

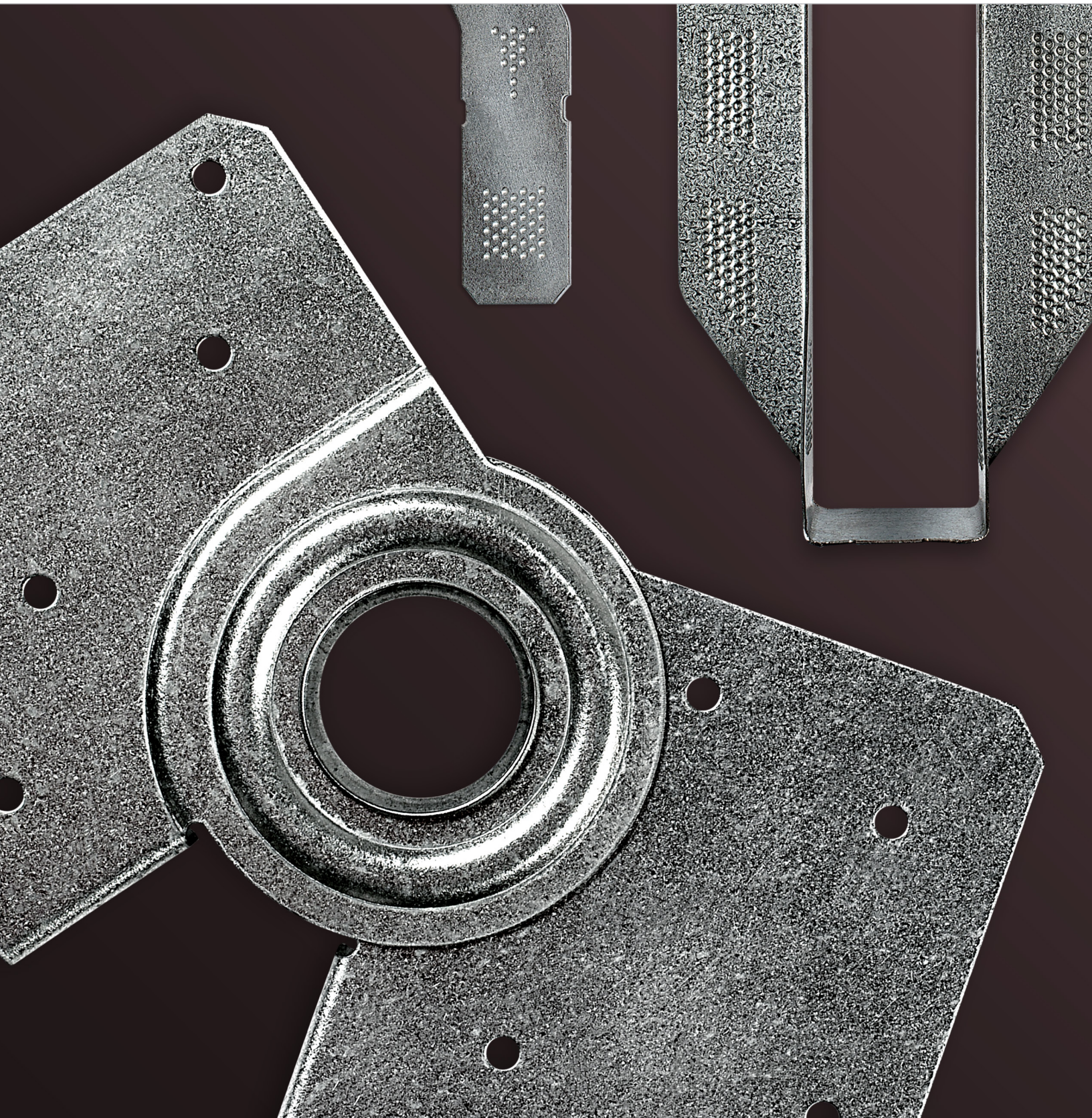
Connectors & Fasteners for Modular Building

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SIMPSON

Strong-Tie

®







Smart Solutions for Modular Building

Simpson Strong-Tie® connectors and fasteners offer improved speed, strength and versatility for modular building. These products save time in manufacturing and provide ease of installation on the jobsite.

This catalog is designed to help you easily locate the right connector or fastener to meet your modular building construction needs. Our products come with the quality, value, service and on-time delivery that we have built our reputation on for the past 60 years.

If you need help finding the right product for your job, give us a call at (800) 999-5099.

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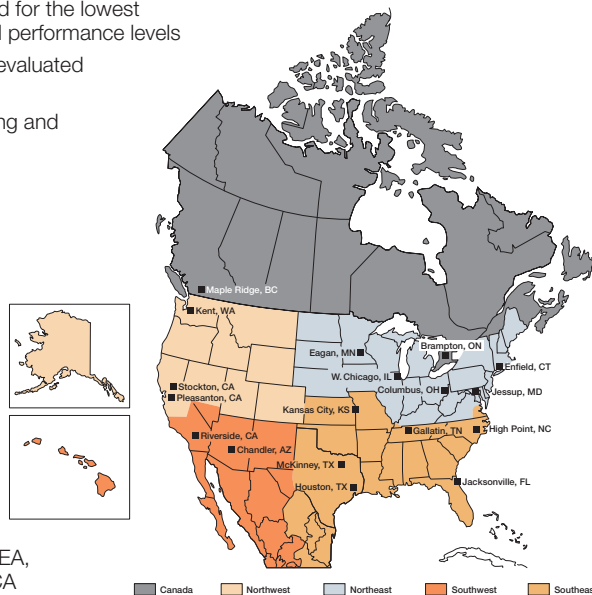
Introduction

For more than 60 years, Simpson Strong-Tie has focused on creating structural products that help people build safer and stronger homes and buildings. A leader in structural systems research and technology, Simpson Strong-Tie is one of the largest suppliers of structural building products in the world. The Simpson Strong-Tie commitment to product development, engineering, testing and training is evident in the consistent quality and delivery of its products and services.

For more information, visit the company's website at strongtie.com.

The Simpson Strong-Tie Company Inc. "No Equal" pledge includes:

- Quality products value-engineered for the lowest installed cost at the highest-rated performance levels
- The most thoroughly tested and evaluated products in the industry
- Strategically located manufacturing and warehouse facilities
- National code agency listings
- The largest number of patented connectors in the industry
- Global locations with an international sales team
- In-house R&D and tool and die professionals
- In-house product testing and quality control engineers
- Support of industry groups including AISI, AITC, ASTM, ASCE, AWC, AWPA, ACI, AISC, CSI, CFSEI, ICFA, NBMDA, NLBMDA, SDI, SETMA, SFA, SFIA, STAFDA, SREA, NFBA, TPI, WDSC, WIJMA, WTCA and local engineering groups



The Simpson Strong-Tie Quality Policy

We help people build safer structures economically. We do this by designing, engineering and manufacturing "No Equal" structural connectors and other related products that meet or exceed our customers' needs and expectations. Everyone is responsible for product quality and is committed to ensuring the effectiveness of the Quality Management System.

Karen Colonias
Chief Executive Officer

Getting Fast Technical Support

When you call for engineering technical support, having the following information on hand will help us to serve you promptly and efficiently:

- Which Simpson Strong-Tie® catalog are you using? (See the front cover for the catalog number.)
- Which Simpson Strong-Tie product are you using?
- What is your load requirement?
- What is the carried member's width and height?
- What is the supporting member's width and height?
- What is the carried and supporting members' material and application?



We Are ISO 9001-2008 Registered

Simpson Strong-Tie is an ISO 9001-2008 registered company. ISO 9001-2008 is an internationally-recognized quality assurance system which lets our domestic and international customers know that they can count on the consistent quality of Simpson Strong-Tie® products and services.

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How To Use This Catalog

• New Products

New products are shown with the  symbol. There are also many new sizes within existing model series.

• Changes In Red

Significant changes from last year's catalog are indicated in red.



Extra Corrosion Protection

The teal arrow icon identifies products that are available with additional corrosion protection (ZMAX®, hot-dip galvanized or double-barrier coating). The SS teal arrow icon identifies products also available in stainless steel. Other products may also be available with additional protection; contact Simpson Strong-Tie for options. The end of the product name will indicate what type of extra corrosion protection is provided (Z = ZMAX, HDG = hot-dip galvanized or SS = stainless steel). Stainless products may need to be manufactured upon ordering. See pp. 7–10 for information on corrosion, and visit our website strongtie.com/info for more technical information on this topic.



Strong-Drive® SD Connector Screw Compatible

This icon identifies products approved for installation with the Simpson Strong-Tie® Strong-Drive® SD Connector screw. See strongtie.com/sd for more information.

How We Determine Allowable Loads

Allowable loads in this catalog are determined by calculations and test criteria established by industry, such as ICC-ES Acceptance Criteria, IAPMO UES Evaluation Criteria and ASTM test standards.

Connectors are typically evaluated in accordance with ICC-ES AC13 – Acceptance Criteria for Joist Hangers and Similar Devices. Evaluation is based on a minimum of three static load tests in wood assemblies. The published allowable load is the lower of the tested ultimate with a safety factor of 3, load at 1/8" deflection or the NDS fastener calculation limits.

Holdowns and tension ties are tested in accordance with ICC-ES AC155 – Acceptance Criteria for Hold-Downs (Tie-Downs) Attached to Wood Members. Allowable loads are based on the lower of three static load tests with a safety factor, deflection limits or NDS fastener calculation limits. Static load tests include holdown testing on steel jigs and wood assembly tests.

Cast-in-place concrete products are tested in accordance with ICC-ES AC398 – Cast-in-Place, Cold-Formed Steel Connectors in Concrete for Light-frame Construction or AC399 – Cast-in-Place Proprietary Bolts in Concrete for Light-Frame Construction. Threaded fasteners are evaluated per AC233 – Alternate Dowel-Type Threaded Fasteners.

Where a test standard is unavailable, testing is conducted per sound engineering principles. Some tests include only portions of a product, such as purlin anchor tests, wherein only the embedded hook is tested, not the nailed or bolted section of the strap, which is calculated. Testing to determine allowable loads in this catalog is not done on connection systems in buildings. Testing is conducted under the supervision of an independent laboratory.

For detailed information regarding how Simpson Strong-Tie tests specific products, contact Simpson Strong-Tie.

Load Table Explanation

Model	Dimensions (in.)		Header Nailing Grids		Nail Quantity		Allowable Loads (lb.)	
	W	H	No. of Grids	Nails in Each Grid	Header	Joist	Uplift	Download
MMLU26	1 1/8	4 3/4	4	1	4	2	95	330
				2	8			655
				3	12			955
MMLU26-2	3 1/8	5 3/8	4	1	4	2	95	240
				2	8			555
				3	12			870
MMLU28	1 1/8	6 3/8	6	1	6	2	95	500
				2	12			955
MMLU28-2	3 1/8	7 1/8	6	1	6	2	95	395
				2	12			870
				3	18			1,340

Model No.:
This is the Simpson Strong-Tie product name.

No. of Nail Grids:
If applicable, some modular products have nailing grids that accommodate power-driven nails.

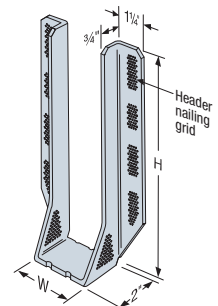
No. of Nails Per Grid:
Indicates the number of nails required in each nailing grid.

Allowable Design Loads: The maximum load that a connection is designed to provide. There may be multiple design loads acting in different directions (up, down, lateral, perpendicular, etc.) imposed on a connection.

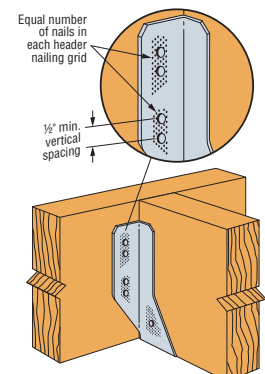
Uplift **Down**

Dimensions W, H:
This shows the product dimensions (width and height in this case) referenced in the product drawing.

Nail Quantity:
Total number of nails required at each member.



Product Drawing:
Provides a graphic presentation of the product with dimensional information (often cross-referenced to the table).



Installation Drawing:
Provides a graphic presentation of the product installation.

Code Reports

Code Reference Column in Load Tables

The alpha-numeric "Code Reference numbers" that appear in the "Code Reference" column in load tables throughout this catalog are intended to identify products listed in evaluation agency reports, typically called "code reports," and the specific reports that cover them. The letter designates the evaluation agency from which the report was obtained. The Code Reference column, used in conjunction with the chart at right, indicates which code listing applies to a product. The reference numbers also clearly identify:

- Products submitted for evaluation report listing (160)
- Products with no evaluation report listing (170)
- Products not submitted because they have no load rating and an evaluation report listing is not necessary (180)
- Products that meet prescriptive or conventional construction code requirements (190)
- Product is calculated per code; testing is not required (200)

Where a model has been submitted for listing (160) or does not have an evaluation report listing (170), Simpson Strong-Tie can supply complete test data to support our published loads. Please contact us for a copy of our product test documentation at (800) 999-5099. Product acceptance may be obtained through the Alternate Methods and Materials section of the applicable building code.

Some loads and applications may not be covered in the code report and specific reductions and restrictions may be required by other product evaluation agencies. Visit strongtie.com/codes or visit the product evaluation agencies' web sites for the current evaluation reports.

Simpson Strong-Tie® products are listed by several product evaluation agencies. Agencies that list our products include ICC-ES; IAPMO UES; UL; FM; the City of Los Angeles, California; and the State of Florida.

Simpson Strong-Tie currently maintains more than 60 ICC-ES ESR and IAPMO UES ER reports evaluated to the 2006/2009/2012/2015 IBC and IRC. We continue to submit product information to ICC-ES in order to update reports or receive additional reports for products in compliance with the latest codes.

To quickly determine which of our stamped and welded connector products are listed in ESR reports, we have obtained the ICC-ES ESR-2523 index report. This report is a reference document to other ESR reports held by Simpson Strong-Tie and will be updated frequently by ICC-ES as new stamped and welded connector evaluation services reports are issued. Please visit strongtie.com for the latest information or contact ICC Evaluation Service at icc-es.org.

IAPMO Uniform Evaluation Service has been evaluating products for more than 75 years and has the same ANSI accreditation as ICC Evaluation Service for evaluating structural building products to the building codes. IAPMO UES began evaluating structural building products in 2004, utilizing licensed structural engineers to perform quality reviews. To quickly determine which of our stamped and welded connector products are listed in ER reports, we have obtained IAPMO UES ER-102 index report, which will be updated frequently as products are added to ERs. Please visit strongtie.com for the latest information or contact IAPMO Uniform Evaluation Service at iapmoes.org.

In November 2010, the California Division of the State Architect, issued a revised IR 23-1. The revised Interpretation of Regulation (IR) addresses and clarifies issues relating to Pre-fabricated Wood

Construction Connectors. IR 23-1 defines the Purpose and Scope and clarifies Listing Requirements, Acceptable Load Capacities, Design Requirements, Installation Requirements Connector Fabrication (which addresses corrosion-resistant material and/or coatings) and testing requirements. Also IRA-5, updated in October 2012, addresses product and evaluation report acceptance.

On October 1, 2003, the State of Florida's Statewide Product Approval System became effective. The purpose of this system is to provide a single product evaluation and approval system that applies statewide to operate in coordination with the Florida Building Code. This Florida product evaluation and approval system is governed by Florida Statutes, Chapter 553, Section 553.842. Since this law specifies that the product approval system is to apply statewide, Notice of Acceptance is no longer necessary where a product has a statewide approval that is applicable in the High Velocity Hurricane Zone (HVHZ) and is installed in accordance with its conditions of use.

To access pertinent code reports related to Simpson Strong-Tie® products, you can access our Code Report Finder Software at strongtie.com/codes.

Code Reference Key Chart

Agency	Code Listing		Code Ref.
ICC-ES	ESR-2105		I4
	ESR-2236		I5
	ESR-3096		I27
City of Los Angeles, California	RR 25711		L1
	RR 25713		L3
	RR 25910		L5
	RR 25803		L14
	RR25906		L23
IAPMO UES	ER-192		IP4
	ER-262		IP5
State of Florida	Florida Product Approval	Visit strongtie.com/codes or floridabuilding.org for accurate and up-to-date product approval and code evaluation reports.	FL
No Code Listing	Call us for Test Data		170

*Because code reports can be issued throughout the year, we encourage the user to visit strongtie.com, icc-es.org, iapmoes.org, ladbs.org, and floridabuilding.org. For the most current information, call Simpson Strong-Tie at (800) 999-5099, or contact the code agency directly.

Corrosion Information

Understanding the Corrosion Issue

Many environments and materials can cause corrosion, including ocean salt air, fire retardants, fumes, fertilizers, preservative-treated wood, de-icing salts, dissimilar metals and more. Metal connectors, fasteners and anchors could corrode and lose load-carrying capacity when installed in corrosive environments or when installed in contact with corrosive materials.

The many variables present in a building environment make it impossible to accurately predict if, or when, corrosion will begin or reach a critical level. This relative uncertainty makes it crucial that specifiers and users are knowledgeable of the potential risks and select a product suitable for the intended use. It is also prudent that regular maintenance and periodic inspections are performed, especially for outdoor applications.

It is common to see some corrosion in outdoor applications. Even stainless steel can corrode. The presence of some corrosion does not mean that load capacity has been affected or that failure is imminent. If significant corrosion is apparent or suspected, then the framing members, fasteners and connectors should be inspected by a qualified

engineer or qualified inspector. Replacement of affected components may be appropriate.

Some wood-preservative chemicals and fire-retardant chemicals and retentions pose increased corrosion potential and are more corrosive to steel connectors and fasteners than others. Testing by Simpson Strong-Tie has shown that ACQ-Type D is more corrosive than Copper Azole Type C, Micronized Copper Azole and CCA-C. At the same time, others have shown that the inorganic boron treatment chemicals, specifically SBX-DOT, are less corrosive than CCA-C.

Due to the many different chemical treatment formulations, chemical retention levels, moisture conditions and regional formulation variants, selection of fasteners has become a complex task. We have attempted to provide basic knowledge on the subject here, but it is important to fully educate yourself by reviewing our technical bulletins on the topic (strongtie.com/info) and also by reviewing information, literature and evaluation reports published by others.

Galvanic Corrosion

Galvanic corrosion occurs when two electrochemically dissimilar metals contact each other in the presence of an electrolyte (such as water) that acts as a conductive path for metal ions to move from the more anodic to the more cathodic metal. In the galvanic couple, the more anodic metal will corrode preferentially. The Galvanic Series of Metals table provides a qualitative guide to the potential for two metals to interact galvanically. Metals in the same group (see table) have similar electrochemical potentials. The farther the metals are apart on the table, the greater the difference in electrochemical potential, and the more rapidly galvanic corrosion will occur. Corrosion also increases with increasing conductivity of the electrolyte.

Good detailing practice, including the following, can help reduce the possibility of galvanic corrosion of fasteners:

- Use fasteners and metals with similar electrochemical properties
- Separate dissimilar metals with insulating materials
- Ensure that the fastener is the cathode when dissimilar metals are present
- Prevent exposure to and pooling of electrolytes

Galvanic Series of Metals

Corroded End (Anode)
Magnesium, Magnesium alloys, Zinc
Aluminum 1100, Cadmium, Aluminum 2024-T4, Iron and Steel
Lead, Tin, Nickel (active), Inconel Ni-Cr alloy (active), Hastelloy alloy C (active)
Brasses, Copper, Cu-Ni alloys, Monel
Nickel (passive)
304 stainless steel (passive), 316 stainless steel (passive), Hastelloy alloy C (passive)
Silver, Titanium, Graphite, Gold, Platinum
Protected End (Cathode)

Hydrogen-Assisted Stress-Corrosion Cracking

Some hardened fasteners may experience premature failure if exposed to moisture as a result of hydrogen-assisted stress-corrosion cracking. These fasteners are recommended specifically for use in dry, interior locations.

Treatment Use Categories and Exposure Conditions

The American Wood Protection Association (AWPA) identifies 12 Use Category designations (UC) for wood treatment chemicals that are based on protection of the wood material; the Use Categories are based on service conditions and environments and agents of deterioration. At the same time, the building codes require specific corrosion resistance for connectors and fasteners that are in contact with chemically-treated wood, and the corrosion resistance is independent of the service environments and treatments that are the basis of the AWPA Use Categories. From the building code perspective, fastener corrosion resistance is provided by hot-dip galvanization applied following ASTM A153, Class D, or by a corrosion-resistant base metal, such as stainless steel, silicon bronze or copper, regardless of exposure. Connectors in contact with preservative-treated wood require a minimum of ASTM A653, Type G185 zinc-coated galvanized steel, or equivalent.

Some exceptions are provided in the International Code Council's (ICC) International Residential Code (IRC) for mechanical galvanization applied to screws. The International Building Code (IBC) has exceptions for plain carbon steel fasteners, nuts and washers in SBX/DOT and zinc borate preservative-treated wood in interior, dry environments.

The International Code Council – Evaluation Service (ICC-ES) implemented AC257 as a method to evaluate alternate corrosion resistance mechanisms for fasteners used in wood construction where hot-dip galvanization (ASTM A153, Class D) is used as the benchmark performance. Under AC257, fastener corrosion resistance is qualified for one or more of four exposure conditions with no salt exposure: (1) treated wood in dry service; (2) clean wood in a salt air dry-service environment; (3) treated wood in a wet-service condition with no salt exposure; and (4) general use with no limitations.

Corrosion Information

Simpson Strong-Tie General Recommendations

Simpson Strong-Tie has evaluated the AWWA (American Wood Protection Association) Use Categories (AWPA U1-16) and the ICC-ES, AC257 Exposure Conditions and developed from that evaluation a set of Corrosion Resistance Recommendations. These recommendations address the coating systems and materials used by Simpson Strong-Tie for connector and fastener products.

Dry-service (or damp-service) environments lead to wood moisture contents less than or equal to 19%. The corrosion potential, even in chemically-treated wood, is reduced in these conditions. These conditions are typical of AWWA UC1 and UC2 for wood treatment and AC257 Exposure Condition 1. See the Corrosion Resistance Classification Table for the Simpson Strong-Tie assessment of corrosion needs in these conditions. The AC257 Exposure Condition 2 reflects the presence of air-borne salt in a dry-service environment and corrosion hazard to exposed metal surfaces; it does not include effects of treatment chemicals.

Outdoor environments are generally more corrosive to steel either because the moisture exposure is elevated (greater than 19%) and/or the treatment chemical-retention level is higher than for interior service. The AWWA classifies exterior above-ground treatments as Use Categories UC3 (A and B) depending on moisture run-off; and for ground-contact levels of protection, it has Use Categories UC4 (A-C). ICC-ES considers the exterior exposure to be limited by the type of chemicals and retention level of the chemicals in the qualification testing and whether the exposure includes salt exposure. In general, The AC257 Exposure Condition 3 includes AWWA Use Categories UC1 (interior dry) to UC4A (exterior ground contact, general use).

Types 316/305/304 stainless steel, copper, silicon bronze and hot-dip galvanized (Class-C) are the most effective protection against corrosion risk, where Type 316 is the best choice for salt marine and chloride-

containing environments regardless of treatment chemicals or wood species. If you choose to use hot-dip galvanized (Class-D), mechanically-galvanized (C3, N2000, or Class 55), double-barrier or Quik Guard® coated fasteners on outdoor projects (e.g., a deck), you should periodically inspect the fasteners or have a professional inspection performed, and regular maintenance is a good practice. See the Corrosion Resistance Classifications Table for the Simpson Strong-Tie assessment of the corrosion resistance associated with materials and coatings and an appropriate level of corrosion resistance for various environments.

Due to the many variables involved, Simpson Strong-Tie cannot provide estimates of service life of connectors and fasteners. We suggest that all users and specifiers obtain recommendations on corrosion from the treated wood supplier or for the type of wood used. As long as Simpson Strong-Tie recommendations are followed, Simpson Strong-Tie stands behind its product performance and our standard warranty applies (p. 14).

