Strong-Drive®
SDWS FRAMING Screw

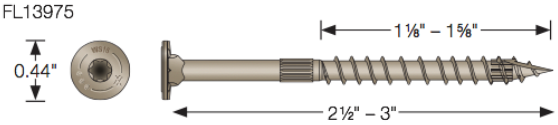
Multipurpose Wood-To-Wood Including Framing, Indoor/Outdoor Projects

The framing connections with the SDWS FRAMING screws are designed for common framing connections, per the 2012 and 2015 IRC and IBC code requirements and are based on engineering analysis.

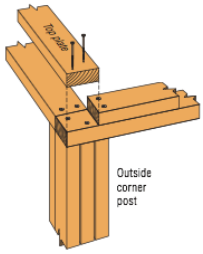
Codes/Standards: IAPMO-UES ER-192, State of Florida FL13975

For More Product Information, see p. 68

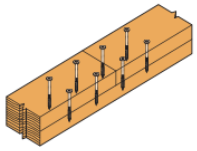
U.S. Patent Pending



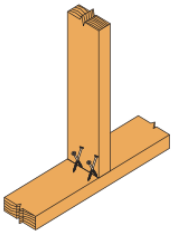
Walls



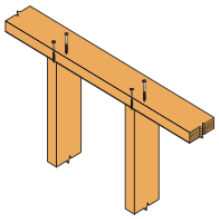
Double Top Plate at Corners



Double Top Plate Laps (Face Screw)



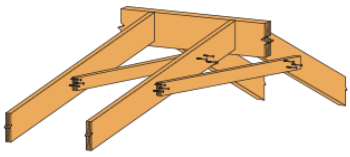
Stud to Sole Plate (Toe Screw)



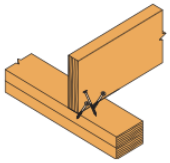
Top or Sole Plate to Stud (End Screw)

Connection Application	Fastener Quantities			
	IRC		IBC	
	Nails per Table R602.3 (1)	Equivalent SDWS Framing Screws	Nails per Table 2304.9.1	Equivalent SDWS Framing Screws
Top or sole plate to stud (end screw)	(2) 16d box	(2) SDWS16212	(2) 16d common	(2) SDWS16300
Stud to sole plate (toe screw)	(2) 16d box	(2) SDWS16212	(4) 8d common	(4) SDWS16212
Double top plate laps (face screw)	(8) 16d box	(8) SDWS16212	(8) 16d common	(8) SDWS16300
Double top plate at corners and intersections (face screw)	(2) 10d box	(2) SDWS16212	(2) 16d common	(2) SDWS16212
Double studs (face screw)	10d box 24" o.c.	SDWS16212 24" o.c.	16d box 24" o.c.	SDWS16300 24" o.c.

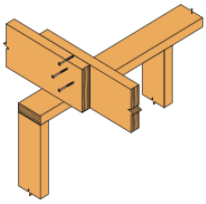
Ceiling



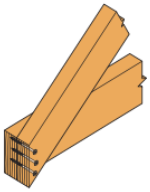
Collar Tie to Rafter (Face Screw)



Ceiling Joist to Plate (Toe Screw)



Ceiling Joist, Laps Over Partitions (Face Screw)



Ceiling Joist to Parallel Rafter (Face Screw)

Connection Application	Fastener Quantities			
	IRC		IBC	
	Nails per Table R602.3 (1) and R802.5.1 (9)	Equivalent SDWS Framing Screws	Nails per Table 2304.9.1 and 2308.10.4.1	Equivalent SDWS Framing Screws
Ceiling joist to plate (toe screw)	(3) 8d box	(3) SDWS16212	(3) 8d common	(3) SDWS16212
Ceiling joists, lap over partitions (face screw)	(3 min*) 10d box	(3 min*) SDWS16212	(3 min*) 16d common	(3 min*) SDWS16300
Collar tie to rafter (face screw)	(3) 10d box	(3) SDWS16212	(3) 10d common	(3) SDWS16300
Ceiling joist to parallel rafters (face screw)	(3) 16d common*	(3) SDWS16300*	(3 min*) 16d common	(3 min*) SDWS16300

* Quantities vary based on project conditions. The SDWS16300 is a 1-for-1 replacement for 16d common nails.

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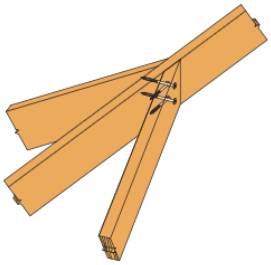
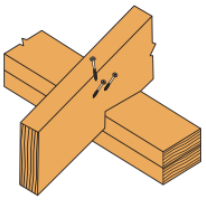
SDWS FRAMING Screw (cont.)

