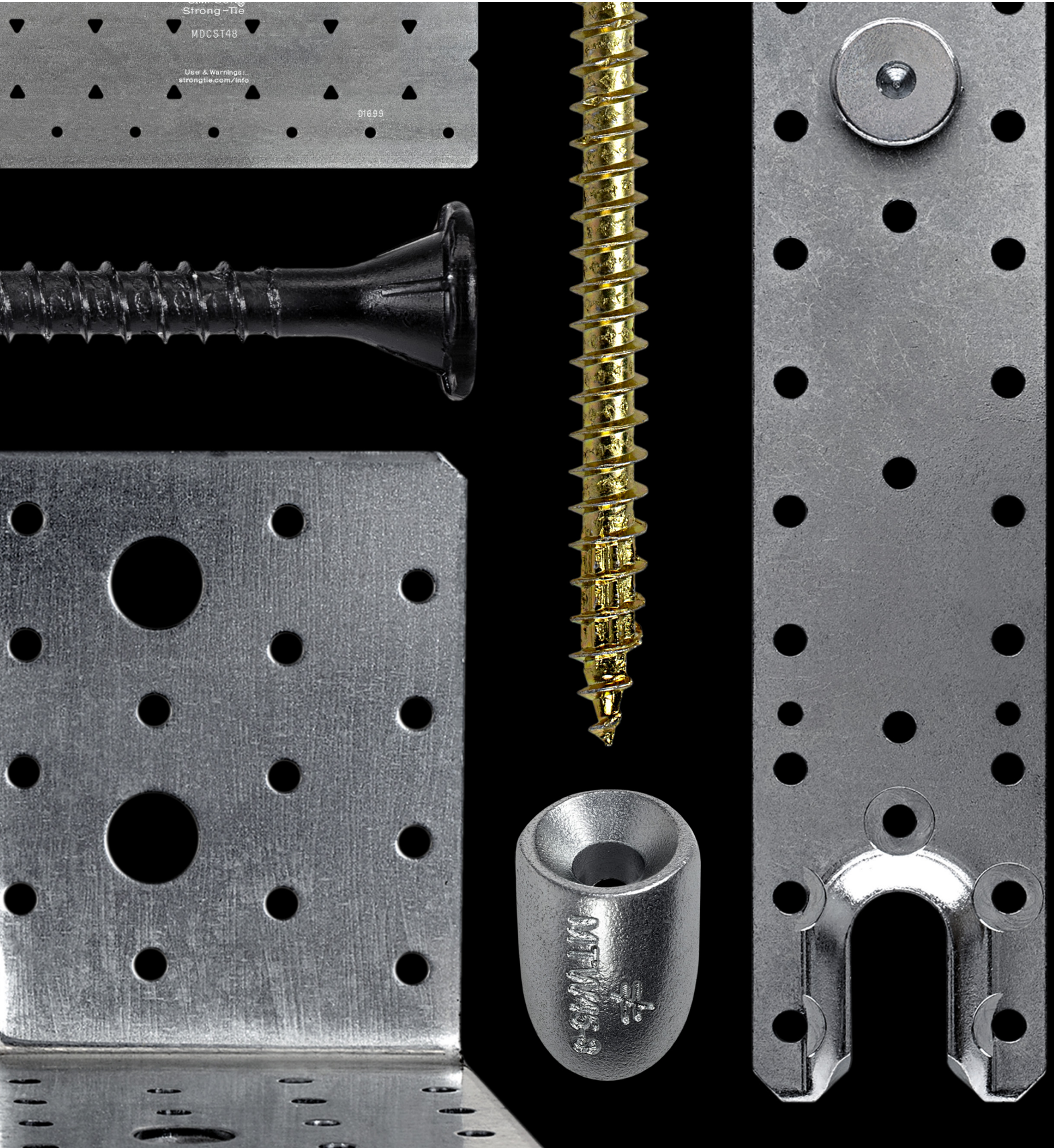


Connectors & Fasteners for Mass Timber Construction

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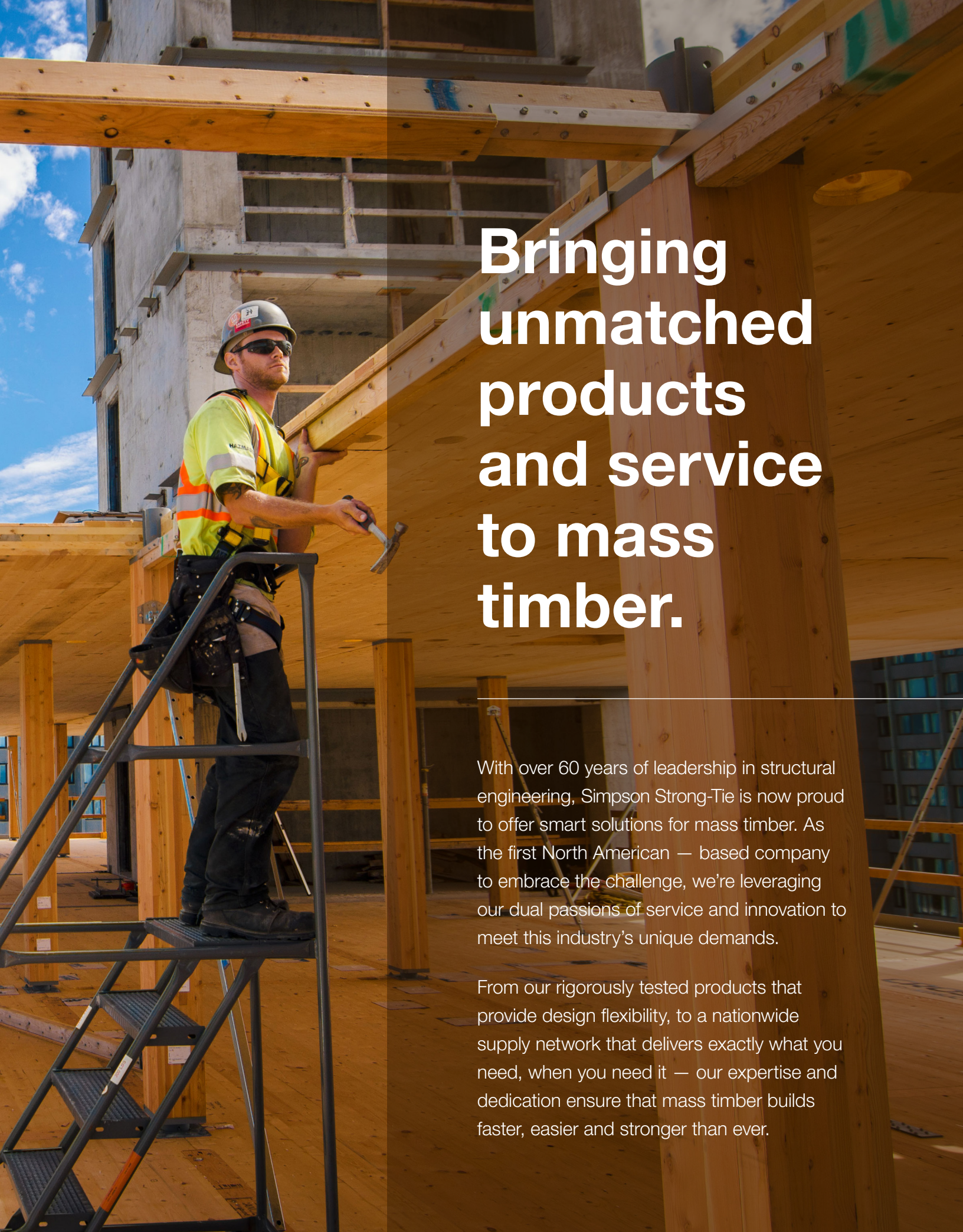
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Sort by Relevance 11 Refined Results Displayed Below

Strong-Drive® SDWS TIMBER SCREW
Strong-Drive® SDWS Timber Screws
Designed to provide an easy-to-install, high-torque alternative to through-bolting and traditional lag screws, SDWS structural wood screws are ideal for the installation of joists for a full...

Strong-Drive® SDWN TIMBER-HEX HDG SCREW
Strong-Drive® SDWN Timber-Hex Screws
Including tapered and non-tapered hex screws, SDWN structural wood screws are ideal for the installation of joists for a full...



Bringing unmatched products and service to mass timber.

With over 60 years of leadership in structural engineering, Simpson Strong-Tie is now proud to offer smart solutions for mass timber. As the first North American — based company to embrace the challenge, we're leveraging our dual passions of service and innovation to meet this industry's unique demands.

From our rigorously tested products that provide design flexibility, to a nationwide supply network that delivers exactly what you need, when you need it — our expertise and dedication ensure that mass timber builds faster, easier and stronger than ever.

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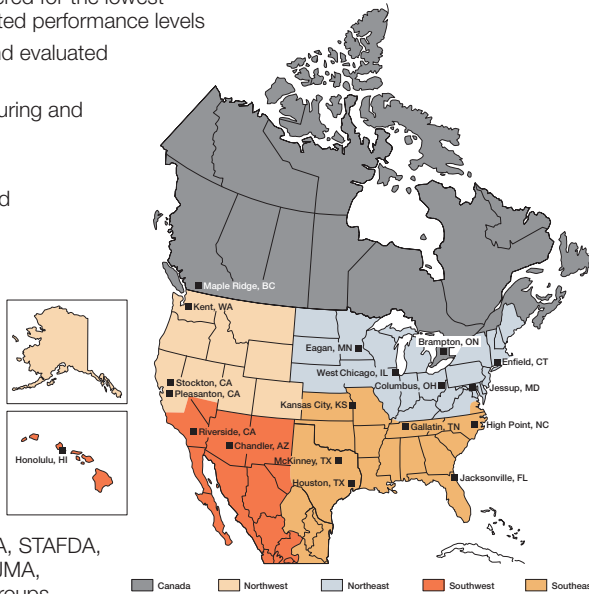
Introduction

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, CAMA, CSI, CFSEI, ICFA, NBMDA, NLBMDA, SBCA, 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 9001:2015 Registered

Simpson Strong-Tie is an ISO 9001:2015 registered company. ISO 9001:2015 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 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.

Post-installed anchoring products have been tested per ACI 355.2 and AC193 for mechanical anchors and ACI 355.4 and AC308 for adhesive anchors.

Threaded fasteners are evaluated per ICC-ES AC233 — Dowel-Type Threaded Fasteners Used in Wood. Fastener strength is determined with shear and tensile tests. Single-fastener performance in wood is evaluated as described in AC233. The published reference allowable load based on testing is the average ultimate load divided by a safety factor of 5.0.

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 in and IAS accredited laboratory or 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 No.: This is the Simpson Strong-Tie product name.

Screws: This shows the fastener quantity and type required to achieve the table loads.

Uplift

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.

Code Ref.: See p. 7 for the Code Reference Key Chart, to determine which code reports include this product.

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

Model No.	Connector Dimension (in.)			Fasteners (SDS)		Allowable Downloads					Code Ref.	
	Width	Height	Route Depth	Joist	Beam	DF/SP			SPF/HF			
						Uplift (160)	Floor (100)	Snow/Roof (115/125)	Uplift (160)	Floor (100)		Snow/Roof (115/125)
CBH2.37x5.5B	2%	5½	1	(13) ¼" x 6"	(13) ¼" x 3"	555	4,830	4,830	485	3,900	4,135	
CBH2.37x7.63B	2%	7%	1	(18) ¼" x 6"	(18) ¼" x 3"	555	6,510	6,510	485	5,400	5,570	—
CBH2.37x9.75B	2%	9%	1	(23) ¼" x 6"	(23) ¼" x 3"	555	8,785	8,785	485	6,900	7,525	

Dimensions Width, Height, Route Depth: This shows the product dimensions (width, length and route depth in this case) referenced in the product drawing.

Fasteners are Strong-Drive® SDS screws
See pp. 16–17 for other fastener sizes and information.

Throughout this catalog a footnote will typically be provided indicating the required fastener diameter and length.

All installations should be designed only in accordance with the allowable load values set forth in this catalog.

Carrying Member

Carried Member

* Dimension line is to centerline of first row of fasteners e = 1½" (min.)

Code Reports

Code Reference Column in Load Tables

Product evaluation agencies play an important role in the building industry providing an independent third-party review of architectural and structural products. Evaluations use publicly developed criteria to determine if the product meets the intent of the building code. Building officials can use product evaluation reports, often referred to as “code reports,” to review and approve product use on a project.

The most prominent architectural and structural building product certification companies are ICC Evaluation Service (ICC-ES) and IAPMO Uniform Evaluation Service (IAPMO UES), which are both ANSI-accredited to ISO Guide 65 “General Requirements for Bodies Operating Product Certification Systems” as product certification entities. Simpson Strong-Tie currently maintains more than 60 ICC-ES ESR and IAPMO UES ER reports evaluated to the 2006, 2009, 2012,

2015 and 2018 International Building Code® (IBC) and International Residential Code® (IRC). We continue to submit product information to evaluation agencies in order to update reports or receive additional reports for products in compliance with the latest codes. Simpson Strong-Tie also has reports for the City of Los Angeles, California and the State of Florida.

We have simplified our code references to make this catalog easier to use. You can quickly determine whether a product has a code report by looking in the Code Reference column of the product load tables. A summary of the code references used is in the table below.

To determine which specific code report applies to a product and download a copy of the code report, you can use our Code Report Finder at strongtie.com/codes.

Code Reference	Evaluation Agency	Building Code Coverage
IBC	ICC-ES IAPMO UES	International Building Code (IBC) International Residential Code (IRC)
FL	Florida Statewide Product Approval	Florida Building Code Visit strongtie.com/codes or floridabuilding.org for accurate and up-to-date product approval and evaluation reports.
LA	City of Los Angeles Department of Building Safety	Los Angeles Building Code and Los Angeles Residential Code These products may have either a City of LA Research Report or a City of LA supplement to their ICC-ES or IAPMO UES evaluation reports.
PR	Prescriptive	Products that meet prescriptive or conventional construction requirements.
—	None	No evaluation report listing.

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 the previous catalog are indicated in red.



Value Engineered

This icon indicates a product that is preferable to similar connectors because of a) easier installation, b) higher loads, c) lower installed cost, or a combination of these features.



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 p. xx 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 Simpson Strong-Tie® Strong-Drive SD Connector screw. Visit our website strongtie.com/sd for more information.

Corrosion Information

Understanding the Corrosion Issue

Metal connectors, fasteners and anchors can corrode and lose 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 predict accurately whether, or when, corrosion will begin to reach a critical level. This relative uncertainty makes it crucial that specifiers and users be knowledgeable about the potential risks and select a product suitable for the intended use. When there is any uncertainty about the possible corrosion risks of any installation, a qualified professional should be consulted. Because of the risks posed by corrosion, periodic inspections should be performed by a qualified engineer or qualified inspector and maintenance performed accordingly.

It's 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 wood, fasteners, anchors, and connectors should be inspected by a qualified engineer or qualified inspector. Replacement of affected components may be appropriate.

Because of the many variables involved, Simpson Strong-Tie cannot provide estimates of the service life of connectors, anchors, and fasteners. We suggest that all users and specifiers obtain recommendations on corrosion from the suppliers of the materials that will be used with Simpson Strong-Tie products, in particular, treated wood or concrete. We have attempted to provide basic knowledge on the subject here, and have additional information in our technical bulletins on the topic (strongtie.com/info). The Simpson Strong-Tie website should always be consulted for the latest information.

Corrosion Conditions

Corrosion can result from many combinations of environmental conditions, materials, construction design, and other factors, and no single guideline addresses all corrosion possibilities. Nevertheless, important corrosion information can be obtained from the American Wood Protection Association (AWPA), the International Building Code (IBC), International Residential Code (IRC), and local building codes. The following discussion provides general guidelines and approaches for the selection of Simpson Strong-Tie products for various construction conditions, but is not intended to supersede the guidelines of the AWPA, IBC, IRC, or local building codes.

Corrosion issues for Simpson Strong-Tie products generally fall into four categories:

1. Environmental and Construction Factors

Many environments and materials can cause corrosion, including ocean salt air, condensation, duration of wetness, fire retardants, fumes, fertilizers, chlorides, sulfates, preservative-treated wood, de-icing salts, dissimilar metals, soils, and more. Designers must take all of these factors into account when deciding which Simpson Strong-Tie products to use with which corrosion-resistant coatings or materials.

The design, quality of construction, and misinstallation can directly affect the corrosion resistance of products. A product intended and installed for use in dry-service environment may corrode if the structure design or building materials allow moisture intrusion, or expose the product to corrosive conditions, such as moisture or chemicals contained in the construction materials, soils, or atmospheres.

2. Chemically Treated Lumber

Some wood-preservative or fire-retardant chemicals or chemical retention levels create increased risk of corrosion and are corrosive to steel connectors and fasteners. For example, testing by Simpson Strong-Tie has shown that ACQ-Type D is more corrosive than Copper Azole, Micronized Copper Azole, or CCA-C. At the same time, other tests have shown that inorganic boron treatment chemicals, specifically SBX-DOT, are less corrosive than CCA-C.

Because different chemical treatments of wood have different corrosion effects, it's important to understand the relationship between the wood treatment chemicals and the coatings and base metals of Simpson Strong-Tie products.

The preservative-treated wood supplier should provide all of the pertinent information about the treated wood product. The information should include the AWPA Use Category Designation, wood species group, wood treatment chemical, and chemical retention. See building code requirements and appropriate evaluation reports for corrosion effects of wood treatment chemicals and for fastener corrosion resistance recommendations.

With Fire-Retardant-Treated (FRT) Wood, the 2015 and 2018 IBC Section 2304.10.5.4 and 2015 and 2018 IRC Section R317.3.4 refer to the manufacturers' recommendations for fastener corrosion

requirements. In the absence of recommendations from the FRT manufacturer, the building codes require fasteners to be hot-dip galvanized, stainless steel, silicon bronze or copper. Simpson Strong-Tie further requires that the fastener is compatible with the metal connector hardware. Fastener shear and withdrawal allowable loads may be reduced in FRT lumber. Refer to the FRT manufacturer's evaluation report for potential reduction factors.