Simpson Strong-Tie does not recommend painting stainless-steel fasteners or hardware. The reason behind this recommendation is that sometimes painting can facilitate corrosion. Stainless steel is "stainless" because it forms a protective chromium oxide film on the surface by passive oxidation with air. The paint film on the stainless steel surface may be imperfect or it can be injured during service, and in either case the metal may be exposed. Microscopic-sized film imperfections and scratches facilitate collection of dirt and water that can be stagnant and degrade or block the passive formation of the protective chromium oxide film. When this happens, crevice corrosion can initiate. Crevice corrosion eventually becomes visible as a brown stain or as red rust. This is the reason that painting usually does not improve corrosion resistance of stainless steel.

Guidelines for Selecting Corrosion-Resistant Connectors and Fasteners

Evaluate the Application

Consider the importance of the connection.

Evaluate the Exposure

Consider these moisture and treatment chemical exposure conditions:

- **Dry Service:** Generally interior applications and includes wall and ceiling cavities, raised floor applications in enclosed buildings that have been designed to prevent condensation and exposure to other sources of moisture. Prolonged exposure during construction should also be considered, as this may constitute a Wet Service or Elevated Service Condition.
- **Wet Service:** Generally exterior construction in conditions other than Elevated Service. These include Exterior Protected and Exposed and General Use Ground Contact as described by the AWWA UC4A.
- **Elevated Service:** Includes fumes, fertilizers, soil, some preservative-treated wood (AWPA UC4B and UC4C), industrial zones, acid rain and other corrosive elements.
- **Uncertain:** Unknown exposure, materials or treatment chemicals.
- **Ocean/Water Front:** Marine environments that include airborne chlorides and some splash. Environments with de-icing salts are included.
- **Treatment Chemicals:** See AWWA Use Category Designations. The preservative-treated wood supplier should provide all of the pertinent information about the wood being used. The information should include Use Category Designation, wood

species group, wood treatment chemical and chemical retention. See appropriate evaluation reports for corrosion effects of treatment chemicals and fastener corrosion resistance recommendations.

- **Fire-Retardant-Treated (FRT) Wood:** Metal connectors in contact with FRT wood in dry service applications may generally be uncoated, painted or galvanized G90 zinc-coated steel. Refer to the FRT wood manufacturer's recommendations for fastener and connector protection requirements. The 2015 IBC Section 2304.10.5.4 and 2015 IRC Section R317.3.4 refer to the manufacturer's recommendations for fastener corrosion requirements. In the absence of recommendations from the manufacturer, the code requires fasteners to be hot-dip galvanized, stainless steel, silicon bronze or copper. Fastener shear and withdrawal allowable loads may be reduced in FRT lumber. Refer to the FRT manufacturer's evaluation report for reduction factors.

Use the Simpson Strong-Tie® Corrosion Classification Table

If the treatment chemical information is incomplete, Simpson Strong-Tie recommends the use of a 300-series stainless-steel product. If the treatment chemical is not shown in the Corrosion Classification Table, then Simpson Strong-Tie has not evaluated it and cannot make any recommendations other than the use of coatings and materials in the Severe category. Manufacturers may independently provide test results of other product information; Simpson Strong-Tie expresses no opinion regarding such information.

Corrosion Information

Corrosion Resistance Recommendations

Low	Medium	High	Severe
Fasteners			
Phosphate (gray, black), Clear (bright) zinc (ASTM F1941), Heavy electro-galvanized (ASTM A641 – Class 1), Yellow zinc (ASTM F1941), Electrocoat (E-Coat™), Type 410 stainless steel	Mechanically galvanized (AS 3566.2-C3, N2000, ASTM B695 – Class 55), Quik Guard® coating, Hot-dip galvanized (ASTM A153 – Class D), Double-barrier coating, Type 410 stainless steel with protective top coat	Type 304 stainless steel, Type 305 stainless steel	Type 316 stainless steel, Hot-dip galvanized (ASTM A153 – Class C), Silicon bronze, Copper
Connectors			
Simpson Strong-Tie® gray paint, Powder coating, Standard G90 zinc coating	ZMAX® (G185) Hot-dip galvanized (ASTM A123)	Type 316L stainless steel	Type 316L stainless steel

Corrosion Resistance Classifications

Environment	Material to Be Fastened						
	Untreated Wood or Other Material	Preservative-Treated Wood					FRT Wood ⁹
		SBX-DOT Zinc Borate	Chemical Retention ≤ AWWA, UC4A	Chemical Retention > AWWA, UC4A	ACZA	Other or Uncertain	
Dry Service	Low	Low	Low	High	Med	High	Med
Wet Service	Med	N/A	Med	High	High	High	High
Elevated Service	High	N/A	Severe	Severe	High	Severe	N/A
Uncertain	High	High	High	Severe	High	Severe	Severe
Ocean/Water Front	Severe	N/A	Severe	Severe	Severe	Severe	N/A

- These are general guidelines that may not consider all application criteria. Refer to product-specific information for additional guidance.
- Type 316/305/304 stainless-steel products are recommended where preservative-treated wood used in ground contact has a chemical retention level greater than those for AWWA UC4A; CA-C, 0.15 pcf; CA-B, 0.21 pcf; micronized CA-C, 0.14 pcf; micronized CA-B, 0.15 pcf; ACQ-Type D (or C), 0.40 pcf.
- Testing by Simpson Strong-Tie following ICC-ES AC257 showed that mechanical galvanization (ASTM B695, Class 55), Quik Guard® coating and Double Barrier coating will provide corrosion resistance equivalent to hot-dip galvanization (ASTM A153, Class D) in contact with chemically-treated wood in dry-service and wet-service exposures (AWWA UC1-UC4A, ICC-ES AC257 Exposure Conditions 1 and 3) and will perform adequately subject to regular maintenance and periodic inspection.
- Mechanical galvanizations C3 and N2000 should not be used in conditions that would be more corrosive than AWWA UC3A (exterior, above ground, rapid water run off).
- If uncertain about Use Category, treatment chemical or environment, use Types 316/305/304 stainless steel, silicon bronze or copper.
- Some treated wood may have excess surface chemicals making it potentially more corrosive than wood with lower retentions. If this condition is suspected, use Type 316/305/304 stainless steel, silicon bronze or copper fasteners.
- Type 316 stainless-steel, silicon bronze and copper fasteners are the best recommendation for ocean-salt air and other chloride-containing environments. Hot-dip galvanized fasteners with at least ASTM A153, Class C protection can also be an alternative for some applications in environments with ocean air and/or elevated wood moisture content.
- Some woods, such as cedars, redwood and oak, contain water-soluble tannins and are more susceptible to staining when in contact with metal connectors and fasteners. According to the California Redwood Association (calredwood.org), applying a quality finish to all surfaces of the wood prior to installation can help reduce the amount of staining, which in redwood, for example, is caused by surface tannins leaching out during rains.
- Fasteners in contact with FRT lumber shall be hot-dip galvanized, stainless steel, silicon bronze or copper unless recommended otherwise by the FRT manufacturer. Some FRT manufacturers permit low-resistant finishes for interior dry conditions. Fastener shear and withdrawal capacities may be reduced in FRT lumber. Refer to the FRT manufacturer's code report for reduction factors.

Dry Service



Wet Service



Severe



Corrosion Information

Coatings Available

Not all products are available in all finishes. Contact Simpson Strong-Tie for product availability, ordering information and lead times.

Finish/Material	Description	Level of Corrosion Resistance
Connectors		
Gray Paint	Water-based paint intended to protect the product while it is warehoused and in transit to the jobsite.	Low
Powder Coating	Baked-on paint finish that is more durable than our standard paint and produces a better-looking finished product.	Low
Galvanized	Standard (G90) zinc-galvanized coating containing 0.90 oz. of zinc per square foot of surface area (total both sides).	Low
	Galvanized (G185) 1.85 oz. of zinc per square foot of surface area (hot-dip galvanized per ASTM A653 total both sides). These products require hot-dip galvanized fasteners (fasteners which meet the specifications of ASTM A153). Products with a powder-coat finish over a ZMAX base have the same level of corrosion resistance.	Medium
	Products are hot-dip galvanized after fabrication (14 ga. and thicker). The coating weight increases with material thickness. The minimum average coating weight is 2.0 oz./ft. ² (per ASTM A123 total both sides). These products require hot-dip galvanized fasteners (fasteners which meet the specifications of ASTM A153). Anchor bolts are hot-dip galvanized per ASTM F2329.	Medium
 Type 316L Stainless Steel	Type 316L stainless steel is a nickel-chromium austenitic grade of stainless steel with 2–3% molybdenum. Type 316L stainless steel is not hardened by heat treatment and is inherently nonmagnetic. It provides a level of corrosion protection suitable for severe environments, especially environments with chlorides. Type 316L stainless-steel fasteners are compliant with the 2012 and 2015 IBC and IRC.	High/ Severe
Fasteners		
Electrocoating (E-Coat™)	Electrocoating utilizes electrical current to deposit the coating material on the fastener. After application, the coating is cured in an oven. Electrocoating provides a minimum amount of corrosion protection and is recommended for dry, non-corrosive applications only.	Low
Gray Phosphate Coating	Gray phosphate provides a minimum level of corrosion resistance and is intended for dry, low-corrosion applications.	Low
Yellow Zinc Coating	Electroplated zinc applied in accordance with ASTM F1941. In the ASTM B117 salt spray test, yellow zinc provides at least 24 hours of corrosion protection before the first appearance of red rust.	Low
Quik Guard® Coating	Quik Guard is a proprietary coating that consists of an electroplated zinc base layer and a system of organic top coats. It provides corrosion resistance equivalent to hot-dip galvanization (ASTM A153, Class D) in some exposures. In ASTM B117 salt spray testing at 1,000 hours of exposure, fasteners with the Quik Guard coating have average red rust less than 2%.	Medium
Type 410 Stainless Steel with Protective Top Coat	Carbon martensitic grade of stainless steel which is inherently magnetic, with an added protective top coat. This material can be used in mild atmospheres and many mild chemical environments.	Medium
Mechanically Galvanized Coating, Class 55	Simpson Strong-Tie® Strong-Drive® SD Connector screws are manufactured with a mechanically-applied zinc coating in accordance with ASTM B695, Class 55 with a supplemental overcoat. These fasteners are compatible with painted and zinc-coated (G90 and ZMAX) connectors.	Medium
Double-Barrier Coating	Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws are manufactured with two different finishes that together provide a level of corrosion protection that equals that provided by the previous HDG coating.	Medium
Type 316 Stainless Steel	Type 316 stainless steel is a nickel-chromium austenitic grade of stainless steel with 2–3% molybdenum. Type 316 stainless steel is not hardened by heat treatment and is inherently nonmagnetic. It provides a level of corrosion protection suitable for severe environments, especially environments with chlorides. Type 316 stainless steel fasteners are compliant with the 2012 and 2015 IBC and IRC.	High/ Severe
 ASTM A153, Class C	Simpson Strong-Tie Strong-Drive Timber-Hex screws are hot-dip galvanized in accordance with ASTM A153, Class C. Hot-dip galvanized fasteners have a minimum average of 1.25 oz./ft. ² of zinc coating. Hot-dip galvanized fasteners are compliant with the 2012 and 2015 IRC (R317.3) and IBC.	High/ Severe

See Corrosion Information for more specific performance and application information on these finishes.

Important Information and General Notes

General Notes

These general notes are provided to ensure proper installation of Simpson Strong-Tie Company Inc. products and must be followed fully.

- a. Simpson Strong-Tie Company Inc. reserves the right to change specifications, designs and models without notice or liability for such changes.
- b. Steel used for each Simpson Strong-Tie® product is individually selected based on the product's steel specifications, including strength, thickness, formability, finish and weldability. Contact Simpson Strong-Tie for steel information on specific products.
- c. Unless otherwise noted, dimensions are in inches, loads are in pounds.
- d. Unless otherwise noted, welds, screws, bolts and nails may not be combined to achieve highest load value. 8d (0.131" x 2 1/2"), 10d (0.148" x 3") and 16d (0.162" x 3 1/2") specify common nails that meet the requirements of ASTM F1667. When a shorter nail is specified, it will be noted (for example 8d x 1 1/2"). Refer to Simpson Strong-Tie Nailing Guide, NDS (National Design Specification) and ASTM F1667 (American Society of Testing and Materials) for more nail info.
- e. Do not overload. Do not exceed catalog allowable loads, which would jeopardize the connection.
- f. Unless otherwise noted, allowable loads are for Douglas Fir-Larch under continuously dry conditions. Allowable loads for other species or conditions must be adjusted according to the code. The section from the AC13 criteria indicating the range of specific gravity reads as follows: 3.2.3 The species of lumber used shall have a specific gravity not greater than 0.55 as determined in accordance with the NDS. This chart shows specific gravity and perpendicular-to-grain compression capacities for the different wood species:

Species	Fc⊥	Specific Gravity
Douglas Fir-Larch (DF)	625 psi	0.50
Southern Pine (SP)	565 psi	0.55
Spruce-Pine-Fir (SPF)	425 psi	0.42
SPF (South)	335 psi	0.36
Hem Fir (HF)	405 psi	0.43
Glulam	650 psi	0.50
LVL (DF/SP)	750 psi	0.50
LSL (E = 1.3 x 10 ⁶)	680 psi	0.50
LSL (E ≥ 1.5 x 10 ⁶)	880 psi	0.50
Parallam® PSL	750 psi	0.50
- g. When using connectors in this catalog with SPF (South) species lumber, apply a 0.87 factor to the allowable loads listed for SPF.
- h. Simpson Strong-Tie Company Inc. will manufacture non-catalog products provided prior approval is obtained and an engineering drawing is included with the order. Steel specified on the drawings as 1/8", 3/16" and 1/4" will be 11 ga. (0.120"), 7 ga. (0.179") and 3 ga. (0.239"), respectively. The minimum yield and tensile strengths are 33 ksi and 52 ksi, respectively.
- i. All references to bolts or machine bolts (MBs) are for structural quality through bolts (not lag screws or carriage bolts) equal to or better than ASTM Standard A307, Grade A.
- j. Unless otherwise noted, bending steel in the field may cause fractures at the bend line. Fractured steel will not carry load and must be replaced.
- k. A fastener that splits the wood will not take the design load. Evaluate splits to determine if the connection will perform as required. Dry wood may split more easily and should be evaluated as required. If wood tends to split, consider pre-boring holes with diameters not exceeding 0.75 of the nail diameter (2015 NDS 12.1.5.3). Use a 5/32" bit for Strong-Drive® SDS Heavy-Duty Connector screws and a 3/32" bit for Strong-Drive SD9/SD10 Connector screws.
- l. Wood shrinks and expands as it loses and gains moisture, particularly perpendicular to its grain. Take wood shrinkage into account when designing and installing connections. Simpson Strong-Tie manufactures products to fit common dry lumber dimensions. If you need a connector with dimensions other than those listed in this catalog, Simpson Strong-Tie may be able to vary connector dimensions; contact Simpson Strong-Tie. The effects of wood shrinkage are increased in multiple lumber connections, such as floor-to-floor installations. This may result in the vertical rod nuts becoming loose, requiring post-installation tightening. (Contact Simpson Strong-Tie for information on Takeup Devices.)
- m. Top flange hangers may cause unevenness. Possible remedies should be evaluated by a professional and include using a face-mount hanger, and routing the beam or cutting the subfloor to accommodate the top flange thickness.
- n. Built-up lumber (multiple members) must be fastened together to act as one unit to resist the applied load (excluding the connector fasteners). Except for the built-up columns listed in this catalog, all other sections must be determined by the Designer.
- o. Some model configurations may differ from those shown in this catalog. Contact Simpson Strong-Tie for details.
- p. Truss plates shown are the responsibility of the Truss Designer.
- q. Do not weld products listed in this catalog unless this publication specifically identifies a product as acceptable for welding, or unless specific approval for welding is provided in writing by Simpson Strong-Tie. Some steels have poor weldability and a tendency to crack when welded. Cracked steel will not carry load and must be replaced. See the Simpson Strong-Tie *Wood Construction Connectors* catalog for hangers that may be welded.
- r. Unless noted otherwise, all references to standard-cut washers refer to Type A plain washers (W) conforming to the dimensions shown in ASME B18.22.1 for the appropriate rod size in accordance with 2012 NDS Appendix L. Some products require SAE narrow washers (N) to fit in a tight space and are noted accordingly.
- s. To achieve tabulated values for embedded concrete/masonry products, full consolidation of concrete or grout is required whether mounted to the form prior to the pour or wet set.
- t. Some applications require multiple connectors to achieve the tabulated load. When multiple connectors are required, they must be installed so fastener locations do not overlap.

Important Information and General Notes

General Instructions for the Installer

These general instructions for the installer are provided to ensure proper selection and installation of Simpson Strong-Tie Company Inc. products and must be followed carefully. These general instructions are in addition to the specific installation instructions and notes provided for each particular product, all of which should be consulted prior to and during installation of Simpson Strong-Tie Company Inc. products.

- a. All specified fasteners must be installed according to the instructions in this catalog. Incorrect fastener quantity, size, placement, type, material, or finish may cause the connection to fail.
 - 8d x 1½" are common nails (0.131" dia. x 1½" long);
 - 8d are common nails (0.131" dia. x 2½" long);
 - 10d x 1½" are common nails (0.148" dia. x 1½" long);
 - 10d x 2½" are common nails (0.148" dia. x 2½" long);
 - 10d are common nails (0.148" dia. x 3" long).
- Unless otherwise noted screws may not be used to replace nails in connectors unless approved and recommended by the Designer/Engineer of Record. Unless stated otherwise, Simpson Strong-Tie cannot and does not make any representations regarding the suitability of use or load-carrying capacities of connectors with screws replacing nails.
- When using stainless-steel connectors, use stainless-steel fasteners. When using ZMAX®/HDG galvanized connectors, use fasteners that meet the zinc coating specifications of ASTM A153 or other fasteners allowed in this catalog.
- b. Fill all fastener holes as specified in the installation instructions for that product.
- c. Do not overdrive nails. Overdriven nails reduce shear capacity.
- d. Use the materials specified in the installation instructions. Substitution of or failure to use specified materials may cause the connection to fail.
- e. Unless a connector is specifically designed for power-driven fasteners that don't have prepunched holes, do not add fastener holes or otherwise modify Simpson Strong-Tie Company Inc. products. The performance of modified products may be substantially weakened. Simpson Strong-Tie will not warrant or guarantee the performance of such modified products.
- f. Install products in the position specified in the catalog.
- g. Do not alter installation procedures from those set forth in this catalog.
- h. The proper use of certain products requires that the product be bent. For those products, installers must not bend the product more than one time (one full cycle).
- i. Bolt holes shall be at least a minimum of ½" and no more than a maximum of ⅝" larger than the bolt diameter (per the 2015 NDS, Section 12.1.3.2 and AISI S100-07, Table E3a if applicable).
- j. Install all specified fasteners before loading the connection.
- k. Some hardened fasteners may have premature failure if exposed to moisture. These fasteners are recommended to be used in dry interior applications.
- l. Use proper safety equipment.
- m. Welding galvanized steel may produce harmful fumes; follow proper welding procedures and safety precautions. Welding should be in accordance with A.W.S. (American Welding Society) standards. Unless otherwise noted Simpson Strong-Tie® connectors cannot be welded.
- n. Pneumatic or powder-actuated fasteners may deflect and injure the operator or others. Pneumatic nail tools may be used to install connectors, provided the correct quantity and type of nails (length and diameter) are properly installed in the nail holes. Tools with nail hole-locating mechanisms should be used. Follow the manufacturer's instructions and use the appropriate safety equipment. Overdriving nails may reduce allowable loads. Contact Simpson Strong-Tie. Powder-actuated fasteners should not be used to install connectors, unless noted otherwise. Reference the Simpson Strong-Tie *Wood Construction Connectors* catalog for hanger installation with powder-actuated fasteners.
- o. Joist shall bear completely on the connector seat, and the gap between the joist end and the header shall not exceed ⅛" per ICC-ES AC261, ASTM D1761 and ASTM D7147 test standards (unless specifically noted otherwise).
- p. Fasteners are permitted to be installed through metal truss plates when approved by the Truss Designer in accordance with ANSI/TPI 1-2014, Section 7.5.3.4 and 8.9.2. Installation of Simpson Strong-Tie Strong-Drive® SDS Heavy-Duty Connector screws through metal connector plates requires the plates to be predrilled using a maximum of a ⅝" bit. Do not drive nails through the truss plate on the opposite side of single-ply trusses, which could force the plate off the truss.
- q. Nuts shall be installed such that the end of the threaded rod or bolt is at least flush with the top of the nut.
- r. When installing hurricane ties on the inside of the wall special considerations must be taken to prevent condensation on the inside of the completed structure in cold climates.
- s. Unless otherwise noted, connectors shown in this catalog have been designed to be installed at the time the framing members are installed. Contact Simpson Strong-Tie for retrofit suitability of specific connectors including those manufactured in accordance with the hanger options section of this catalog.

Important Information and General Notes

General Instructions for the Designer

These general instructions for the Designer are provided to ensure proper selection and installation of Simpson Strong-Tie Company Inc. products and must be followed carefully. These general instructions are in addition to the specific design and installation instructions and notes provided for each particular product, all of which should be consulted prior to and during the design process.

- a. The term “Designer” used throughout this catalog is intended to mean a licensed/certified building design professional, a licensed professional engineer, or a licensed architect.
- b. All connected members and related elements shall be designed by the Designer.
- c. All installations should be designed only in accordance with the allowable load values set forth in this catalog.
- d. When a connector is loaded simultaneously in more than one direction, the allowable load must be evaluated as given in option 1 or option 2.

Option 1:

Design Uplift/Allowable Uplift + Design Lateral Parallel to Plate / Allowable Lateral Parallel to Plate + Design Lateral Perpendicular to Plate / Allowable Lateral Perpendicular to Plate < 1.0.

The three terms in the unity equation are due to the possible directions that exist to generate force on a connector. The number of terms that must be considered for simultaneous loading is at the sole discretion of the Designer and is dependent on their method of calculating wind forces and the utilization of the connector within the structural system.

Option 2:

As an alternative, Seismic and Hurricane Ties on pp. 18–19 can be evaluated using the following: The design load in each direction shall not exceed the published allowable load in that direction multiplied by 0.75. For connections involving members with different specific gravities, use the allowable load corresponding to the lowest specific gravity in the connection, unless noted otherwise.
- e. Loads are based on the 2015 National Design Specifications (NDS) and AISI S100-12 if applicable, unless otherwise specified. Other code agencies may use different allowable loads.
- f. Unless otherwise noted, loads include Load Duration, Group Action and Toe-Nail factors from the NDS as applicable. The application of additional adjustment factors shall be by the Designer. Duration of load adjustments as specified by the code are as follows:

“PERMANENT” — 90% of the design load.

“FLOOR” and “DOWN” (100) — no increase for duration of load.

“SNOW” (115) — 115% of design load for two-month duration of load.

“ROOF LOAD” (125) — 125% of design load for seven-day duration of load.

“EARTHQUAKE / WIND” (160) — 160% of design load for earthquake/wind loading.
- g. Unless otherwise noted, wood shear is not considered in the loads given; reduce allowable loads when wood shear is limiting.
- h. Simpson Strong-Tie strongly recommends the following addition to construction drawings and specifications: “Simpson Strong-Tie® connectors are specifically required to meet the structural calculations of plan. Before substituting another brand, confirm load capacity based on reliable published testing data or calculations. The Engineer/Designer of Record should evaluate and give written approval for substitution prior to installation.”
- i. Verify that the dimensions of the supporting member are sufficient to receive the specified fasteners, and develop the top flange bearing length.
- j. Some catalog illustrations show connections that could cause cross-grain tension or bending of the wood during loading if not sufficiently reinforced. In this case, mechanical reinforcement should be considered.
- k. Simpson Strong-Tie will provide upon request code testing data on all products that have been code tested.
- l. The allowable loads published in this catalog are for use when utilizing the traditional Allowable Stress Design methodology. A method for using Load and Resistance Factor Design (LRFD) for wood has been published in ASTM D5457. When designing with LRFD, reference lateral resistances must be used. Contact Simpson Strong-Tie for reference lateral resistances of products listed in this catalog. For more information, refer to the 2015 NDS Appendix N, which contains a conversion procedure that can be used to derive LRFD capacities.
- m. For joist hangers, Simpson Strong-Tie recommends the hanger height shall be at least 60% of joist height for stability against rotation while under construction prior to sheathing install.
- n. Local and/or regional building codes may require meeting special conditions. Building codes often require special inspection of anchors installed in concrete and masonry. For compliance with these requirements, it is necessary to contact the local and/or regional building authority. Except where mandated by code, Simpson Strong-Tie products do not require special inspection.
- o. Throughout the catalog there are installation drawings showing the load transfer from one element in the structure to another. Additional connections may be required to safely transfer the loads through the structure. It is the Designer’s responsibility to specify and detail all necessary connections to ensure that a continuous load path is provided as required by the building code.
- p. Top flange hanger allowable loads are typically based on testing with solid headers. Load reductions may apply when using headers comprised of multiple plies of dimensioned lumber or SCL. See technical bulletin T-C-MPLYHEADER at strongtie.com for more information.