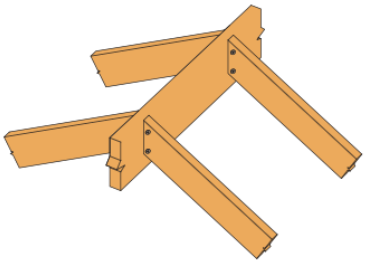
Roof



Jack Rafter to Hip (Toe Screw)



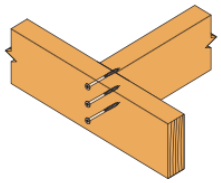
Roof Rafter to Plate (Toe Screw)



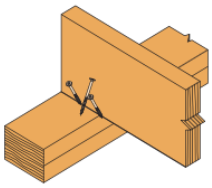
Roof Rafter to 2x Ridge Board (Toe Screw)

Connection Application	Fastener Quantities			
	IRC		IBC	
	Nails per Table R602.3 (1)	Equivalent SDWS Framing Screws	Nails per Table 2304.9.1	Equivalent SDWS Framing Screws
Roof rafter to plate (toe screw)	(3) 10d common	(3) SDWS16212	(3) 8d common	(3) SDWS16212
Roof rafter to 2x ridge board (toe screw)	(4) 16d box	(4) SDWS16212	(2) 16d common	(2) SDWS16300
Jack rafter to hip (toe screw)	(4) 16d box	(4) SDWS16212	(3) 10d common	(3) SDWS16300

Floor



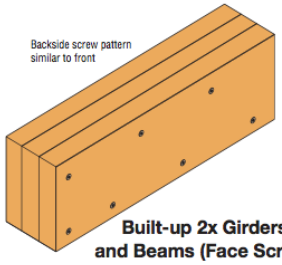
Joist to Rim Board (End Screw)



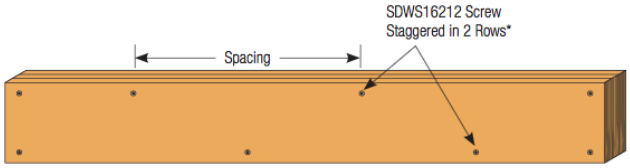
Joist to Sill or Girder (Toe Screw)

Connection Application	Fastener Quantities			
	IRC		IBC	
	Nails per Table R602.3 (1)	Equivalent SDWS Framing Screws	Nails per Table 2304.9.1	Equivalent SDWS Framing Screws
Joist to band joist (end screw)	(3) 16d common end nail	(3) SDWS16300	(3) 16d common	(3) SDWS16300
Joist to sill or girder (toe screw)	(3) 8d box	(3) SDWS16212	(3) 8d common	(3) SDWS16212

Beam



Built-up 2x Girders and Beams (Face Screw)



Beam Assembly Detail*

Connection Application	Fastener Quantities and Spacing			
	IRC		IBC	
	Nails per Table R602.3 (1)	Equivalent SDWS Framing Screws	Nails per Table 2304.9.1	Equivalent SDWS Framing Screws
Built-up 2x girders and beams (Face screw)	10d box 32" o.c. (24" o.c. per 2015)	SDWS16212 32" o.c.	10d box 24" o.c.	SDWS16212 24" o.c.

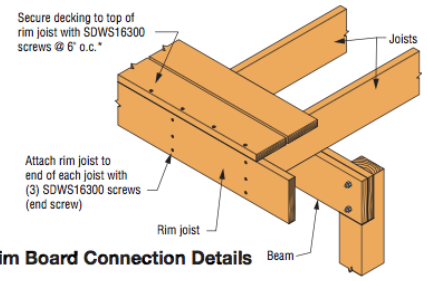
*Fastening pattern shown applies to each ply of the built-up 2x beam.

Strong-Drive®
SDWS FRAMING Screw (cont.)

Deck

Connection Application	Fastener Quantities			
	IRC		IBC	
	Nails per Table R602.3 (1)	Equivalent SDWS Framing Screws	Nails per Table 2304.9.1	Equivalent SDWS Framing Screws
Rim joist to end joist (End screw)	(3) 16d common	(3) SDWS16300	(3) 16d common	(3) SDWS16300

*Per American Wood Council, DCA6, 2014.



Rim Board Connection Details

SDWS Framing Screw – Allowable Shear Loads for Sawn Lumber

Model No.	Side Member Thickness (in.)	Main Member Penetration (in.)	Allowable Shear Loads (lb.)		
			SP	DF	SPF/HF
SDWS16212	1½	0.90	131	106	99
SDWS16300	1½	1.40	229	150	150
	2	0.90	—	129	89

1. All applications are based on full penetration into the main member. Full penetration is the screw length minus the side member thickness.
2. Allowable loads are shown at the wood load duration factor of C_D = 1.0. Loads may be increased for load duration per the building code up to a C_D = 1.6. Tabulated values must be multiplied by all applicable adjustment factors per the NDS.
3. Minimum fastener spacing requirements to achieve table loads; 2" (SDWS16212) and 3" (SDWS16300) end distance, ½" (SDWS16212) and 1" (SDWS16300) edge distance, 7/16" between staggered rows of fasteners, 1" between non-staggered and 4" between fasteners in a row.
4. For in-service moisture content greater than 19% use C_M = 0.70.
5. Screws must be installed straight into the side grain of the wood main member with the screw axis at a 90 degree angle to the wood fibers.