3. Dissimilar Metals and 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. Good detailing practice, including the following, can help reduce the possibility of galvanic corrosion of fasteners and connectors:

- Use fasteners or anchors and connectors with similar electrochemical properties
- Use insulating materials to separate dissimilar metals
- Ensure that the fastener or anchor is the cathode when dissimilar connector 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)

If you are uncertain about the galvanic corrosion potential of any installation, always consult with a corrosion expert. See the product pages for particular parts for more information regarding what coating systems are recommended or required for use with the parts in question.

4. Hydrogen-Assisted Stress Corrosion Cracking

Some hardened fasteners may experience premature failure from hydrogen-assisted stress-corrosion cracking if exposed to moisture. These fasteners are recommended for use only in dry-service conditions.

Corrosion Information

Guidelines for Selecting Materials and Coatings

In the discussion and charts of this section, Simpson Strong-Tie presents a system to determine which product coatings and base metals to use in a range of corrosion conditions. These are general guidelines that may not consider all relevant application criteria. Refer to product-specific information for additional guidance.

Simpson Strong-Tie evaluated the AWPA Use Categories (See AWPA U1-16) and ICC-ES AC257 Exposure Conditions and developed a set of corrosion resistance recommendations. These recommendations

address the coating systems and materials used by Simpson Strong-Tie for fastener, connector, and anchor products. Although the AWPA Use Categories and ICC-ES AC257 Exposure Conditions specifically address treated-wood applications and some common corrosion agents, Simpson Strong-Tie believes that its recommendations may be applied more generally to other application conditions, insofar as the service environments discussed are similar. You should consult with a corrosion engineer concerning the application where advisable.

Step 1 — Evaluate the Corrosion Conditions

- Dry Service:** Generally INTERIOR applications including 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 periods of wetness during construction should also be considered, as this may constitute a Wet Service or Elevated Service condition. Dry Service is typical of AWPA UC1 and UC2 for wood treatment and AC257 Exposure Condition 1. Keep in mind that dry-service environment may contain airborne salts. AC257 Exposure Condition 2 reflects the presence of airborne salt in a dry-service environment and corrosion hazard to exposed metal surfaces. It does not include effects of treatment chemicals. This condition is generally considered in Elevated and Uncertain assessments.
- 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 AWPA UC4A. The AWPA U1 standard classifies exterior above-ground treatments as Use Categories UC3 (A and B) depending on moisture run-off; and for exterior ground-contact levels of protection, it has Use Categories UC4 (A-C). ICC-ES AC257 considers the exterior exposure to be limited by the presence of treatment chemicals, and corrosion accelerators. In general, the AC257 Exposure Condition 1 includes AWPA Use Categories UC1 (interior/dry) and UC2 (interior/damp), while Exposure Condition 3 is a surrogate to UC3A, 3B, and 4A (exterior, above-ground and ground-contact, general use). The ICC-ES AC257 Exposure Conditions 2 and 4 are exposures that are salt environments.
- Elevated Service:** Includes fumes, fertilizers, soil, some preservative-treated wood (AWPA UC4B and UC4C), industrial-zone atmospheres, acid rain, salt air, and other corrosive elements.
- Uncertain:** Unknown exposure, materials, or treatment chemicals.
- Ocean/Water Front Service:** Marine environments that include airborne chlorides, salt air, and some salt splash. Environments with de-icing salts are included.

Step 2 — Determine Your Corrosion Resistance Classification

Corrosion Resistance Classifications

Environment	Material to Be Fastened						FRT Wood
	Untreated Wood or Other Material	Preservative-Treated Wood				Other or Uncertain	
		SBX-DOT Zinc Borate	Chemical Retention ≤ AWPA, UC4A	Chemical Retention > AWPA, UC4A	ACZA		
Dry Service	Low	Low	Low	High	Medium	High	Medium
Wet Service	Medium	N/A	Medium	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

Additional Considerations







- Always consider the importance of the connection as well as the cost of maintenance and replacement.
- If the information about treatment chemicals in an application is incomplete, or if there is any uncertainty as to the service environment of any application, Simpson Strong-Tie recommends the use of a Type 300 Series stainless steel. Simpson Strong-Tie has evaluated the corrosion effects of various formulations of wood treatment chemicals ACZA, ACQ, CCA, MCA, CA, and salt as corrosion accelerators. Simpson Strong-Tie has not evaluated all formulations and retentions of the named wood treatment chemicals other than to use coatings and materials in the severe category. Manufacturers may independently provide test results or other product information. Simpson Strong-Tie expresses no opinion regarding such information.
- 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 AWPA 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. When wood treated with micronized CA-C and micronized CA-B with treatment retentions up to UC4B is in dry service, hot-dip galvanized fasteners and connectors may be suitable.
- Mechanical galvanizations C3 and N2000 should not be used in conditions that would be more corrosive than AWPA UC3A (exterior, above ground, rapid water run off).
- Some chemically treated wood may have chemical retentions greater than specification, particularly near the surface, making it potentially more corrosive than chemically treated wood with lower retentions. If this condition is suspected, use Type 316/305/304 stainless-steel, silicon bronze, or copper fasteners.
- Some woods, such as cedars, redwood, and oak, contain water-soluble tannins and are 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 staining.
- Anchors, fasteners and connectors in contact with FRT lumber shall be hot-dip galvanized or stainless steel, unless recommended otherwise by the FRT manufacturer. Many FRT manufacturers permit low-corrosion-resistant connector and fastener coatings for dry-service conditions.
- Type 316 stainless steel is susceptible to corrosion when corrosion agents (e.g., chlorides) and conditions exceed critical threshold levels. Surface corrosion products can stain adjacent materials. Painting usually does not improve corrosion resistance of stainless steel.

Corrosion Information

Step 3 – Match Your Corrosion Resistance Classification to the Coatings and Materials Available

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

Coatings and Materials Available

Level of Corrosion Resistance	Coating or Material	Description	
		Connectors	Fastener Material or Finish
Low	Gray Paint	Organic paint intended to protect the product while it is warehoused and in transit to the jobsite.	Bright, Hot-Dip Galvanized, Mechanically Galvanized, or Double-Barrier Coating
	Powder Coating	Baked-on paint finish that is more durable than standard paint.	
	Galvanized	Standard (G90) zinc-galvanized coating containing 0.90 oz. of zinc per square foot of surface area (total both sides).	
Medium	 ZMAX G185	Galvanized (G185) 1.85 oz. of zinc per square foot of surface area (hot-dip galvanized per ASTM A653) total for both sides. Products with a powder-coat finish over a ZMAX® base have the same level of corrosion resistance.	Hot-Dip Galvanized, Mechanically Galvanized, or Double-Barrier Coating <i>*Bright fasteners may be used with ZMAX or HDG connectors where low corrosion resistance is allowed.</i>
	 HDG GALVANIZED	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 for both sides. Anchor bolts are hot-dip galvanized per ASTM F2329.	
High/Severe	 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	Applicable Products
Low	Bright	No surface coating.	Nails
	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, low-corrosive applications.	Strong-Drive® SDWC and SDW Screws
	Clear, Yellow, Blue-Bright Zinc ASTM F1941	Zinc coatings applied by electrogalvanizing processes to fasteners that are used in dry service and with no environmental or material corrosion hazard.	Strong-Drive SDCP TIMBER-CF Screw SDCP TIMBER-CP Screw SDHR COMBO-HEAD screw
Medium	 HDG GALVANIZED ASTM A153, Class D	Hot-dip galvanized fasteners 3/8" and smaller in diameter in accordance with ASTM A153, Class D. Hot-dip galvanized fasteners are compliant with the 2015 and 2018 IRC and IBC.	Strong-Drive SCN Nail
	Type 410 Stainless Steel with Protective Top Coat	Carbon martensitic grade of stainless steel that is inherently magnetic, with an added protective top coat. This material can be used in mild atmospheres and many mild chemical environments.	Titen® Stainless-Steel Concrete and Masonry Screw
	Mechanically Galvanized Coating, ASTM B695, 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 and are recognized in evaluation reports that can be found on strongtie.com .	Strong-Drive SD CONNECTOR Screw
	Double-Barrier Coating	Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws and Outdoor Accents® structural wood screws are manufactured with double-barrier coating that provides a level of corrosion protection equaling that provided by HDG coating and are recognized in evaluation reports that can be found on strongtie.com .	Strong-Drive SDWH TIMBER-HEX Screw
High/Severe	 HDG GALVANIZED ASTM A153, Class C	Simpson Strong-Tie Strong-Drive Timber-Hex screws are hot-dip galvanized in accordance with ASTM A153, Class C. These hot-dip galvanized fasteners have a minimum average of 1.25 oz./ft. ² of zinc coating and are compliant with the 2015 and 2018 IRC (R317.3) and IBC.	Strong-Drive SDWH TIMBER-HEX HDG Screw
	 Type 316 Stainless Steel	Type 316 stainless steel is a nickel-chromium austenitic grade of stainless steel with 2-3% molybdenum. It provides a level of corrosion protection suitable for severe environments, especially environments with chlorides. Type 316 stainless-steel fasteners are compliant with the 2015 and 2018 IBC and IRC.	Strong-Drive SDWS TIMBER SS Screw

Dry Service



Photo courtesy of Structurlam Mass Timber Corp.

Wet Service



Photo courtesy of Structurlam Mass Timber Corp.

Elevated Service / Severe



Important Information and General Notes

Warning

Simpson Strong-Tie Company Inc. structural connectors, anchors, and other products are designed and tested to provide specified design loads. To obtain optimal performance from Simpson Strong-Tie Company Inc. products and achieve maximal allowable design load, the products must be properly installed and used in accordance with the installation instructions and design limits provided by Simpson Strong-Tie Company Inc. To ensure proper installation and use, designers and installers must carefully read the following General Notes, General Instructions for the Installer and General Instructions for the Designer, as well as consult the applicable catalog pages for specific product installation instructions and notes.

Proper product installation requires careful attention to all notes and instructions, including these basic rules:

1. Be familiar with the application and correct use of the connector and fastener.
2. Follow all installation instructions provided in the applicable catalog, website, *Installer's Pocket Guide* or any other Simpson Strong-Tie publications.
3. Install all required fasteners per installation instructions provided by Simpson Strong-Tie Company Inc.: (a) use proper fastener type; (b) use proper fastener quantity; (c) fill all fastener holes; (d) do not overdrive or underdrive nails, including when using powder nailers; and (e) ensure screws are completely driven.

4. Only bend products that are specifically designed to be bent. For those products that require bending (such as strap-type holdowns, straight-end twist straps, etc.), do not bend more than one full cycle.
5. Cut joists to the correct length, do not "short-cut." The gap between the end of the joist and the header material should be no greater than 1/8" unless otherwise noted.

Failure to follow all of the notes and instructions provided by Simpson Strong-Tie Company Inc. may result in improper installation of products. Improperly installed products may not perform to the specifications set forth in this catalog and may reduce a structure's ability to resist the movement, stress and loading that occurs from gravity loads as well as impact events such as earthquakes and high-velocity winds.

Simpson Strong-Tie Company Inc. does not guarantee the performance or safety of products that are modified, improperly installed or not used in accordance with the design and load limits set forth in this catalog.

Important Information

In addition to following the basic rules provided above as well as all notes, warnings and instructions provided in the catalog, installers, designers, engineers and consumers should consult the Simpson Strong-Tie Company Inc. website at strongtie.com to obtain additional design and installation information.

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

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. 0.131" x 2½", 0.148" x 3" and 0.162" x 3½" specify common nails that meet the requirements of ASTM F1667. When a shorter nail is specified, it will be noted (for example 0.131" x 1½"). Refer to Simpson Strong-Tie Nailing Guide, NDS (National Design Specification) and ASTM F1667 (American Society of Testing and Materials) for more nail information.
- 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. This chart shows specific gravity and perpendicular-to-grain compression capacities for the different wood species:

Species	F _{c⊥}	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
Spruce-Pine-Fir South (SPF-S)	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. 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 ⅛", ⅜" and ¼" 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.
- h. All references to bolts are for structural quality through bolts (not lag screws or carriage bolts) equal to or better than ASTM Standard A307, Grade A.
- i. 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.
- j. 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 (2015/2018 NDS 12.1.5.3). Use a ⅜" bit for Strong-Drive® SDS Heavy-Duty Connector screws and a ⅜" bit for Strong-Drive SD9/SD10 Connector screws.
- k. 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. (Reference ICC-ES ESR-2320 for information on Take-up Devices.)
- l. 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.
- m. Built-up lumber (multiple members) must be fastened together to act as one unit to resist the applied load (excluding the connector fasteners). This must be determined by the designer.
- n. Some model configurations may differ from those shown in this catalog. Contact Simpson Strong-Tie for details.
- o. Hanger Options (see pp. 97–99 of the *Wood Construction Connectors* catalog (C-C-2019) at strongtie.com for Hanger Options Matrix and Hanger Option General Notes) — some combinations of hanger options are not available. In some cases, combinations of these options may not be installable. Horizontal loads induced by sloped joists must be resisted by other members in the structural system. A qualified designer must always evaluate each connection, including carried and carrying member limitations, before specifying the product. Fill all fastener holes with fastener types specified in the tables, unless otherwise noted. Hanger configurations, height and fastener schedules may vary from the tables depending on joist size, skew and slope. See the allowable table load for the non-modified hanger, and adjust as indicated. Gauge may vary from that specified depending on the manufacturing process used.
- p. Simpson Strong-Tie will calculate the net height for a sloped seat. The customer must provide the H1 joist height before slope.
- 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. For hangers that may be welded, see pp. 97–99 of the *Wood Construction Connectors* catalog (C-C-2019) at strongtie.com for Hanger Options Matrix and Hanger Option General Notes.
- 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 2015/2018 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.

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. Prior to using a particular fastener, please consult Connector Fastener types on pp. 16–17.
 - Larger-diameter fasteners may be substituted for smaller-diameter fasteners in connectors provided the larger fastener does not cause splitting in the wood member and the connector holes are not enlarged.
 - Simpson Strong-Tie Strong Drive® SD Connector screws are available for use with our connectors. These are designed to replace nails in certain products. Visit strongtie.com/sd for information. Screws not manufactured by Simpson Strong-Tie are not supported in our products.
- b. Fill all fastener holes as specified in the installation instructions for that product. Refer to p. 15 for the requirements of the various shapes of fastener hole.
- c. Do not overdrive nails. Overdriven nails reduce shear capacity.
- d. Products shall be installed for the use specified. Use the materials specified in the installation instructions. Substitution of or failure to use specified materials may cause the connection to fail. Do not alter installation procedures from those set forth in this catalog. See Terms and Conditions of Sale.
- e. 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. 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).
- g. Bolt holes shall be at least a minimum of 1/2" and no more than a maximum of 1/16" larger than the bolt diameter (per the 2015/2018 NDS, Section 12.1.3.2 and AISI S100, Table E3a if applicable).
- h. Install all specified fasteners before loading the connection.
- i. Some hardened fasteners may have premature failure if exposed to moisture. These fasteners are recommended to be used in dry interior applications.
- j. Use proper safety equipment.
- k. 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.
- l. 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. Connectors with tool embossments or tools with nail hole-locating mechanisms should be used. CSHP coiled strap works with several manufacturers' pneumatic framing tools. Visit strongtie.com/cshp for additional information. Follow the manufacturer's instructions and use the appropriate safety equipment. Contact Simpson Strong-Tie. Powder-actuated fasteners should not be used to install connectors, unless noted otherwise. Visit strongtie.com for top-flange hanger installation with powder-actuated fasteners.
- m. Joist shall bear completely on the connector seat, and the gap between the joist end and the header shall not exceed 1/8" per ICC-ES AC13, ASTM D1761 and ASTM D7147 test standards (unless specifically noted otherwise).
- n. Nuts shall be installed such that the end of the threaded rod or bolt is at least flush with the top of the nut.
- o. 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.
- p. 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. See p. 11 for load table explanation.
- e. See p. 261 of the *Wood Construction Connectors* catalog (C-C-2019) at strongtie.com for connections with simultaneous loads.
- f. Loads are based on the 2015/2018 NDS and AISI S100 if applicable, unless otherwise specified. Other code agencies may use different allowable loads.
- g. 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.
- h. Unless otherwise noted, wood shear is not considered in the loads given; reduce allowable loads when wood shear is limiting.
- i. 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.”
- j. Verify that the dimensions of the supporting member are sufficient to receive the specified fasteners, and develop the top flange bearing length.
- k. 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.
- 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. A method for using LRFD for cold-formed steel has also been published in the AISI S100-07. 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-MPLYHEADR at strongtie.com for more information.
- q. For connections involving members with different specific gravities, use the allowable load corresponding to the lowest specific gravity in the connection, unless noted otherwise.

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°

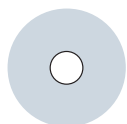
US Standard Steel Gauge Equivalents in Nominal Dimensions

Ga.	Min. Thick. (mil)	Approximate Dimensions		Thickness of Steel Sheets (in.)		
		in.	mm	Uncoated Steel	Galvanized Steel (G90)	ZMAX® (G185)
3	229	1/4	6	0.239	—	—
7	171	3/16	4.5	0.179	0.186	—
10	118	9/64	3.5	0.134	0.138	0.14
11	111	1/8	3.1	0.12	0.123	0.125
12	97	7/64	2.7	0.105	0.108	0.11
14	68	5/64	2	0.075	0.078	0.08
16	54	1/16	1.6	0.06	0.063	0.065
18	43	3/64	1.3	0.048	0.052	0.054
20	33	1/32	1	0.036	0.04	0.042
22	27	1/32	1	0.03	0.033	0.035

1. 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.

1. Steel thickness may vary according to industry mill standards.

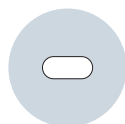
Fastening Identification



Round Holes

Purpose: To fasten a connector.