Important Information and General Notes

Limited Warranty

Simpson Strong-Tie Company Inc. warrants catalog products to be free from defects in material or manufacturing. Simpson Strong-Tie Company Inc. products are further warranted for adequacy of design when used in accordance with design limits in this catalog and when properly specified, installed and maintained. This warranty does not apply to uses not in compliance with specific applications and installations set forth in this catalog, or to non-catalog or modified products, or to deterioration due to environmental conditions.

Simpson Strong-Tie® connectors are designed to enable structures to resist the movement, stress and loading that results from impact events such as earthquakes and high-velocity winds. Other Simpson Strong-Tie products are designed to the load capacities and uses listed in this catalog. Properly-installed Simpson Strong-Tie products will perform in accordance with the specifications set forth in the applicable Simpson Strong-Tie catalog. Additional performance limitations for specific products may be listed on the applicable catalog pages.

Due to the particular characteristics of potential impact events, the specific design and location of the structure, the building

materials used, the quality of construction, and the condition of the soils involved, damage may nonetheless result to a structure and its contents even if the loads resulting from the impact event do not exceed Simpson Strong-Tie catalog specifications and Simpson Strong-Tie connectors are properly installed in accordance with applicable building codes.

All warranty obligations of Simpson Strong-Tie Company Inc. shall be limited, at the discretion of Simpson Strong-Tie Company Inc., to repair or replacement of the defective part. These remedies shall constitute Simpson Strong-Tie Company Inc.'s sole obligation and sole remedy of purchaser under this warranty. In no event will Simpson Strong-Tie Company Inc. be responsible for incidental, consequential, or special loss or damage, however caused.

This warranty is expressly in lieu of all other warranties, expressed or implied, including warranties of merchantability or fitness for a particular purpose, all such other warranties being hereby expressly excluded. This warranty may change periodically — consult our website strongtie.com for current information.

Terms and Conditions of Sale

Product Use

Products in this catalog are designed and manufactured for the specific purposes shown, and should not be used with other connectors not approved by a qualified Designer. Modifications to products or changes in installations should only be made by a qualified Designer. The performance of such modified products or altered installations is the sole responsibility of the Designer.

Indemnity

Customers or Designers modifying products or installations, or designing non-catalog products for fabrication by Simpson Strong-Tie Company Inc. shall, regardless of specific instructions to the user, indemnify, defend and hold harmless Simpson Strong-Tie Company Inc. for any and all claimed loss or damage occasioned in whole or in part by non-catalog or modified products.

Non-Catalog and Modified Products

Consult Simpson Strong-Tie Company Inc. for applications for which there is no catalog product, or for connectors for use in hostile environments, with excessive wood shrinkage, or with abnormal loading or erection requirements.

Non-catalog products must be designed by the customer and will be fabricated by Simpson Strong-Tie in accordance with customer specifications.

Simpson Strong-Tie cannot and does not make any representations regarding the suitability of use or load-carrying capacities of non-catalog products. Simpson Strong-Tie provides no warranty, express or implied, on non-catalog products. F.O.B. Shipping Point unless otherwise specified.

Important Information and General Notes

Conversion Charts

Metric Conversion

Imperial	Metric
1 in.	25.40 mm
1 ft.	0.3048 m
1 lb.	4.448 N
1 Kip	4.448 kN
1 psi	6,895 Pa

Bolt Diameter

in.	mm
3/8	9.5
1/2	12.7
5/8	15.9
3/4	19.1
7/8	22.2
1	25.4

If Common Rafter Roof Pitch is ...

Rise/Run	Slope
1/12	5°
2/12	10°
3/12	14°
4/12	18°
5/12	23°
6/12	27°
7/12	30°
8/12	34°
9/12	37°
10/12	40°
11/12	42°
12/12	45°

Then Hip/Valley Rafter Roof Pitch becomes ...

Rise/Run	Slope
1/17	3°
2/17	7°
3/17	10°
4/17	13°
5/17	16°
6/17	19°
7/17	22°
8/17	25°
9/17	28°
10/17	30°
11/17	33°
12/17	35°

Use these Roof Pitch to Hip/Valley Rafter Roof Pitch conversion tables only for hip/valley rafters that are skewed 45° right or left. All other skews will cause the slope to change from that listed.

US Standard Steel Gauge Equivalents in Nominal Dimensions

Ga.	Minimum Thickness (mil)	Approximate Dimensions		Thickness of Steel Sheets (in.)		
		in.	mm	Uncoated Steel	Galvanized Steel (G90)	ZMAX® (G185)
3	229	1/4	6.0	0.239	—	—
7	171	3/16	4.5	0.179	0.186	—
10	118	5/64	3.5	0.134	0.138	0.140
11	111	1/8	3.1	0.120	0.123	0.125
12	97	7/64	2.7	0.105	0.108	0.110
14	68	5/64	2.0	0.075	0.078	0.080
16	54	1/16	1.6	0.060	0.063	0.065
18	43	3/64	1.3	0.048	0.052	0.054
20	33	1/32	1.0	0.036	0.040	0.042
22	27	1/32	1.0	0.030	0.033	0.035

Steel thickness may vary according to industry mill standards.

Connectors



MMLU

Face-Mount Hangers for Factory-Built Structures

The MMLU series provides installation versatility for factory-built structures. Nailing grids in the MMLU hangers replace traditional nail holes, allowing for faster installation of power-driven nails. Each hanger provides multiple nailing pattern options to enable value engineering for different loads.

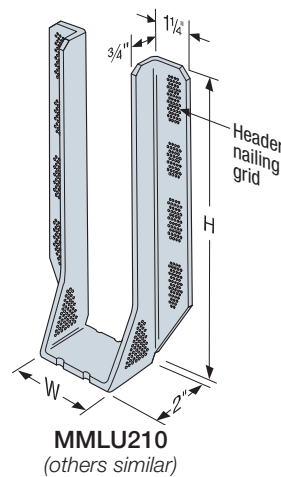
Material: MMLU26-2, MMLU28-2 — 18 gauge,
all others — 20 gauge

Finish: Galvanized

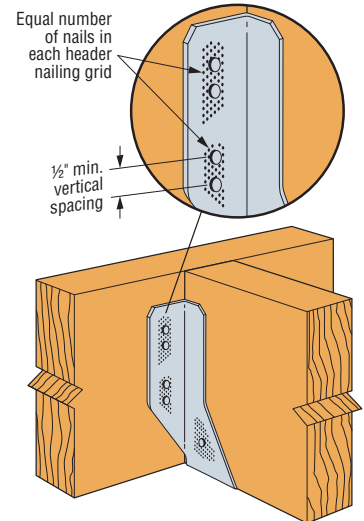
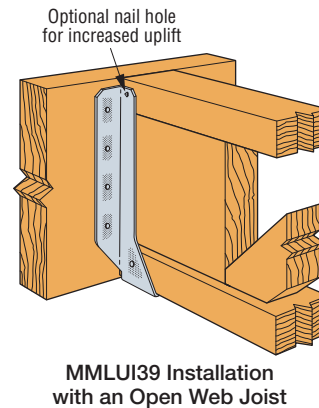
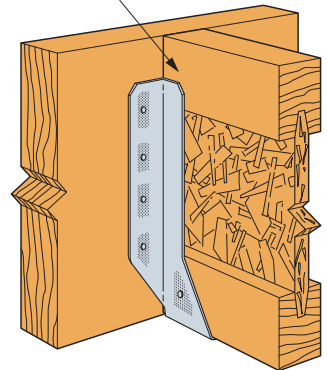
Installation:

- Nails must be installed with a powered nail tool. Face protection is required. To reduce ricochet, install nails straight through the nailing grid. Follow all safety instructions for the nail tool.
- Adjust the nail tool pressure so nail heads are flush with the hanger and are not overdriven causing the MMLU steel to dimple.
- Install at least one 8d x 1½" or 10d x 1½" nail into each nailing grid.
- Install additional nails in accordance with the MMLU Installation and Load Table for increased capacity. Each header nailing grid must contain the same quantity of nails.
- The minimum vertical center-to-center spacing of nails in the same nailing grid is ½" and must not split the wood header.
- The MMLU height (H) must equal or exceed 60% of the joist height to provide joist rotation resistance. If H is less than 60% of the joist height, provide lateral restraint to the top of the joist by other means, such as blocking, end nailing or Simpson Strong-Tie® A34 framing angles above the hanger.
- I-joist web stiffeners or floor truss end vertical webs must be installed in the carried member when the hanger side flanges do not support the I-joist top flange or floor truss top chord.

Codes: Testing performed in accordance with ICC-ES AC-13.



Web stiffeners required when joist top flange is not laterally supported by MMLU



MMLU Installation and Load Table

Model	Dimensions (in.)		Header Nailing Grids		Nail Quantity		Allowable Loads (lb.)	
			8d x 1 ½" or 10d x 1 ½"					
	W	H	No. of Grids	Nails in Each Grid	Header	Joist	Uplift	Download
MMLU26	1⅞	4¾	4	1	4	2	95	330
				2	8			655
				3	12			955
MMLU26-2	3⅞	5⅞	4	1	4	2	95	240
				2	8			555
				3	12			870
MMLU28	1⅞	6⅞	6	1	6	2	95	500
				2	12			955
MMLU28-2	3⅞	7⅞	6	1	6	2	95	395
				2	12			870
				3	18			1,340
MMLU210	1⅞	7⅞	8	1	8	2	95	510
				2	16			1,215
MMLUI211	1⅞	11⅞	10	1	10	2 ⁴	95 ⁴	705
				2	20			1,215
MMLUI39	2⅞	9⅞	8	1	8	2 ⁴	95 ⁴	510
				2	16			1,295
MMLUI311	2⅞	11⅞	10	1	10	2 ⁴	95 ⁴	705
				2	20			1,295

- Connectors must be installed with 8d x 1½" (0.131" x 1½") or 10d x 1½" (0.148" x 1½") nails.
- Loads apply to DF, SP, HF and SPF lumber species.
- Tabulated values are based on a load duration factor (C_D) of 1.0 with no further increase allowed.
- Install two nails in the optional triangle holes for an increased allowable uplift load of 330 lb. (C_D = 1.0) or 445 lb. (C_D = 1.6) for the MMLUI211, MMLUI39 and MMLUI311.

H2.5A/H2.5T/H10A/MMH8/RST-3

Roof Tiedowns

The versatile MMH8 line of connectors provides uplift resistance for roof trusses and rafters for factory-built structures. The nailing grids in the MMH8 replace traditional nail holes allowing for faster installation of power-driven nails. The MMH8 nailing grids also permit multiple nailing pattern options to enable value engineering for different load levels. Connectors have been evaluated with and without $\frac{5}{8}$ " bearing strips.

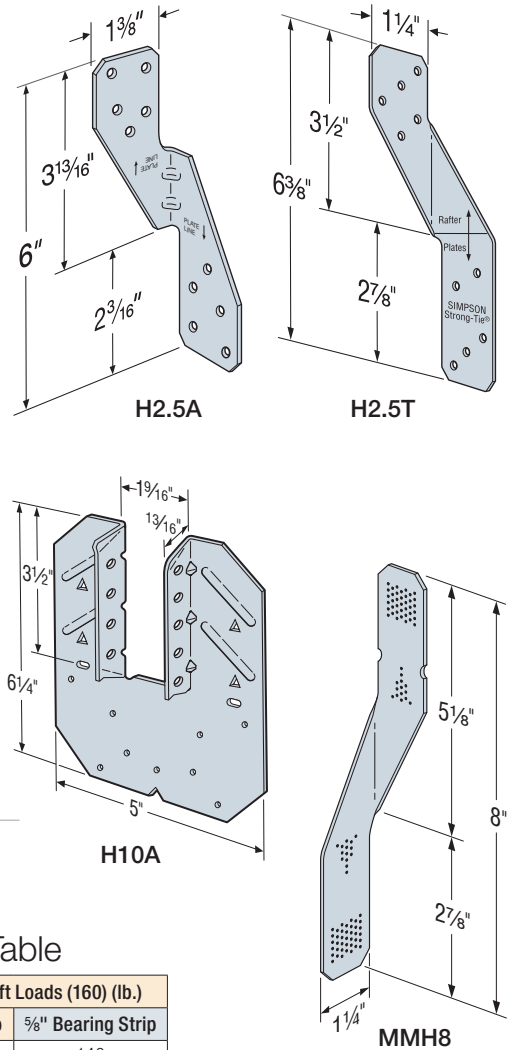
Material: 18 gauge

Finish: Galvanized

Installation: • Use all specified fasteners; see General Notes.

- H2.5T ties are shipped in equal quantities of right and left versions.
- For connections to the wide face of the stud, RST-3 ties can be bent at the perforated strap portion of the connector. Bend only once.
- Hurricane ties do not replace solid blocking.
- When installing ties on plated trusses (on the side opposite the truss plate) do not fasten through the truss plate from behind. This can force the truss plate off of the truss and compromise truss performance.
- MMH8 nails must be installed with a power nailer. Full face and eye protection is required. Extreme caution is required when driving nails through the MMH8. To prevent ricochet, drive nails straight through the nailing grid. Follow all safety instructions for the nail tool. Adjust the nail drive by setting the depth-of-drive on the nailer tool so that nail heads are driven into contact with the hanger. Do not over-drive nails, which are indicated by the tops of the nail heads driven below the top surface of the metal connector.
- MMH8 nails must have a minimum $\frac{1}{2}$ " center-to-center spacing in the same nailing grid and not split the wood. The square nailing grid must contain a minimum of three nails, and a maximum of five nails. In order for the $\frac{1}{2}$ " spacing requirement to be met with five nails in the square nailing grid, nails shall be positioned at the four corners of the grid, with the fifth nail positioned in the center of the grid.

Codes: Testing performed in accordance with ICC-ES AC-13. Visit strongtie.com for the latest load values and testing information.



These products are available with additional corrosion protection. For more information, see p.10.

These products are approved for installation with the Strong-Drive® SD Connector screw. See strongtie.com/sd for more information.

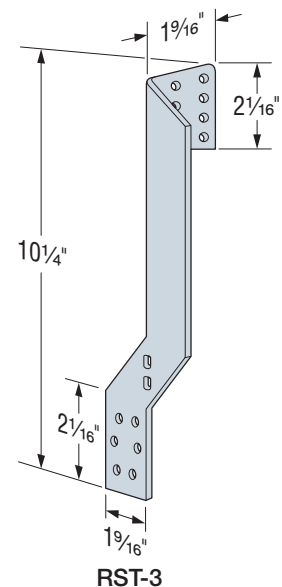
Roof Uplift Connector Installation and Allowable Load Table

Model	Fasteners			Allowable Uplift Loads (160) (lb.)	
	To Rafters/Truss	To Plates	To Studs	No Bearing Strip	5/8" Bearing Strip
H2.5A	(3) 8d x 1 1/2"	(3) 8d x 1 1/2"	—	175	140
	(5) 8d x 1 1/2"	(5) 8d x 1 1/2"	—	495	400
	(5) SD #9 x 1 1/2"	(5) SD #9 x 1 1/2"	—	520	550
H2.5T	(3) 8d x 1 1/2"	(3) 8d x 1 1/2"	—	175	155
	(5) 8d x 1 1/2"	(5) 8d x 1 1/2"	—	425	385
	(5) SD #9 x 1 1/2"	(5) SD #9 x 1 1/2"	—	525	410
H10A	(9) 8d x 1 1/2"	(9) 8d x 1 1/2"	—	910	—
MMH8	(3) 8d x 1 1/2"	(3) 8d x 1 1/2"	—	175	175
	(5) 8d x 1 1/2"	(5) 8d x 1 1/2"	—	330	330
	(6) 8d x 1 1/2"	(6) 8d x 1 1/2"	—	450	450
RST-3 into wide face of stud	(6) 8d x 1 1/2"	—	(6) 8d x 1 1/2"	435	320
	(6) SD #9 x 1 1/2"	—	(6) SD #9 x 1 1/2"	590	390
RST-3 into narrow face of stud	(6) 8d x 1 1/2"	—	(6) 8d x 1 1/2"	410	380
	(6) SD #9 x 1 1/2"	—	(6) SD #9 x 1 1/2"	435	435

1. Loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Allowable loads are for one connector. A minimum rafter thickness of 2 1/2" must be used when connectors are used on each side of the rafter and on the same side of the plate (exception: connectors installed such that fasteners on opposite side do not interfere).
3. Loads apply to DF, SP, HF and SPF lumber species.
4. Allowable F₁ load for the RST-3 installed into the narrow face of stud with no bearing strip is 60 lb.
5. The allowable F₂ load for the H2.5T with or without a bearing strip is 65 lb.
6. Allowable loads in the F₁ direction are not intended to

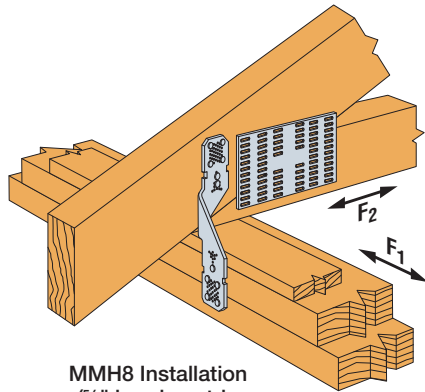
replace diaphragm boundary members or cross-grain bending of the truss or rafter members.

7. When cross-grain bending or cross-grain tension cannot be avoided in the members, mechanical reinforcement to resist such forces may be required.
8. Connectors are shown on the inside of the wall for clarity. Installation on the outside of the wall is acceptable, provided a minimum 3 1/2" overhang. For a Continuous Uplift Load Path, connections in the same area (i.e., truss-to-plate connector and plate-to-stud connector) must be on the same side of the wall.
9. **Nails:** 8d x 1 1/2" = 0.131" dia. x 1 1/2" long. 10d x 1 1/2" = 0.148" dia. x 1 1/2" long may be used at table loads.
10. **Screws:** Strong-Drive® SD #9 x 1 1/2" (model SD9112) = 0.131" dia. x 1 1/2" long.

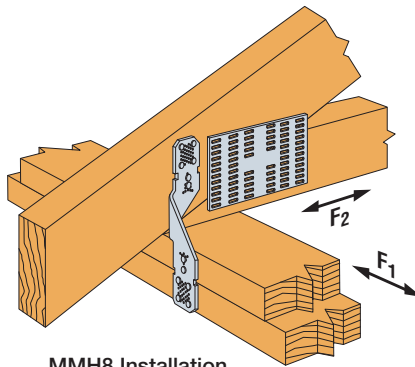


H2.5A/H2.5T/H10A/MMH8/RST-3

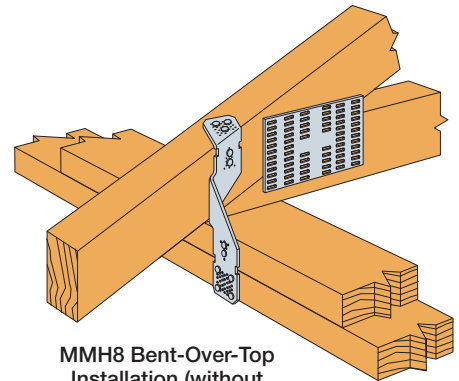
Roof Tiedowns (cont.)



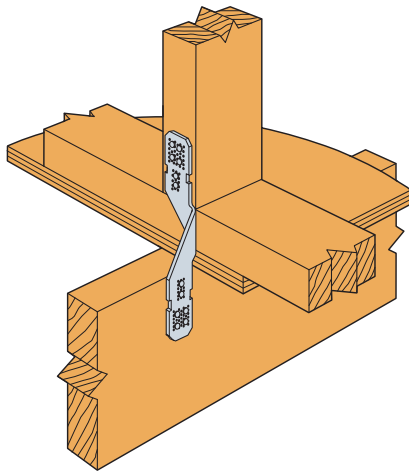
MMH8 Installation
($\frac{5}{8}$ " bearing strip
above top plate)



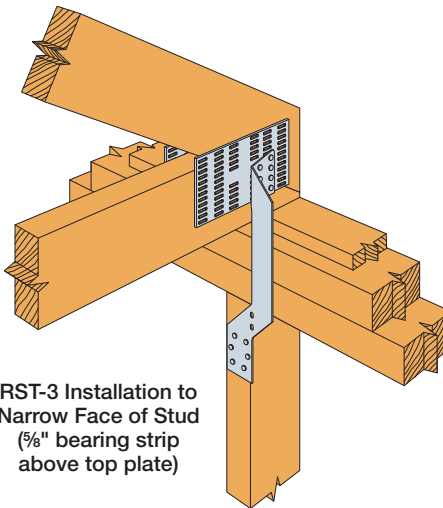
MMH8 Installation
(without $\frac{5}{8}$ "
bearing strip)



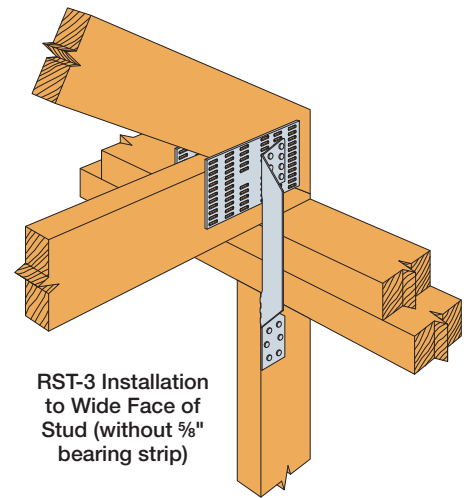
MMH8 Bent-Over-Top
Installation (without
 $\frac{5}{8}$ " bearing strip)



MMH8 Knee-Wall Installation



RST-3 Installation to
Narrow Face of Stud
($\frac{5}{8}$ " bearing strip
above top plate)



RST-3 Installation
to Wide Face of
Stud (without $\frac{5}{8}$ "
bearing strip)

When a connector is loaded simultaneously in more than one direction, the allowable load must be evaluated as option 1 or 2.

Option 1: Unity Equation

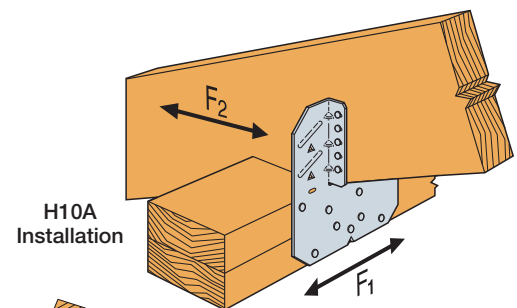
For all connectors use the following equation:

Design Uplift/Allowable Uplift + Design Lateral Parallel to Plate /
Allowable Lateral Parallel to Plate + Design Lateral Perpendicular to Plate /
Allowable Lateral Perpendicular to Plate < 1.0 .

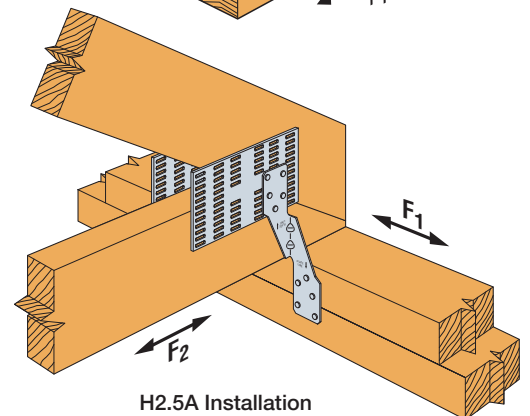
The three terms in the unity equation are due to the possible directions that exist to generate force on a connector. The number of terms that must be considered for simultaneous loading is at the sole discretion of the Designer and is dependent on their method of calculating wind forces and the utilization of the connector within the structural system.

