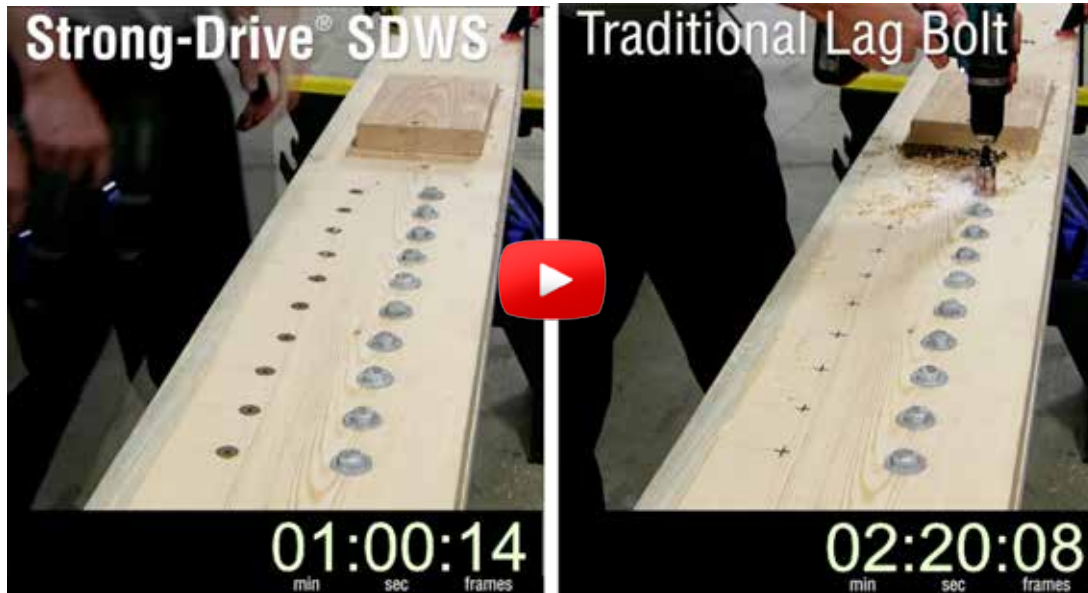
Codes/Standards: IAPMO UES ER-192

U.S. Patents 5,897,280; 7,101,133



# Engineered to Be Stronger

Watch how quickly the SDWS Timber screw can be installed compared to traditional lag bolts at [strongtie.com/videolibrary/SDWS.html](http://strongtie.com/videolibrary/SDWS.html).

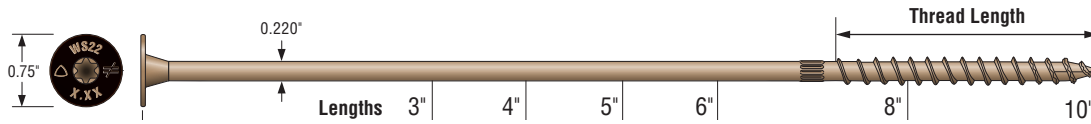


Scan here to watch the video.

Retail and mini-bulk packs include one 6-lobe, T-40 driver bit; bulk packs include two driver bits.

Size Dia. x L (in.)	Thread Length (in.)	Retail Clam			Retail Pack			Mini-Bulk		Bulk	
		Fasteners per Pack	Packs per Master Carton	Model No.	Fasteners per Pack	Packs per Master Carton	Model No.	Fasteners per Pack	Model No.	Fasteners per Pack	Model No.
0.220 x 3	1½	12	10	SDWS22300DB-RC12	50	6	SDWS22300DB-R50	250	SDWS22300DBMB	950	SDWS22300DB
0.220 x 4	2¾	12	10	SDWS22400DB-RC12	50	6	SDWS22400DB-R50	250	SDWS22400DBMB	600	SDWS22400DB
0.220 x 5	2¾	12	10	SDWS22500DB-RC12	50	6	SDWS22500DB-R50	250	SDWS22500DBMB	600	SDWS22500DB
0.220 x 6	2¾	12	10	SDWS22600DB-RC12	50	6	SDWS22600DB-R50	250	SDWS22600DBMB	500	SDWS22600DB
0.220 x 8	2¾	12	10	SDWS22800DB-RC12	50	6	SDWS22800DB-R50	250	SDWS22800DBMB	400	SDWS22800DB
0.220 x 10	2¾	12	10	SDWS221000DBRC12	50	6	SDWS221000DB-R50	—	—	250	SDWS221000DB

General Information



Factored Resistances for D.Fir-L Members (lb.)