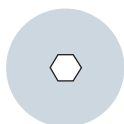
Fill Requirements: Always fill, unless noted otherwise.



Obround Holes

Purpose: To make fastening a connector in a tight location easier.

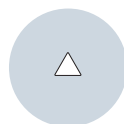
Fill Requirements: Always fill.



Hexagonal Holes

Purpose: To fasten a connector to concrete or masonry.

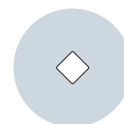
Fill Requirements: Always fill when fastening a connector to concrete or masonry.



Triangular Holes

Purpose: To increase a connector's strength or to achieve max. strength.

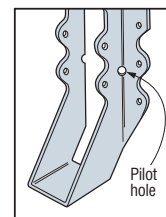
Fill Requirements: When the designer specifies max. nailing.



Diamond Holes

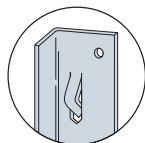
Purpose: To temporarily fasten a connector to make installing it easier.

Fill Requirements: None.



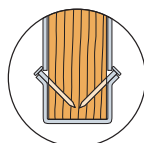
Pilot Holes

Tooling holes for manufacturing purposes. No fasteners required.



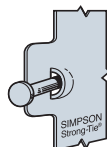
Speed Prongs

Used to temporarily position and secure the connector for easier and faster installation.



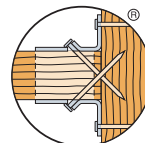
Positive Angle Nailing (PAN)

Provided when wood splitting may occur, and to speed installation.



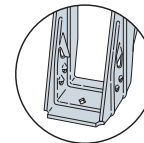
Dome Nailing

This feature guides the nail into the joist and header at a 45° angle.



Double-Shear Nailing

The nail is installed into the joist and header, distributing the load through two points on each joist nail for greater strength. Double-shear nailing must be full-length catalog nail.



ITS/IUS Strong-Grip™

The Strong-Grip™ seat allows the I-joist to "snap" in securely without the need for joist nails.

Standard Connector Fastener Types

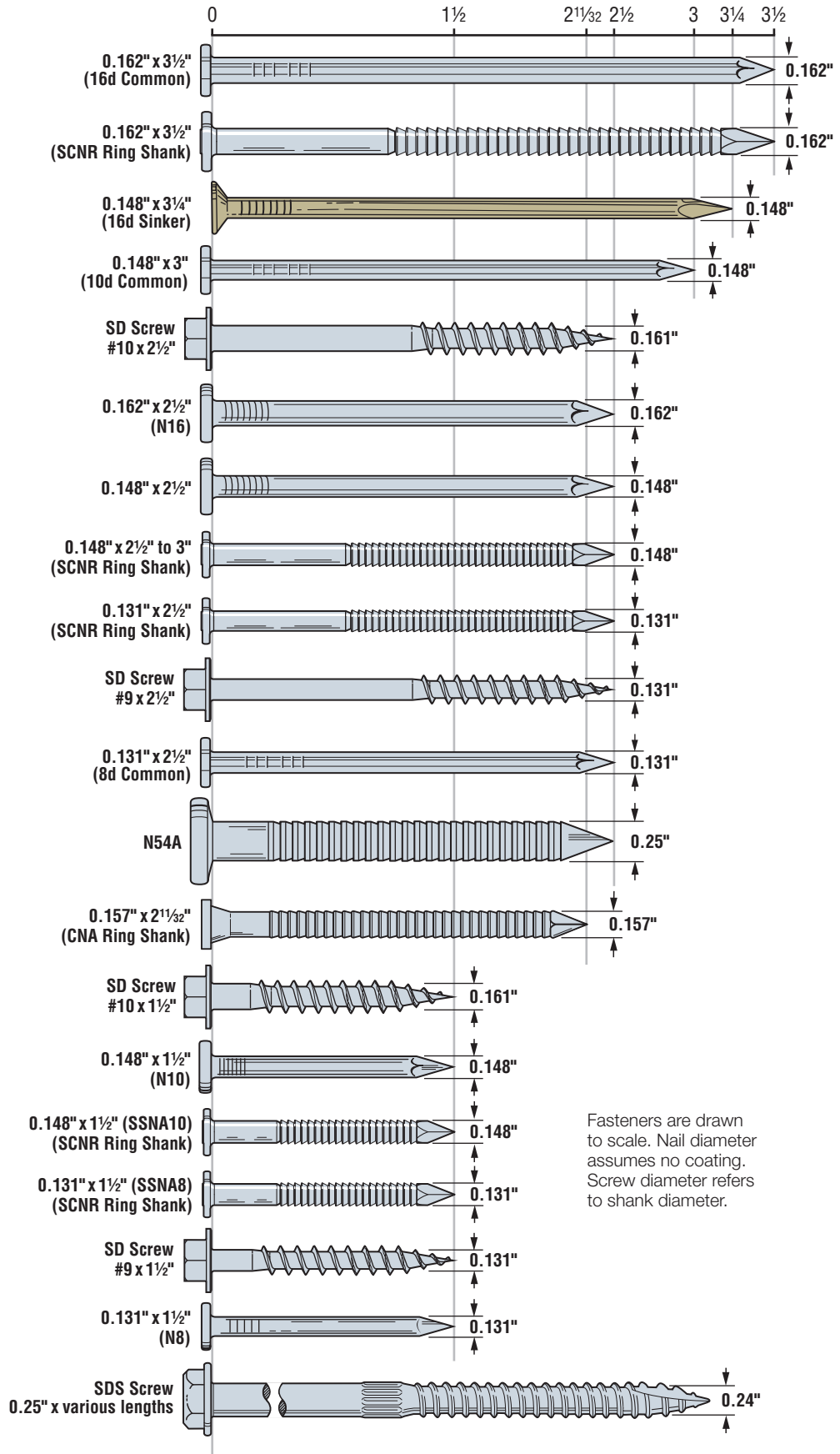
Many Simpson Strong-Tie connectors have been designed and tested for use with specific types and sizes of fasteners. The specified quantity, type and size of fastener must be installed in the correct holes on the connector to achieve published loads. Other factors such as fastener material and finish are also important. Incorrect fastener selection or installation can compromise connector performance and could lead to failure. For more information about fasteners, see our *Fastening Systems* catalog at strongtie.com or access our Fastener Finder software at strongtie.com/software.



The Simpson Strong-Tie® Strong-Drive® connector screws are the only screws approved for use (as a replacement for nails) in our connectors. See pp. 334–337 of the *Wood Construction Connectors* catalog (C-C-2019) at strongtie.com for more information.



The allowable loads of stainless-steel connectors match those of carbon-steel connectors when installed with Simpson Strong-Tie® stainless-steel Strong-Drive SCNR Ring-Shank Connector nails. For more information, refer to engineering letter L-F-SSNAILS at strongtie.com.



Fasteners are drawn to scale. Nail diameter assumes no coating. Screw diameter refers to shank diameter.

Fastener Design Information

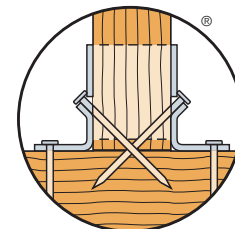
In some cases, it is desirable to install Simpson Strong-Tie face-mount joist hangers and straight straps with fasteners that are a different type or size than what is called out in the load table. In these cases, these reduction factors must be applied to the allowable loads listed for the connector.

Load Adjustment Factors for Optional Fasteners Used with Face-Mount Hangers and Straight Straps

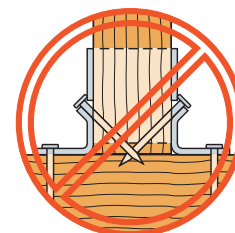
Connector Table Nail	Replacement Fastener	Allowable Load Adjustment Factor				
		Straight Download/Uplift	Face-Mount Hangers		Post Bases and Caps	Straight Straps
			Uplift	Download		
0.131" x 1½"	#9 x 1½" SD Connector screw	1.00	N/A	N/A	N/A	1.00
0.131" x 2½"	0.131" x 1½"	0.85	N/A	N/A	N/A	1.00
	#9 x 1½" SD Connector screw	1.00	N/A	N/A	N/A	1.00
0.148" x 1½"	#9 x 1½" SD Connector screw	1.00	N/A	N/A	N/A	1.00
	0.131" x 1½"	0.83	N/A	N/A	N/A	0.83
0.148" x 3"	0.131" x 1½"	0.71	Not allowed	Not allowed	N/A	0.83
	0.131" x 2½"	0.83	0.65	0.83	0.83	0.83
	0.148" x 1¼"	0.64	Not allowed	Not allowed	N/A	1.00 ⁹
	0.148" x 1½"	0.77	Not allowed	Not allowed	N/A	1.00 ⁹
	0.148" x 2½"	1.00	0.80	1.00	1.00	1.00
	0.148" x 3¼"	1.00	1.00	1.00	1.00	1.00
	#9 x 1½" SD Connector screw	1.00	Not allowed	Not allowed	N/A	1.00
	#9 x 2½" SD Connector screw	1.00	See strongtie.com ⁴		1.00	1.00
0.148" x 3¼"	0.148" x 1½"	0.77	N/A	N/A	N/A	1.00
	0.148" x 1¼"	0.64	N/A	N/A	N/A	1.00
	0.148" x 3"	1.00	1.00	1.00	1.00	1.00
	#9 x 1½" SD Connector screw	1.00	N/A	N/A	N/A	1.00
	#9 x 2½" SD Connector screw	1.00	N/A	N/A	N/A	1.00
0.162" x 2½"	#10 x 1½" SD Connector screw	1.00	Not allowed	Not allowed	N/A	1.00
	#10 x 2½" SD Connector screw	1.00	See strongtie.com ⁴		1.00	1.00
0.162" x 3½"	0.162" x 2½"	1.00	0.67	1.00	1.00	1.00
	0.148" x 2½"	0.84	0.67	0.84	0.84	0.84
	0.148" x 3"	0.84	0.84	0.84	0.84	0.84
	0.148" x 3¼"	0.84	0.84	0.84	0.84	0.84
	0.148" x 1½"	0.64	Not allowed	Not allowed	Not allowed	0.84
	#10 x 1½" SD Connector screw	1.00	Not allowed	Not allowed	N/A	1.00
	#10 x 2½" SD Connector screw	1.00	See strongtie.com ⁴		1.00	1.00

- Allowable load adjustment factors shown in the table are applicable to all face-mount hangers, post bases and caps, and straight straps throughout this catalog, except as noted in the footnotes below.
- Some products have been tested specifically with alternative fasteners and have allowable load adjustment factors or reduced capacities published on the specific product page. Values published on the product page may be used in lieu of using this table.
- This table does not apply to SUR/SUL/HSUR/HSUL hangers or to hangers modified per allowed options, or to connectors made from steel thicker than 10 ga.
- Strong-Drive® SD Connector screw substitutions in this table do not apply to sloped, skewed, or double-shear hangers. Strong-Drive SD Connector screws may be used in these connectors. For additional information and specific allowable loads, refer to strongtie.com/sd.
- Nails and Strong-Drive SD Connector screws may not be combined in a connection.
- Do not substitute 0.148" x 1½" nails for face nails in slope and skew combinations or in skewed-only LSU.
- For straps installed over wood structural panel sheathing, use a 2½"-long fastener minimum.
- Where noted, use 0.80 for 10 ga., 11 ga., and 12 ga. products when using SPF lumber.
- Where noted, use 0.92 for 10 ga., 11 ga., and 12 ga. products when using SPF lumber.

For LUS, MUS, HUS, LRU, HHUS and HGUS Hangers



Double-shear nailing shall use minimum 2½"-long nails or 2½"-long SD screws



Shorter fasteners may not be used as double-shear nails

Over-Driven Nails in Connectors and Straps

A nail that is installed such that the head deforms the steel of the connector or strap is considered over-driven. Extra care to prevent over-driven nails should be taken when installing power-driven nails. Simpson Strong-Tie has evaluated the effect of over-driven nails in connectors and straps. No load reductions for connectors or straps apply as a result of over-driven nails if all of the following conditions are met:

- Connectors and straps are 14-, 16-, or 18-gauge steel.
- The top of the nail head is not driven past flush with the face of the metal hardware.
- The nail goes through an existing fastener hole without enlarging it.
- The steel around the hole is not torn or damaged other than denting caused by the nail head.

Fastener Types for Mass Timber

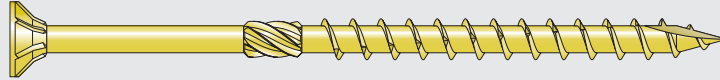
Simpson Strong-Tie offers a wide selection of fully-threaded and partially-threaded screws for mass timber construction. Partially threaded are available in lengths of up to 360 mm (14³/₁₆"). Fully-threaded fasteners are available in lengths up to 600 mm (23⁵/₁₆").

Fasteners

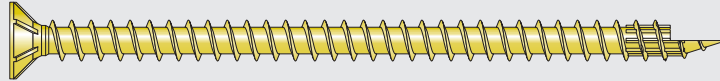
**Strong-Drive®
SDWS TIMBER Screw***
(Interior Grade)
8 mm x (101–381 mm)



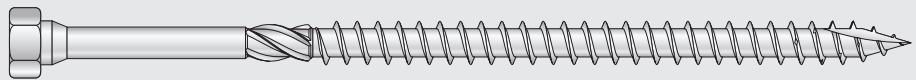
**Strong-Drive
SDCP TIMBER-CP Screw***
8 mm x (80–300 mm)
10 mm x 360 mm



**Strong-Drive
SDCF TIMBER-CF Screw***
8 mm x (120–350 mm)
10 mm x (500 mm and 600 mm)



**Strong-Drive
SDHR COMBO-HEAD Screw***
10 mm x (100 mm and 160 mm)
12 mm x (100 mm and 160 mm)

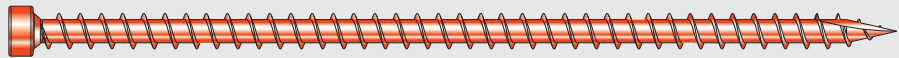


Testing in a variety of mass timber applications is underway.
For the most up-to-date product information, please visit strongtie.com/masstimber.

* Note that the screws above are given in millimeters to align with European nomenclature for these screw types. Also note that the listed diameter is the thread diameter, not the shank diameter.

** Note that the dimensions are given in inches to align with North American nomenclature for these screw types.

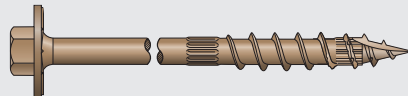
**Strong-Drive
SDWC TRUSS Screw****
0.152" x 4¹/₂" (Black E-Coat®)
0.152" x 6"



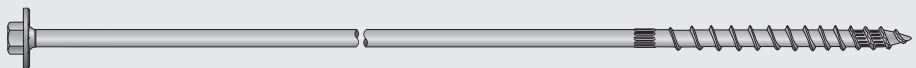
**Strong-Drive
SDWV SOLE-TO-RIM Screw****
0.140" x 4"



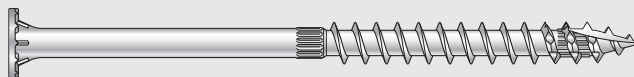
**Strong-Drive
SDWH TIMBER-HEX Screw****
0.195" x (3"–10")



**Strong-Drive
SDWH TIMBER-HEX HDG Screw****
0.276" x (4"–15")



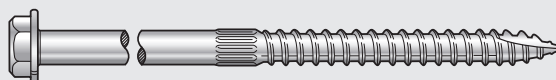
**Strong-Drive
SDWS TIMBER SS Screw****
0.276" x (3"–12")



**Strong-Drive
SDW TRUSS-PLY/EWP-PLY Screw****
0.220" x (3"–6³/₄")



**Strong-Drive
SDS HEAVY-DUTY
CONNECTOR Screw****
0.250" x (1¹/₂"–8")



Strong-Drive® SDCF TIMBER-CF Screw**Beam Reinforcement, Wall to Wall, Floor to Floor, Support Beams, Butt Joints**

The Strong-Drive SDCF Timber-CF screw is a structural fastener available in a variety of lengths and is designed for cross-laminated timber construction, mass timber construction and general interior applications. These 0.315"- and 0.394"-diameter structural fasteners provide uncompromised strength for these demanding applications. The large flat head with underhead nibs provides for clean countersinking. The yellow-zinc, fully-threaded screw, with a proprietary "half-point" provides fast starts and excellent holding power.

Special Features:

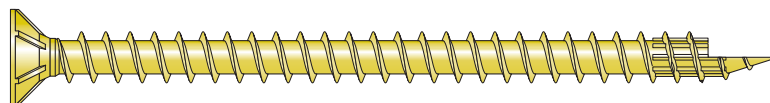
- Designed to be countersunk with head flush to wood surface
- Proprietary "half-point" ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- Fully threaded to provide high withdrawal resistance

Codes/Standards: Pending

Warning: Industry studies show that hardened fasteners can experience performance problems in wet and corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.

Testing in a variety of mass timber applications is underway.

For the most up-to-date product information, please visit strongtie.com/masstimber.