Option 2: 75% Rule

As an alternative, roof-to-wall connectors on pp. 18–19 can be evaluated using the following: The design load in each direction shall not exceed the published allowable load in that direction multiplied by 0.75.



H10A
Installation



H2.5A Installation
(no bearing strip above top plates)

LTS

Twist Strap

Twist straps provide a tension connection between two wood members. They resist uplift at the heel of a truss economically. LTS straps have a 2" bend section that eliminates interference at the transition points between the two members.

Material: 18 gauge

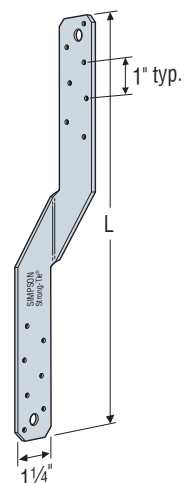
Finish: Galvanized. Some products available in stainless steel; see Corrosion Information, pp. 7–10.

Installation:

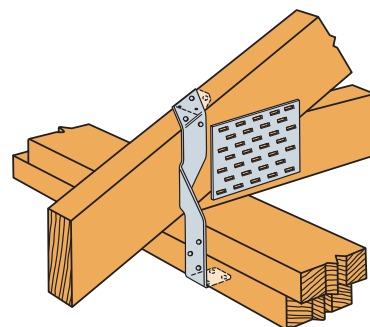
- Use all specified fasteners; see General Notes.
- LTS straps are available with the bend reversed. Specify "-REV" after the model number, such as LTS16-REV.

Codes: See p.6 for Code Reference Key Chart

These products are available with additional corrosion protection. For more information, see p. 10.



LTS12



LTS Installation as a Truss-to-Top Plate Tie

Model No.	L	Fasteners		DF/SP Allowable Uplift Loads		SPF/HF Allowable Uplift Loads		Code Ref.
				10d	10d x 1 1/2"	10d	10d x 1 1/2"	
				(160)	(160)	(160)	(160)	
SS LTS12	12	(12) 10d	(12) 10d x 1 1/2"	775	720	665	620	I17, L6, FL
LTS16	16	(12) 10d	(12) 10d x 1 1/2"	775	720	665	620	
SS LTS18	18	(12) 10d	(12) 10d x 1 1/2"	775	720	665	620	
LTS20	20	(12) 10d	(12) 10d x 1 1/2"	775	720	665	620	

1. Loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. LTS12 thru LTS20 have additional nail holes.
3. Install half of the fasteners on each end of strap to achieve full loads.
4. All straps have the twist in the center of the strap.
5. Twist straps do not have to be wrapped over the truss to achieve the load.
6. May be installed on the inside face of the stud.
7. Allowable lateral loads are $F_1 = 75$ lb. and $F_2 = 125$ lb. when the following installation requirements are met.
The first seven nail holes each side of the bend must be filled with 10d x 1 1/2" minimum nails.
All additional fasteners may be installed in any remaining strap holes.
8. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long.

MMHC

Hinged Roof Connector

The innovative MMHC hinged roof connector makes it easy to build a stick-frame roof in the factory that can fold flat during shipping. This connector has been tested and load rated in multiple directions. It can be installed on one or both sides of the roof rafter assembly.

Features:

- Innovative hinge rotates easily from open position to folded.
- The offset nail pattern allows for installation on both sides.
- Connector tabs make it intuitive to position before nailing.
- Nails in place for easy installation. No bolts required.
(No measuring or predrilling saves installers time.)

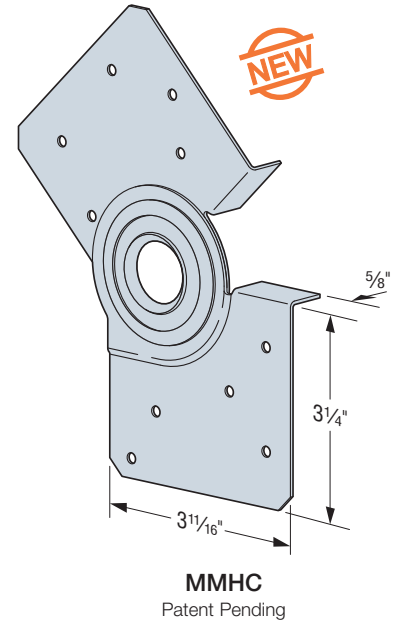
Material: 18 gauge

Finish: G90

Installation:

- Minimum 2x6 roof rafter and ceiling joist; minimum 2x4 knee wall stud
- Arrange members in installed position
- Open connector to same position
- Place on wood members using tabs as a guide
- Install with specified nails
- Adjust members for shipping purposes, then reopen at jobsite
- MMHC does not replace solid blocking

Codes: See p. 6 for Code Reference Key Chart



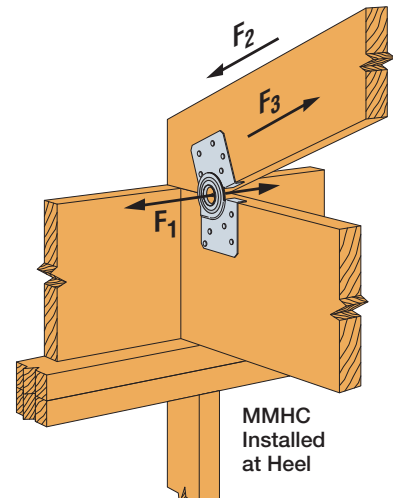
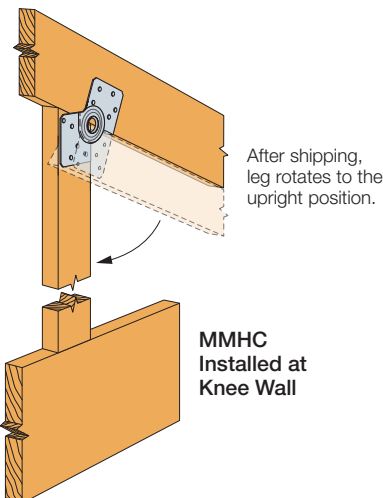
Allowable Loads for Kneewall Application

Model No.	Roof Pitch	Connector Quantity	Fasteners per Member 10d x 1 1/2" Nails	DF		SPF/HF	
				Download	Uplift	Download	Uplift
				(115/125/160)	(160)	(115/125/160)	(160)
MMHC	3:12 – 12:12	1	5	1,145	385	1,010	330

Allowable Loads for Single-Ply Rafter to Ceiling Joist

Model No.	Roof Pitch	Connector Quantity	Fasteners per Member 10d x 1 1/2" Nails	DF				SPF/HF			
				F ₁	F ₂	F ₃	Uplift	F ₁	F ₂	F ₃	Uplift
				(160)	(115/125/160)	(160)	(160)	(160)	(115/125/160)	(160)	(160)
MMHC	3:12	1	5	95	485	485	480	95	415	415	470
		2	10	215	955	955	870	215	825	825	770
	12:12	1	5	65	560	455	525	65	530	400	480
		2	10	140	1,215	845	940	140	1,150	725	855

1. All installations assume at minimum a single-ply 2x member.
2. Double-ply applications with two-sided installation will achieve twice the published load for the one-sided installation.
3. Linear interpolation of the loads is allowed for roof pitches between 3:12 and 12:12.



BC

Post Base

The BC series offers dual-purpose post cap/base for light cap or base connectors.

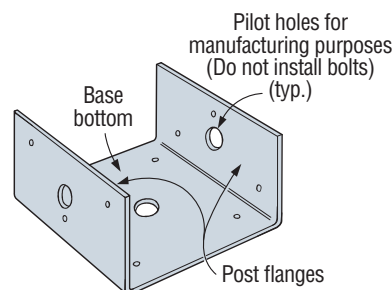
Material: 18 gauge

Finish: Galvanized. Some products available in ZMAX® coating and stainless steel.

Installation:

- Use all specified fasteners
- Do not install bolts into pilot holes
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-top-supported installations (such as fences or unbraced carports)
- To tie multiple 2x members together, the Designer must determine the fasteners required to join members to act as one unit without splitting the wood

Codes: See p. 6 for Code Reference Key Chart

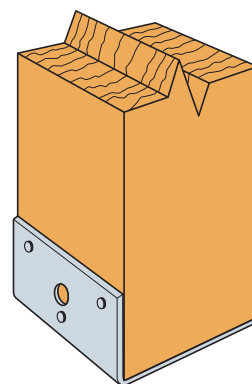


BC60 Half Base
(others similar)

These products are available with additional corrosion protection. For more information, see p. 10.

Model	Dimensions (in.)			Fasteners		Allowable Loads (160) (DF/SP)		Code Ref.
	W	L	H	Post Flange	Base Bottom	Uplift	Lateral	
SS BC40	3 ³ / ₁₆	3 ¹ / ₄	2 ¹ / ₄	(6) 10d x 1 1/2"	(4) 10d x 1 1/2"	510	735	I27, L5
BC40R	4	4	3	(6) 10d x 1 1/2"	(4) 10d x 1 1/2"	510	735	170
BC460	5 1/2	3 3/8	3	(6) 10d x 1 1/2"	(4) 10d x 1 1/2"	450	735	
BC60	5 1/2	5 1/2	3	(6) 10d x 1 1/2"	(4) 10d x 1 1/2"	450	735	I27, L5
BC60R	6	6	3	(6) 10d x 1 1/2"	(4) 10d x 1 1/2"	450	735	170
BC80	7 1/2	7 1/2	4	(6) 10d x 1 1/2"	(4) 10d x 1 1/2"	450	735	
BC80R	8	8	4	(6) 10d x 1 1/2"	(4) 10d x 1 1/2"	450	735	

1. Allowable loads have been increased for wind or earthquake with no further increase allowed; reduce where other loads govern.
2. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for values on the narrow face (edge).
3. Base allowable loads assumes nails have full penetration into supporting member. Loads do not apply to end grain post installations.
4. 8d x 1 1/2" nails may be used instead of the specified 10d x 1 1/2" nails at 0.83 of the table load.
5. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long; 8d x 1 1/2" = 0.131" dia. x 1 1/2" long.



Typical BC60 Installation

LSTA/MSTA

Strap Ties

LSTA and MSTA straps are designed to transfer tension loads in a wide variety of applications on the edge of 2x members, and have a nailing pattern that reduces the potential for splitting.

Finish: Galvanized. Some products are available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 7–10.

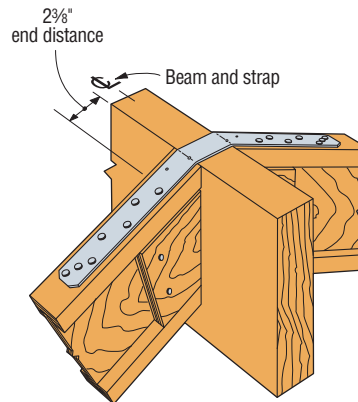
Installation:

- Use all specified fasteners; see General Notes

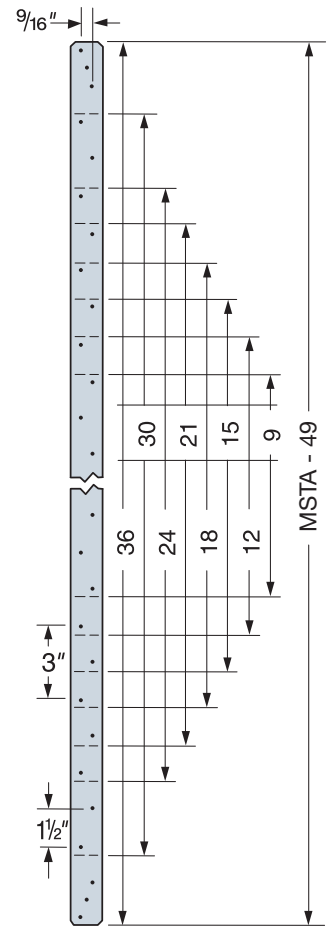
Codes: See p. 6 for Code Reference Key Chart

These products are available with additional corrosion protection. For more information, see p. 10.

These products are approved for installation with the Strong-Drive® SD Connector screw. See strongtie.com/sd for more information.



Typical LSTA Installation
(hanger not shown)
Bend strap one time only,
max. 12/12 joist pitch.



LSTA and MSTA
(pilot holes not shown)

Model No.	Ga.	Dimensions (in.)		Fasteners (Total)	Allowable Tension Loads (DF/SP)	Allowable Tension Loads (SPF/HF)	Code Ref.
		W	L		(160)	(160)	
LSTA9	20	1 1/4	9	(8) 10d x 2 1/2"	740	635	I4, L3, L5, FL
LSTA12		1 1/4	12	(10) 10d x 2 1/2"	925	795	
LSTA15		1 1/4	15	(12) 10d x 2 1/2"	1,110	955	
LSTA18		1 1/4	18	(14) 10d x 2 1/2"	1,235	1,110	
LSTA21		1 1/4	21	(16) 10d x 2 1/2"	1,235	1,235	
LSTA24		1 1/4	24	(18) 10d x 2 1/2"	1,235	1,235	
LSTA30	18	1 1/4	30	(22) 10d x 2 1/2"	1,640	1,640	
LSTA36		1 1/4	36	(24) 10d x 2 1/2"	1,640	1,640	
MSTA9		1 1/4	9	(8) 10d x 2 1/2"	750	650	
SS MSTA12		1 1/4	12	(10) 10d x 2 1/2"	940	810	
MSTA15		1 1/4	15	(12) 10d x 2 1/2"	1,130	970	
SS MSTA18		1 1/4	18	(14) 10d x 2 1/2"	1,315	1,135	
MSTA21		1 1/4	21	(16) 10d x 2 1/2"	1,505	1,295	
SS MSTA24		1 1/4	24	(18) 10d x 2 1/2"	1,640	1,460	
MSTA30		1 1/4	30	(22) 10d x 2 1/2"	2,050	1,825	
SS MSTA36		1 1/4	36	(26) 10d x 2 1/2"	2,050	2,050	
MSTA49	16	1 1/4	49	(26) 10d x 2 1/2"	2,020	2,020	FL, L3, L5

1. Allowable loads have been increased for wind or seismic loading with no further increase allowed; reduce where other loads govern.
2. 10d x 1 1/2" fasteners achieve full loads when installed directly to framing. When nailing strap over wood structural panels, use 2 1/2"-long fastener minimum.
3. Use half of the nails in each member being connected to achieve the listed loads.
4. Tension loads apply for uplift when installed vertically.
5. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 2 1/2" = 0.148" dia. x 2 1/2" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long.
6. **Screws:** SD #10 x 1 1/2" = 0.161" dia. x 1 1/2", SD #10 x 2 1/2" = 0.161" dia. x 2 1/2".

CS/CMST

Coiled Straps

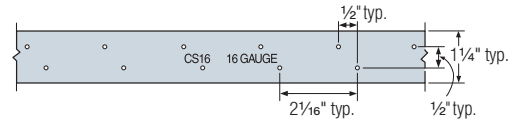
CMSTC provides nail slots for easy installation; it can be cut to length. CS are continuous utility straps which can be cut to length on the jobsite. Packaged in lightweight (about 40 lb.) cartons.

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 7–10.

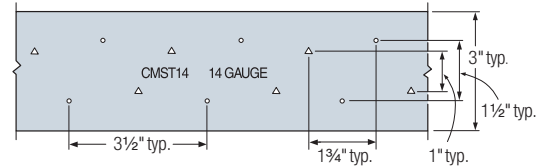
Installation:

- Use all specified fasteners; see General Notes.
- Wood shrinkage after strap installation across horizontal wood members may cause strap to buckle outward.
- Refer to the applicable code for minimum nail penetration and minimum wood edge and end distances.
- The table shows the maximum allowable loads and the nails required to obtain them. Fewer nails may be used; reduce the allowable load as shown in footnote #3.
- The cut length of the strap shall be equal to twice the "End Length" noted in the table plus the clear span dimension.
- CMST only — Use every other round hole if the wood tends to split. Use round and triangle holes for comparable MST loads, providing wood does not tend to split.
- For lap splice and alternate nailing information, refer to technical bulletin T-CMST at strongtie.com.
- CS straps are available in 25' lengths; order CS14-R, CS16-R, CS18-R, CS20-R or CS22-R.

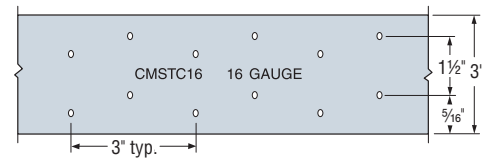
Codes: See p. 6 for Code Reference Key Chart



CS16 Hole Pattern
(All other CS straps similar)



CMST14 Hole Pattern
(CMST12 similar)



CMSTC16 Hole Pattern

Gauge stamped on part for easy identification

These products are available with additional corrosion protection. For more information, see p. 10.

These products are approved for installation with the Strong-Drive® SD Connector screw. See strongtie.com/sd for more information.

Model No.	Total L	Ga.	DF/SP		SPF/HF		Allowable Tension Loads (160)	Code Ref.
			Fasteners	End Length	Fasteners	End Length		
CMST12	40'	12	(74) 16d x 2 1/2"	33"	(84) 16d x 2 1/2"	38"	9,215	I4, L3, FL
			(86) 10d x 2 1/2"	39"	(98) 10d x 2 1/2"	44"	9,215	
CMST14	52 1/2'	14	(56) 16d x 2 1/2"	26"	(66) 16d x 2 1/2"	30"	6,475	
			(66) 10d x 2 1/2"	30"	(76) 10d x 2 1/2"	34"	6,475	
CMSTC16	54'	16	(50) 16d sinker	20"	(58) 16d sinker	25"	4,690	
CS14	100'	14	(26) 10d x 2 1/2"	15"	(30) 10d x 2 1/2"	16"	2,490	
			(30) 8d	16"	(36) 8d	19"	2,490	
CS16	150'	16	(20) 10d x 2 1/2"	11"	(22) 10d x 2 1/2"	13"	1,705	
			(22) 8d	13"	(26) 8d	14"	1,705	
CS18	200'	18	(16) 10d x 2 1/2"	9"	(18) 10d x 2 1/2"	11"	1,370	
			(18) 8d	11"	(22) 8d	12"	1,370	
CS20	250'	20	(12) 10d x 2 1/2"	6"	(14) 10d x 2 1/2"	9"	1,030	
			(14) 8d	9"	(16) 8d	9"	1,030	
CS22	300'	22	(10) 10d x 2 1/2"	7"	(12) 10d x 2 1/2"	7"	845	
			(12) 8d	7"	(14) 8d	8"	845	

1. Fastener quantities and end lengths are calculated using an increase for wind or seismic loading.
2. Use half of the required nails in each member being connected to achieve the listed loads.
3. Calculate the connector value for a reduced number of nails as follows:

$$\text{Allowable Load} = \frac{\text{No. of Nails Used}}{\text{No. of Nails in Table}} \times \text{Table Load}$$

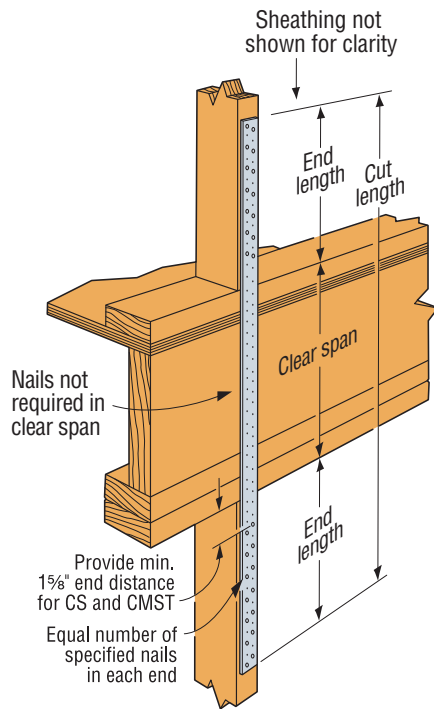
Example: CMSTC16 in DF/SP with 40 nails total.
(Half of the nails in each member being connected)

$$\text{Allowable Load} = \frac{40 \text{ Nails (Used)}}{50 \text{ Nails (Table)}} \times 4,585 \text{ lb.} = 3,668 \text{ lb.}$$

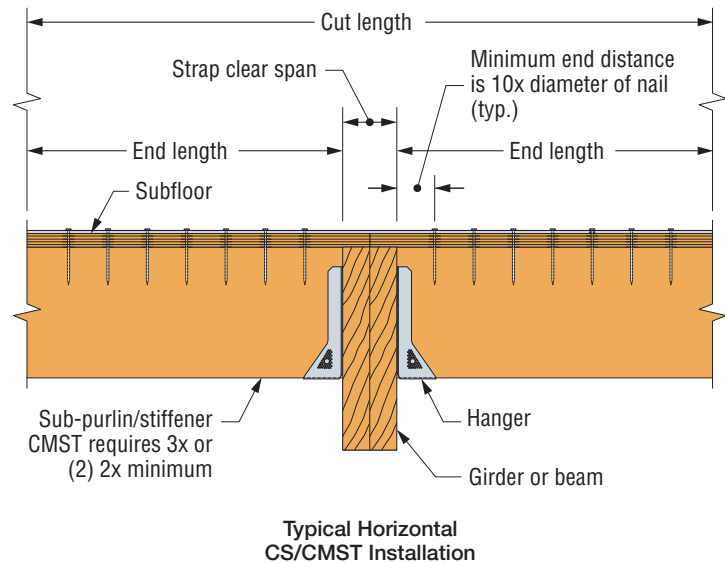
4. Tension loads apply for uplift when installed vertically.
5. 10d x 2 1/2" may be used for 16d sinkers at full table load.
6. 8d x 1 1/2" may be used for 8d and 10d x 1 1/2" may be used for 16d sinker or 10d x 2 1/2" with no load reduction when installed directly over framing. For installations over wood structural panel sheathing, use 2 1/2"-long fasteners minimum.
7. **Nails:** 16d = 0.162" dia. x 3 1/2" long, 16d sinker = 0.148" dia. x 3 1/4" long, 10d = 0.148" dia. x 3" long, 16d x 2 1/2" = 0.162" dia. x 2 1/2" long, 10d x 2 1/2" = 0.148" dia. x 2 1/2" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long.
8. **Screws:** SD #10 x 1 1/2" = 0.161" dia. x 1 1/2", SD #10 x 2 1/2" = 0.161" dia. x 2 1/2".

CS/CMST

Coiled Straps (cont.)



**Typical CS Installation
as a Floor-to-Floor Tie**
(CMST requires minimum (2) 2x studs)



Not Sure How Much Coil Strap You Need?

Simpson Strong-Tie has a web-based app, the Coil Strap Length Calculator, which can help you quickly determine the cut length of each strap and the total amount of coil strap needed for each application on a project.

For more information or to access, go to strongtie.com/software.

Fasteners



Strong-Drive® SDWC TRUSS Screw

The Strong-Drive SDWC screw provides a fast and economical uplift connection for roof rafters and trusses. This connection has been evaluated with a 5/8" bearing strip that is common for factory-built structures.

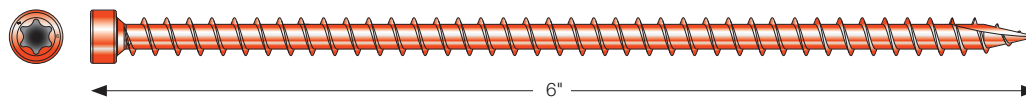
Material: Carbon steel

Finish: Zinc coating (with orange indicator)

Installation: See General Notes

Codes: See p. 6 for Code Reference Key Chart.

Visit strongtie.com for the latest load values and testing information.