Size Dia. x L (in.)	Model No.	Thread Length TL (in.)	D.Fir-L										Factored Withdrawal Resistance (K <sub>w</sub> =1.15)
			Factored Lateral Resistance (K <sub>l</sub> =1.00)										
			Wood Side Member Thickness (in.)										
			1.5	2	2.5	3	3.5	4	4.5	6	8		
0.220 x 3	SDWS22300DB	1 ½	340	—	—	—	—	—	—	—	—	—	485
0.220 x 4	SDWS22400DB	2 ¾	445	455	430	—	—	—	—	—	—	—	795
0.220 x 5	SDWS22500DB	2 ¾	445	505	540	490	430	—	—	—	—	—	935
0.220 x 6	SDWS22600DB	2 ¾	460	515	565	565	560	505	445	—	—	—	935
0.220 x 8	SDWS22800DB	2 ¾	460	515	565	565	565	565	565	505	—	—	935
0.220 x 10	SDWS221000DB	2 ¾	460	515	565	565	565	565	565	565	505	—	935

See footnotes below.

Factored Resistances for S-P-F Members (lb.)

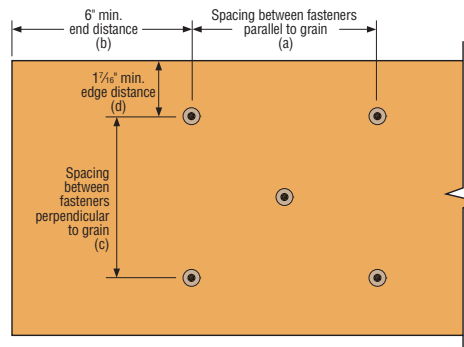
Size Dia. x L (in.)	Model No.	Thread Length TL (in.)	S-P-F										Factored Withdrawal Resistance (K <sub>w</sub> =1.15)
			Factored Lateral Resistance (K <sub>l</sub> =1.00)										
			Wood Side Member Thickness (in.)										
			1.5	2	2.5	3	3.5	4	4.5	6	8		
0.220 x 3	SDWS22300DB	1 ½	290	—	—	—	—	—	—	—	—	—	370
0.220 x 4	SDWS22400DB	2 ¾	390	390	380	—	—	—	—	—	—	—	605
0.220 x 5	SDWS22500DB	2 ¾	395	445	485	430	380	—	—	—	—	—	620
0.220 x 6	SDWS22600DB	2 ¾	405	455	505	510	495	445	395	—	—	—	620
0.220 x 8	SDWS22800DB	2 ¾	405	455	505	510	510	510	510	445	—	—	620
0.220 x 10	SDWS221000DB	2 ¾	405	455	505	510	510	510	510	510	445	—	620

- Factored resistances shown have been developed in accordance with 12.11 CSA O86-14 based on testing per ICC-ES AC233. Apply the adjustment factors K<sub>w</sub>, K<sub>sp</sub> and K<sub>r</sub> as per 12.11.4.1 when applicable. Do not install in end grain.
- Factored withdrawal resistances shown are applicable to short-term loads; reduce where other load durations govern.
- Factored withdrawal resistances shown assume the entire threaded portion of the screw is installed into the main member. Where the penetration into the main member is less than the length of the thread, the factored resistances may be calculated by multiplying the length of penetration of the threads x 355 lb./in. (62 N/mm) for D.Fir-L and 270 lb./in. (47 N/mm) for S-P-F, to a maximum of the tabulated value above.
- Minimum spacing, edge and end distances shall be in accordance with 12.9.2.1 CSA O86-14 using a diameter value of 0.30". See table below.

Spacing Requirements

Geometry	Minimum Dimensions (in.)	
	D.Fir-L	S-P-F
a = Spacing parallel to grain	6	5
b = End distance parallel to grain	6	6
c = Spacing perpendicular to grain	3	2 ½
d = Edge distance perpendicular to grain	1 7/16	1 7/16

1. Additional screws may be staggered diagonally between rows.



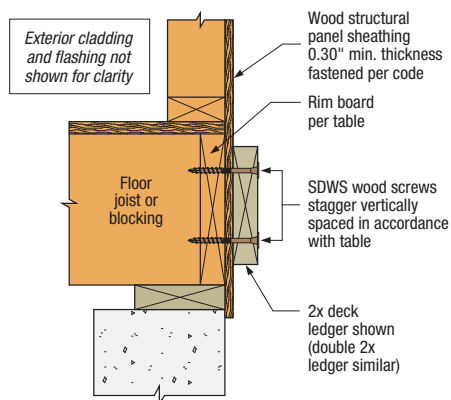
Spacing Requirements

# Ledger-to-Rim-Board Spacing

Maximum Fastener Spacing for Sawn-Lumber-Deck-Ledger-to-Rim-Board Connections (in.)