**Yellow-Zinc Coating**

Model No.	Dimensions								Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack	Box Packaging SKU	Fasteners per Box
	mm				in.							
	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.				
SDCF22434	8 x 120	5.6	113	15	0.315 x 4¾	0.23	4.45	0.59	SDCF22434-R50	50	SDCF22434	250
SDCF22512	8 x 140	5.6	133	15	0.315 x 5½	0.23	5.24	0.59	SDCF22512-R50	50	SDCF22512	250
SDCF22614	8 x 160	5.6	153	15	0.315 x 6¼	0.23	6.02	0.59	SDCF22614-R50	50	SDCF22614	250
SDCF22700	8 x 180	5.6	173	15	0.315 x 7	0.23	6.81	0.59	SDCF22700-R50	50	SDCF22700	250
SDCF22858	8 x 220	5.6	213	15	0.315 x 8¾	0.23	8.39	0.59	SDCF22858-R50	50	SDCF22858	250
SDCF221014	8 x 260	5.6	253	15	0.315 x 10¼	0.23	9.96	0.59	SDCF221014-R50	50	SDCF221014	250
SDCF221134	8 x 300	5.6	293	15	0.315 x 11¾	0.23	11.54	0.59	SDCF221134-R50	50	SDCF221134	250
SDCF221334	8 x 350	5.6	343	15	0.315 x 13¾	0.23	13.50	0.59	SDCF221334-R50	50	SDCF221334	250
SDCF271958 ³	10 x 500	7	491	18.5	0.394 x 19¾	0.28	19.33	0.73	SDCF271958-R25	25	SDCF271958	100
SDCF272358 ³	10 x 600	7	591	18.5	0.394 x 23¾	0.28	23.27	0.73	SDCF272358-R25	25	SDCF272358	100

1. Dia. denotes major thread diameter.

2. Driver bit size: SDCF22XXXX = T40; SDCF27XXXX = T50.

3. SDCF27XXXX have clear-zinc coating.

Strong-Drive® SDCP TIMBER-CP Screw

Wall to Wall, Floor to Floor, Wall to Floor, Panel to Beam, Panel to Wall, Surface Splines, Lap Joints, Ledger Connections and General Timber Framing

The Strong-Drive SDCP Timber-CP screw is a structural fastener available in a variety of lengths and is designed for cross-laminated timber construction, mass timber construction and general interior applications. These partially-threaded, 0.315"- and 0.394"-diameter structural fasteners are designed to pull structural members together with superb holding power. The large flat head with underhead ribs provides for clean countersinking. The SDCP Timber-CP has a yellow-zinc coating, a robust knurled shaft and Type-17 point for fast starts and low-torque driving.

Special Features:

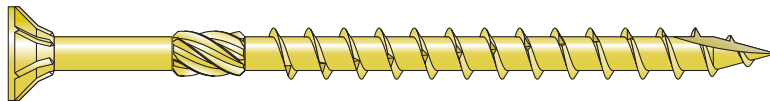
- Designed to be countersunk so that head is flush to wood surface
- Type-17 point ensures fast starts, reduces installation torque
- Partially threaded with aggressive thread to provide high pullout resistance

Codes/Standards: ICC-ES ESR3046

Warning: Industry studies show that hardened fasteners can experience performance problems in wet and corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.

Testing in a variety of mass timber applications is underway.

For the most up-to-date product information, please visit strongtie.com/masstimber.

**Yellow-Zinc Coating**

Model No.	Dimensions								Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack	Bucket Packaging SKU	Fasteners per Bucket
	mm				in.							
	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.				
SDCP22318	8 x 80	5.6	50	15	0.315 x 3 $\frac{1}{8}$	0.22	1.97	0.59	SDCP22318-R50	50	SDCP22318	250
SDCP22434	8 x 120	5.6	80	15	0.315 x 4 $\frac{3}{4}$	0.22	3.15	0.59	SDCP22434-R50	50	SDCP22434	250
SDCP22512	8 x 140	5.6	80	15	0.315 x 5 $\frac{1}{2}$	0.22	3.15	0.59	SDCP22512-R50	50	SDCP22512	250
SDCP22614	8 x 160	5.6	80	15	0.315 x 6 $\frac{1}{4}$	0.22	3.15	0.59	SDCP22614-R50	50	SDCP22614	250
SDCP22700	8 x 180	5.6	80	15	0.315 x 7	0.22	3.15	0.59	SDCP22700-R50	50	SDCP22700	250
SDCP22858	8 x 220	5.6	80	15	0.315 x 8 $\frac{5}{8}$	0.22	3.15	0.59	SDCP22858-R50	50	SDCP22858	250
SDCP22912	8 x 240	5.6	80	15	0.315 x 9 $\frac{1}{2}$	0.22	3.15	0.59	SDCP22912-R50	50	SDCP22912	250
SDCP221100	8 x 280	5.6	80	15	0.315 x 11	0.22	3.15	0.59	SDCP221100-R50	50	SDCP221100	250
SDCP221134	8 x 300	5.6	80	15	0.315 x 11 $\frac{3}{4}$	0.22	3.15	0.59	SDCP221134-R50	50	SDCP221134	250
SDCP271400	10 x 360	7	80	18	0.394 x 14	0.275	3.15	0.7	SDCP271400-R25	25	SDCP271400	150

1. Dia. denotes major thread diameter.

2. Driver bit size: SDCP22XXXX = T40.

Strong-Drive® SDHR COMBO-HEAD Screw**Steel Plate-to-Wood Connections**

The Strong-Drive SDHR Combo-Head screw is a structural fastener designed for cross-laminated timber construction, mass timber construction and general interior applications. These partially-threaded, sturdy 0.394"- and 0.472"-diameter structural fasteners are designed to pull structural members together while providing excellent connection strength. The unique "combination" head allows for effortless driving using either a hex driver bit or T40 6-lobe driver bit. The SDHR Combo-Head has an interior-grade, blue-zinc coating, a robust knurled shaft and Type-17 point for fast starts and low-torque driving.

Special Features:

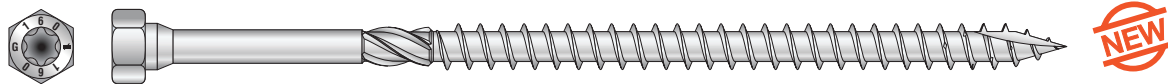
- Designed for use with steel side plates
- Type-17 point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- Partially threaded with aggressive thread to provide high pullout resistance

Codes/Standards: Pending

Warning: Industry studies show that hardened fasteners can experience performance problems in wet and corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.

Testing in a variety of mass timber applications is underway.

For the most up-to-date product information, please visit strongtie.com/masstimber.

**Blue-Bright Zinc Coating**

Model No.	Dimensions						Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack	Box Packaging SKU	Fasteners per Box
	mm			in.						
	Size Dia. x L	Shank Dia.	Thread Length	Size Dia. x L	Shank Dia.	Thread Length				
SDHR27400	10 x 100	7	55	0.394 x 4	0.275	2.15	SDHR27400-R25	25	SDHR27400	100
SDHR27614	10 x 160	7	110	0.394 x 6¼	0.275	4.3	SDHR27614-R25	25	SDHR27614	100
SDHR31400	12 x 100	8	55	0.472 x 4	0.315	2.15	SDHR31400-R25	25	SDHR31400	100
SDHR31614	12 x 160	8	110	0.472 x 6¼	0.315	4.3	SDHR31614-R25	25	SDHR31614	100

1. Dia. denotes major thread diameter.

2. Driver bit size: SDHR27XXXX — 6-lobe = T40, hex = 15 mm; SDHR31XXXX — 6-lobe = T40, hex = 17 mm.

Strong-Drive® SDWS TIMBER Screw (Interior Grade)

Surface Splines, Lap Joints, Timber Framing and General Interior Applications

The Strong-Drive SDWS Timber screw is a structural wood screw available in a variety of lengths and is designed for cross-laminated timber construction, mass timber construction and general interior applications. These 0.195" and 0.220"-diameter structural fasteners require less torque to install than comparable fasteners. The large diameter washer head pulls members down easily, eliminating the need to use extra washers. It is code listed under IAPMO-UES ER-192 and meets 2015 and 2018 IRC and IBC code requirements for several common wood framing applications.

Special Features:

- SawTooth™ point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- Low-profile head design makes countersinking easy
- Serrated thread reduces splitting and damage
- Large washer head with nibs provides maximum bearing area
- 6-lobe, T40 drive provides positive engagement that makes the screw easy to drive (replacement driver bit: BIT40T-134)
- Size identification on all Simpson Strong-Tie screws

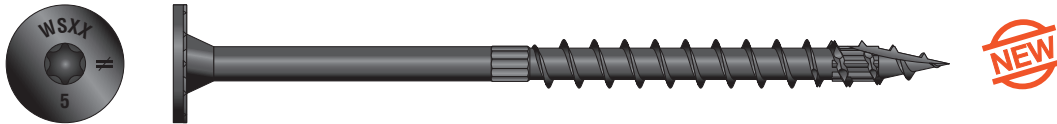
Codes/Standards: IAPMO-UES ER-192

US Patent: 9,523,383

Warning: Industry studies show that hardened fasteners can experience performance problems in wet and corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.

Testing in a variety of mass timber applications is underway.

For the most up-to-date product information, please visit strongtie.com/masstimber.



E-Coat® Coating

Model No.	Dimensions								Retail Packaging SKU	Fasteners per Pack	Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack
	mm				in.							
	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.				
SDWS19600	7 x 152	4.9	70	16	0.275 x 6	0.195	2.75	0.64	SDWS19600-R50	50	SDWS19600	250
SDWS19712	7 x 191	4.9	70	16	0.275 x 7½	0.195	2.75	0.64	SDWS19712-R50	50	SDWS19712	250
SDWS22400	8 x 101	5.6	60	19	0.315 x 4	0.22	2.375	0.75	SDWS22400-50	50	SDWS22400	250
SDWS22500	8 x 127	5.6	70	19	0.315 x 5	0.22	2.75	0.75	SDWS22500-50	50	SDWS22500	250
SDWS22512	8 x 140	5.6	70	19	0.315 x 5½	0.22	2.75	0.75	SDWS22512-50	50	SDWS22512	250
SDWS22600	8 x 152	5.6	70	19	0.315 x 6	0.22	2.75	0.75	SDWS22600-50	50	SDWS22600	250
SDWS22800	8 x 203	5.6	70	19	0.315 x 8	0.22	2.75	0.75	SDWS22800-R50	50	SDWS22800	250
SDWS22900	8 x 229	5.6	70	19	0.315 x 9	0.22	2.75	0.75	SDWS22900-R50	50	SDWS22900	250
SDWS221000	8 x 254	5.6	70	19	0.315 x 10	0.22	2.75	0.75	SDWS221000-R50	50	SDWS221000	250
SDWS221100	8 x 279	5.6	70	19	0.315 x 11	0.22	2.75	0.75	SDWS221100-R50	50	SDWS221100	250
SDWS221200	8 x 305	5.6	70	19	0.315 x 12	0.22	2.75	0.75	SDWS221200-R50	50	SDWS221200	250
SDWS221500	8 x 381	5.6	70	19	0.315 x 15	0.22	2.75	0.75	SDWS221500-R50	50	SDWS221500	200

1. Dia. denotes major thread diameter.

2. Driver bit size: T40.

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

Strong-Drive® SDWS TIMBER SS Screw**Structural Wood and Engineered Wood Connections
Including Docks, Piers and Boardwalks**

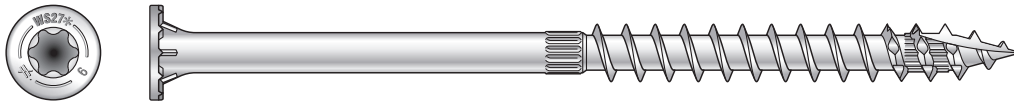
The SDWS Timber SS screw is a 0.276"-diameter Type 316 stainless-steel fastener suitable for cross-laminated timber and mass timber applications in marine and coastal environments or wherever severe-corrosion resistance is a necessity. The SDWS Timber SS screw has a SawTooth™ point and flat washer head that make it the ideal choice for use in applications where fast starts, low-torque driving and superb holding power are desired.

Special Features:

- 0.276"-shank diameter for heavy-duty structural applications
- SawTooth point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- No counterboring required for most applications
- Large flat head with nibs is designed to be driven flush to surface — no protrusions
- Large, deep T50 6-lobe recess for a secure drive (replacement driver bit: BIT50T-125-RC1)

Codes/Standards: Pending

US Patent: 9,523,383



Model No.	Dimensions								Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack	Bucket Packaging SKU	Fasteners per Bucket
	mm				in.							
	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.				
SDWS27300SS	10 x 76	7	50.8	16.5	0.394 x 3	0.276	2	0.65	SDWS27300SS-R30	30	SDWS27300SS	350
SDWS27400SS	10 x 101	7	76.2	16.5	0.394 x 4	0.276	3	0.65	SDWS27400SS-R30	30	SDWS27400SS	350
SDWS27500SS	10 x 127	7	76.2	16.5	0.394 x 5	0.276	3	0.65	SDWS27500SS-R30	30	SDWS27500SS	300
SDWS27600SS	10 x 152	7	76.2	16.5	0.394 x 6	0.276	3	0.65	SDWS27600SS-R30	30	SDWS27600SS	300
SDWS27800SS	10 x 203	7	76.2	16.5	0.394 x 8	0.276	3	0.65	SDWS27800SS-R30	30	SDWS27800SS	200
SDWS271000SS	10 x 254	7	76.2	16.5	0.394 x 10	0.276	3	0.65	SDWS271000SS-R30	30	—	—
SDWS271200SS	10 x 305	7	76.2	16.5	0.394 x 12	0.276	3	0.65	SDWS271200SS-R30	30	—	—

1. Dia. denotes major thread diameter.

2. Driver bit size: T50.

Strong-Drive® SDWH TIMBER-HEX HDG Screw

Structural Wood and Engineered Wood Including Ledgers

The SDWH Timber-Hex HDG screw is a 0.276"-diameter hot-dip galvanized screw suitable for cross-laminated timber and mass timber construction in coastal applications or wherever corrosion resistance is a necessity. The SDWH Timber-Hex HDG screw has a SawTooth™ point and oversized integral washer that makes for fast installations; no predrilling or separate washer needed. Speed up your next job by replacing ¾" and 5/8" HDG bolt/washer/nut assemblies (two screws for one bolt in many conditions) with the Strong-Drive SDWH Timber-Hex HDG screw.

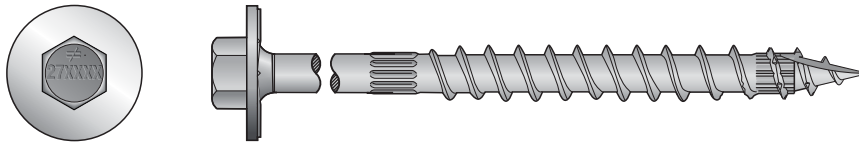
Special Features:

- 0.276"-shank diameter for heavy-duty structural applications
- ASTM A153 Class-C hot-dip galvanized coating suitable for coastal environments
- SawTooth point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- Oversized 0.93"-diameter integral washer eliminates the need for a separate washer
- 3/8" hex drive for secure driving (replacement driver bit: BITHEXR38-134)

Codes/Standards: IAPMO-UES ER-192; City of LA RR25906; State of Florida FL13975

Install Tips: For best results, use a minimum of ½" low-speed corded drill to install

US Patent: 9,523,383



Class C, Hot-Dip Galvanized

Model No.	Dimensions								Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack	Bucket Packaging SKU	Fasteners per Bucket
	mm				in.							
	Size Dia. x L	Shank Dia.	Thread Length	Head Dia. ³	Size Dia. x L	Shank Dia.	Thread Length	Head Dia. ³				
SDWH27400G	10 x 101	7	76.2	23.6	0.394 x 4	0.276	3	0.93	SDWH27400GMB	150	SDWH27400G	350
SDWH27600G	10 x 152	7	76.2	23.6	0.394 x 6	0.276	3	0.93	SDWH27600GMB	150	SDWH27600G	350
SDWH27800G	10 x 203	7	76.2	23.6	0.394 x 8	0.276	3	0.93	SDWH27800GMB	150	—	—
SDWH271000G	10 x 254	7	76.2	23.6	0.394 x 10	0.276	3	0.93	SDWH271000GMB	150	—	—
SDWH271200G	10 x 305	7	76.2	23.6	0.394 x 12	0.276	3	0.93	SDWH271200GMB	150	—	—
SDWH271500G	10 x 381	7	76.2	23.6	0.394 x 15	0.276	3	0.93	SDWH271500GMB	150	—	—

1. Dia. denotes major thread diameter.

2. Hex driver bit size: 3/8".

3. Head diameter includes size of integrated washer with 3/8" hex head.

Strong-Drive® SDWC TRUSS Screw

CLT Butt Joints, Truss/Rafter-to-Plate and Stud-to-Plate Connections

The Strong-Drive SDWC Truss screw provides an excellent cross-laminated timber solution, a stud-to-bottom plate or stud-to-top plate connection, as well as fastening trusses and rafters to top plates. The full-threaded shank engages the entire length of the fastener, providing a secure connection. The SDWC is tested in accordance with ICC-ES AC233 (screw) and AC13 (wall assembly and roof-to-wall assembly) for uplift and lateral loads between wall plates and vertical wall framing and between the top plate and the roof rafters or trusses. It is code listed under IAPMO-UES ER-262 and meets 2015 and 2018 IRC and IBC code requirements for several common wood framing applications.

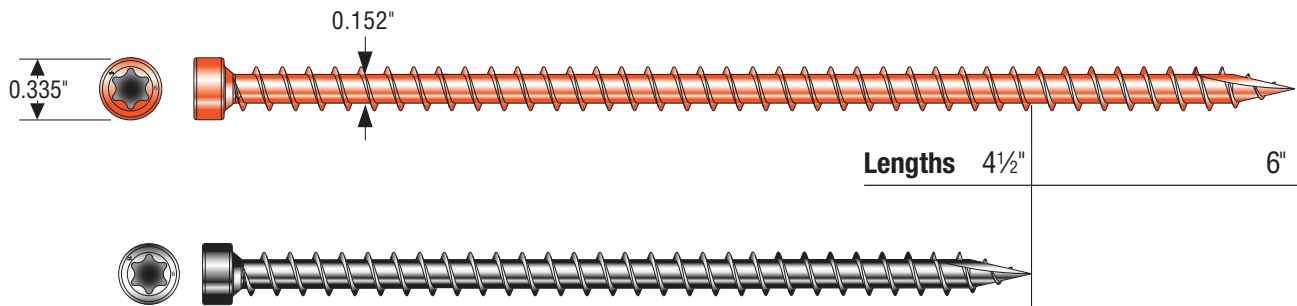
For safe and easy overhead installations, use the Quik Stik™ rafter and truss fastening system.