Strong-Drive SDWC TRUSS Screw

Product Information

Model	Minor Diameter (in.)	Length (in.)	Thread Length (in.)	Allowable Uplift (160) SPF/HF/DF/SP (lb.)		Code Ref.
				With Overhang	Without Overhang	
SDWC15600	0.152	6	5 3/4	415	370	IP5, FL, L25

1. Loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Allowable loads apply to Spruce-Pine-Fir, Hem-Fir, Douglas Fir-Larch, and Southern Pine.
3. Allowable loads are for an SDWC installed per the "With Overhang" or "Without Overhang" installation details on p. 28.
4. SDWC must be installed on the exterior side of the wall.
5. SDWC must be installed at an angle between 10° and 22½°. Guide provided with screws is at 22½°.
6. For Uplift Continuous Load Path, top plate to stud connections must be located on the exterior side of the wall or see filer F-F-SDWC at strongtie.com.
7. Table loads do not apply to trusses with end-grain bearing.
8. Top plate, stud and top plate splice fastened per applicable Building Code.



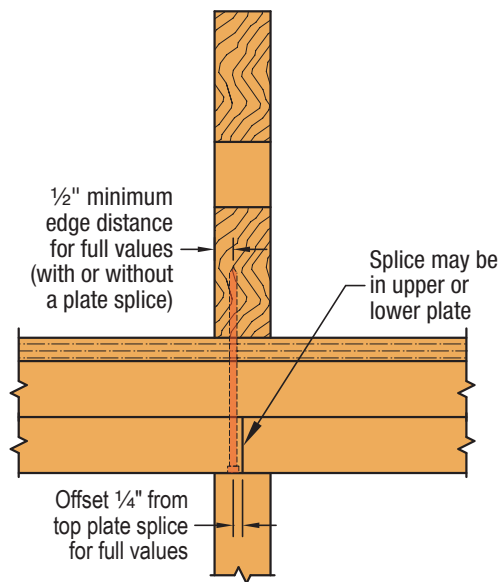
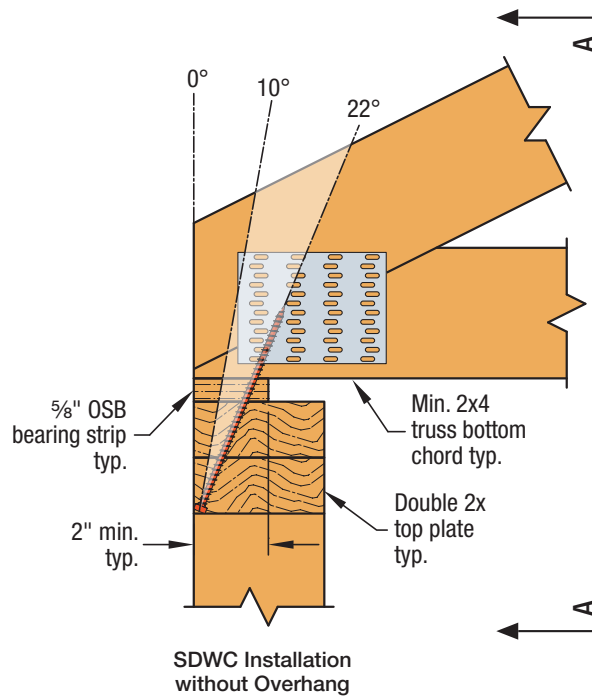
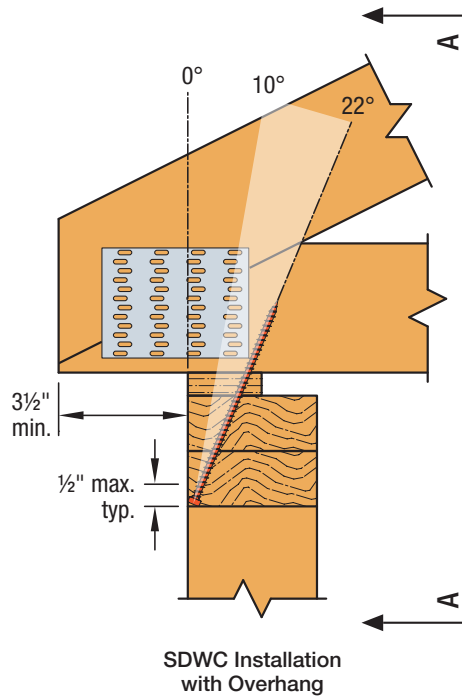
Strong-Drive SDWC15600-KT contains:

- (50) Strong-Drive SDWC Truss screws
- (1) Matched-tolerance driver bit (Part no. BIT30T-2-RC3; also sold separately)
- (1) Metal installation guide tool
 - SDWC-GUIDE (for SDWC15600 only; also sold separately)

Strong-Drive SDWC15450B-KT and SDWC15600B-KT contains:

- (500) Strong-Drive SDWC Truss screws
- (2) Matched-tolerance driver bits (Part no. BIT30T-2-RC3; also sold separately)
- (2) Metal installation guide tools
 - SDWC-GUIDE (for SDWC15600 only; also sold separately)

Strong-Drive® SDWC TRUSS Screw (cont.)



Strong-Drive® SDW TRUSS-PLY and EWP-PLY Screws

The Strong-Drive SDW Truss-Ply and EWP-Ply screws are a 0.22"-diameter, high-strength structural screws specifically designed for fastening multi-ply members such as plated trusses, engineered-lumber products and solid sawn lumber. The Strong-Drive SDW Truss-Ply and EWP-Ply screws install with no predrilling and are available in optimized lengths for fastening 2-, 3- and 4-ply trusses or 1¾"-engineered lumber such as structural composite lumber (SCL). The Strong-Drive SDW Truss-Ply and EWP-Ply screws enable single-side fastening, while still allowing concurrent loading on both sides of the assembly to the full allowable head or point-side load of the fastener.

Features:

- Low-profile head for reduced interference during handling or installation of hardware on the assembly
- Patented Sawtooth™ point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- High shear values enable wider screw spacing
- Bold thread design firmly cinches plies together to close gaps in multi-ply assemblies
- Optimal screw lengths provide maximum penetration

Material: Heat-treated carbon steel

Finish: Black E-coat™

Codes: IAPMO-UES ER-192; City of L.A. RR25906

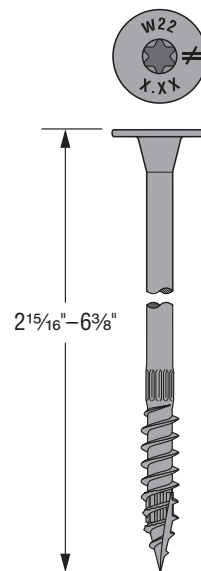
Warning: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, the Strong-Drive SDW Truss-Ply and EWP-Ply screws should only be used in dry, interior and non-corrosive environments.

Installation:

- Use all specified fasteners; see General Notes.
- Strong-Drive SDW Truss-Ply and EWP-Ply screws install best with a low-speed ½" drill motor and a T-40 6-lobe bit. The matched bit included with the screws is recommended for best results.
- Predrilling is typically not required. Strong-Drive SDW Truss-Ply and EWP-Ply screws may be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Section 8.9.2 are met (predrilling required through the plate using a maximum of ⅝" bit).
- Screw heads that are countersunk flush to the wood surface are acceptable if the screw has not spun out.
- Individual screw locations may be adjusted up to 3" to avoid conflicts with other hardware or to avoid lumber defects.

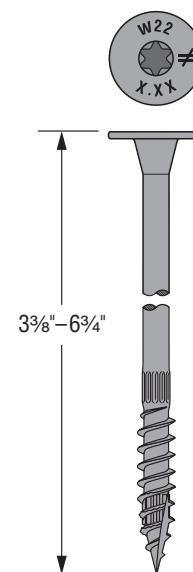
Notes to the Designer:

1. Single-fastener shear loads and withdrawal loads in this section, are based on testing per ICC-ES AC233. Allowable withdrawal load for DF/SP/SCL is 200 lb./in. and for SPF/HF withdrawal is 150 lb./in. of thread length penetration into the main member. Total allowable withdrawal load is based on actual thread penetration into the main member.
2. Allowable loads in tables are shown at the load duration factor of $C_D = 1.00$ and shall be multiplied by all applicable adjustment factors per the NDS. Loads may be increased for load duration per the building code up to a C_D of 1.6.
3. Minimum fastener spacing requirements: 6" end distance, 1⅞" edge distance, ⅝" between staggered rows of fasteners, 4" between non-staggered rows of fasteners and 6" between fasteners in a row.
4. Maximum fastener spacing is recommended not to exceed 24" on-center except as approved by a qualified Designer.
5. Structural composite lumber (SCL = LVL, PSL or LSL) loads assume an equivalent Specific Gravity of 0.50 or higher for fastener shear in the wide face (unless otherwise noted).
6. Tabular loads in this document are based on the capacity of the Simpson Strong-Tie Strong-Drive SDW Truss-Ply and EWP-Ply screws. The capacity of the multi-ply assembly must be checked by a qualified Designer.
7. For a top-loaded, solid sawn 2x, multi-ply assembly that is evenly loaded across the entire assembly width, the recommended fastener detail is two rows of SDW screws where the spacing between fasteners in a row is 32". For a top-loaded, SCL (1¾") multi-ply assembly that is evenly loaded across the entire assembly width, the recommended spacing between SDW screws in a row is 24" o.c.; use two rows for up to 18" deep members and three rows for members deeper than 18".



Strong-Drive SDW TRUSS-PLY Screw

U.S. Patent 9,523,383



Strong-Drive SDW EWP-PLY Screw

U.S. Patent 9,523,383



T-40 Driver Bit
(included)
BIT40-R1

Strong-Drive® SDW TRUSS-PLY and EWP-PLY Screws (cont.)

Product Information

Model No. ^{2,3}	Head Stamp Length	Nominal Screw Length (L) (in.)	Typical Application ¹	Thread Length (TL) (in.)	Retail Box ³ Quantity (1 Bit)	Retail Boxes/ Carton	Mini-Bulk Bucket Quantity ² (1 Bit)	Bulk Bucket Quantity (2 Bits)
SDW22300	3.00	2 ¹⁵ / ₁₆	2x/Truss	1 ⁷ / ₁₆	50	6	250	950
SDW22338	3.37	3 ⁹ / ₁₆	SCL	1 ⁷ / ₁₆	50	6	250	900
SDW22438 ⁴	4.37	4 ⁹ / ₁₆	2x/Truss Desert	1 ⁷ / ₁₆	50	4	200	600
SDW22458 ⁴	4.62	4 ⁹ / ₁₆	2x/Truss	1 ⁷ / ₁₆	50	4	200	600
SDW22500	5.00	5	SCL/3x2PCT	1 ⁷ / ₁₆	50	4	200	600
SDW22600 ⁵	6.00	6	2x/Truss Desert	1 ⁷ / ₁₆	50	4	200	500
SDW22638 ⁵	6.37	6 ⁹ / ₁₆	2x/Truss	1 ⁷ / ₁₆	50	4	200	500
SDW22634	6.75	6 ³ / ₄	SCL/4x2PCT	1 ⁷ / ₁₆	50	4	200	500

1. Typical screw application key:

2x/Truss = Solid sawn dimensional lumber and plated wood trusses.

2x/Truss Desert = Solid sawn dimensional lumber and plated wood trusses in desert environments (scant lumber).

SCL = 1³/₄" plies of structural-composite lumber.SCL/3x2PCT = 1³/₄" plies of structural-composite lumber or double 3x2 parallel-chord trusses.SCL/4x2PCT = 1³/₄" or 3¹/₂" plies of structural-composite lumber or double 4x2 parallel-chord trusses.

2. To order mini-bulk buckets add the letters MB to the model number, e.g. SDW22458MB.

3. To order retail pack boxes add "R50" to the model number, e.g. SDW22458-R50.

4. If assembly is less than or equal to 4⁹/₁₆" thick, use the SDW22438.5. If assembly is less than or equal to 6⁹/₁₆" thick, use the SDW22600.

Table 1 — Strong-Drive SDW Truss-Ply and EWP-Ply Screws Allowable Shear Loads — DF, SP, SPF, HF Lumber and 2x Truss Loaded on Head Side

Assembly	Model No.	Nominal Screw Length (in.)	Thread Length (in.)	Nominal Side Member Thickness (in.)	Main Member Penetration (in.)	DF/SP Allowable Shear	SPF/HF Allowable Shear	Code Ref.
2-ply 2x/Truss	SDW22300	2 ¹⁵ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	1 ³ / ₈ ¹	325	255	IP4, FL, L23
3-ply 2x/Truss desert	SDW22438	4 ⁹ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	2 ⁷ / ₈	400	325	
3-ply 2x/Truss	SDW22458	4 ⁹ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	2 ⁷ / ₈	400	325	
4-ply 2x/Truss desert	SDW22600	6	1 ⁷ / ₁₆	1 ¹ / ₂	4 ¹ / ₂	400	340	
4-ply 2x/Truss	SDW22638	6 ⁹ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	4 ¹ / ₂	400	340	

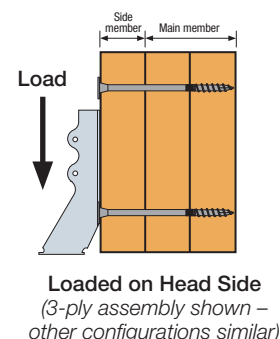
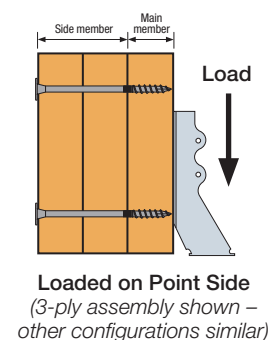
1. For minimum penetration into main member of 1¹/₈", use 235 lb. for DF/SP and 210 lb. for SPF/HF.

Table 2 — Strong-Drive SDW Truss-Ply and EWP-Ply Screws Allowable Shear Loads — DF, SP, SPF, HF Lumber and 2x Truss Loaded on Point Side

Assembly	Model No.	Nominal Screw Length (in.)	Thread Length (in.)	Nominal Side Member Thickness (in.)	Main Member Penetration (in.)	DF/SP Allowable Shear	SPF/HF Allowable Shear	Code Ref.
2-ply 2x/Truss	SDW22300	2 ¹⁵ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	1 ³ / ₈ ¹	325	255	IP4, FL
3-ply 2x/Truss desert	SDW22438	4 ⁹ / ₁₆	1 ⁷ / ₁₆	3	1 ³ / ₈ ¹	275	255	
3-ply 2x/Truss	SDW22458	4 ⁹ / ₁₆	1 ⁷ / ₁₆	3	1 ³ / ₈ ¹	275	255	
4-ply 2x/Truss desert	SDW22600	6	1 ⁷ / ₁₆	4 ¹ / ₂	1 ³ / ₈ ¹	275	255	
4-ply 2x/Truss	SDW22638	6 ⁹ / ₁₆	1 ⁷ / ₁₆	4 ¹ / ₂	1 ³ / ₈ ¹	275	255	

1. For minimum penetration into main member of 1¹/₈", use 235 lb. for DF/SP and 210 lb. for SPF/HF.

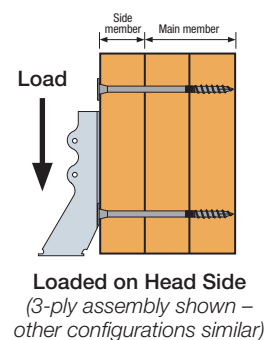
Strong-Drive® SDW TRUSS-PLY and EWP-PLY Screws (cont.)**Lumber Fastening in Dry Climates**

The highlighted regions on this map may experience drier conditions which can result in reduced lumber thickness (scant lumber) due to wood shrinkage. To help ensure optimum thread penetration into the main outermost member without excessive protrusion, Simpson Strong-Tie offers the 4 $\frac{3}{8}$ " and 6" lengths of the SDW screw, which are sized for the thinner members common in these "desert" climates (see table above). It is the responsibility of the Truss Manufacturer or contractor/installer to determine the appropriate fastener length for any given application. (See tables and footnotes for minimum required penetration.)

**Table 3 — Strong-Drive SDW Truss-Ply and EWP-Ply Screws
Allowable Shear Loads — LVL, PSL and LSL Loaded on Head Side**

Assembly	Model No.	Nominal Screw Length (in.)	Thread Length (in.)	Nominal Side Member Thickness (in.)	Main Member Penetration (in.)	Equivalent Specific Gravity 0.50 Allowable Shear	Equivalent Specific Gravity 0.42 Allowable Shear	Code Ref.
2-ply 1 $\frac{3}{4}$ " SCL	SDW22338	3 $\frac{3}{8}$	1 $\frac{1}{16}$	1 $\frac{3}{4}$	1 $\frac{5}{8}$ ¹	400	255	IP4, FL
3-ply 1 $\frac{3}{4}$ " SCL	SDW22500	5	1 $\frac{1}{16}$	1 $\frac{3}{4}$	3 $\frac{1}{4}$	400	325	
4-ply 1 $\frac{3}{4}$ " SCL	SDW22634	6 $\frac{3}{4}$	1 $\frac{1}{16}$	1 $\frac{3}{4}$	5	400	385	
2-ply 3 $\frac{1}{2}$ " SCL	SDW22634	6 $\frac{3}{4}$	1 $\frac{1}{16}$	3 $\frac{1}{2}$	3 $\frac{1}{4}$	400	—	

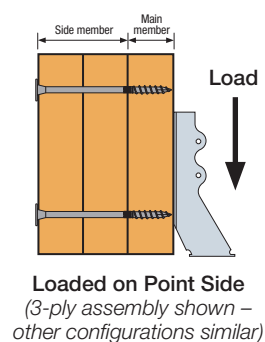
1. For minimum penetration into main outermost member of 1 $\frac{1}{2}$ ", use 300 lb.



**Table 4 — Strong-Drive SDW Truss-Ply and EWP-Ply Screws
Allowable Shear Loads — LVL, PSL and LSL Loaded on Point Side**

Assembly	Model No.	Nominal Screw Length (in.)	Thread Length (in.)	Nominal Side Member Thickness (in.)	Main Member Penetration (in.)	Equivalent Specific Gravity 0.50 Allowable Shear	Equivalent Specific Gravity 0.42 Allowable Shear	Code Ref.
2-ply 1 $\frac{3}{4}$ " SCL	SDW22338	3 $\frac{3}{8}$	1 $\frac{1}{16}$	1 $\frac{3}{4}$	1 $\frac{5}{8}$ ¹	400	255	IP4, FL
3-ply 1 $\frac{3}{4}$ " SCL	SDW22500	5	1 $\frac{1}{16}$	3 $\frac{1}{2}$	1 $\frac{1}{2}$	300	255	170
4-ply 1 $\frac{3}{4}$ " SCL	SDW22634	6 $\frac{3}{4}$	1 $\frac{1}{16}$	5 $\frac{1}{4}$	1 $\frac{1}{2}$	300	255	
2-ply 3 $\frac{1}{2}$ " SCL	SDW22634	6 $\frac{3}{4}$	1 $\frac{1}{16}$	3 $\frac{1}{2}$	3 $\frac{1}{4}$	400	—	IP4, FL

1. For minimum penetration into main member of 1 $\frac{1}{2}$ ", use 300 lb.

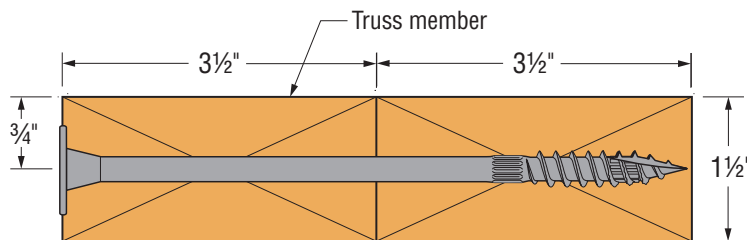


Strong-Drive® SDW TRUSS-PLY and EWP-PLY Screws (cont.)

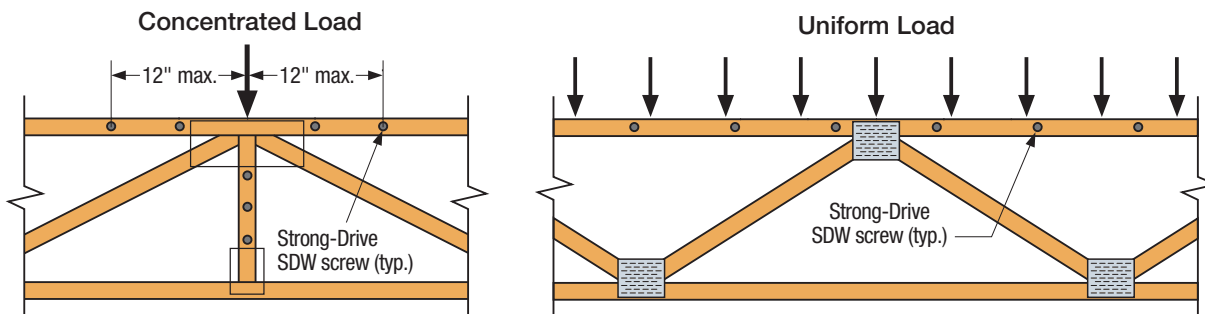
Table 5 — Strong-Drive SDW Truss-Ply and EWP-Ply Screws Allowable Shear Loads —
Two-Ply 3x2 / 4x2 Parallel-Chord Trusses Loaded on Either Side

Assembly	Model No.	Nominal Screw Length (in.)	DF/SP Allowable Shear	SPF/HF Allowable Shear	Code Ref.
2-ply 3x2 PCT	SDW22500	5	280	200	170
2-ply 4x2 PCT	SDW22634	6¾	280	200	
	SDW22638	6¾			
	SDS25600	6			

- To transfer uniform or concentrated loads applied to simply supported spans on assembly top chord:
 - Space screws as required to transfer half the load into the supporting truss.
 - Minimum screw spacing shall be 4" o.c.
- To transfer concentrated loads applied to simply supported spans on an assembly top chord or vertical web:
 - Concentrated loads must be applied at a panel point.
 - Screws to be installed within 12" of the concentrated load on top-chord assembly
- Gap between the trusses shall not exceed ¼".
- Floor sheathing shall be screwed or nailed to each top-chord ply.
(Fastener spacing per the applicable Code requirements, or 12" o.c.)
- Strong-Drive SDW screws shall not be installed in areas where lumber wane exceeds ¼".
- Hangers on skewed girders:
 - Hanger loads not exceeding 34" o.c. on a skewed girder (resulting from uniformly spaced joists up to 24" o.c.) may be converted to a uniform load.
 - For girders with hanger load spacing in excess of 34" o.c. the loads shall be considered as concentrated loads at the applicable locations.
- Other configurations acceptable as long as approved by Truss Designer.



**Strong-Drive SDW Screw Position
in 2-Ply 4x2 Truss**
(SDS in 2-ply 4x2 truss and
SDW in 2-ply 3x2 truss similar)



Strong-Drive® SDW TRUSS-PLY and EWP-PLY Screws (cont.)

Table 6 — Strong-Drive SDW Truss-Ply Screws Allowable Uniform Load Applied to Either Outside Member — Side-Loaded Multi-Ply Assemblies

Multiple Members		Nominal Screw Length (in.)	Loaded Side	DF/SP						SPF/HF					
				12" o.c.		16" o.c.		24" o.c.		12" o.c.		16" o.c.		24" o.c.	
Assembly	Components			2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows
A-W	2-ply 2x/Truss	2 1/4"	Either	1,300	1,950	975	1,465	650	975	1,020	1,530	765	1,150	510	765
B-W	3-ply 2x/Truss	4% or 4 1/4"	Head	1,200	1,800	900	1,350	600	900	975	1,465	730	1,095	490	730
			Point	825	1,240	620	930	415	620	765	1,150	575	860	385	575
C-W	4-ply 2x/Truss	6 or 6 1/4"	Head	1,065	1,600	800	1,200	535	800	905	1,360	680	1,020	455	680
			Point	735	1,100	550	825	365	550	680	1,020	510	765	340	510

1. Each ply is assumed to carry same proportion of load.

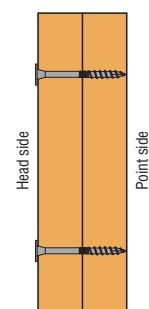
2. Loads may be applied to the head side and point side concurrently provided neither published allowable load is exceeded. (Example: a 3-ply DF assembly with a head side load of 1,300 plf and point side load of 900 plf may be fastened together with three rows of SDW @ 16" o.c. between fasteners in a row.)