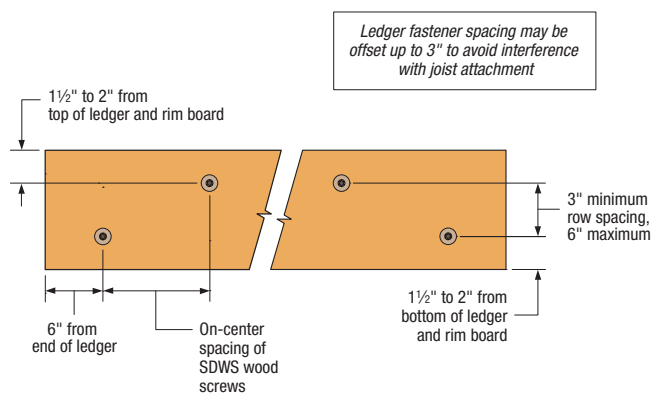
Nominal Ledger Size (in.)	Model No.	Specified Live Load	Rim Board	Maximum On-Centre Spacing of Fasteners (in.)					
				Maximum Deck Joist Span (ft.)					
				6	8	10	12	14	16
2x	SDWS22400DB	40 psf (1.9 kPa)	1" OSB	10	7	6	5	4	3
			1 1/8" OSB	10	8	6	5	4	4
			1 1/4" LSL	11	8	6	5	4	4
			2x SPF	12	9	7	6	5	4
		50 psf (2.4 kPa)	1" OSB	8	6	5	4	3	3
			1 1/8" OSB	9	6	5	4	3	3
			1 1/4" LSL	9	7	5	4	4	3
			2x SPF	10	7	6	5	4	3
		100 psf (4.8 kPa)	1" OSB	4	3	—	—	—	—
			1 1/8" OSB	4	3	—	—	—	—
			1 1/4" LSL	5	3	3	—	—	—
			2x SPF	5	4	3	—	—	—
2-2x	SDWS22500DB	40 psf (1.9 kPa)	1" OSB	13	10	8	6	5	5
			1 1/8" OSB	14	10	8	7	6	5
			1 1/4" LSL	14	11	8	7	6	5
			2x SPF	15	11	9	7	6	5
		50 psf (2.4 kPa)	1" OSB	11	8	6	5	4	4
			1 1/8" OSB	11	8	7	5	5	4
			1 1/4" LSL	12	9	7	6	5	4
			2x SPF	12	9	7	6	5	4
		100 psf (4.8 kPa)	1" OSB	6	4	3	3	—	—
			1 1/8" OSB	6	4	3	3	—	—
			1 1/4" LSL	6	4	3	3	—	—
			2x SPF	6	5	4	3	—	—

1. Sawn lumber ledger board shall be a minimum of 2x8 or 2-2x8. Spacings apply to S-P-F, Hem-Fir or D.Fir-L.
2. Minimum structural panel thickness shall be 0.30" (7.5 mm) fastened to the rim board per applicable code.
3. Multi-ply 2-2x ledger board must be fastened together to act as one unit independent of the SDWS screws.
4. Spacing requirements are based on testing per ICC-ES AC233 and AC13 modified to meet the requirements of 12.11 CSA O86-14 assuming wet service conditions. Spacings may be increased x 1.5 for dry service conditions.
5. Tabulated values assume a specified dead load of 10 psf (0.50 kPa).
6. For 1 1/4" LVL rim board made with Douglas Fir or Southern Pine veneers, use the values listed for 1 1/4" LSL.
7. End screws shall be located 6" from the end and at 1 1/2" to 2" from the bottom of the ledger. For screws located at least 2" but less than 6" from the end, use 50% of the load per screw and 50% of the table spacing between the end screw and the adjacent screw, and for screws located between 2" and 4" from the end, predrill using a 5/32" drill bit.
8. Rows of screws shall be vertically offset and evenly staggered. Screws shall be placed 1 1/2" to 2" from the top and bottom of the ledger or the band joist with 3" to 6" between rows and spaced per the table.