Special Features:

- Fully-threaded shank engages the entire length of the fastener, providing a secure connection between the roof and wall framing members
- Cap-style head countersinks fully into the double top plate to avoid interference with drywall or finish trades
- Wide tolerance on installation angle makes it easy to install the SDWC correctly
- Can be installed from inside the structure, eliminating exterior work on the upper stories and enhancing job safety
- 6-lobe, T30 driver bit provides positive engagement that makes the screw easy to drive and improves bit life (replacement driver bit: BIT30T-2-RC3)
- Fastening can be performed before or after exterior sheathing is applied for added flexibility
- Orange color for easy inspection
- Type-17 point for faster starts and easier driving
- SDWC15450 is recognized for use in chemically-treated wood as described in the evaluation report
- Can be used for CLT diaphragm butt joints as shown on p. 37–38.

Codes/Standards: IAPMO-UES ER-262; State of Florida FL13975

Warning: Industry studies show that hardened fasteners can experience performance problems in wet and corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.



E-Coat® and Clear Zinc Coating with Orange Top Coat

Model No.	Dimensions								Retail Packaging SKU	Retail Fasteners per Pack	Bucket Packaging SKU	Fasteners per Bucket
	mm				in.							
	Size Dia. x L	Minor Dia.	Thread Length	Head Dia.	Size Dia. x L	Minor Dia.	Thread Length	Head Dia.				
SDWC15450	6 x 114	4	107.95	8.5	0.238 x 4.5	0.152	4.25	0.335	SDWC15450-KT	50	SDWC15450B-KT	500
SDWC15600	6 x 152	4	146.05	8.5	0.238 x 6	0.152	5.75	0.335	SDWC15600-KT	50	SDWC15600B-KT	500

1. Dia. denotes major thread diameter.
2. Driver bit size: T30.
3. E-coat is a registered trademark of PPG Industries.

Strong-Drive® SDWV SOLE-TO-RIM Screw

Half-Lap Joints, Sole-to-Rim Attachment

The Strong-Drive SDWV Sole-to-Rim screw may be used for cross-laminated timber applications such as diaphragm surface splines, as well as to attach a sole plate to a rim board. The SDWV Sole-to-Rim screw coating is intended for dry service, medium-corrosion applications and is suitable for use with FRT in dry-service applications.

Special Features:

- Large 0.400"-diameter head for increased holding power
- Fast start point with helical ridge for fast, easy, low-torque installation
- Tested in wood and engineered wood
- Variable thread design, optimized for 2x dimensional lumber

Codes/Standards: IAPMO-UES ER-192

US Patent: 6,074,149

Warning: Industry studies show that hardened fasteners can experience performance problems in wet and corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.



Zinc Plus E-Coat® Coating

Model No.	Dimensions								Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack	Bucket Packaging SKU	Fasteners per Bucket
	mm				in.							
	Size Dia. x L	Minor Dia.	Thread Length	Head Dia.	Size Dia. x L	Minor Dia.	Thread Length	Head Dia.				
SDWV13400	4.5 X 101	3.5	38	10.2	0.188 x 4	0.14	1.5	0.4	—	—	SDWV13400	1,000

1. Dia. denotes major thread diameter.

2. Driver bit size: T25.

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

Strong-Drive® SDWH TIMBER-HEX Screw*Structural Wood and Engineered Wood Connections Including Ledgers*

The Strong-Drive SDWH Timber-Hex screw is ideal for structural cross-laminated timber, mass timber and general-purpose fastening applications where a hex-head drive is preferred. It is code listed under IAPMO-UES ER-192 and meets 2015 and 2018 IRC and IBC code requirements for several common wood framing applications.

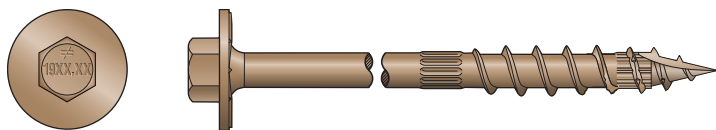
Special Features:

- Bold thread design provides superior holding power
- 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)

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

US Patent: 9,523,383

**Double-Barrier Coating**

Model No.	Dimensions								Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack	Bucket Packaging SKU	Fasteners per Bucket
	mm				in.							
	Size Dia. x L	Shank Dia.	Thread Length	Head Dia. ³	Size Dia. x L	Shank Dia.	Thread Length	Head Dia. ³				
SDWH19300DB	7 x 76	4.9	38	16.5	0.276 x 3	0.195	1.5	0.64	SDWH19300DBMB	250	SDWH19300DB	1,000
SDWH19400DB	7 x 101	4.9	60	16.5	0.276 x 4	0.195	2.375	0.64	SDWH19400DBMB	250	SDWH19400DB	800
SDWH19600DB	7 x 152	4.9	70	16.5	0.276 x 6	0.195	2.77	0.64	SDWH19600DBMB	250	SDWH19600DB	600
SDWH19800DB	7 x 203	4.9	70	16.5	0.276 x 8	0.195	2.77	0.64	SDWH19800DBMB	250	SDWH19800DB	500
SDWH191000DB	7 x 254	4.9	70	16.5	0.276 x 10	0.195	2.77	0.64	SDWH191000DBMB	—	SDWH191000DB	250

1. Dia. denotes major thread diameter.

2. Hex driver bit size: 5/16".

3. Head diameter includes diameter of integrated washer with 5/16" hex head.

Strong-Drive® SDW TRUSS-PLY/EWP-PLY Screw

Surface Splines, Lap Joints, Timber Framing and General Interior Applications

The Strong-Drive SDW TRUSS-PLY/EWP-PLY screw is a structural wood screw available in a variety of lengths and is designed for cross-laminated timber construction applications and multi-ply wood members. These 0.220"-diameter structural fasteners require less torque to install than comparable fasteners. The large diameter washer head pulls members down easily, eliminating the need to use extra washers.

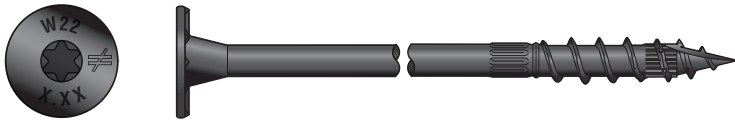
Special Features:

- SawTooth™ point ensures fast starts, reduces installation torque and eliminates the need for predrilling in most applications
- Low-profile head design makes countersinking easy (0.75"-head diameter)
- Serrated thread reduces splitting and damage
- Large washer head with nibs provides maximum bearing area
- 6-lobe, T40 drive provides positive engagement that makes the screw easy to drive and improves bit life (replacement driver bit: BIT40T-134)
- Size identification on all SDW screw heads

Codes/Standards: IAPMO-UES ER-192; City of LA RR25906; State of Florida 13975

US Patent: 9,523,383

Warning: Industry studies show that hardened fasteners can experience performance problems in wet and corrosive environments. Accordingly, use this product in dry, interior and noncorrosive environments only.



E-Coat®

Model No.	Dimensions								Mini-Bulk Packaging SKU	Mini-Bulk Fasteners per Pack	Box Packaging SKU	Fasteners per Box
	mm				in.							
	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.	Size Dia. x L	Shank Dia.	Thread Length	Head Dia.				
SDW22300	8 x 76	5.6	36.5	19	0.315 x 3	0.22	1 ¹ / ₁₆	0.75	SDW22300MB	250	SDW22300	950
SDW22438	8 x 111	5.6	36.5	19	0.315 x 4 ³ / ₈	0.22	1 ¹ / ₁₆	0.75	SDW22438MB	200	SDW22438	600
SDW22458	8 x 117.5	5.6	36.5	19	0.315 x 4 ⁵ / ₈	0.22	1 ¹ / ₁₆	0.75	SDW22458MB	200	SDW22458	600
SDW22600	8 x 152.4	5.6	36.5	19	0.315 x 6	0.22	1 ¹ / ₁₆	0.75	SDW22600MB	200	SDW22600	500
SDW22638	8 x 162	5.6	36.5	19	0.315 x 6 ³ / ₈	0.22	1 ¹ / ₁₆	0.75	SDW22638MB	200	SDW22638	500
SDW22338	8 x 86	5.6	40	19	0.315 x 3 ³ / ₈	0.22	1 ¹ / ₁₆	0.75	SDW22338MB	250	SDW22338	900
SDW22500	8 x 127	5.6	40	19	0.315 x 5	0.22	1 ¹ / ₁₆	0.75	SDW22500MB	200	SDW22500	600
SDW22634	8 x 171.5	5.6	40	19	0.315 x 6 ³ / ₄	0.22	1 ¹ / ₁₆	0.75	SDW22634MB	200	SDW22634	500

1. Dia. denotes major thread diameter.

2. Driver bit size: T40.

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

Strong-Drive® SDS HEAVY-DUTY CONNECTOR Screw**Heavy-Duty Simpson Strong-Tie® Connectors**

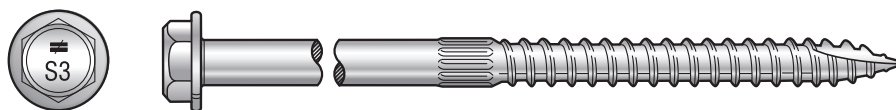
The Strong-Drive SDS Heavy-Duty Connector Screw is a ¼"-diameter, high-strength structural wood screw ideal for various connector installations, as well as wood-to-wood and engineered-wood applications.

Special Features:

- Type-17 point enables easy driving with no predrilling
- Available with a double-barrier coating and Type 316 stainless steel
- ⅝" hex head with 0.48" integrated washer
- Head is stamped with the Simpson Strong-Tie "≠" sign and fastener length for easy identification after installation
- Replacement driver bit: BITHEXR38-134

Install Tips: A low-speed ½" drill with a ⅝" hex driver is the recommended tool for installation

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

**Double-Barrier Coating or Type-316 Stainless Steel**

Model No.	Dimensions				Retail Pack		Mini Bulk		Bulk		Coating/Material
	mm		in.		Fasteners Per Pack	Model No.	Fasteners Per Pack	Model No.	Fasteners Per Pack	Model No.	
	Size Dia. x L	Thread Length	Size Dia. x L	Thread Length							
SDS25112	6.35 x 38	25	¼ x 1½	1	25	SDS25112-R25	300	SDS25112MB	1,500	SDS25112	Double Barrier
SDS25200	6.35 x 51	32	¼ x 2	1¼	25	SDS25200-R25	250	SDS25200MB	1,300	SDS25200	Double Barrier
SDS25212	6.35 x 64	38	¼ x 2½	1½	25	SDS25212-R25	200	SDS25212MB	1,100	SDS25212	Double Barrier
SDS25300	6.35 x 76	51	¼ x 3	2	25	SDS25300-R25	150	SDS25300MB	950	SDS25300	Double Barrier
SDS25312	6.35 x 89	57	¼ x 3½	2¼	10	SDS25312-R10	125	SDS25312MB	900	SDS25312	Double Barrier
—					25	SDS25312-R25L*	—	—	—	—	Double Barrier
SDS25412	6.35 x 114	70	¼ x 4½	2¾	10	SDS25412-R10	100	SDS25412MB	800	SDS25412	Double Barrier
SDS25500	6.35 x 127	70	¼ x 5	2¾	10	SDS25500-R10	100	SDS25500MB	500	SDS25500	Double Barrier
—					25	SDS25500-R25L*	—	—	—	—	Double Barrier
SDS25600	6.35 x 152	83	¼ x 6	3¼	10	SDS25600-R10	100	SDS25600MB	600	SDS25600	Double Barrier
—	6.35 x 203	83	¼ x 8	3¼	10	SDS25800-R10	—	—	—	—	Double Barrier
SDS25800					50	SDS25800-R50	—	—	400	SDS25800	Double Barrier
SDS25112SS	6.35 x 38	25	¼ x 1½	1	25	SDS25112SS-R25	—	—	1500	SDS25112SS	Type 316 SS
SDS25200SS	6.35 x 51	32	¼ x 2	1¼	25	SDS25200SS-R25	—	—	1300	SDS25200SS	Type 316 SS
SDS25212SS	6.35 x 64	38	¼ x 2½	1½	25	SDS25212SS-R25	—	—	1100	SDS25212SS	Type 316 SS
SDS25300SS	6.35 x 76	51	¼ x 3	2	25	SDS25300SS-R25	—	—	950	SDS25300SS	Type 316 SS
SDS25312SS	6.35 x 89	57	¼ x 3½	2¼	25	SDS25312SS-R25	—	—	900	SDS25312SS	Type 316 SS
—					25	SDS25312SS-R25L*	—	—	—	—	Type 316 SS

1. Dia. denotes major thread diameter.

ABR/AE

Angle Brackets for Cross-Laminated Timber (CLT)

ABR and AE angle brackets are used to connect cross-laminated timber (CLT) wall panels to CLT floors or concrete slabs. A wide variety of fastener and anchor options are available depending on the required loads and application.

Material: ABR9020 — 14 gauge
ABR105, AE116, ABR255 — 11 gauge

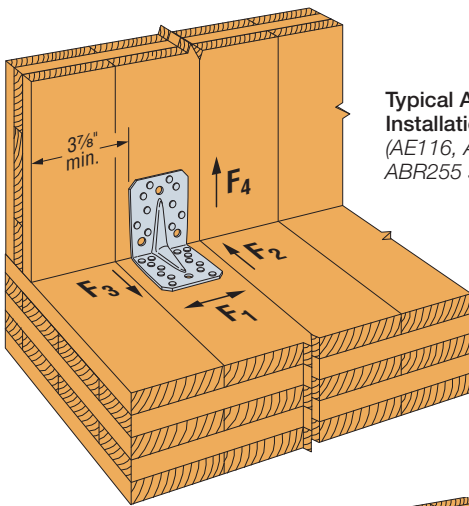
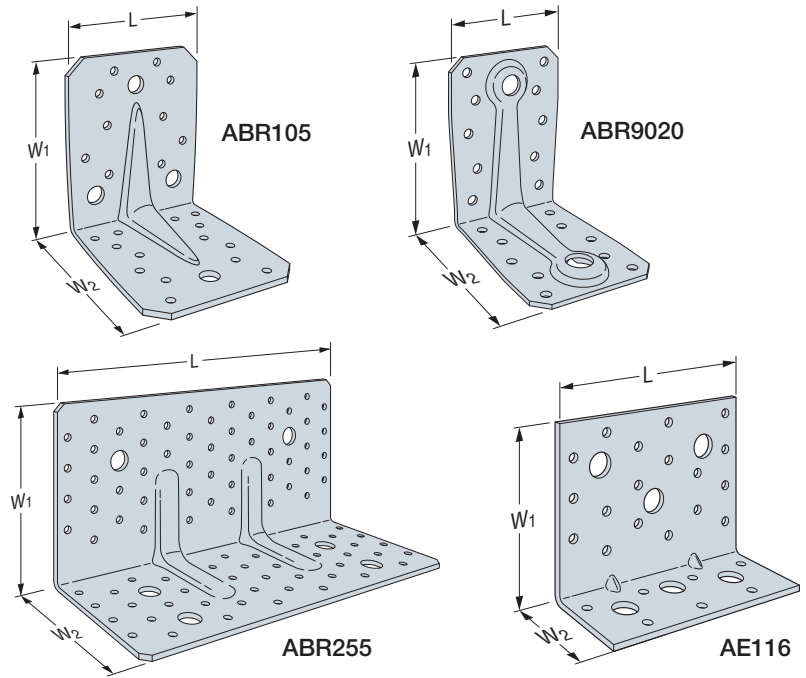
Finish: Galvanized

Installation:

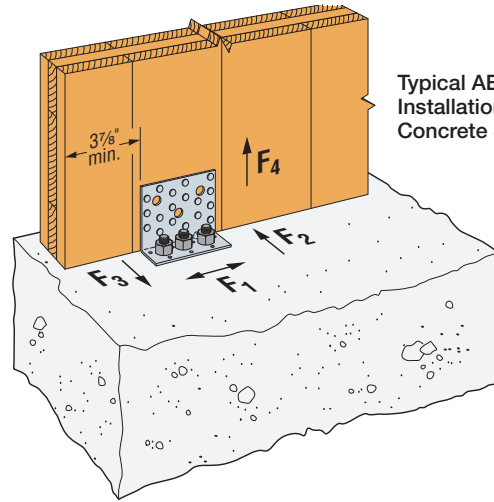
- Use all specified fasteners and anchors
- Follow installation images given below

Codes: See p. 7 for Code Reference Key Chart

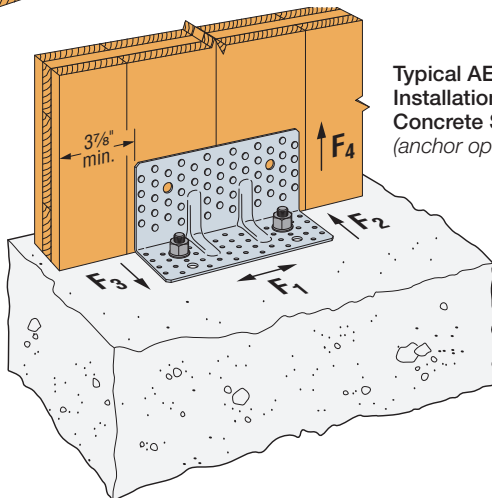
Angle Brackets



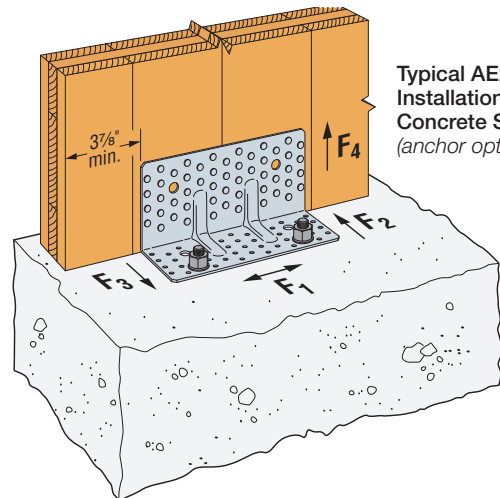
Typical ABR105 Installation to CLT Floor
(AE116, ABR9020, ABR255 similar)



Typical AE116 Installation to Concrete Slab



Typical AE255 Installation to Concrete Slab
(anchor option 1)



Typical AE255 Installation to Concrete Slab
(anchor option 2)

ABR/AE

Angle Brackets for Cross-Laminated Timber (CLT) (cont.)