3. When hangers are installed on point side, hanger face fasteners must be a minimum of 3" long.

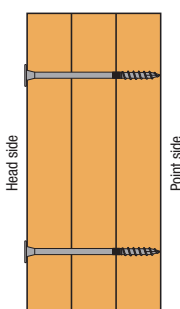
4. Tables are based on Main Member Penetration as noted in Tables 1 and 2.

5. Hanger load spacing on the multi-ply assembly should not exceed 24" o.c.

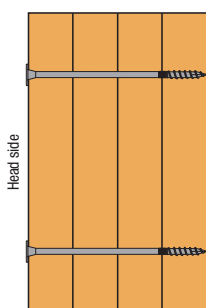
Exception: On a skewed girder, hanger loads up to 34" o.c. (resulting from joists uniformly spaced up to 24" o.c.) may be converted to a uniform load.



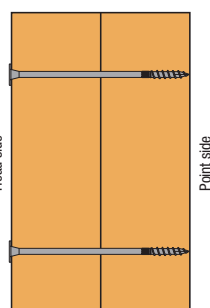
Assembly A-W



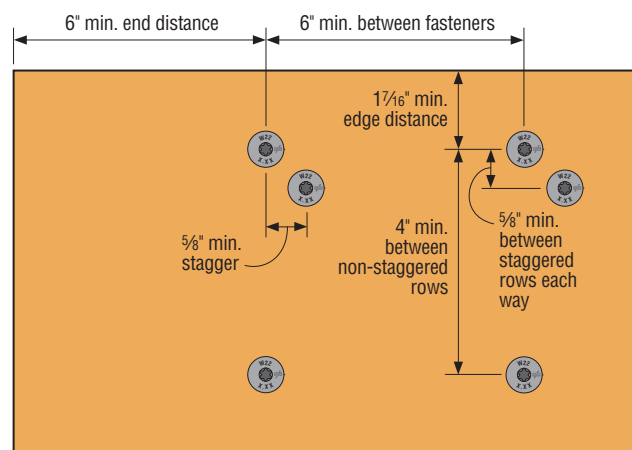
Assembly B-W



Assembly C-W



Assembly F-W



Spacing Requirements

Table 7 — Strong-Drive SDW EWP-Ply Screws Allowable Uniform Load Applied to Either Outside Member — Side-Loaded Multi-Ply LVL, PSL and LSL Assemblies

Multiple Members		Nominal Screw Length (in.)	Loaded Side	Shear per Screw (lb.)	12" o.c.		16" o.c.		24" o.c.	
					2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows
A	2-ply LVL	3 3/4"	Either	400	1,600	2,400	1,200	1,800	800	1,200
B	3-ply LVL	5	Head	400	1,200	1,800	900	1,350	600	900
			Tip	300	900	1,350	675	1,015	450	675
C	4-ply LVL	6 3/4"	Head	400	1,065	1,600	800	1,200	535	800
			Tip	300	800	1,200	600	900	400	600
F	2-ply 3 1/2" SCL	6 3/4"	Either	400	1,600	2,400	1,200	1,800	800	1,200

1. Each ply is assumed to carry same proportion of load.

2. Loads may be applied to the head side and point side concurrently provided neither published allowable load is exceeded. (Example: a 3-ply assembly with a head side load of 1,300 plf and point side load of 1,000 plf may be fastened together with three rows of SDW @ 16" o.c. between fasteners in a row.)

3. When hangers are installed on point side, hanger face fasteners must be a minimum of 3" long.

4. Tables are based on Main Member Penetration as noted in single-fastener load tables 3 and 4.

Strong-Drive® SDW TRUSS-PLY and EWP-PLY Screws (cont.)**SDW-Built-Up Column Assemblies**

Built-up column assemblies shown in this section determine the *Column Stability Coefficient*, K_f , when fastened using SDW Truss-Ply screws. For use with Section 15.3.2 of the 2012 and 2015 National Design Specification (NDS), the table provides Strong-Drive SDW Truss-Ply screw substitution information to replace nails or bolts in built-up columns per Section 15.3.3 and 15.3.4 of NDS.

Design Parameters for Built-Up Columns using SDW Truss-Ply screws:

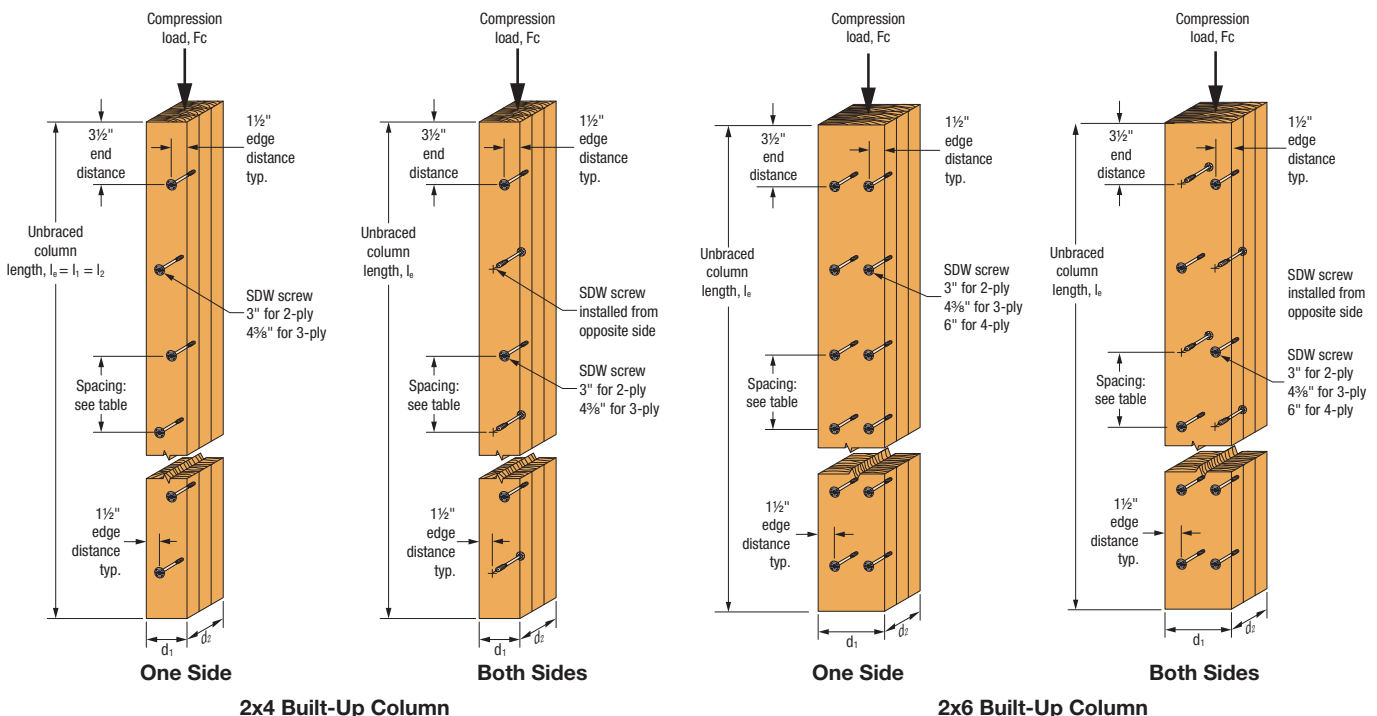
- $K_f = 0.60$ for SDW installed on one side
- $K_f = 0.70$ for SDW installed on both sides
- $l_e/d \leq 50$
- Each lamination (ply) has a rectangular cross-section and is at least 1 1/2" thick
- All laminations have same face width, d_1
- Faces of adjacent laminations are in contact
- All laminations are full length
- Number of laminations: 2 to 4

SDW Truss-Ply Screw Substitution Table for NDS Specifications

No. of Plies	Minimum Nominal Lumber Size (in.)	NDS Specification				SDW Truss-Ply Screw Substitution			
		Fastener ¹	NDS Reference	Installation	Spacing (in.)	Model No.	Description	Installation	Spacing (in.)
2	2 x 4	10d	Figure 15C	Both sides	6	SDW22300	0.22" dia. x 3" long screw	One side	6
								Both sides	8
3	2 x 4	30d	Figure 15C	Both sides	8	SDW22438	0.22" dia. x 4⅝" long screw	One side	8
	Both sides							9	
	2 x 6							One side	9
								Both sides	10
4	2 x 6	½" bolts	Figure 15D	One side	8	SDW22600	0.22" dia. x 6" long screw	One side	7
								Both sides	8

1. **Nails:** 10d = 0.148" dia. x 3" long, 30d = 0.207" dia. x 4 1/2" long.

2. **Bolts:** 1/2" bolts = 1/2" bolts with a washer between the wood and the bolt head and between the wood and the nut.



Strong-Drive® SDW TRUSS-PLY and EWP-PLY Screws (cont.)

Allowable Compression Capacity for Built-Up Columns

Lumber		Fastener			Allowable Compression Capacity Parallel to Grain, F _c ' (lb.)																			
Size	No. of Plies	Model Number	Spacing	Installation	Floor (100)					Snow (115)					Roof (125)					Wind/Seismic (160)				
					Unbraced Length, ℓ _e (ft.)					Unbraced Length, ℓ _e (ft.)					Unbraced Length, ℓ _e (ft.)					Unbraced Length, ℓ _e (ft.)				
					8	9	10	11	12	8	9	10	11	12	8	9	10	11	12	8	9	10	11	12
Southern Pine No. 2																								
2x4	2	SDW22300	6	One side	2,405	1,935	1,585	1,320	1,115	2,435	1,950	1,595	1,325	1,120	2,445	1,955	1,600	1,330	1,120	2,480	1,975	1,610	1,335	1,125
				Both sides	2,810	2,255	1,850	1,540	1,300	2,840	2,275	1,860	1,545	1,305	2,855	2,285	1,865	1,550	1,310	2,890	2,305	1,880	1,560	1,315
	3	SDW22438	8	One side	7,145	5,960	4,995	4,225	3,610	7,395	6,105	5,085	4,285	3,650	7,525	6,180	5,130	4,315	3,670	7,835	6,360	5,240	4,385	3,715
				Both sides	7,930	6,430	5,295	4,430	3,755	8,060	6,505	5,345	4,460	3,775	8,130	6,545	5,370	4,475	3,785	8,290	6,640	5,430	4,515	3,810
	4	SDW22600	6	One side	10,575	8,575	7,065	5,905	5,005	10,750	8,675	7,125	5,945	5,030	10,840	8,725	7,160	5,970	5,045	11,055	8,855	7,235	6,020	5,080
				Both sides	10,575	8,575	7,065	5,905	5,005	10,750	8,675	7,125	5,945	5,030	10,840	8,725	7,160	5,970	5,045	11,055	8,855	7,235	6,020	5,080
2x6	2	SDW22300	6	One side	3,770	3,035	2,485	2,070	1,750	3,815	3,055	2,500	2,080	1,760	3,835	3,070	2,510	2,085	1,760	3,890	3,100	2,530	2,100	1,770
				Both sides	4,400	3,540	2,900	2,415	2,040	4,450	3,565	2,920	2,430	2,050	4,475	3,580	2,925	2,435	2,055	4,535	3,620	2,950	2,450	2,065
	3	SDW22438	8	One side	11,120	9,300	7,815	6,615	5,655	11,530	9,540	7,960	6,710	5,720	11,745	9,665	8,035	6,760	5,750	12,250	9,955	8,215	6,875	5,830
				Both sides	12,975	10,850	9,115	7,720	6,600	13,450	11,130	9,285	7,830	6,675	13,700	11,275	9,375	7,885	6,710	14,290	11,615	9,585	8,025	6,805
	4	SDW22600	8	One side	20,575	18,380	16,200	14,180	12,400	22,215	19,490	16,920	14,655	12,720	23,130	20,080	17,300	14,900	12,885	25,515	21,545	18,215	15,490	13,275
				Both sides	24,005	21,445	18,895	16,545	14,470	25,915	22,735	19,740	17,100	14,840	26,990	23,430	20,185	17,385	15,035	29,765	25,140	21,250	18,070	15,490
2x8	2	SDW22300	6	One side	4,955	3,990	3,270	2,725	2,305	5,015	4,020	3,290	2,740	2,315	5,045	4,040	3,305	2,750	2,320	5,115	4,085	3,330	2,765	2,330
				Both sides	5,780	4,655	3,815	3,180	2,690	5,850	4,690	3,840	3,195	2,700	5,885	4,715	3,855	3,205	2,705	5,970	4,765	3,885	3,225	2,720
	3	SDW22438	8	One side	14,505	12,170	10,245	8,685	7,430	15,070	12,500	10,445	8,815	7,520	15,360	12,670	10,550	8,885	7,565	16,065	13,075	10,800	9,045	7,675
				Both sides	16,920	14,200	11,950	10,135	8,670	17,580	14,585	12,185	10,285	8,775	17,920	14,780	12,310	10,365	8,825	18,740	15,255	12,600	10,550	8,955
	4	SDW22600	8	One side	26,540	23,825	21,080	18,510	16,225	28,735	25,325	22,070	19,165	16,665	29,970	26,140	22,595	19,505	16,895	33,215	28,155	23,855	20,315	17,435
				Both sides	30,965	27,795	24,590	21,595	18,930	33,520	29,550	25,750	22,360	19,445	34,970	30,495	26,360	22,755	19,710	38,750	32,845	27,830	23,705	20,340
Spruce-Pine-Fir No. 1/No. 2																								
2x4	2	SDW22300	6	One side	2,385	1,925	1,575	1,315	1,110	2,415	1,940	1,590	1,320	1,115	2,430	1,950	1,595	1,325	1,120	2,465	1,970	1,605	1,335	1,125
				Both sides	2,785	2,245	1,840	1,535	1,295	2,820	2,265	1,850	1,540	1,305	2,835	2,275	1,860	1,545	1,305	2,880	2,300	1,875	1,555	1,315
	3	SDW22438	8	One side	6,955	5,850	4,930	4,185	3,580	7,235	6,015	5,030	4,250	3,625	7,380	6,095	5,080	4,280	3,645	7,730	6,300	5,205	4,360	3,700
				Both sides	7,830	6,375	5,260	4,405	3,735	7,980	6,460	5,315	4,440	3,760	8,055	6,500	5,340	4,460	3,775	8,235	6,610	5,405	4,500	3,805
	4	SDW22600	6	One side	10,445	8,495	7,015	5,875	4,985	10,640	8,610	7,085	5,920	5,015	10,740	8,670	7,120	5,945	5,030	10,980	8,810	7,210	6,000	5,070
				Both sides	10,445	8,495	7,015	5,875	4,985	10,640	8,610	7,085	5,920	5,015	10,740	8,670	7,120	5,945	5,030	10,980	8,810	7,210	6,000	5,070
2x6	2	SDW22300	6	One side	3,735	3,010	2,470	2,060	1,745	3,785	3,040	2,490	2,075	1,755	3,810	3,055	2,500	2,080	1,755	3,870	3,090	2,520	2,095	1,765
				Both sides	4,360	3,515	2,885	2,405	2,035	4,415	3,545	2,905	2,420	2,045	4,445	3,565	2,915	2,425	2,050	4,515	3,605	2,940	2,445	2,060
	3	SDW22438	8	One side	10,780	9,100	7,690	6,535	5,605	11,240	9,370	7,855	6,645	5,675	11,480	9,510	7,945	6,700	5,710	12,060	9,850	8,150	6,835	5,800
				Both sides	12,575	10,615	8,970	7,625	6,535	13,115	10,935	9,165	7,750	6,620	13,395	11,100	9,265	7,815	6,665	14,070	11,490	9,505	7,970	6,770
4	SDW22600	8	One side	19,335	17,500	15,600	13,780	12,130	21,035	18,700	16,410	14,320	12,495	22,010	19,355	16,835	14,600	12,685	24,600	20,995	17,875	15,270	13,130	
			Both sides	22,555	20,420	18,200	16,075	14,155	24,540	21,815	19,140	16,705	14,580	25,675	22,580	19,640	17,030	14,795	28,700	24,495	20,850	17,815	15,320	
2x8	2	SDW22300	6	One side	4,900	3,955	3,250	2,715	2,295	4,965	3,995	3,275	2,730	2,305	5,000	4,015	3,290	2,735	2,315	5,085	4,065	3,320	2,760	2,325
				Both sides	5,715	4,615	3,790	3,165	2,680	5,795	4,660	3,820	3,185	2,690	5,835	4,685	3,835	3,195	2,700	5,935	4,745	3,870	3,220	2,715
	3	SDW22438	8	One side	13,980	11,860	10,050	8,565	7,350	14,625	12,240	10,285	8,715	7,450	14,960	12,440	10,410	8,790	7,505	15,775	12,910	10,695	8,980	7,630
				Both sides	16,310	13,835	11,730	9,990	8,575	17,060	14,280	12,000	10,165	8,695	17,455	14,510	12,145	10,260	8,755	18,405	15,060	12,480	10,475	8,900
	4	SDW22600	8	One side	24,725	22,510	20,175	17,900	15,810	26,990	24,140	21,290	18,650	16,320	28,300	25,040	21,885	19,045	16,585	31,835	27,315	23,335	19,985	17,210
				Both sides	28,850	26,265	23,540	20,885	18,445	31,490	28,165	24,840	21,760	19,040	33,020	29,210	25,530	22,215	19,350	37,140	31,865	27,225	23,315	20,080

1. Adjustment factors: $[C_M, C_t, C_i] = 1.0$. For C_F refer to NDS, Table 4A.

2. For LRFD, see NDS, Section 4.3.

3. Compression perpendicular to grain has not been evaluated.

4. All SDW screws have an E-coat®. Simpson Strong-Tie has conducted testing per Acceptance Criteria AC257, showing in dry conditions E-coat performs equivalent to hot-dip galvanized (HDG) coating.

5. For fire-retardant-treated (FRT) wood, additional reduction factors may need to be applied based on the manufacturer's recommendations.

6. The column capacities are evaluated for column being completely unbraced in both strong and weak axis. $\ell_e = \ell_1 = \ell_2$.

*E-coat is a registered trademark of PPG Industries.

Strong-Drive® SDW TRUSS-PLY and EWP-PLY Screws (cont.)

Allowable Compression Capacity for Built-Up Columns

Lumber		Fastener			Allowable Compression Capacity Parallel to Grain, F _c ' (lb.)																			
Size	No. of Plies	Model Number	Spacing	Installation	Floor (100)					Snow (115)					Roof (125)					Wind/Seismic (160)				
					Unbraced Length, ℓ _e (ft.)					Unbraced Length, ℓ _e (ft.)					Unbraced Length, ℓ _e (ft.)					Unbraced Length, ℓ _e (ft.)				
					8	9	10	11	12	8	9	10	11	12	8	9	10	11	12	8	9	10	11	12
Douglas-Fir Larch No. 2																								
2x4	2	SDW22300	6	One side	2,725	2,190	1,795	1,495	1,265	2,755	2,210	1,810	1,505	1,270	2,770	2,220	1,815	1,510	1,275	2,810	2,245	1,830	1,520	1,280
				Both sides	3,175	2,555	2,095	1,745	1,475	3,215	2,580	2,110	1,755	1,485	3,235	2,590	2,115	1,760	1,485	3,280	2,615	2,135	1,770	1,495
	3	SDW22438	8	One side	7,990	6,695	5,635	4,775	4,085	8,295	6,875	5,745	4,845	4,130	8,455	6,970	5,800	4,880	4,155	8,835	7,185	5,935	4,970	4,215
				Both sides	8,950	7,270	6,000	5,020	4,255	9,110	7,365	6,055	5,055	4,280	9,190	7,410	6,085	5,075	4,295	9,390	7,530	6,160	5,125	4,330
	4	SDW22600	6	One side	11,930	9,695	7,995	6,695	5,675	12,145	9,820	8,075	6,745	5,710	12,255	9,880	8,115	6,770	5,725	12,520	10,035	8,210	6,835	5,770
				Both sides	11,930	9,695	7,995	6,695	5,675	12,145	9,820	8,075	6,745	5,710	12,255	9,880	8,115	6,770	5,725	12,520	10,035	8,210	6,835	5,770
2x6	2	SDW22300	6	One side	4,260	3,435	2,815	2,350	1,985	4,315	3,465	2,835	2,360	1,995	4,340	3,480	2,845	2,370	2,000	4,405	3,520	2,870	2,385	2,010
				Both sides	4,970	4,005	3,285	2,740	2,320	5,035	4,040	3,310	2,755	2,330	5,065	4,060	3,320	2,765	2,335	5,140	4,105	3,350	2,780	2,345
	3	SDW22438	8	One side	12,385	10,425	8,790	7,465	6,390	12,890	10,720	8,975	7,580	6,470	13,155	10,875	9,065	7,640	6,510	13,790	11,240	9,290	7,785	6,610
				Both sides	14,450	12,160	10,255	8,710	7,455	15,040	12,510	10,470	8,845	7,550	15,345	12,685	10,580	8,915	7,595	16,085	13,115	10,840	9,085	7,710
	4	SDW22600	8	One side	22,435	20,225	17,960	15,820	13,895	24,350	21,555	18,850	16,410	14,295	25,440	22,280	19,320	16,715	14,500	28,315	24,085	20,455	17,445	14,985
				Both sides	26,170	23,595	20,955	18,455	16,215	28,405	25,145	21,990	19,145	16,675	29,675	25,990	22,540	19,500	16,915	33,035	28,095	23,860	20,355	17,485
2x8	2	SDW22300	6	One side	5,590	4,510	3,705	3,090	2,615	5,665	4,555	3,730	3,105	2,625	5,705	4,575	3,745	3,115	2,635	5,795	4,630	3,780	3,140	2,650
				Both sides	6,525	5,260	4,320	3,605	3,050	6,610	5,310	4,350	3,625	3,065	6,655	5,340	4,370	3,635	3,070	6,760	5,400	4,410	3,660	3,090
	3	SDW22438	8	One side	16,075	13,590	11,495	9,780	8,385	16,780	14,010	11,755	9,945	8,495	17,150	14,225	11,885	10,030	8,555	18,035	14,740	12,200	10,235	8,690
				Both sides	18,755	15,855	13,415	11,410	9,785	19,580	16,345	13,710	11,605	9,915	20,010	16,595	13,865	11,700	9,980	21,045	17,195	14,235	11,940	10,140
	4	SDW22600	8	One side	28,710	26,035	23,245	20,565	18,125	31,270	27,850	24,475	21,385	18,680	32,740	28,845	25,130	21,815	18,965	36,670	31,350	26,715	22,840	19,650
				Both sides	33,495	30,375	27,120	23,990	21,145	36,480	32,490	28,555	24,950	21,795	38,195	33,650	29,315	25,450	22,125	42,780	36,575	31,165	26,645	22,925
Hem-Fir No. 2																								
2x4	2	SDW22300	6	One side	2,235	1,795	1,465	1,220	1,030	2,260	1,805	1,475	1,225	1,035	2,270	1,810	1,480	1,230	1,035	2,295	1,830	1,490	1,235	1,040
				Both sides	2,610	2,095	1,710	1,425	1,205	2,635	2,105	1,720	1,430	1,205	2,645	2,115	1,725	1,435	1,210	2,675	2,130	1,735	1,440	1,215
	3	SDW22438	8	One side	6,775	5,600	4,670	3,940	3,355	6,975	5,715	4,745	3,985	3,385	7,075	5,775	4,780	4,010	3,405	7,320	5,920	4,865	4,065	3,440
				Both sides	7,410	5,985	4,915	4,105	3,475	7,510	6,045	4,955	4,130	3,490	7,565	6,075	4,975	4,140	3,500	7,695	6,150	5,020	4,175	3,520
	4	SDW22600	6	One side	9,875	7,975	6,555	5,475	4,635	10,015	8,060	6,605	5,505	4,655	10,085	8,100	6,630	5,525	4,665	10,260	8,200	6,695	5,565	4,695
				Both sides	9,875	7,975	6,555	5,475	4,635	10,015	8,060	6,605	5,505	4,655	10,085	8,100	6,630	5,525	4,665	10,260	8,200	6,695	5,565	4,695
2x6	2	SDW22300	6	One side	3,505	2,810	2,300	1,915	1,620	3,540	2,830	2,315	1,925	1,625	3,555	2,840	2,320	1,930	1,625	3,600	2,870	2,335	1,940	1,635
				Both sides	4,090	3,280	2,685	2,235	1,890	4,130	3,305	2,700	2,245	1,895	4,150	3,315	2,705	2,250	1,900	4,200	3,345	2,725	2,265	1,905
	3	SDW22438	8	One side	10,535	8,740	7,300	6,165	5,255	10,865	8,930	7,420	6,240	5,310	11,035	9,030	7,480	6,280	5,335	11,445	9,265	7,625	6,375	5,400
				Both sides	12,290	10,195	8,520	7,190	6,135	12,675	10,420	8,655	7,280	6,195	12,875	10,535	8,730	7,325	6,225	13,350	10,810	8,895	7,435	6,300
	4	SDW22600	8	One side	20,080	17,705	15,430	13,400	11,650	21,510	18,630	16,020	13,780	11,905	22,295	19,120	16,325	13,980	12,040	24,275	20,310	17,060	14,450	12,355
				Both sides	23,430	20,655	18,000	15,630	13,595	25,095	21,735	18,690	16,080	13,890	26,010	22,305	19,050	16,310	14,045	28,320	23,695	19,905	16,860	14,415
2x8	2	SDW22300	6	One side	4,605	3,695	3,025	2,520	2,130	4,650	3,725	3,045	2,535	2,140	4,675	3,740	3,055	2,540	2,145	4,735	3,775	3,075	2,555	2,155
				Both sides	5,370	4,315	3,530	2,940	2,485	5,425	4,345	3,550	2,955	2,495	5,455	4,365	3,565	2,960	2,500	5,525	4,405	3,590	2,980	2,510
	3	SDW22438	8	One side	13,720	11,425	9,570	8,085	6,905	14,185	11,695	9,735	8,195	6,975	14,425	11,830	9,815	8,250	7,015	14,995	12,160	10,020	8,380	7,100
				Both sides	16,005	13,325	11,160	9,435	8,055	16,550	13,640	11,355	9,560	8,140	16,830	13,805	11,455	9,625	8,180	17,495	14,190	11,690	9,775	8,285
	4	SDW22600	8	One side	25,810	22,890	20,050	17,470	15,230	27,745	24,170	20,875	18,010	15,590	28,820	24,850	21,300	18,285	15,775	31,560	26,510	22,330	18,945	16,215
				Both sides	30,115	26,705	23,390	20,385	17,770	32,370	28,195	24,350	21,010	18,190	33,620	28,990	24,850	21,335	18,405	36,820	30,930	26,055	22,105	18,920

1. Adjustment factors: $[C_M, C_t, C_i] = 1.0$. For C_F refer to NDS, Table 4A.

2. For LRFD, see NDS, Section 4.3.

3. Compression perpendicular to grain has not been evaluated.

4. All SDW screws have an E-coat®. Simpson Strong-Tie has conducted testing per Acceptance Criteria AC257, showing in dry conditions E-coat performs equivalent to hot-dip galvanized (HDG) coating.