**Ledger-to-Rim Board Assembly**

(Wood-framed lower floor acceptable; concrete wall shown for illustration purposes)



**SDWS Timber Screw Ledger Spacing Detail**

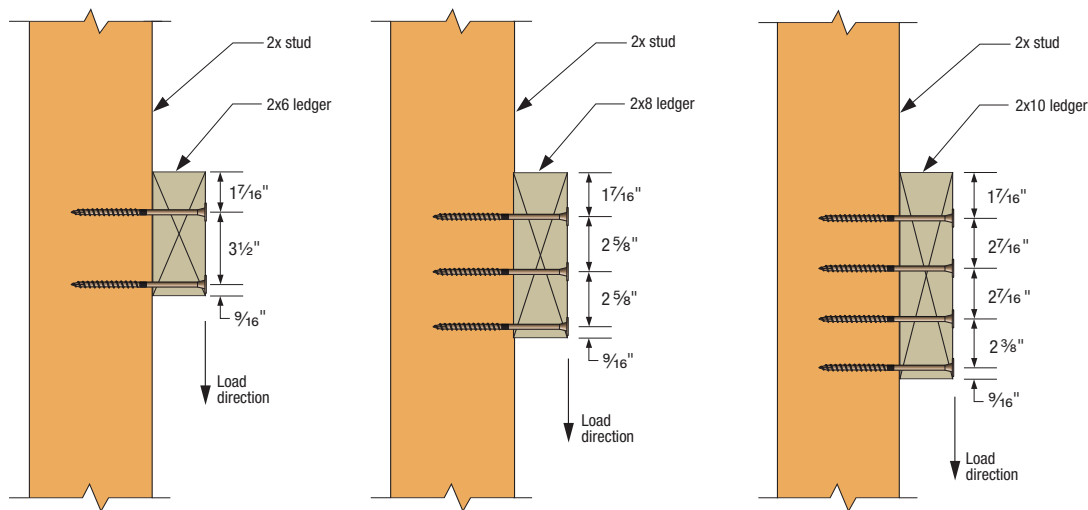
## Ledger-to-Stud Applications

The Simpson Strong-Drive® SDWS Timber screws may be used to attach a ledger to the narrow face of nominal 2x lumber studs according to the following table.

### Factored Lateral Resistance for Ledger Attachment to Studs (lb.)

Model No.	Length (in.)	Nominal Ledger Size (in.)	Number of Screws per Stud	Factored Resistance ( $K_p = 1.00$ )	
				D.Fir-L	S-P-F
SDWS22400DB	4	2x6	2	890	780
		2x8	3	1335	1170
		2x10	4	1760	1560

1. Factored resistances shown have been developed in accordance with 12.11 CSA O86-14 based on testing per ICC-ES AC233. Apply the adjustment factors  $K_D$ ,  $K_{SF}$  and  $K_r$  as per 12.11.4.1 where applicable.
2. Resistances shown are limited to parallel-to-grain loaded solid sawn lumber studs (minimum 2" nominal).
3. Resistances shown assume the same species for ledger and stud. For mixed species applications, use the lower tabulated value for each species.
4. Fasteners shall be centred in the stud and spaced as shown in the figure below. The stud minimum end distance is 6" when loaded toward the end and 2½" when loaded away from the end. The ledger end distance is 6" for full values. For ledger end distances from 2" to < 6", use 50% of the tabulated values. For end distances between 2 and 4", predrill using a ½" bit.
5. Screws may be installed through an intermediate layer of wood structural panel between the ledger and studs provided the structural panel is fastened to the main member per code and the minimum screw penetration into the stud is 2½" (excluding the structural panel). Longer-length screws may be used.
6. For 2x8 ledgers with 2 screws, use 2x6 values. For 2x10 ledgers with 3 screws, use 2x8 values. Spacings, edge and end distances shown in the figure below are minimum dimensions.
7. For loading in the opposite direction shown, multiply the table values by 0.5 for 2x6, 0.67 for 2x8 and 0.75 for 2x10.