Allowable Loads — CLT Floor Values

Model No.	Gauge	Dimensions (in.)			Fastener Schedule		Allowable Load (lb.) C _D = 1.60				Code Ref.
		W ₁	W ₂	L	Horizontal Leg	Vertical Leg	F ₁	F ₂	F ₃	F ₄	
ABR9020	14	3 ⁷ / ₁₆	3 ⁷ / ₁₆	2 ⁹ / ₁₆	(10) CNA 4 x 60	(10) CNA 4 x 60	1,085	780	1,330	590	—
					(10) SD #10 x 2 ¹ / ₂ "	(10) SD #10 x 2 ¹ / ₂ "	1,480	1,200	1,330	1,010	
					(10) 0.162" x 2 ¹ / ₂ "	(10) 0.162" x 2 ¹ / ₂ "	980	425	1,330	510	
ABR105	11	4 ¹ / ₈	4 ¹ / ₈	3 ⁹ / ₁₆	(14) CNA 4 x 60	(10) CNA 4 x 60	1,350	835	2,300	1,020	
					(14) SD #10 x 2 ¹ / ₂ "	(10) SD #10 x 2 ¹ / ₂ "	1,880	1,235	2,300	1,475	
					(14) 0.162" x 2 ¹ / ₂ "	(10) 0.162" x 2 ¹ / ₂ "	1,220	580	2,020	415	
AE116	11	3 ⁹ / ₁₆	1 ⁷ / ₈	4 ⁹ / ₁₆	(7) CNA 4 x 60	(18) CNA 4 x 60	1,720	1,225	1,550	650	
					(7) SD #10 x 2 ¹ / ₂ "	(18) SD #10 x 2 ¹ / ₂ "	1,850	1,445	1,850	1,035	
					(7) 0.162" x 2 ¹ / ₂ "	(18) 0.162" x 2 ¹ / ₂ "	1,440	840	1,440	395	
ABR255	11	4 ³ / ₄	3 ¹⁵ / ₁₆	10	(41) CNA 4 x 60	(52) CNA 4 x 60	3,530	2,370	4,080	2,385	
					(41) SD #10 x 2 ¹ / ₂ "	(52) SD #10 x 2 ¹ / ₂ "	3,805	4,430	3,165	3,970	
					(41) 0.162" x 2 ¹ / ₂ "	(52) 0.162" x 2 ¹ / ₂ "	3,800	2,715	4,315	2,080	

For SI: 1 inch = 25.4 mm; 1 lbf = 4.45 N.

- The allowable loads are based on CLT grades E1-E4 and V1-V4 of APA PRG-320.
- Installation and fastener schedule assume platform framing, i.e., install vertical leg at bottom edge of CLT wall panel, and horizontal leg on CLT floor panel with 3⁷/₁₆" minimum edge distance.
- Allowable loads have been increased for wind or earthquake loading with no further increase allowed. Reduce for other load durations as required by code.
- Nails:** CNA 4 x 60 nail = 4 mm diameter x 60 mm long proprietary ring-shank nail; 0.162" x 2¹/₂" nail = 0.162" diameter x 2¹/₂" long.
- Screws:** SD #10 x 2¹/₂" = 0.162" shank diameter x 2¹/₂" long Simpson Strong-Drive® SD Connector screw.

Allowable Loads — Anchorage to Concrete Values

Model No.	Gauge	Dimensions (in.)			Fastener Schedule		Allowable Load (lb.) C _D = 1.60				Code Ref.
		W ₁	W ₂	L	Horizontal Leg	Vertical Leg	F ₁	F ₂	F ₃	F ₄	
AE116	11	3 ⁹ / ₁₆	1 ⁷ / ₈	4 ⁹ / ₁₆	(3) 1/2" bolt	(18) SD #10 x 2 ¹ / ₂ "	3,765	1,445	3,175	3,825	—
					(3) 1/2" bolt	(18) 0.162" x 2 ¹ / ₂ "	2,565	1,030	3,085	1,175	
ABR255	11	4 ³ / ₄	3 ¹⁵ / ₁₆	10	Anchor Option 1 — (2) 1/2" bolt	(52) 0.162" x 2 ¹ / ₂ "	3,910	2,505	3,605	1,240	
					Anchor Option 2 — (2) 1/2" bolt	(52) 0.162" x 2 ¹ / ₂ "	3,805	2,505	3,885	540	

For SI: 1 inch = 25.4 mm; 1 lbf = 4.45 N.

- The allowable loads are based on CLT grades E1-E4 and V1-V4 of APA PRG-320.
- Allowable loads have been increased for wind or earthquake loading with no further increase allowed. Reduce for other load durations as required by code.
- The designer must specify the anchor bolt type, length, and embedment. Allowable load shall be taken as lower of anchorage capacity per designer and the loads listed on the table.
- Nails:** 0.162" x 2¹/₂" nail = 0.162" diameter x 2¹/₂" long.
- Screws:** SD #10 x 2¹/₂" = 0.162" shank diameter x 2¹/₂" long Simpson Strong-Drive SD Connector screw.

MTW45-8

Mass-Timber Angled Washer

Angled screws greatly increase the strength and stiffness of mass timber connections. The Simpson Strong-Tie® MTW45-8 is designed for use with a wide variety of 10 gauge–33 ksi connection plates and 8 mm-diameter Simpson Strong-Tie Strong-Drive® SDCF Timber-CF screws driven at a 45° angle.

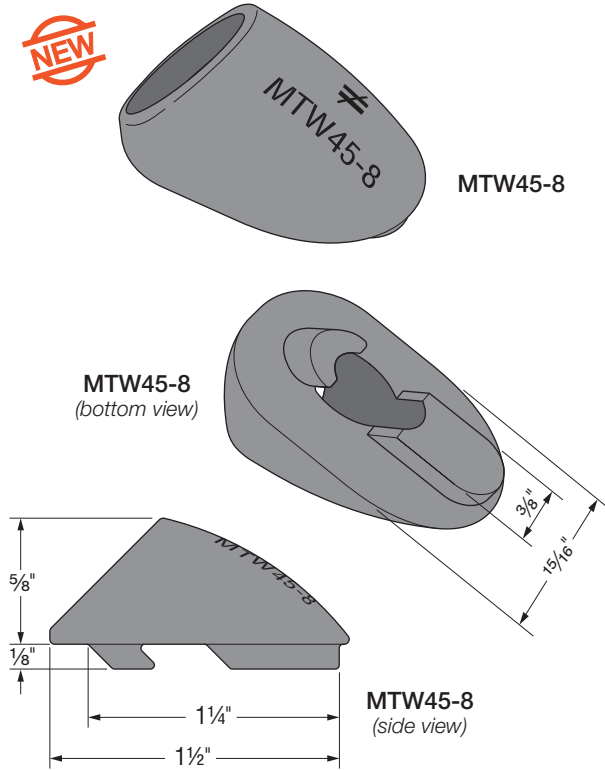
Material: ASTM A27, Grade 70–40

Finish: Zinc plated electro-galvanized

Installation:

- Use all specified MTW45-8 washers and Strong-Drive SDCF Timber-CF screws.
- Minimum connector plate is 10 gauge (0.126" minimum thickness), with ASTM A653 SS Grade 33, or ASTM A1011 Grade 36, Type 2.
- Fabricate plates with obround holes as given below. If plates are galvanized after holes are punched, oversize holes to account for galvanized thickness.
- Insert MTW45-8 into obround holes and drive Strong-Drive SDCF Timber-CF screws at a 45° angle in the direction specified by the designer. Countersunk screw heads shall be fully seated into MTW45-8 screw hole.

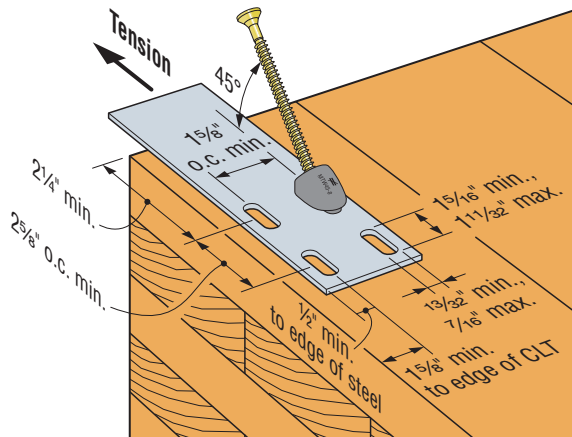
Loads: Contact Simpson Strong-Tie for the latest single fastener loads. Allowable loads for straps using the MTW45-8 are the responsibility of the designer.



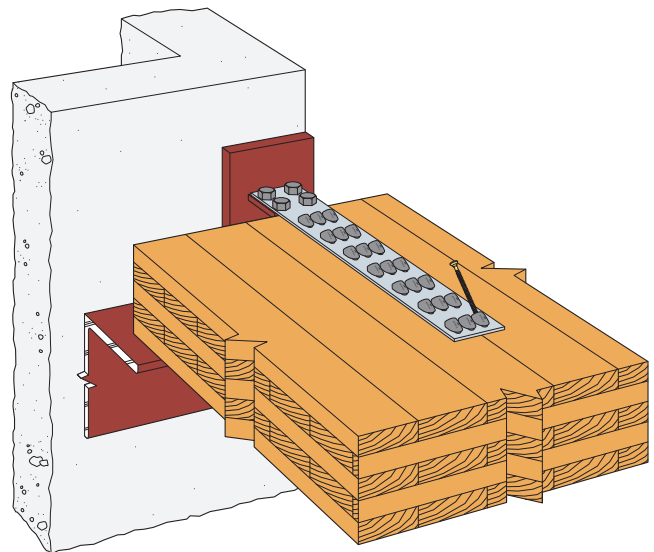
Strap Ties

Notes:

1. If using hot-dipped galvanized plates, increase slot dimensions by 1/32". This assumes that galvanized thickness is no thicker than 10 mils on any edge and must be verified with the galvanizer.
2. Min. plate thickness is 10 gauge (0.124" min.).



Recommended Plate Dimensions and Placement Relative to CLT End/Edge



Typical MTW45-8 Installation for CLT Floor Diaphragm Drag Strap at Concrete Core

MSTC/ST/HRS/MDCST/MST

Tension Straps for Cross-Laminated Timber (CLT) Applications

Straps are designed to carry tension loads in a wide variety of applications.

MDCST48 — A 14-gauge high-capacity strap specifically designed to carry tension across a CLT floor or wall-panel joint. The MDCST48 installs with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws.

MSTC — A high-capacity strap that utilizes a staggered nail pattern to help minimize wood splitting. Nail slots have been countersunk to provide a lower nail head profile.

HRS — A 12-gauge strap with a nailing pattern designed for installation on the edge of 2x members, but also suitable for many CLT applications. The HRS416Z installs with Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws.

MST — A high-capacity strap that can be used with nails for a variety of CLT applications. Reference *Wood Construction Connectors* catalog (C-C-2019) at strongtie.com for bolted connections. Suitable for double 2x member connections or greater, and also for a variety of CLT applications.

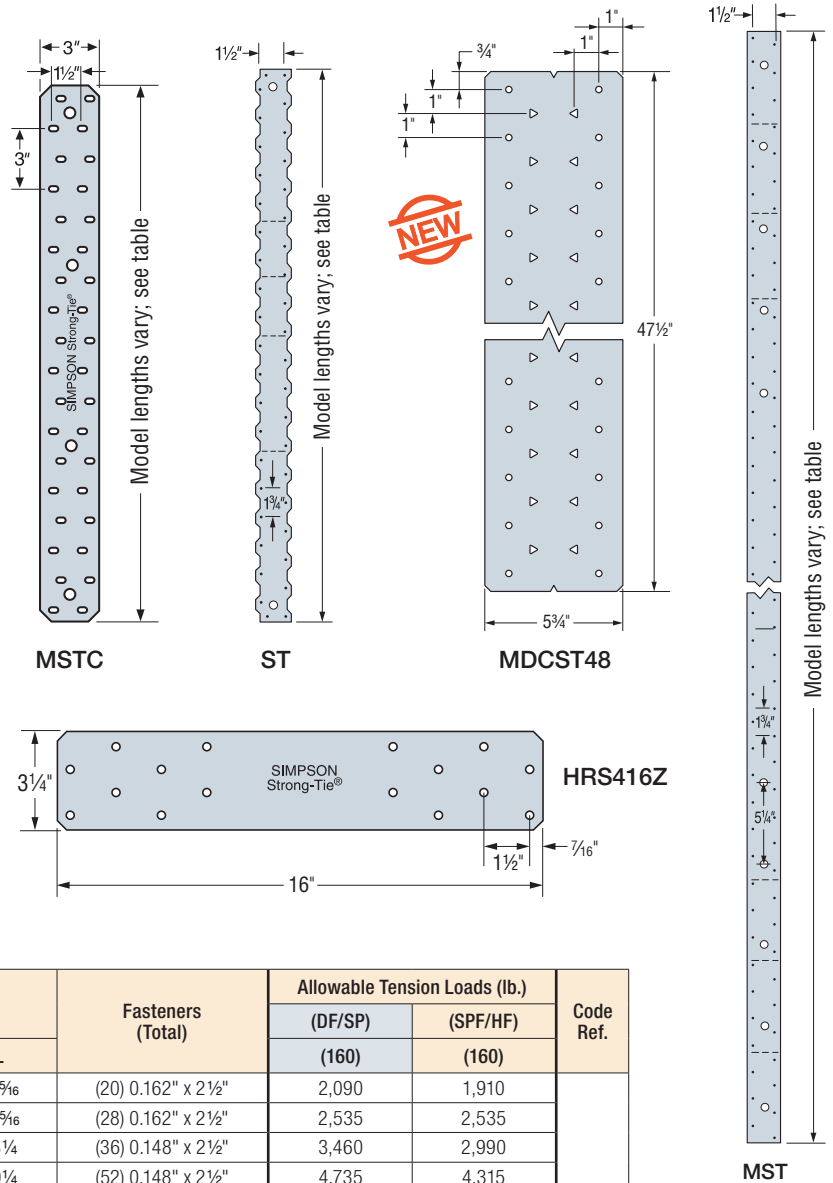
Material: See table

Finish: Galvanized G90. Some products are available in ZMAX® coating; see Corrosion Information on pp. 8–10.

Installation:

- Use all specified fasteners; see General Notes.

Codes: See p. 7 for Code Reference Key Chart



Strap Ties

Allowable Tension Loads

Model No.	Ga.	Dimensions (in.)		Fasteners (Total)	Allowable Tension Loads (lb.)		Code Ref.
		W	L		(DF/SP)	(SPF/HF)	
					(160)	(160)	
ST6215	16	2 1/8	16 5/8	(20) 0.162" x 2 1/2"	2,090	1,910	IBC, FL, LA
ST6224		2 1/8	23 5/8	(28) 0.162" x 2 1/2"	2,535	2,535	
MSTC28		3	28 1/4	(36) 0.148" x 2 1/2"	3,460	2,990	
MSTC40		3	40 1/4	(52) 0.148" x 2 1/2"	4,735	4,315	
MSTC52		3	52 1/4	(62) 0.148" x 2 1/2"	4,735	4,735	
MSTC66	14	3	65 3/4	(76) 0.148" x 2 1/2"	5,850	5,850	
MSTC78		3	77 3/4	(76) 0.148" x 2 1/2"	5,850	5,850	
ST6236		2 1/8	33 1 1/8	(40) 0.162" x 2 1/2"	3,845	3,845	
MDCST48		5 3/4	47 1/2	(36) 1/4" x 3" SDS	11,905	10,560	
MDCST48 (Doubled/Overlapped)		5 3/4	47 1/2	(72) 1/4" x 3" SDS	23,810	21,120	
HRS416Z	12	3 1/4	16	(16) 1/4" x 1 1/2" SDS	2,835	2,305	IBC, FL, LA
MST27		2 1/8	27	(30) 0.162" x 2 1/2"	3,700	3,210	
MST37		2 1/8	37 1/2	(42) 0.162" x 2 1/2"	5,070	4,495	
MST48		2 1/8	48	(50) 0.162" x 2 1/2"	5,310	5,190	
MST60		10	2 1/8	60	(68) 0.162" x 2 1/2"	6,730	
MST72	2 1/8		72	(68) 0.162" x 2 1/2"	6,730	6,475	

1. Allowable loads have been increased for wind or seismic loading with no further increase allowed; reduce where other loads govern.
2. If wood tends to split, consider pre-boring holes with diameters not exceeding 0.75 of the nail diameter (2015/2018 NDS 12.1.5.3). Use a 5/8 bit for Strong-Drive SDS Heavy-Duty Connector screws.
3. Use half of the required fasteners in each member being connected to achieve the listed loads.
4. Tension loads apply for uplift as well when installed vertically.
5. When using the MDCST48 as a single strap, fill only round holes. When using the MDCST48 as a double/overlapped strap, fill round and triangle holes. Fill the fastener holes uniformly on both ends of the strap.
6. **Nails:** See Simpson Strong-Tie *Wood Construction Connectors* catalog (C-C-2019) at strongtie.com for other nail sizes and information.