5. For fire-retardant-treated (FRT) wood, additional reduction factors may need to be applied based on the manufacturer's recommendations.

6. The column capacities are evaluated for column being completely unbraced in both strong and weak axis. $\ell_e = l_1 = l_2$.

*E-coat is a registered trademark of PPG Industries.

Strong-Drive® SDWH TIMBER-HEX Screw

Ideal for structural and general-purpose fastening applications where a hex-head drive is preferred. The Strong-Drive SDWH Timber-Hex screw is ideal for the contractor and do-it-yourselfer alike. It is code listed under IAPMO-UES ER-192 and meets 2012 and 2015 IRC® and IBC® code requirements for several common wood framing applications.

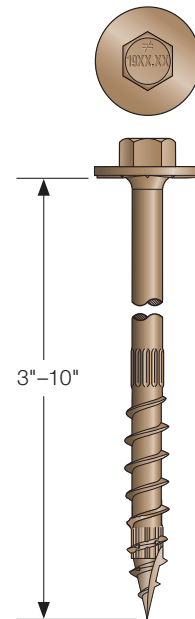
Features:

- Bold thread design provides superior holding power
- Patented Sawtooth™ point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- Underhead nibs offer greater control when seating the head
- Large washer head provides maximum bearing area (0.64" washer head diameter)
- Size identification on all SDWH screw heads
- 5/16" hex drive (replacement driver bit — BITHEXR516-134)

Material: Heat-treated carbon steel

Finish: 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.

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



**Strong-Drive SDWH
TIMBER-HEX Screw**
U.S. Patent 9,523,383

Product Information

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.
0.195 x 3	1½	12	10	SDWH19300DB-RC12	50	6	SDWH19300DB-R50	250	SDWH19300DBMB	1,000	SDWH19300DB
0.195 x 4	2¾	12	10	SDWH19400DB-RC12	50	6	SDWH19400DB-R50	250	SDWH19400DBMB	800	SDWH19400DB
0.195 x 6	2¾	12	10	SDWH19600DB-RC12	50	6	SDWH19600DB-R50	250	SDWH19600DBMB	600	SDWH19600DB
0.195 x 8	2¾	12	10	SDWH19800DB-RC12	50	6	SDWH19800DB-R50	250	SDWH19800DBMB	500	SDWH19800DB
0.195 x 10	2¾	12	10	SDWH191000DBRC12	50	6	SDWH191000DB-R50	—	—	250	SDWH191000DB

Retail and mini-bulk packs include one 5/16" hex driver bit; bulk packs include two driver bits.

Strong-Drive® SDWH TIMBER-HEX Screw (cont.)**SDWH — Allowable Shear Loads — Douglas Fir-Larch and Southern Pine Lumber**

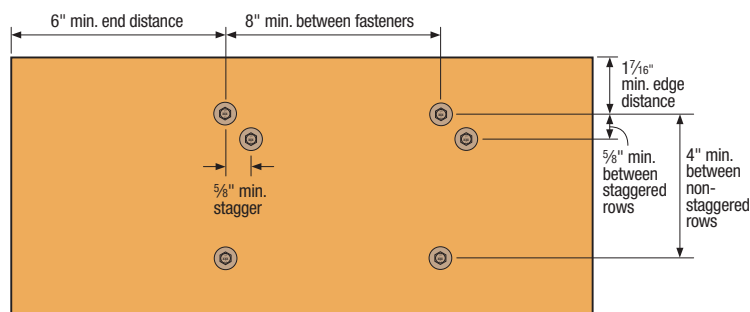
Size (dia. x length) (in.)	Model No.	Thread Length (in.)	DF/SP Allowable Shear Loads (lb.)									
			Wood Side Member Thickness (in.)									
			1.5	2	2.5	3	3.5	4	4.5	6	8	
0.195 x 3	SDWH19300DB	1½	285	—	—	—	—	—	—	—	—	—
0.195 x 4	SDWH19400DB	2¾	370	300	300	—	—	—	—	—	—	—
0.195 x 6	SDWH19600DB	2¾	370	265	265	265	265	245	245	—	—	—
0.195 x 8	SDWH19800DB	2¾	370	265	265	265	265	265	260	245	—	—
0.195 x 10	SDWH191000DB	2¾	370	265	265	265	265	265	260	260	245	245

See footnotes below.

SDWH — Allowable Shear Loads — Spruce-Pine-Fir and Hem-Fir Lumber

Size (dia. x length) (in.)	Model No.	Thread Length (in.)	SPF/HF Allowable Shear Loads (lb.)									
			Wood Side Member Thickness (in.)									
			1.5	2	2.5	3	3.5	4	4.5	6	8	
0.195 x 3	SDWH19300DB	1½	230	—	—	—	—	—	—	—	—	—
0.195 x 4	SDWH19400DB	2¾	330	235	195	—	—	—	—	—	—	—
0.195 x 6	SDWH19600DB	2¾	350	265	265	265	265	215	180	—	—	—
0.195 x 8	SDWH19800DB	2¾	350	265	265	265	265	265	215	215	—	—
0.195 x 10	SDWH191000DB	2¾	350	265	265	265	265	265	250	250	215	215

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: 6" end distance, 1½" edge distance, 5/8" between staggered rows of fasteners, 4" between non-staggered rows of fasteners and 8" between fasteners in a row.
4. For in-service moisture content greater than 19%, use $C_M = 0.7$.
5. Loads are based on installation into the side grain of the wood with the screw axis perpendicular to the face of the member.

**SDWH Spacing Requirements****SDWH — Allowable Withdrawal Loads — Douglas Fir-Larch, Southern Pine, Spruce-Pine-Fir and Hem-Fir Lumber**

Size (dia. x length) (in.)	Model No.	Fastener Length (in.)	Thread Length (in.)	Reference Withdrawal Design Value, W (lb./in.)		Max. Reference Withdrawal Design Value, W _{Max} (lb.)	
				DF and SP Main Member	HF and SPF Main Member	DF and SP Main Member	HF and SPF Main Member
0.195 x 3	SDWH19300DB	3	1½	177	120	265	180
0.195 x 4	SDWH19400DB	4	2¾	192	147	455	350
0.195 x 6	SDWH19600DB	6	2¾	197	164	545	445
0.195 x 8	SDWH19800DB	8	2¾	197	164	545	445
0.195 x 10	SDWH191000DB	10	2¾	197	164	545	445

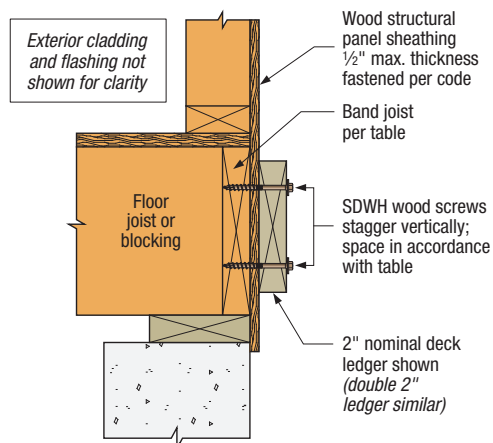
1. The tabulated reference withdrawal design value, W, is in pounds per inch of the thread penetration into the side grain of the main member.
2. The tabulated reference withdrawal design value, W_{Max}, is in pounds where the entire thread length must penetrate into the side grain of the main member.
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. Embedded thread length is that portion held in the main member including the screw point.
5. Values are based on the lesser of withdrawal from the main member or pull-through of a 1½" side member.
6. For in-service moisture content greater than 19%, use $C_M = 0.7$.

Strong-Drive® SDWH TIMBER-HEX Screw (cont.)**SDWH — 2012 and 2015 IRC Compliant Spacing
for a Sawn Lumber Deck Ledger to Rim Board**

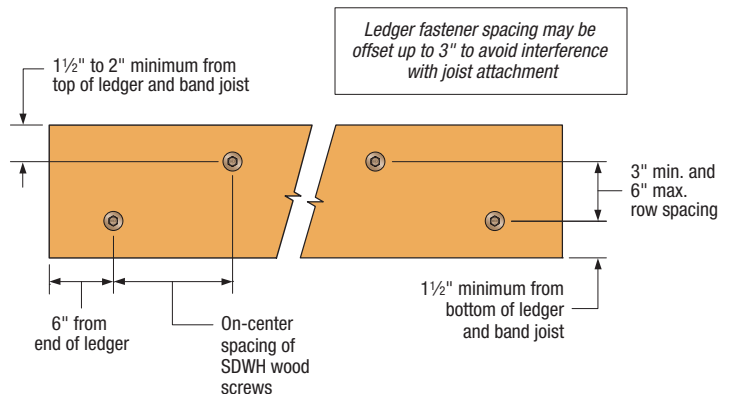
Loading Condition	Nominal Ledger Size	Model No.	Rim Board Material and Minimum Size	Maximum Deck Joist Span						
				Up to 6 ft.	Up to 8 ft.	Up to 10 ft.	Up to 12 ft.	Up to 14 ft.	Up to 16 ft.	Up to 18 ft.
				Maximum On-Center Spacing of Fasteners (in.)						
40 psf Live 10 psf Dead	2x	SDWH19400DB	1" OSB	13	9	8	6	5	5	4
			1" LVL							
			1½" OSB	18	13	11	9	8	7	6
			1⅝" LVL							
			1¼" LSL							
			2x SP, DFL – 2x SPF, HF	15	12	9	8	7	6	5
60 psf Live 10 psf Dead	2x	SDWH19400DB	1" OSB	9	7	5	5	4	—	—
			1" LVL							
			1½" OSB	13	10	8	6	5	5	4
			1⅝" LVL							
			1¼" LSL							
			2x SP, DFL – 2x SPF, HF	11	8	7	6	5	4	4

- SDWH screw spacing values are equivalent to 2012/2015 IRC table R507.2. The table above also provides SDWH screw spacing for a wider range of materials commonly used for rim board, and an alternative loading condition as required by some jurisdictions.
- 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.
- Fastener spacings are based on the lesser of single fastener ICC-ES AC233 testing of the Strong-Drive SDWH screw with a safety factor of 5.0 or ICC-ES AC13 assembly testing with a factor of safety of 5.0. Spacing includes NDS wet service factor adjustment.

- Rows of screws shall be vertically offset and evenly staggered. Screws shall be placed 1½" to 2" from the top and bottom of the ledger or rim board with 3" minimum and 6" maximum between rows and spaced per the table. End screws shall be located 6" from the end and at 1½" 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 1.8" drill.
- Structural sheathing between the ledger and rim board shall be a maximum of ½" thick and fastened per code.

**Ledger-to-Rim Board Assembly**

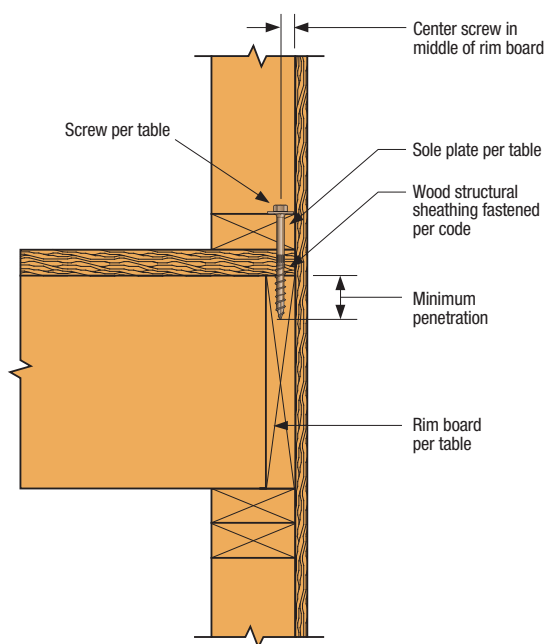
(wood-framed lower floor acceptable, concrete wall shown for illustration purposes)

**SDWH Screw Spacing Detail**

Strong-Drive® SDWH TIMBER-HEX Screw (cont.)**SDWH — Allowable Shear Loads for Sole-to-Rim Connections**

Size (in.)	Model No.	Nominal Sole Plate Thickness (in.)	Minimum Penetration into Rim Board (in.)	Allowable Loads (lb.)							
				2x DF/SP Rim Board		2x SPF/HF Rim Board		1 ¼" Min. LVL Rim Board		1 ¼" Min. LSL Rim Board	
				DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate
0.195 x 4	SDWH19400DB	2x	1.75	315	295	295	295	255	255	275	275
0.195 x 6	SDWH19600DB	2x or 3x	2	315	295	295	295	255	255	275	275

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 SDWH is 6" o.c., minimum end distance is 6", and minimum edge distance is $\frac{5}{8}$ ".
4. 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.
5. A double 2x sole plate is permitted provided it is independently fastened per the code and the minimum screw penetration per the table is met.

**Sole-to-Rim Board Assembly**

Strong-Drive® SDWS TIMBER Screw

The Strong-Drive SDWS Timber screw is designed to provide an easy-to-install, high-strength alternative to through-bolting and traditional lag screws.

Features:

- Bold thread design provides superior holding power
- Patented Sawtooth™ point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- Underhead nibs offer greater control when seating the head
- Large low-profile washer head provides maximum bearing area

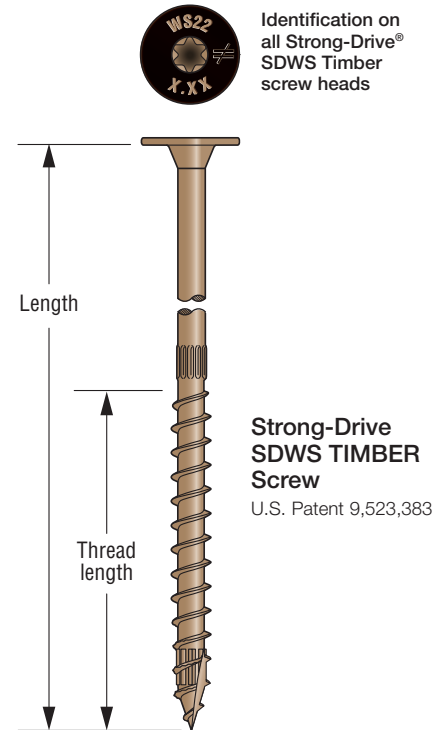
Material: Heat-treated carbon steel

Finish: Double-barrier coating

Installation:

- See General Notes.
- Strong-Drive SDWS Timber screws install best with a low-speed ½" drill and a T-40 6-lobe bit. The matched bit included with the screws is recommended for best results.
- Predrilling is typically not required. Where predrilling is necessary, use a ⅝" drill bit for Strong-Drive SDWS Timber screws.
- SDWS Timber screws are driven such that screw heads that are countersunk flush to the wood surface are acceptable if the screw has not spun out.
- For additional information, visit strongtie.com/fasteners.

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

**Strong-Drive® SDWH TIMBER-HEX SS Screw**

The Strong-Drive SDWH Timber-Hex SS screw provides a structural wood-to-wood connection, including for ledgers. As a Type 316 stainless-steel fastener, the Strong-Drive SDWH Timber-Hex SS screw offers maximum corrosion protection.

Features:

- Bold thread design provides superior holding power
- Patented Sawtooth™ point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- Unique box thread design significantly reduces driving torque
- Hex washer head provides large bearing area

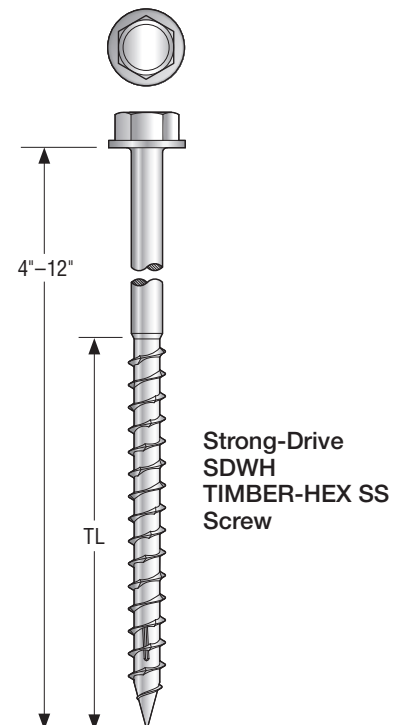
Material: Type 316 stainless steel

Finish: Stainless steel

Installation:

- See General Notes.
- Strong-Drive SDWH Timber-Hex SS screws install best with a low-speed ½" drill and a ⅝" or ½" hex driver bit. The matched bit included with the screws is recommended for best results.
- Predrilling is typically not required. Where predrilling is necessary, use a ⅝" drill bit for 0.188" Strong-Drive SDWH Timber-Hex SS screws. Use a ⅞" drill bit for 0.276" Strong-Drive SDWH Timber-Hex SS screws.
- For additional information, visit strongtie.com/fasteners.

Codes: See p. 6 for Code Reference Key Chart



Strong-Drive® SDWS TIMBER / SDWH TIMBER-HEX SS Screws (cont.)

SDWS Timber Screw Product Information

Size Dia. x L (in.)	Thread Length TL (in.)	Retail Pack ¹			Mini-Bulk Bucket ¹			Bulk ¹	
		Fasteners per Pack	Packs per Master Carton	Model No.	Fasteners per Pack	Packs per Master Carton	Model No.	Fasteners per Pack	Model No.
0.220 x 3	1½	12	10	SDWS22300DB-RC12	50	6	SDWS22300DB-R50	950	SDWS22300DB
0.220 x 4	2¾	12	10	SDWS22400DB-RC12	50	6	SDWS22400DB-R50	600	SDWS22400DB
0.220 x 5	2¾	12	10	SDWS22500DB-RC12	50	6	SDWS22500DB-R50	600	SDWS22500DB
0.220 x 6	2¾	12	10	SDWS22600DB-RC12	50	6	SDWS22600DB-R50	500	SDWS22600DB
0.220 x 8	2¾	12	10	SDWS22800DB-RC12	50	6	SDWS22800DB-R50	400	SDWS22800DB
0.220 x 10	2¾	12	10	SDWS221000DB-RC12	50	6	SDWS221000DB-R50	250	SDWS221000DB

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

SDWH Timber-Hex SS Screw Product Information

Size (in.)	Hex Drive (in.)	Thread Length (in.)	Package		Bucket	
			Fasteners per Pack	Model No.	Fasteners per Bucket	Model No.
0.188 x 4	⅝	2.40	20	SDWH19400SS-R20	100	SDWH19400SS-R100
0.188 x 4.5	⅝	2.75	10	SDWH19450SS-R10	100	SDWH19450SS-R100
0.188 x 5	⅝	2.40	10	SDWH19500SS-R10	100	SDWH19500SS-R100
0.188 x 6	⅝	2.40	10	SDWH19600SS-R10	100	SDWH19600SS-R100
0.188 x 8	⅝	2.40	10	SDWH19800SS-R10	50	SDWH19800SS-R50
0.276 x 3	½	2.95	10	SDWH27300SS-R10	100	SDWH27300SS-R100
0.276 x 4	½	2.95	10	SDWH27400SS-R10	100	SDWH27400SS-R100
0.276 x 5	½	2.95	10	SDWH27500SS-R10	50	SDWH27500SS-R50
0.276 x 6	½	2.95	10	SDWH27600SS-R10	50	SDWH27600SS-R50
0.276 x 8	½	2.95	10	SDWH27800SS-R10	25	SDWH27800SS-R25
0.276 x 10	½	2.95	5	SDWH271000SS-R5	25	SDWH271000SS-R25
0.276 x 12	½	2.95	5	SDWH271200SS-R5	25	SDWH271200SS-R25

Strong-Drive® SDWS TIMBER Screw (cont.)SDWS Timber Screw Allowable Shear Loads —
Douglas Fir–Larch and Southern Pine

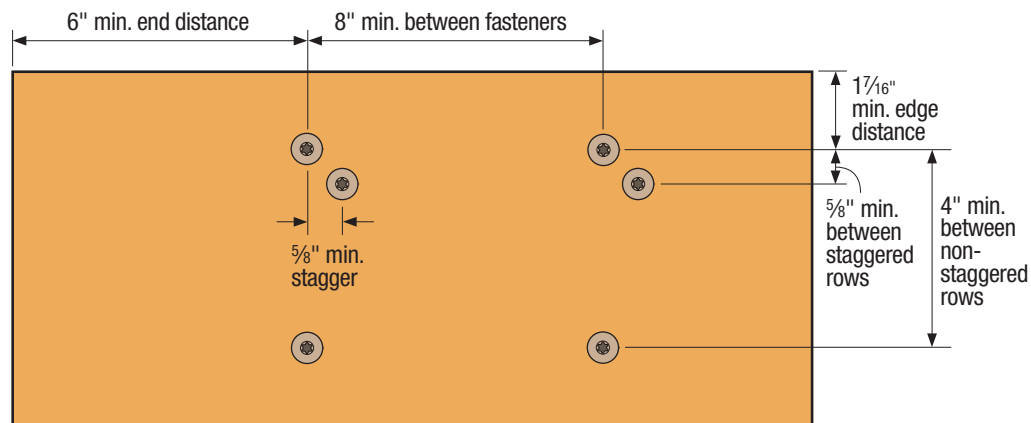
Size Dia. x L (in.)	Model No.	Thread Length TL (in.)	DF/SP Allowable Loads									Code Ref.
			Shear (100)									
			Wood Side Member Thickness (in.)									
			1.5	2	2.5	3	3.5	4	4.5	6	8	
0.220 x 3	SDWS22300DB	1½	255	—	—	—	—	—	—	—	IP4, FL, L23	
0.220 x 4	SDWS22400DB	2¾	405	405	305	—	—	—	—	—		
0.220 x 5	SDWS22500DB	2¾	405	405	360	360	325	—	—	—		
0.220 x 6	SDWS22600DB	2¾	405	405	405	405	365	365	355	—		
0.220 x 8	SDWS22800DB	2¾	405	405	405	405	395	395	395	395		
0.220 x 10	SDWS221000DB	2¾	405	405	405	405	395	395	395	395		395

See footnotes below.