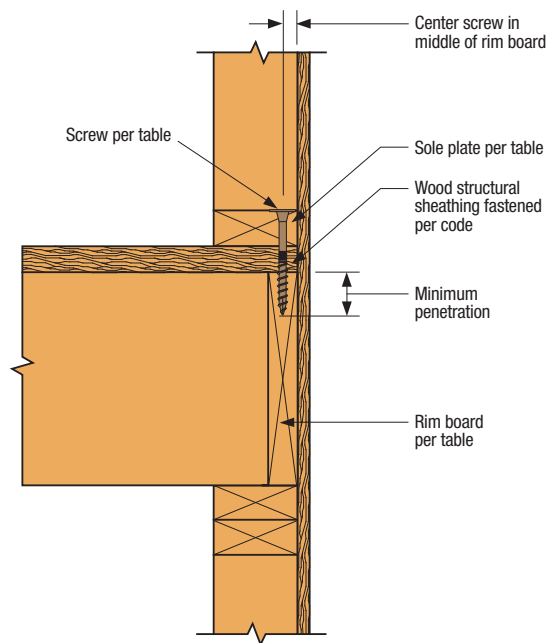


# Sole-to-Rim Connections

## Factored Lateral Resistances for Sole-to-Rim Connections

Screw Size (in.)	Model No.	Sole Plate Nominal Size (in.)	Minimum Penetration into Rim Board (in.)	Factored Lateral Resistance per Screw ( $K_p = 1.15$ )							
				2x D.Fir-L Rim Board		2x S-P-F Rim Board		1 1/4" min. LVL Rim Board		1 1/4" min. LSL Rim Board	
				Sole Plate		Sole Plate		Sole Plate		Sole Plate	
				D.Fir-L	S-P-F	D.Fir-L	S-P-F	D.Fir-L	S-P-F	D.Fir-L	S-P-F
0.220 x 4	SDWS22400DB	2x	1.75	510	470	495	455	520	470	520	470
0.220 x 5	SDWS22500DB	2x	2	510	470	495	455	520	470	520	470
0.220 x 6	SDWS22600DB	2x or 3x	2	530	485	505	465	530	490	530	490

1. Factored resistances shown have been developed in accordance with 12.11 CSA O86-14 based on testing per ICC-ES AC233 and are limited to parallel-to-grain loading.
2. Apply the adjustment factors  $K_p$ ,  $K_{sf}$  and  $K_r$  as per 12.11.4.1 CSA O86-14 where applicable.
3. Minimum spacing of the SDWS is 6" o.c., minimum end distance is 6", and minimum edge distance is 5/8".
4. Wood structural panel up to 2 3/8" for the SDWS22400DB or 1 1/8" for SDWS22500DB and SDWS22600DB is permitted between the sole plate and the rim board provided the wood structural panel is fastened to the rim board per code and the minimum penetration of the screw into the rim board is met.
5. A double 2x sole plate is permitted provided the members of the sole plate are independently fastened per the code and the minimum screw penetration per the table is met.

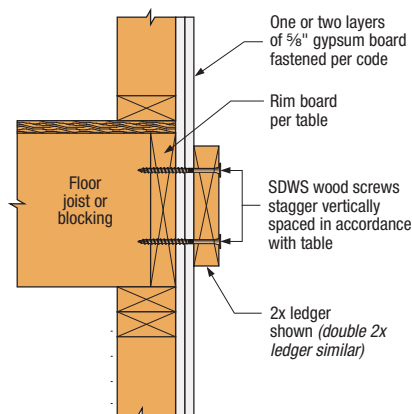


## Ledger-to-Rim-Board Connections with Gypsum Board Interlayer(s)

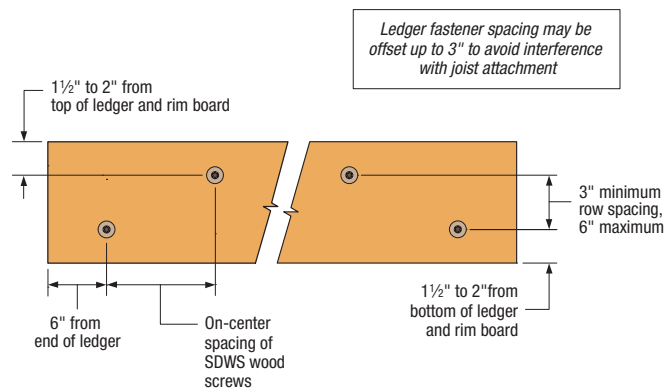
Maximum Fastener Spacing for Sawn-Lumber-Ledger-to-Rim-Board Connections with One or Two Layers of 5/8" Gypsum Board Between