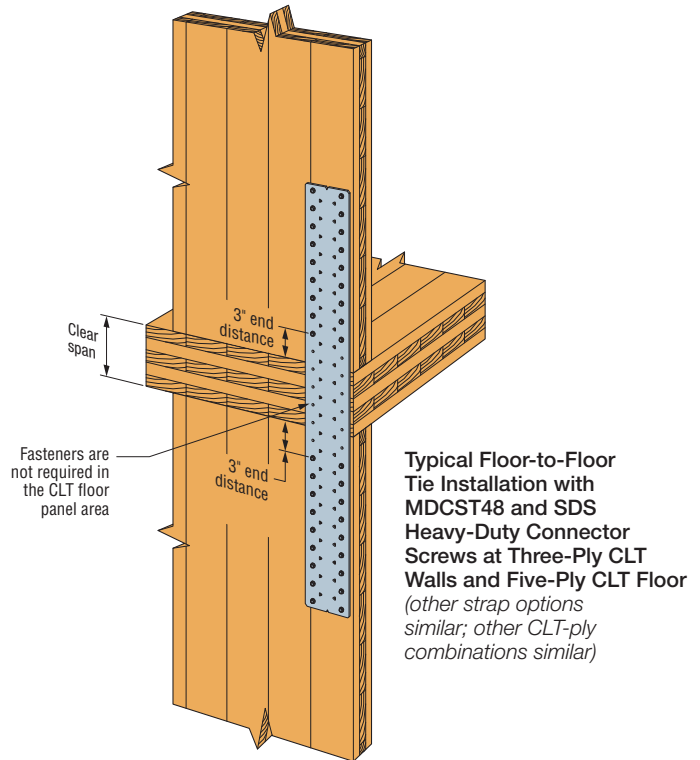
MSTC/ST/HRS/MDCST/MST

Tension Straps for Cross-Laminated Timber (CLT) Applications (cont.)

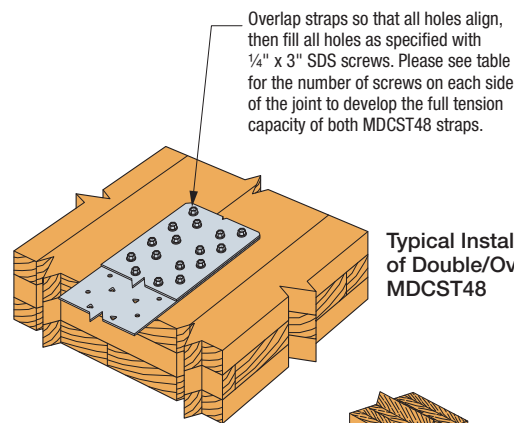
Floor-to-Floor Clear Span Table

Model No.	CLT Plies	Clear Span (in.)	Fasteners (Total)	Allowable Tension Loads (lb.)	
				(DF/SP)	(SPF/HF)
				(160)	(160)
MSTC40	3	4 1/8	(44) 0.148" x 2 1/2"	4,225	3,650
	5	6 7/8	(44) 0.148" x 2 1/2"	4,225	3,650
	7	9 5/8	(40) 0.148" x 2 1/2"	3,840	3,320
	9	12 3/8	(36) 0.148" x 2 1/2"	3,455	2,990
MSTC52	3	4 1/8	(60) 0.148" x 2 1/2"	4,735	4,735
	5	6 7/8	(60) 0.148" x 2 1/2"	4,735	4,735
	7	9 5/8	(56) 0.148" x 2 1/2"	4,735	4,650
	9	12 3/8	(52) 0.148" x 2 1/2"	4,735	4,315
MSTC66	3	4 1/8	(80) 0.148" x 2 1/2"	5,850	5,850
	5	6 7/8	(76) 0.148" x 2 1/2"	5,850	5,850
	7	9 5/8	(72) 0.148" x 2 1/2"	5,850	5,850
	9	12 3/8	(68) 0.148" x 2 1/2"	5,850	5,640
MSTC78	3	4 1/8	(96) 0.148" x 2 1/2"	5,850	5,850
	5	6 7/8	(92) 0.148" x 2 1/2"	5,850	5,850
	7	9 5/8	(88) 0.148" x 2 1/2"	5,850	5,850
	9	12 3/8	(84) 0.148" x 2 1/2"	5,850	5,850
MST48	3	4 1/8	(48) 0.162" x 2 1/2"	5,310	5,135
	5	6 7/8	(44) 0.162" x 2 1/2"	5,310	4,710
	7	9 5/8	(44) 0.162" x 2 1/2"	5,310	4,710
	9	12 3/8	(40) 0.162" x 2 1/2"	4,940	4,290
MST60	3	4 1/8	(64) 0.162" x 2 1/2"	6,730	6,475
	5	6 7/8	(60) 0.162" x 2 1/2"	6,730	6,475
	7	9 5/8	(56) 0.162" x 2 1/2"	6,730	6,475
	9	12 3/8	(52) 0.162" x 2 1/2"	6,730	6,110
MST72	3	4 1/8	(76) 0.162" x 2 1/2"	6,730	6,475
	5	6 7/8	(72) 0.162" x 2 1/2"	6,730	6,475
	7	9 5/8	(72) 0.162" x 2 1/2"	6,730	6,475
	9	12 3/8	(68) 0.162" x 2 1/2"	6,730	6,475
MDCST48	3	4 1/8	(36) 1/4" x 3" SDS	11,905	8,640
	5	6 7/8	(36) 1/4" x 3" SDS	11,905	8,640
	7	9 5/8	(32) 1/4" x 3" SDS	10,750	7,680
	9	12 3/8	(28) 1/4" x 3" SDS	9,410	6,720
MDCST48 (Doubled/Overlapped)	3	4 1/8	(72) 1/4" x 3" SDS	23,810	17,280
	5	6 7/8	(68) 1/4" x 3" SDS	22,850	16,320
	7	9 5/8	(64) 1/4" x 3" SDS	21,505	15,360
	9	12 3/8	(56) 1/4" x 3" SDS	18,815	13,440

1. Allowable loads have been increased for wind or seismic loading with no further increase allowed; reduce where other loads govern.
2. If wood tends to split, consider pre-boring holes with diameters not exceeding 0.75 of the nail diameter (2015/2018 NDS 12.1.5.3) and for Strong-Drive® SDS Heavy-Duty Connector screws use a 5/32" bit.
3. Use half of the required fasteners in each member being connected to achieve the listed loads.
4. When using the MDCST48 as a single strap, fill only round holes. When using the MDCST48 as a double/overlapped strap, fill round and triangle holes.
5. **Nails:** See Simpson Strong-Tie® Wood Construction Connectors catalog (C-C-2019) at strongtie.com for other nail sizes and information.



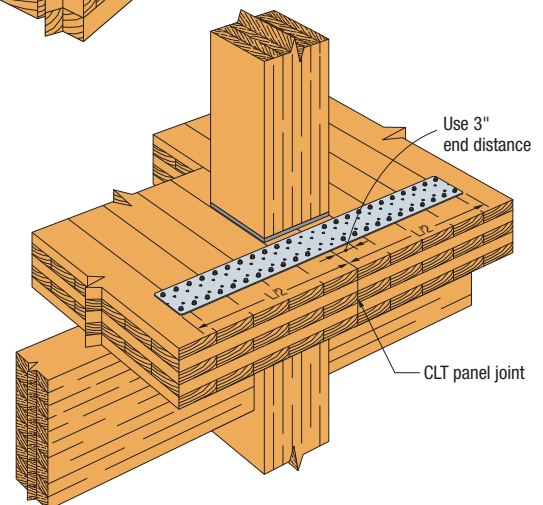
Typical Floor-to-Floor Tie Installation with MDCST48 and SDS Heavy-Duty Connector Screws at Three-Ply CLT Walls and Five-Ply CLT Floor
(other strap options similar; other CLT-ply combinations similar)



Typical Installation of Double/Overlapped MDCST48

Typical MDCST48 Installation for Diaphragm Chord Tension Across a Five-Ply CLT Panel Joint

(three-ply and seven-ply CLT similar; other strap options similar)



MDSS/CMSTC/SDS/SDWS

Diaphragm Solutions for Cross-Laminated Timber (CLT)

The MDSS96 surface spline is 95½" long, is attached with Strong-Drive® SDS Heavy-Duty Connector screws (SDS), and is an ideal solution for CLT diaphragms. For CLT manufacturers, it reduces costs by eliminating or reducing time for milling at panel edges. And since our tabulated values are based on tests, not just calculations, designers can value-engineer a solution using fewer screws than calculated solutions would allow.

If nails are preferred to screws, we've tested our CMSTC16 strap with 0.162" x 2½" nails. This solution has the added benefit of a low profile, which may eliminate the need for milling at panel edges.

If plywood surface splines are preferred, we've tested with our Strong-Drive SDWS Timber screws (SDWS22xxx) for this application.

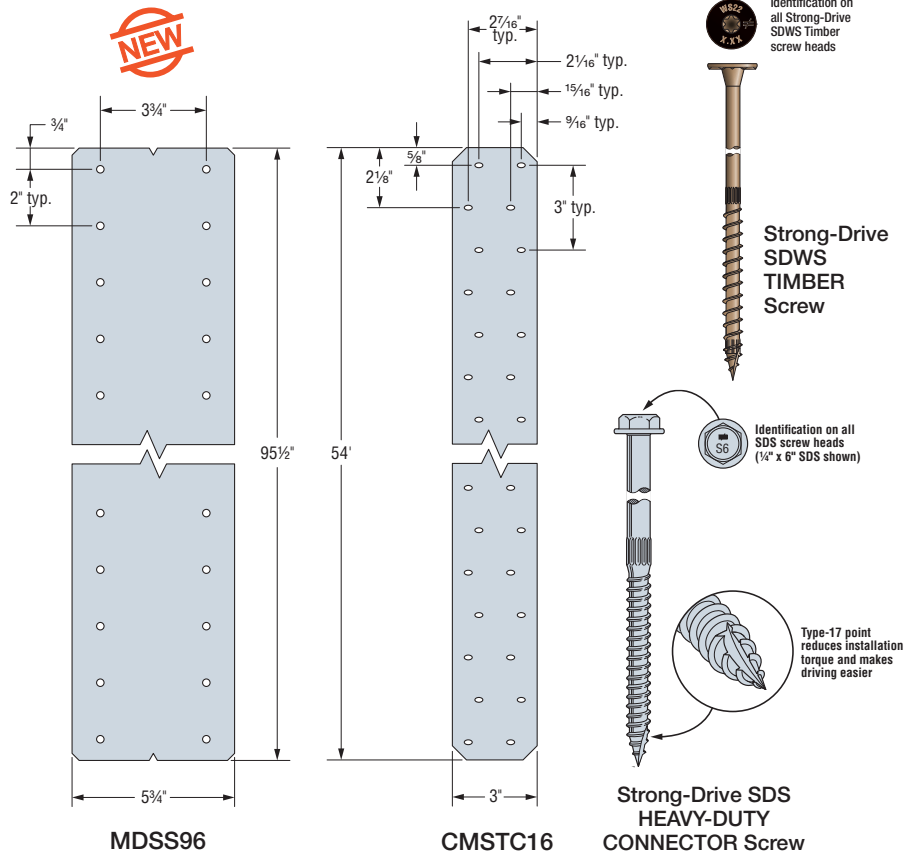
Material: MDSS96 — 14 gauge;
CMSTC16 — 16 gauge

Finish: Galvanized (G90)

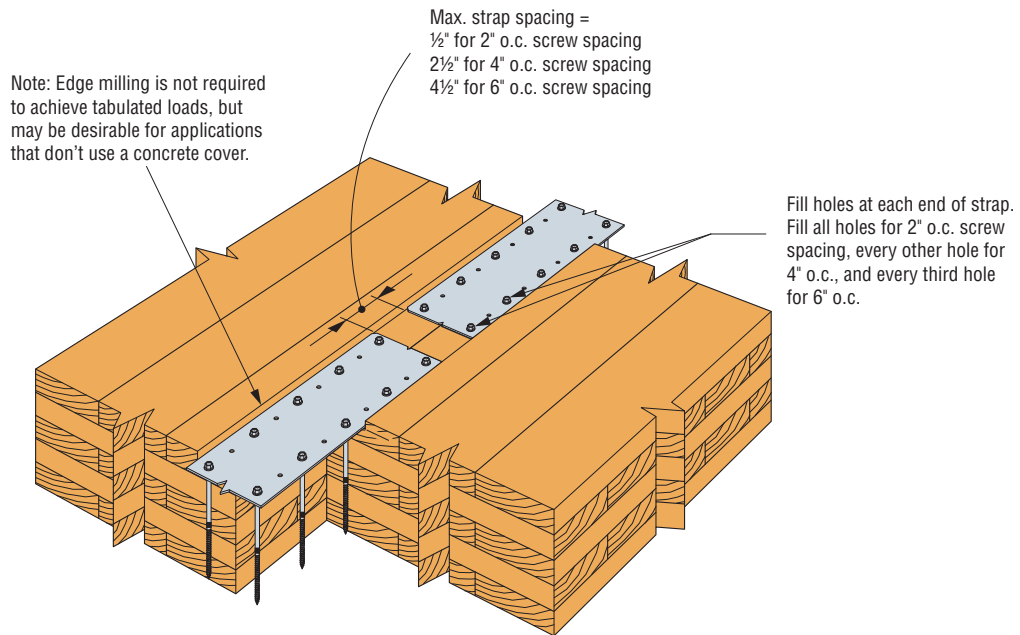
Installation:

- Use all specified fasteners/anchors

Codes: See strongtie.com.



Strap Ties



Typical MDSS96 Installation with ¼" x 6" SDS Heavy-Duty Connector Screws at 4" o.c. in a Five-Ply CLT Panel
(2" o.c. and 6" o.c. SDS screw spacing options similar; three-ply application similar)

MDSS/CMSTC/SDS/SDWS

Diaphragm Solutions for Cross-Laminated Timber (CLT) (cont.)

Allowable Shear Loads

Model No.	Ga.	CLT Layout	Fasteners	Fastener Spacing (in.)	Allowable Shear Load (160) (lb./ft.)		e_n (in.)
					DF/SP	SPF/HF	
MDSS96	14	Three-ply	¼" x 3½" SDS	4	2,015	1,440	0.042
				6	1,345	960	0.042
				8	1,010	720	0.042
		Five-ply, seven-ply	¼" x 6" SDS	4	2,015	1,440	0.042
				6	1,345	960	0.042
				8	1,010	720	0.042
CMSTC16	16	Three-ply	0.148" x 2½"	1½	1,535	1,330	0.025
				3	730	665	0.025
SDWS screws with 1⅝" plywood	N/A	Three-ply	0.22" x 4" SDWS	4	1,125	1,005	0.057
				6	750	670	0.057
				8	560	505	0.057
		Five-ply, seven-ply	0.22" x 6" SDWS	4	1,125	1,005	0.057
				6	750	670	0.057
				8	560	505	0.057

1. Allowable loads have been increased for wind or seismic loading with no further increase allowed: reduce where other loads govern.
2. Applicable adjustments shall be applied following the ANSI/AWC NDS-15 or NDS-18.
3. Tabulated values are applicable for splines in the major and minor strength directions.
4. For SDWS solutions, use 1⅝" APA rated Sturd-I-Floor wood structural panel surface splines.
5. **Screws:** ¼" x 3½" SDS = model SDS25312; ¼" x 6" SDS = model SDS25600; 0.22" x 4" SDWS = model SDWS22400; 0.22" x 6" SDWS = model SDWS22600.
6. CLT panel minimum thickness is: three-ply = 4.125"; five-ply = 6.875"; seven-ply = 9.625".
7. The component of diaphragm deflection due to fastener slip at panel-to-panel joints is calculated as, $\delta_f = CLe_n$, where,

$$C = (1/P_L + 1/P_w) / 2$$

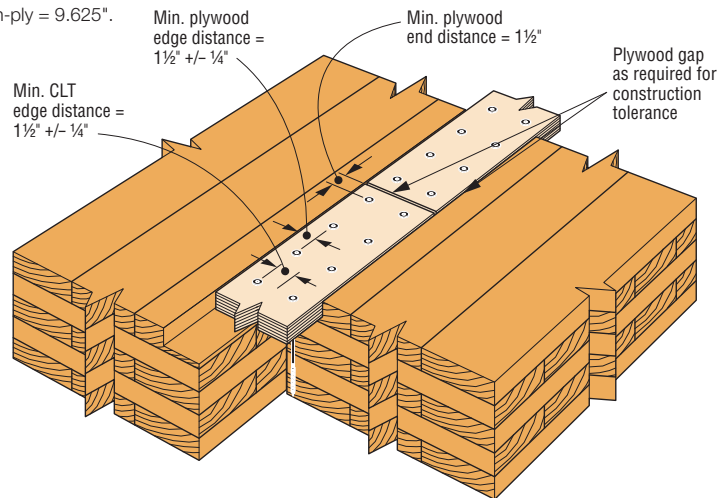
P_L = Length of individual CLT panel (ft.)
 P_w = Width of individual CLT panel (ft.)
 L = Overall length of diaphragm (ft.)
 e_n = Fastener slip at allowable shear load; value may be linearly reduced for design loads less than allowable load by taking the ratio of design load to allowable load.

(Reference — Applied Technology Council. 1981. *Guidelines for the design of horizontal wood diaphragms*. Redwood City, CA.)

8. Fastener slip (e_n) is compatible with calculation for slip in panel-to-panel joints. The e_n value is allowable shear load per fastener (lb.) / connection stiffness (lb./in.).