SDWS Timber Screw Allowable Shear Loads —
Spruce-Pine-Fir and Hem-Fir

Size Dia. x L (in.)	Model No.	Thread Length TL (in.)	SPF/HF Allowable Loads									Code Ref.
			Shear (100)									
			Wood Side Member Thickness (in.)									
			1.5	2	2.5	3	3.5	4	4.5	6	8	
0.220 x 3	SDWS22300DB	1½	190	—	—	—	—	—	—	—	—	IP4, FL, L23
0.220 x 4	SDWS22400DB	2¾	385	285	215	—	—	—	—	—	—	
0.220 x 5	SDWS22500DB	2¾	405	290	290	290	195	—	—	—	—	
0.220 x 6	SDWS22600DB	2¾	405	365	365	365	310	310	210	—	—	
0.220 x 8	SDWS22800DB	2¾	405	365	365	365	310	310	280	280	—	
0.220 x 10	SDWS221000DB	2¾	405	365	365	365	310	310	280	280	280	

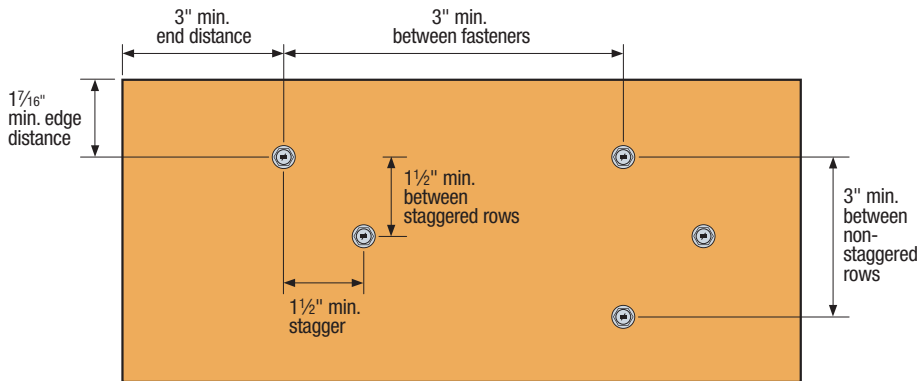
1. All applications are based on full penetration into the main member. Full penetration is the screw length minus the side member thickness.
2. Allowable loads are shown at the wood load duration factor of $C_D = 1.0$. Loads may be increased for load duration per the building code up to a $C_D = 1.6$. Tabulated values must be multiplied by all applicable adjustment factors per the NDS.
3. Minimum fastener spacing requirements to achieve table loads: 6" end distance, 17/16" edge distance, 5/8" between staggered rows of fasteners, 4" between non-staggered rows of fasteners and 8" between fasteners in a row.
4. For in-service moisture content greater than 19%, use $C_M = 0.7$.



Strong-Drive SDWS Timber Spacing Requirements

Strong-Drive® SDWS TIMBER / SDWH TIMBER-HEX SS Screws (cont.)**SDWH Timber-Hex SS Screw**Allowable Shear Loads — Douglas Fir-Larch,
Southern Pine, Spruce-Pine-Fir and Hem-Fir

Size (in.)	Model No.	Thread Length (in.)	Allowable Shear Loads			Code Ref.
			Wood Side Member Thickness (in.)			
			1½	3	3½	
0.188 x 4	SDWH19400SS-R100	2.40	177	—	—	IP4, FL, L23
0.188 x 4½	SDWH19450SS-R100	2.75	177	177	—	
0.188 x 5	SDWH19500SS-R100	2.40	177	177	177	
0.188 x 6	SDWH19600SS-R100	2.40	177	177	177	
0.188 x 8	SDWH19800SS-R50	2.40	177	177	177	
0.276 x 4	SDWH27400SS-R100	2.95	235	—	—	
0.276 x 5	SDWH27500SS-R50	2.95	235	235	235	
0.276 x 6	SDWH27600SS-R50	2.95	235	235	235	
0.276 x 8	SDWH27800SS-R25	2.95	235	235	235	
0.276 x 10	SDWH271000SS-R25	2.95	235	235	235	
0.276 x 12	SDWH271200SS-R25	2.95	235	235	235	

**Strong-Drive SDWH Timber-Hex SS Screw
Spacing Requirements**

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 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. Table values based on testing in SPF lumber.
4. Minimum fastener spacing requirements: 3" end distance, 1½" edge distance, 1½" between staggered rows of fasteners, 3" between non-staggered rows of fasteners and 3" between fasteners in a row.
5. Design values include NDS wet service factor; no adjustment required for in-service moisture content greater than 19%.
6. Allowable loads apply to perpendicular- or parallel-to-grain loading.
7. Installs best with 18V high-torque cordless or ½" low speed drill. If splitting occurs predrill with ⅝" drill bit for 0.188" screws and ⅜" drill bit for 0.276" screws.
8. Allowable withdrawal load for the 0.188" screw for DF/SP is 155 lb./in. and for SPF/HF is 108 lb./in. Allowable load is based on inches of thread penetration into the main member.
9. Allowable withdrawal load for the 0.276" screw for DF/SP is 260 lb./in. and for SPF/HF is 160 lb./in. Allowable load is based on inches of thread penetration into the main member.
10. For LRFD values, the reference connection design values shall be adjusted in accordance with NDS-12, section 10.3 (NDS-15, Section 11.3).

SDWS Timber Screw — Douglas Fir-Larch, Southern Pine, Spruce-Pine-Fir and Hem-Fir Lumber Allowable Withdrawal Loads

Model No.	Fastener Length, L (in.)	Thread Length, TL (in.)	Reference Withdrawal Design Value, W (lb./in.)		Max. Reference Withdrawal Design Value, W _{Max.}		Code Ref.
			DF and SP Main Member	HF and SPF Main Member	DF and SP Main Member	HF and SPF Main Member	
SDWS22300DB	3	1½	164	151	245	225	IP4, FL, L23
SDWS22400DB	4	2¾	179	160	425	380	
SDWS22500DB	5	2¾	214	187	590	495	
SDWS22600DB	6	2¾	214	187	590	495	
SDWS22800DB	8	2¾	214	187	590	495	
SDWS221000DB	10	2¾	214	187	590	495	

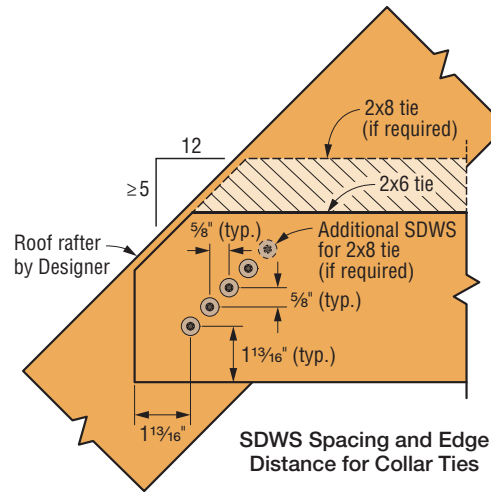
1. The tabulated reference withdrawal design value, W, is in pounds per inch of the thread penetration into the side grain of the main member.
2. The tabulated reference withdrawal design value, W_{Max.}, is in pounds where the entire thread length must penetrate into the side grain of the main member.
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. Embedded thread length is that portion held in the main member including the screw tip.
5. Values are based on the lesser of withdrawal from the main member or pull-through of a 1½" side member.
6. For in-service moisture content greater than 19%, use $C_M = 0.7$.

Strong-Drive® SDWS TIMBER Screw (cont.)

Equivalent SDWS Screws to Replace Bolts for Collar Tie Connections

Rafter Slope	Rafter Spacing	Bolt Quantity and Diameter	Minimum Collar Tie Size	Equivalent SDWS Screws			
				Quantity	Model	Diameter x Length	Thread Length
≥ 5:12	≤ 16" o.c.	(2) ½"	2x6	4	SDWS22300DB	0.220" x 3"	1 ½"
		(2) ⅝"	2x8	5			

1. Bolted connections are assumed to meet the minimum spacing, edge and end distance requirements established in *ANSI/AWC National Design Specification for Wood Construction (NDS)*.
2. Calculated capacity of bolted connections are based on 2x Southern Pine framing members ($t_m = t_s = 1\frac{1}{2}"$).
3. SDWS screws shall maintain minimum spacing, edge and end distances shown in Figure 2. Collar tie size is the minimum required for the SDWS connection only; the design of the collar tie itself is the responsibility of the Designer.
4. Capacities for tabulated SDWS screw quantities meet or exceed the required heel joint capacities for 20 psf roof live load at a maximum roof span of 36 ft. from WFCM Table 3.9, including an adjustment factor of 1.50 for HC/HR = ⅓ per footnote 5.

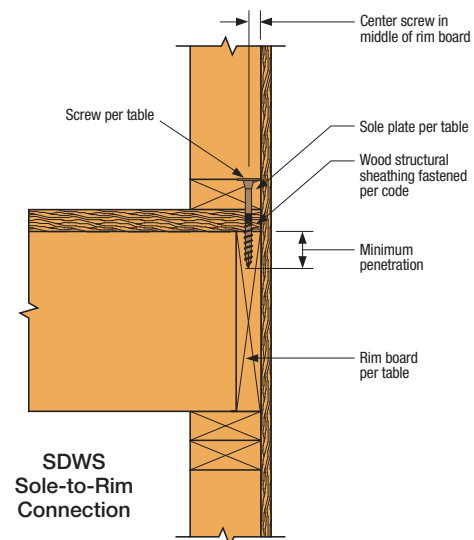


These products are available with additional corrosion protection. For more information, see p. 10.

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

Size (in.)	Model No.	Sole Plate Nominal Size	Minimum Penetration into Rim Board (in.)	Allowable Loads (lb.)							
				2x DF/SP Rim Board		2x SPF/HF Rim Board		1 ¼" Min. LVL Rim Board		1 ¼" Min. LSL Rim Board	
				DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate
0.220 x 4	SDWS22400DB	2x	1 ¾"	345	295	295	295	275	275	275	275
0.220 x 5	SDWS22500DB	2x	2"	345	295	295	295	275	275	275	275
0.220 x 6	SDWS22600DB	2x or 3x	2"	345	295	295	295	275	275	275	275

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 SDWS is 6" o.c., minimum end distance is 6", and minimum edge distance is ⅝".
4. Wood structural panel up to 1 ½" thick (⅔" for SDWS22400DB) 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.
5. A double 2x sole plate is permitted provided it is independently fastened per the code and the minimum screw penetration per the table is met.
6. Additional sole-to-rim fasteners are available. See engineering letter L-F-SOLRMSCRW at strongtie.com.



Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw

The Simpson Strong-Tie® Strong-Drive SDS Heavy-Duty Connector screw is a 1/4"-diameter structural wood screw ideal for various connector installations as well as wood-to-wood applications. It installs with no predrilling and has been extensively tested in various applications. The SDS Heavy-Duty Connector screw is improved with a patented easy-driving Type-17 point and a corrosion resistant double-barrier coating.

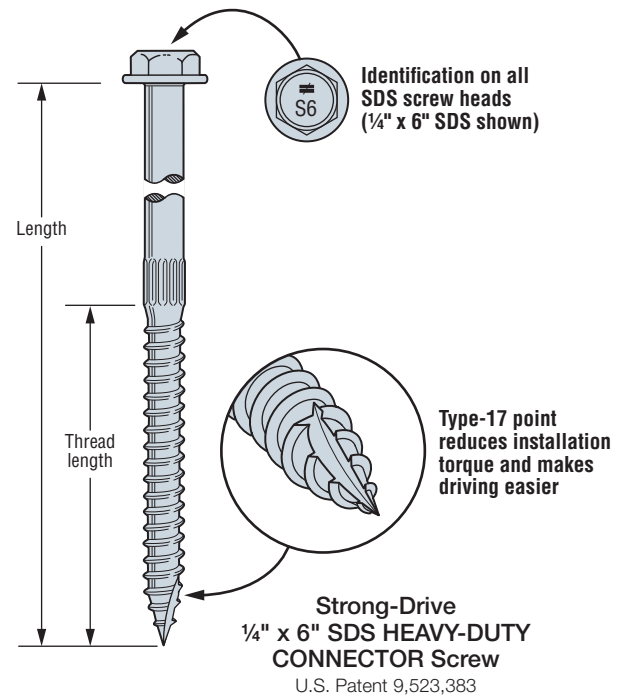
Features:

- The Type-17 point reduces installation torque and makes driving easier with no predrilling and minimal wood splitting.
- Available with a double-barrier coating or in Type 316 stainless steel. Carbon steel loads apply to corresponding stainless-steel models.
- 3/8" hex washer head is stamped with the No-Equal sign and fastener length for easy identification after installation.
- For the 3/8" hex-head driver bit, order model no. BITHEXR38-14.

Material: Heat-treated carbon steel, Type 316 stainless steel

Finish: Double barrier (all lengths); Type 316 stainless steel (1 1/2" through 3 1/2" lengths)

Codes: See p. 6 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 10.

SDS Heavy-Duty Connector Screw

	Size (in.)	Model No.	Thread Length (in.)	Fasteners per Carton ⁶	DF/SP Allowable Loads ⁴					SPF/HF Allowable Loads ⁴						Code Ref.	
					Shear (100) ¹					Withdrawal ⁵ (100)	Shear (100)						Withdrawal ⁵ (100)
					Wood Side Plate ³		Steel Side Plate				Wood Side Plate ³		Steel Side Plate				
					1½"	1¾" SCL	16 ga.	14 ga. and 12 ga.	10 ga. or Greater		Wood or Steel Side Plate	1½"	1¾" SPF LVL	16 ga.	14 ga. and 12 ga.		
SS	¼ x 1½	SDS25112	1	1,500	—	—	250	250	250	170	—	—	180	180	180	120	I5, L1, FL
SS	¼ x 2	SDS25200	1¼	1,300	—	—	250	290	290	215	—	—	180	210	210	150	
SS	¼ x 2½	SDS25212	1½	1,100	190	—	250	390	420	255	135	—	180	280	300	180	
SS	¼ x 3	SDS25300	2	950	280	—	250	420	420	345	200	—	180	300	300	240	
SS	¼ x 3½	SDS25312	2¼	900	340	340	250	420	420	385	245	245	180	300	300	270	
	¼ x 4½	SDS25412	2¾	800	350	340	250	420	420	475	250	245	180	300	300	330	
	¼ x 5	SDS25500	2¾	500	350	340	250	420	420	475	250	245	180	300	300	330	
	¼ x 6	SDS25600	3¼	600	350	340	250	420	420	560	250	245	180	300	300	395	
	¼ x 8	SDS25800	3¼	400	350	340	250	420	420	560	250	245	180	300	300	395	

1. Screws may be provided with the Type-17 point.

2. Strong-Drive SDS Heavy-Duty Connector screws install best with a low-speed 1/2" drill with a 3/8" hex-head driver.

3. Shear values are valid for connections between two members with full thread penetration into the main member. For other wood side plate values, see *Fastening Systems* catalog (C-F-2017) at strongtie.com.

4. Allowable loads are shown at the wood load duration factor of $C_D = 1.00$. Loads may be increased for load duration per the building code up to a $C_D = 1.60$.

5. Withdrawal loads shown are in pounds (lb.) and are based on the entire threaded section installed into the main member. If thread penetration into the main member is less than the Thread Length as shown in the table for DF/SP, reduce allowable load by 172 lb./in. of thread not in main member. Use 121 lb./in. for SPF/HF.

6. Fasteners per Carton represent the quantity of screws that are available in bulk packaging. Screws are also available in mini bulk and retail packs. Refer to Simpson Strong-Tie® *Fastening Systems* catalog (C-F-2017) at strongtie.com.

7. LSL wood-to-wood applications that require 4 1/2", 5", 6" or 8" SDS Heavy-Duty Connector screws are limited to interior-dry use only.

8. Where predrilling is required for Strong-Drive SDS Heavy-Duty Connector screws, predrill diameter is 5/32".

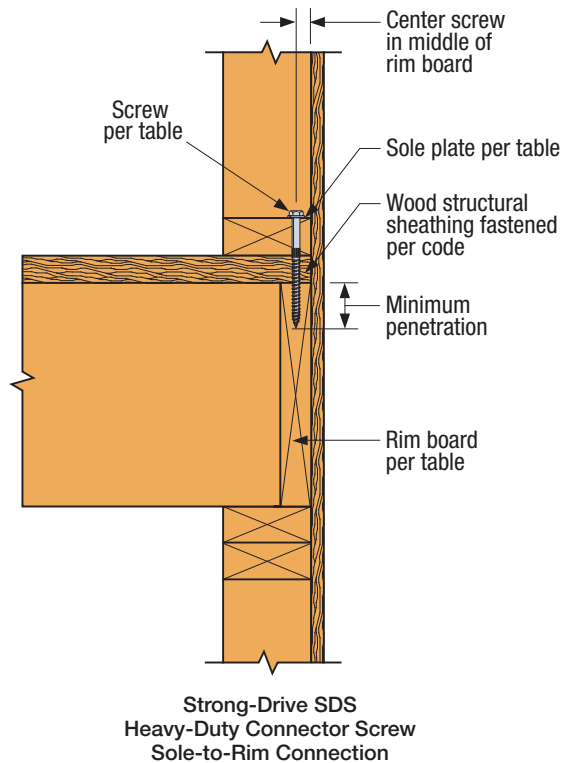
9. Minimum spacing, edge and end spacing distance requirements are listed in ICC-ES ESR-2236. For smaller spacing, please contact Simpson Strong-Tie Engineering.

Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw (cont.)

SDS Heavy-Duty Connector Screw — Allowable Shear Values for Sole-to-Rim Connections

Size (in.)	Model No.	Sole Plate Nominal Size	Minimum Penetration into Rim Board (in.)	Allowable Loads (lb.)							
				2x DF/SP Rim Board		2x SPF/HF Rim Board		1 1/4" Min. LVL Rim Board		1 1/4" Min. LSL Rim Board	
				DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate
1/4 x 4 1/2	SDS25412	2x	2	250	190	190	190	190	190	220	190
1/4 x 5	SDS25500	2x	2	250	190	190	190	190	190	220	190
1/4 x 6	SDS25600	2x or 3x	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 solid sawn applications is 3" o.c., minimum end distance is 3", and minimum edge distance is 5/8".
4. Minimum spacing of the SDS for LVL and LSL applications is 6" o.c., minimum end distance is 6" o.c., and minimum edge distance is 5/8".
5. A double 2x sole plate is permitted provided it is independently fastened per the code and the minimum screw penetration per the table is met.
6. Additional sole-to-rim fasteners are available. See engineering letter L-F-SOLRMSCRW at strongtie.com.



Subfloor/Sheathing Applications

Quik Drive® Auto-Feed Screw Driving Systems

Quik Drive auto-feed screw driving systems turn repetitive fastening into opportunities to increase efficiency and save time. Extensive research goes into the design of each system, resulting in professional, quality auto-feed solutions that truly make work easier.

- Patented Quik Drive auto-feed attachments and collated fasteners eliminate the need to handle (and fumble) individual screws — the result: faster installations and less waste
- Extensions allow stand-up driving for appropriate applications, making work less of a strain on the back, shoulders and knees

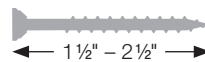


Quik Drive auto-feed screw driving systems are ideal for subfloor installation, combining the efficiency of stand-up driving with the holding power of screws. Screws are superior to nails in this application because they reduce the gaps that cause floor squeaks.

PRO250 System



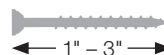
- Expanded depth settings for high-density flooring materials
- Uniform toenailing and countersink on slick surfaces
- Reversible and replaceable non-skid teeth



PROSDD Combo System



- Expanded depth settings for appropriate countersink in a variety of applications
- Includes both PRO300S Attachment and PRO200 Attachment for added versatility
- Reversible and replaceable non-skid teeth
- Sure-grip guide tube increases stability for a broad range of screws



Subfloor/Sheathing Applications

PROCCS+ Combo System



- Includes both PRO300S Attachment and PRO200S Attachment for added versatility
- Expanded depth settings for high-density flooring materials
- Reversible and replaceable non-skid teeth
- Sure-grip guide tube increases stability for a broad range of screws



Collated Screws for the Quik Drive® System

Fastener Model	PRO250	PROSDD/CCS+	PRO300s
Strong-Drive® WSNL SUBFLOOR Screw  Wood-to-wood applications, yellow zinc coating, sharp point	1¾", 2", 2½"	1¾", 2", 2½", 3"	1¾", 2", 2½", 3"
Strong-Drive WSV SUBFLOOR Screw  Wood-to-wood applications, yellow zinc coating, sharp point	1¾"	1¾"	1¾"
Strong-Drive PPSD SHEATHING-TO-CFS Screw  Wood-to-steel applications, #2 drill point Quik Guard® and yellow zinc coating	#10 x 1¾", #8 x 1½"	#10 x 1¾", #8 x 1½", #10 x 3"	#10 x 1¾", #8 x 1½", #10 x 3"
WSHL Subfloor Screw  Wood-to-wood applications, gray phosphate coating	1¾"	1¾"	1¾"
WSC Wood Screw  Wood-to-wood applications, yellow zinc coating, coarse thread	1½"	1½"	1½"

Drywall Applications



Quik Drive® auto-feed screw driving systems are ideal for fastening drywall. They provide a fast, efficient solution with a precision countersink adjustment that produces consistent dimples.

PRO200 System



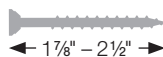
- Compact body for reduced weight and easy handling
- Smooth nose will not mar drywall surface
- Slim profile allows driving in corners



PRO250DW Attachment

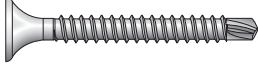


- Compact body for reduced weight and easy handling
- Smooth nose will not mar drywall surface
- Slim profile allows driving in corners

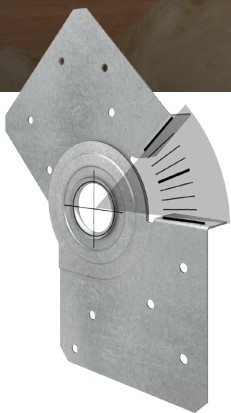


Drywall Applications

Collated Screws for the Quik Drive® System

Fastener Model	PRO200	PRO250DW
DWHL Drywall Screw  High-low threads, gray phosphate coating	1 7/8"	1 7/8"
DWC Drywall Screw  Drywall to wood, gray phosphate and yellow zinc coatings available	1", 1 1/4", 1 5/8", 2"	2", 2 1/2"
DWF Drywall-to-CFS Screw  Drywall to steel, gray phosphate coating (33, 27, 18 mil / 20, 22, 25 ga.)	1 1/4", 1 5/8"	N/A
DWFSD Drywall-to-CFS Screw  Drywall to steel, #2 point, yellow zinc coating (54, 43 mil / 16, 18 ga.)	1 1/4", 1 5/8", 1 7/8"	1 7/8", 2 3/8"
DWFSD Drywall-to-CFS Screw  Drywall to steel, #2 point, Quik Guard® coating (54, 43 mil / 16, 18 ga.)	1 1/4"	1 1/4"

Raising the roof on modular building



Custom versatility. Off-the-shelf convenience.

The innovative MMHC hinged roof connector makes it easy to build a stick-frame roof in the modular factory that can fold flat during shipping. It's been tested and load rated in multiple directions. The MMHC can be installed on one or both sides of the roof-rafter assembly.

Contact your local Simpson Strong-Tie representative for more information.