Nominal Ledger Size (in.)	Screw Model No.	Specified Live Load	Rim Board	Maximum On-Centre Spacing of Fasteners (in.)					
				Maximum Deck Joist Span (ft.)					
				6	8	10	12	14	16
2x	For one layer of gypsum board, use SDWS22400DB  For two layers of gypsum board, use SDWS22500DB	40 psf (1.9 kPa)	1" OSB	13	10	8	6	5	5
			1 1/8" OSB	14	10	8	7	6	5
			1 1/4" LSL	15	11	9	7	6	5
			2x SPF	16	12	10	8	7	6
		50 psf (2.4 kPa)	1" OSB	11	8	6	5	4	4
			1 1/8" OSB	12	9	7	6	5	4
			1 1/4" LSL	12	9	7	6	5	4
			2x SPF	13	10	8	6	5	5
		100 psf (4.8 kPa)	1" OSB	6	4	3	3	—	—
			1 1/8" OSB	6	4	3	3	—	—
			1 1/4" LSL	6	5	4	3	—	—
			2x SPF	7	5	4	3	3	—
2-2x	For one or two layers of gypsum board, use SDWS22600DB	40 psf (1.9 kPa)	1" OSB	18	14	11	9	8	7
			1 1/8" OSB	19	14	11	9	8	7
			1 1/4" LSL	20	15	12	10	8	7
			2x SPF	21	16	13	10	9	8
		50 psf (2.4 kPa)	1" OSB	15	11	9	7	6	5
			1 1/8" OSB	16	12	9	8	6	6
			1 1/4" LSL	16	12	10	8	7	6
			2x SPF	18	13	10	9	7	6
		100 psf (4.8 kPa)	1" OSB	8	6	5	4	3	3
			1 1/8" OSB	8	6	5	4	3	3
			1 1/4" LSL	9	6	5	4	3	3
			2x SPF	9	7	5	4	4	3

1. Sawn lumber ledger board shall be a minimum of 2x8 or 2-2x8. Spacings apply to S-P-F, Hem-Fir or D.Fir-L.
2. Multi-ply 2-2x ledger board must be fastened together to act as one unit independent of the SDWS screws.
3. Spacing requirements are based on testing per ICC-ES AC233 and AC13 modified to meet the requirements of 12.11 CSA O86-14 and are only applicable in dry service conditions.
4. Tabulated values assume a specified dead load of 10 psf (0.50 kPa).
5. For 1 1/4" LVL rim board made with Douglas Fir or Southern Pine veneers, use the values listed for 1 1/4" LSL.
6. SDWS screws shall be placed no less than 1 1/2" from the top and bottom of the ledger or rim boards. The minimum end distance shall be 6" and the minimum spacing perpendicular to grain shall be 3". See figure below for full details.
7. End screws shall be located 6" from the end and at 1 1/2" to 2" from the bottom of the ledger. For screws located at least 2" but less than 6" from the end, use 50% of the load per screw and 50% of the table spacing between the end screw and the adjacent screw, and for screws located between 2" and 4" from the end, predrill using a 5/32" drill bit.
8. Rows of screws shall be vertically offset and evenly staggered. Screws shall be placed 1 1/2" to 2" from the top and bottom of the ledger or the band joist with 3" to 6" between rows and spaced per the table.