SDWS Framing Screw– Allowable Withdrawal Load in Sawn Lumber

Model No.	Fastener Length (in.)	Thread Length (in.)	Reference Withdrawal Design Loads, W (lb./in.)			Max. Reference Withdrawal Design Loads, W_{max} (lb.)		
			SP	DF	SPF/HF	SP	DF	SPF/HF
SDWS16212	2.40	1.250	177	132	103	199	149	116
SDWS16300	2.90	1.625	192	125	122	310	205	200

1. The tabulated reference withdrawal design values (W) are in pounds per inch of the thread penetration into the main member.
2. The tabulated reference withdrawal design values (W_{MAX}) are in pounds where the entire thread length must penetrate into the main member.
3. Tabulated reference withdrawal design values (W) and (W_{MAX}) are shown at a C_D = 1.0. Loads may be increased for load duration per the building code up to a C_D = 1.6. Tabulated values must be multiplied by all applicable adjustment factors from the NDS as referenced in the IBC or IRC.
4. Values are based on the lesser of withdrawal from the main member or pull-through of a 1½" side member. For in-service moisture content greater than 19% use C_M = 0.65.

SDWS Framing Screw– Allowable Shear Loads for Wood Structural Panel Side Member

Model No.	Side Member Thickness (in.)	Min. Main Member Penetration (in.)	Allowable Shear Loads (lb.)		
			SP	DF	SPF/HF
SDWS16	15/32	1.93	143	143	143
	23/32	1.68	200	187	138

1. Allowable loads are shown at the wood load duration factor of C_D=1.0. Loads may be increased for load duration per the building code up to a C_D=1.6. Tabulated loads must be multiplied by all applicable adjustment factors per the NDS.
2. WSP side members for tests was oriented strand board (equivalent specfic gravity = 0.50).
3. All applications are based on full penetration into the main member. Full penetration is the screw length minus the side member thickness.
4. Screws must be installed straight into the side grain of the wood main member with the screw axis at a 90-degree angle to the wood fibers.

SDWS Framing Screw– Allowable Pull-Through Loads for Wood Structural Panel Side Member

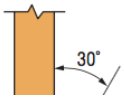
Model No.	Side Member Thickness (in.)	Allowable Pull-Through Loads (lb.)
SDWS16	15/32	84
	23/32	169

1. Allowable loads are shown at the wood load duration factor pf C_D=1.0. Loads may be increased for load duration per the building code up to a C_D=1.6. Tabulated loads must be multiplied by all applicable adjustment factors per the NDS.
2. WSP side members for tests was oriented strand board (equivalent specfic gravity = 0.50).
3. For connections with 15/32" and 23/32" thick OSB side members, the lesser of withdrawal loads from the main and pull-through loads from WSP side member shall be used in design.

Strong-Drive® SDWS FRAMING Screw (cont.)

Typical Conventional Framing Connections

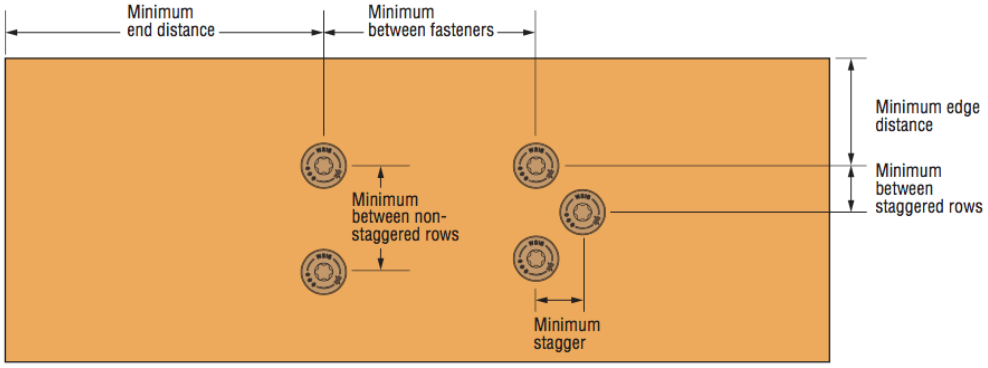
Toe Screw



Face Screw

End Screw

Strong-Drive® SDWS Framing Screw Spacing Requirements for Non-Prescriptive Construction



SDWS Framing Screw Spacing Requirements

Condition		Minimum Distance or Spacing (in.)	
		SDWS16212	SDWS16300
End distance	Loading toward end	2	3
	Loading away from end	2	3
	Loading perpendicular to grain	3½	4
Edge distance	Loading parallel to grain	½	1
	Loading perpendicular to grain	1	1
Spacing between fasteners in a row	Loading parallel to grain	2	2
	Loading perpendicular to grain	2	2
Spacing between rows	In-line rows*	1	1
	Staggered rows	7/16	7/16

*Table loads must be multiplied by adjustment factors of 0.93 (SDWS16212) and 0.91 (SDWS16300).