**Ledger-to-Rim-Board Assembly**



**SDWS Timber Screw Ledger Spacing Detail**

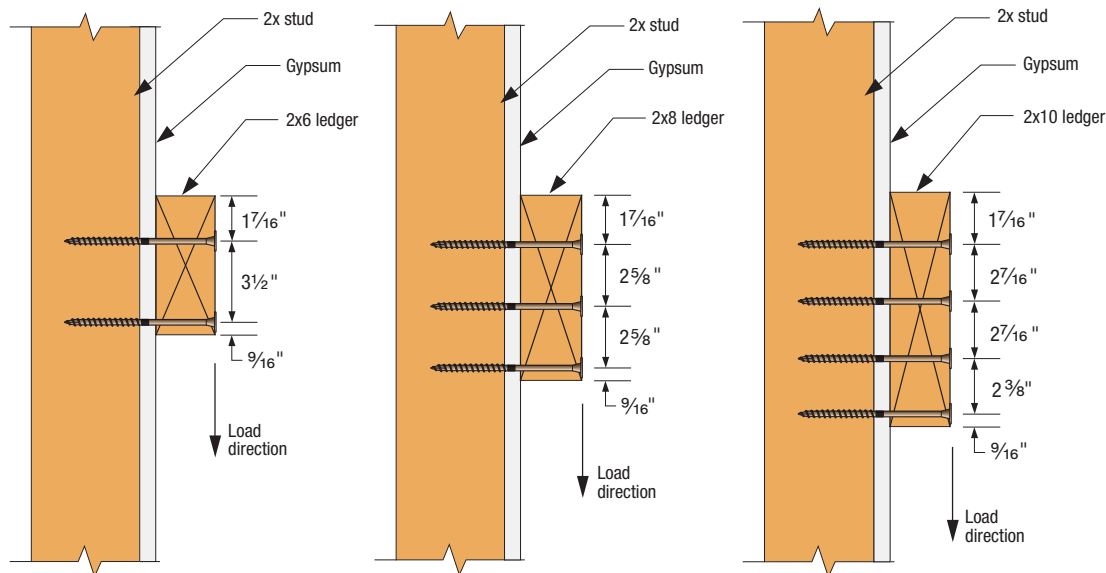


## Ledger-to-Stud Connections with Gypsum Board Interlayer(s)

Factored Lateral Resistance for Ledger Attachment to Studs with One or Two Layers of Gypsum Board (lb.)

Model	Length (in.)	Nominal Ledger Size (in.)	Number of Screws per Stud	Factored Resistance ( $K_D = 1.00$ )	
				D.Fir-L	S-P-F
SDWS22600DB	5	2x6	2	880	780
		2x8	3	1225	1170
		2x10	4	1490	1490

1. Factored resistances shown have been developed in accordance with 12.11 CSA O86-14 based on testing per ICC-ES AC233 and are applicable to dry service conditions only under standard term loading. Adjust for other load durations per 5.3.2 CSA O86-14 where applicable.
2. Resistances shown are limited to parallel-to-grain loaded solid sawn lumber studs (minimum 2" nominal).
3. Resistances shown assume the same species for ledger and stud. For mixed species applications, use the lower tabulated value for each species.
4. Fasteners shall be centred in the stud and spaced as shown in the figure below. The stud minimum end distance is 6" when loaded toward the end and 2½" when loaded away from the end. The ledger end distance is 6" for full values. For ledger end distances from 2" to < 6" use 50% of the tabulated values. For end distances between 2" and 4", predrill using a ⅜" bit.
5. Screws may be installed through an intermediate layer of wood structural panel between the ledger and studs provided the structural panel is fastened to the main member per code and the minimum screw penetration into the stud is 2½" (excluding the structural panel). Longer-length screws may be used.
6. For 2x8 ledgers with 2 screws, use 2x6 values. For 2x10 ledgers with 3 screws, use 2x8 values. Spacings, edge and end distances shown in the figure below are minimum dimensions.
7. For loading in the opposite direction shown, multiply the table values by 0.5 for 2x6, 0.67 for 2x8 and 0.75 for 2x10.
8. Gypsum board must be attached as per the building code.
9. Tabulated values shown are applicable to one or two layers of ½" or ⅝" gypsum board.



### Notes to Installer Regarding the Attachment of Ledgers to Studs

The screws must be installed into the middle of the stud with a tolerance of ⅜" either side of center. Various methods can be used to ensure proper placement of the screws in the stud including snapping a chalk line, using a stud finder, or prerocking (attaching only a strip of gypsum at the ledger location until the ledger is fastened to the studs). If proper screw placement into the stud cannot be achieved in the field, blocking should be installed between studs to receive and support the ledger screws.

# Attaching Exterior Foam Insulation

Simpson Strong-Tie® Strong-Drive® SDWS Timber Screws may be used for installing exterior rigid-foam board insulation over wood structural panel (WSP) sheathing. Each fastener installs through furring strips, rigid-foam board and WSP sheathing into the wood wall stud framing. The fasteners do not typically require predrilling. Preservative-treated wood suitable for dry service (CSA 080 UC1, UC2, UC3.1) and untreated wood may be used depending on the protection needs of the construction. The SDWS products with “DB” in the model number have a double-barrier coating that provides corrosion resistance equivalent to hot-dip galvanization, while the products without “DB” in the model number can be used only in conditions with dry service and no wood-treatment chemicals. The table below provides recommended spacing for fastening to vertical furring strips through ½” to 6” of rigid foam insulation board into each wall stud. The SDWS22DB and SDWS22 screws were evaluated as alternate threaded fasteners using ICC-ES AC233 and are the subject of IAPMO UES ER-192. The Strong-Drive SDWS22DB screws were evaluated for corrosion resistance using ICC-ES AC257.

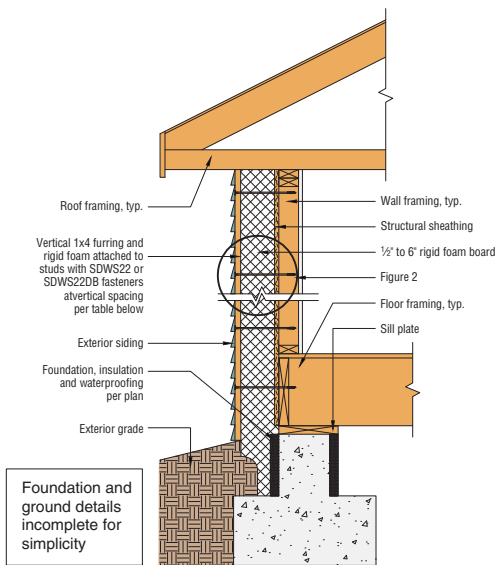


Figure 1: Wall Cross-Section

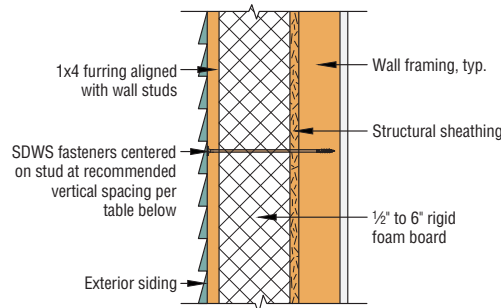


Figure 2: Furring and Rigid Foam Attachment Detail

**CAUTION:** Fasteners can penetrate wiring, plumbing, and other mechanical systems in exterior walls. All mechanical systems in the exterior wall involved with the fastening shall be mapped before driving screws.

## Recommended Vertical Fastener Spacing (in.) on Each Stud

Model No.	Size Dia. x L (in.)	Foam Thickness (in.)	Stud Spacing (in.)	Maximum Specified Cladding Weight to Be Supported, psf (kPa)		
				≤ 21 (1.0)	26 (1.25)	31 (1.5)
SDWS22400DB	0.220 x 4	½	16	24" o.c.	24" o.c.	24" o.c.
			24			
SDWS22500DB	0.220 x 5	1 to 1 ¼	16			
			24			
SDWS22600DB	0.220 x 6	1 ½ to 2	16			
			24			
SDWS22800DB SDWS22800	0.220 x 8	4	16			
			24			
SDWS221000DB SDWS221000	0.220 x 10	6	16			
			24	18" o.c.	16" o.c.	

- CAUTION:** Fasteners can penetrate wiring, plumbing, and other mechanical systems in exterior walls. All mechanical systems in the exterior wall involved with the fastening shall be mapped before driving screws.
- Foam sheathing shall have a minimum compressive strength of 15 psi in accordance with CAN/ULC-S701 or CAN/ULC-S704.
- Wood wall framing (studs) shall be a minimum of 2" nominal thickness. Wood framing and furring shall be a minimum Spruce-Pine-Fir species with specific gravity of 0.42 or greater. Table assumes furring strip thickness of ¾ in. and full thread embedment in the framing member.
- Wood framing, furring and WSP sheathing shall meet the design requirements in accordance with the applicable building codes. WSP sheathing shall be fastened to the framing as required by the applicable building code.
- Each fastener is capable of resisting 130 lb. (0.58 kN) of withdrawal due to out-of-plane wind loading ( $K_p = 1.15$ ) with no further increase allowed.
- Spacing recommendations are based on a loading that produced 0.015" of assembly movement with 6"-thick rigid foam board insulation.
- Maximum specified cladding weight shall be the additive weight of furring, cladding including foam insulation, environmental effects (e.g., ice) and other supported materials.
- Metal fasteners conduct heat, and it is recommended that exposed screw heads are covered with foam and sealed.
- Screws shall be installed such that they close gaps between connected components. Furring and sheathing shall provide the required thickness and performance for siding manufacturer installation instructions.



# SDWS TIMBER Screw: The Anatomy of Performance

Sinks in to  
any great project

Make way for a  
smooth finish

We recommend  
a test drive

Easy driving  
from here on

Start fast with  
no predrilling

The **Strong-Drive® SDWS Timber screw** is like no other. Its patented tip ensures fast starts, reduces torque and eliminates predrilling. The bold thread design provides superior holding power while the large, low-profile head eliminates washers. All of this and a double-barrier coating to resist corrosion – now that's a fastener engineered to perform.



**Code Listed:** IAPMO UES ER-192

This flier is effective until June 30, 2019, and reflects information available as of October 1, 2016. This information is updated periodically and should not be relied upon after June 30, 2019. Contact Simpson Strong-Tie for current information and limited warranty or see [strongtie.com](http://strongtie.com).

**(800) 999-5099**  
**[strongtie.com](http://strongtie.com)**