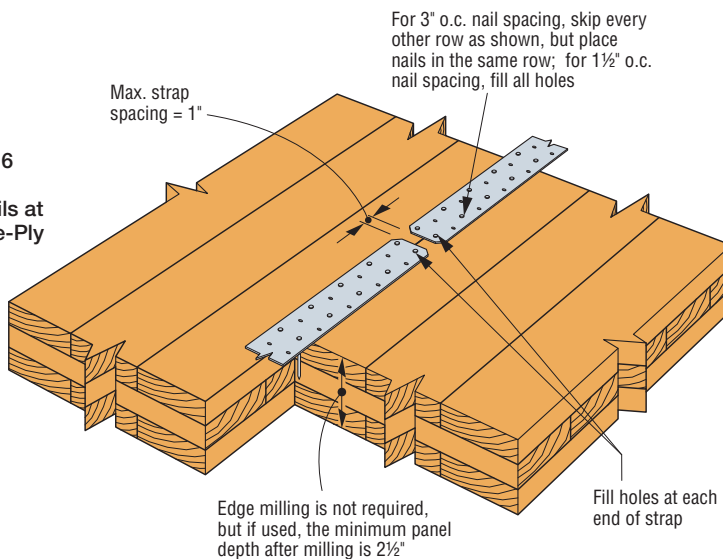
For additional information on fastener slip and stiffness/slip modulus, see:

1. American Wood Council. 2018. *ANSI/AWC National Design Specification for Wood Construction, NDS*®, Section 11.3.6. AWC, Leesburg, VA.
2. Zhan, J.J. 1991. *Design Equation for Multiple-Fastener Wood Connections*. US Forest Service, Forest Products Laboratory, Madison, WI.



Typical Installation of 1⅝" Plywood Surface Spline with SDWS Screws with Five-Ply CLT Panel
(three-ply and seven-ply CLT panel similar)

Typical CMSTC16 Installation with 0.162" x 2½" Nails at 3" o.c. in a Three-Ply CLT Panel
(0.162" x 2½" nails at 1½" o.c. similar, except fill all holes)

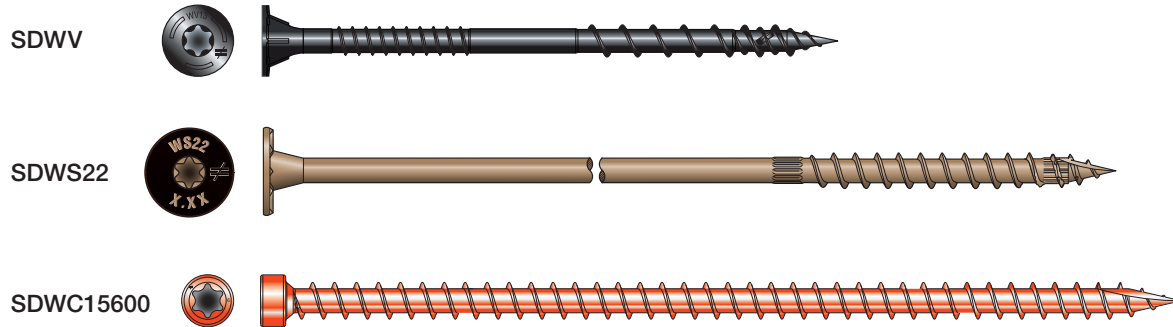


Strong-Drive® SCN SMOOTH-SHANK CONNECTOR Nail

CLT Diaphragm Solutions

Butt Joints/Half-Lap Joints

Simpson Strong-Tie has made sourcing screws for CLT diaphragm butt joints and half-lap joints more convenient by providing load tables for these critical applications using Simpson Strong-Tie SDWC, SDWS, and SDWV screws.



Allowable Shear Loads

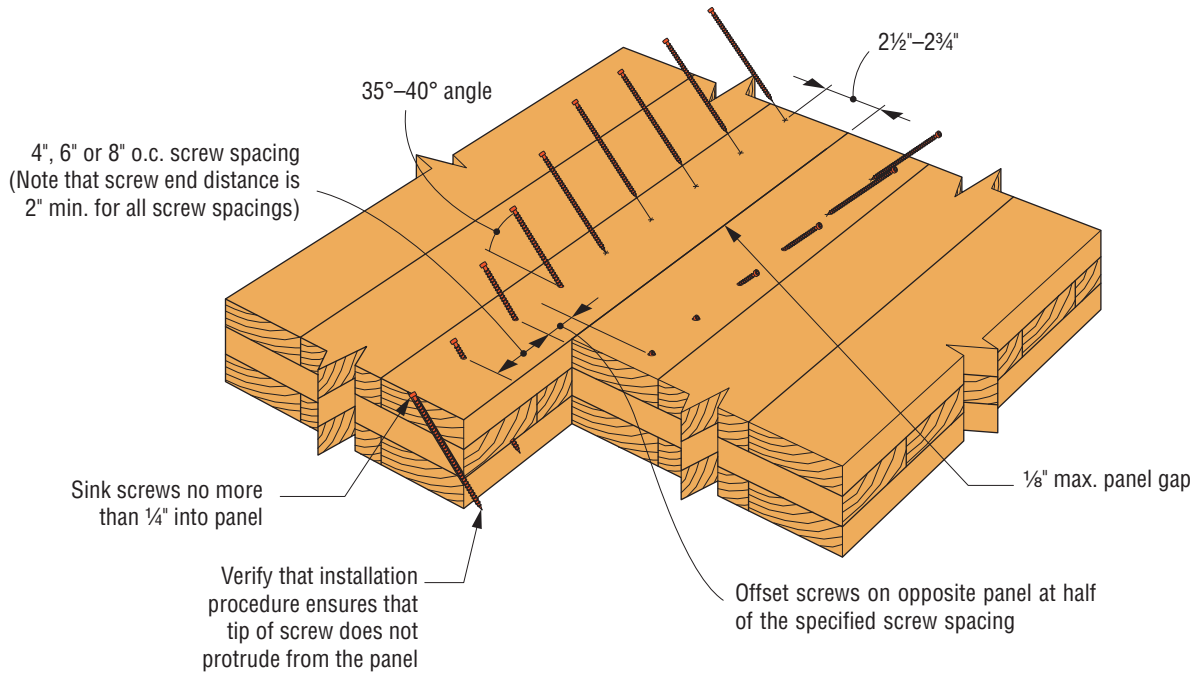
Diaphragm Joint	CLT Layout	Fastener Model No. (Dia. x Length)	Screw Spacing (in.)	Allowable Shear (100) (lb./ft.)		e_n (in.)
				DF/SP	SPF/HF	
Butt joint	Three-ply	SDWC15600 (0.150" x 6")	4	1,440	1,440	0.077
			6	960	960	0.077
			8	720	720	0.077
Half-lap	Three-ply	SDWS22400DB (0.220" x 4")	4	1,035	780	0.048
			6	690	520	0.048
			8	520	390	0.048
		SDWV13400 (#10 x 4")	4	555	480	0.028
			6	370	320	0.028
			8	280	240	0.028
	Five-ply, seven-ply	SDWS22600DB (0.220" x 6")	4	930	840	0.047
			6	620	560	0.047
			8	465	420	0.047
		SDWS19600 (0.197" x 6")	4	795	795	0.043
			6	530	530	0.043
			8	400	400	0.043

1. Allowable shear loads are shown for wood load duration $C_D = 1.0$; duration of load may be increased as permitted by the local building code up to $C_D = 1.6$.
2. For butt joints with the SDWC Truss screws, the allowable load is for a pair of screws spaced as indicated.
3. CLT laminate thickness assumed to be 1 3/8".
4. DF: Douglas Fir-Larch; SP: Southern Pine; SPF: Spruce-Pine-Fir; HF: Hem-Fir.
Allowable shear loads for SPF (South) are to be 0.85 (SPF/HF).
5. Fastener slip (e_n) is compatible with calculation for slip in panel-to-panel joints. The e_n value is allowable shear load per fastener (lb.) / connection stiffness (lb./in.). The SDWC connection stiffness is based on NDS calculation. The e_n value may be adjusted for loads less than allowable as the product of e_n and the ratio of design load to allowable load.

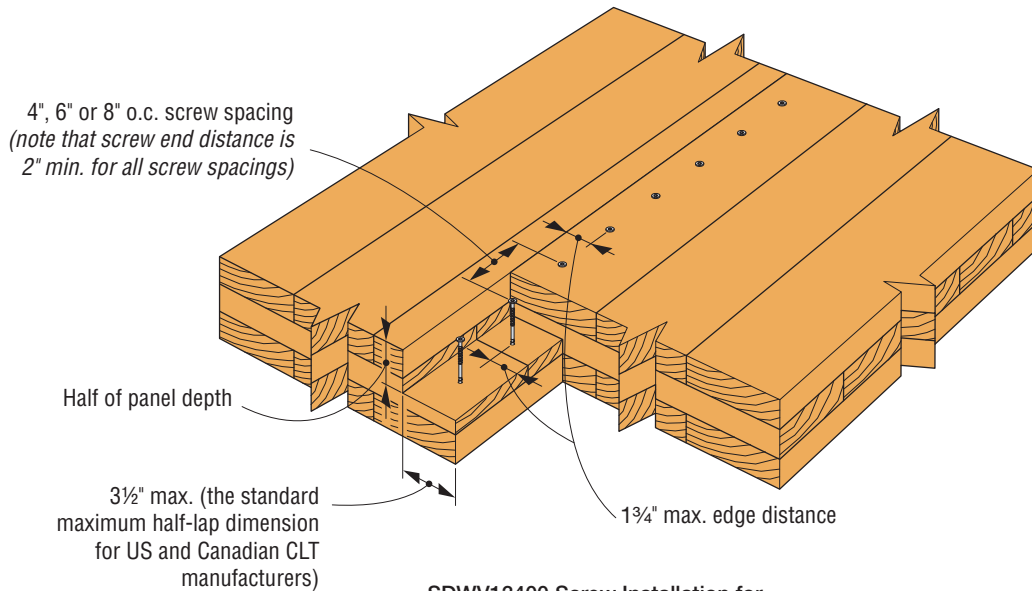
CLT Diaphragm Solutions

Butt Joints/Half-Lap Joints (cont.)

Strap Ties



SDWC15600 Screw Installation for Butt Joint in Three-Ply CLT



SDWV13400 Screw Installation for Half-Lap Joint in Three-Ply CLT
(SDWS22400DB in three-ply and SDWS19600 in five-ply or seven-ply similar)

Strong-Rod™ Anchor Tiedown System (ATS)

Rod Tiedown Systems for Cross-Laminated Timber (CLT)

Mid-rise structures using cross-laminated timber (CLT) are becoming increasingly popular, and Simpson Strong-Tie is committed to supporting this emerging technology with our Strong-Rod product line.

Product Design

We put our product designs through rigorous testing at our cutting-edge research and development facilities in order to deliver best-in-class structural solutions to the market. Our high-performance Strong-Rod systems are code listed for securing mid-rise, wood-framed buildings against forces caused by seismic and wind events. With innovative components that work together to create a continuous load path, Simpson Strong-Tie® rod systems are built for maximum resilience and installation efficiency.

Engineering Design Services

No company understands wood construction better than Simpson Strong-Tie. Our design support services provide the technical expertise needed to tackle the complex challenges posed by mid-rise buildings. Using your project's unique design considerations and specifications, we can quickly create whole system designs, providing you a submittal-ready package of code-compliant components and plans to keep your project on time and within budget.

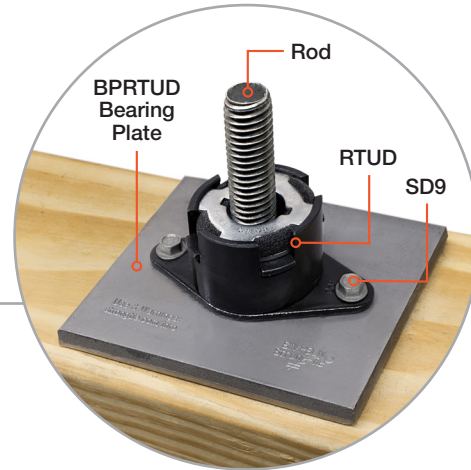
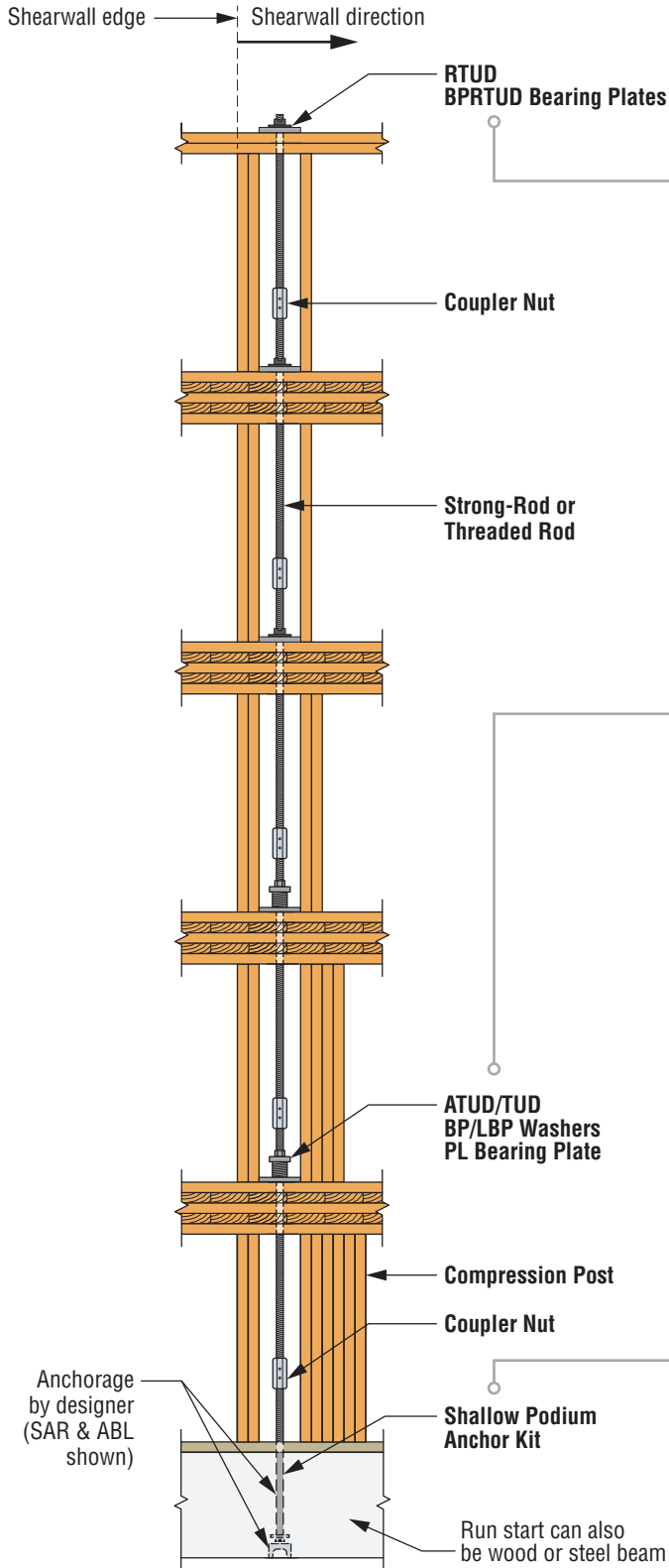


Strong-Rod™ Anchor Tiedown System (ATS)

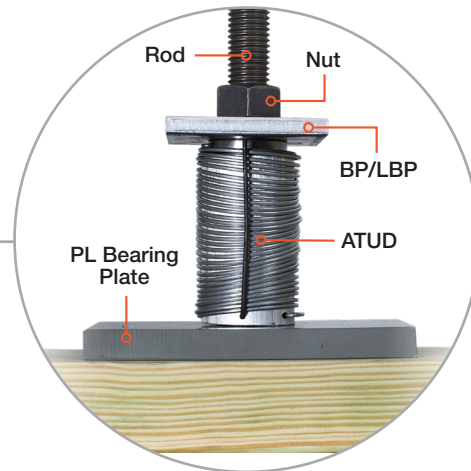
Components

Roof to the Foundation Anchorage

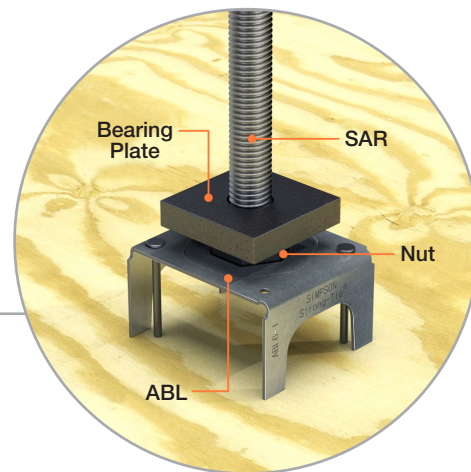
Components for Anchor Tiedown System for Shearwall Overturning Restraint



Ratcheting Take-Up Device Assembly



Take-Up Device Assembly



Shallow Podium Anchor Kit (SAR & ABL) Assembly Attached To The Formwork

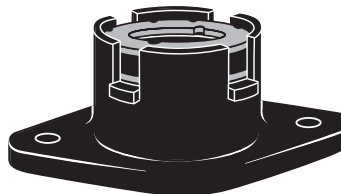
Note: Third stud may be required at shearwall edge.

Strong-Rod™ Anchor Tiedown System (ATS)

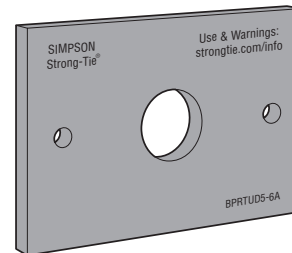
Components (cont.)

RTUD Ratcheting Take-Up Device

The RTUD ratcheting take-up device is a cost-effective shrinkage compensation solution for continuous rod systems. The RTUD is code-listed for use with rod systems to ensure highly reliable performance in a device that allows for unlimited shrinkage. The RTUD should be hand installed until the base of the device fully bears on top of the BPRTUD. Once the fastener holes are aligned and the RTUD is flush, install the Strong-Drive® fasteners. Once the RTUD is installed, a series of internal threaded wedges enable the device to ratchet down the rod as the wood structure shrinks, but engage the rod in the reverse direction under tensile loading. Engagement is maintained on the rod by the take-up device, enabling the rod system to perform as designed from the time of installation.



RTUD
Patent Pending



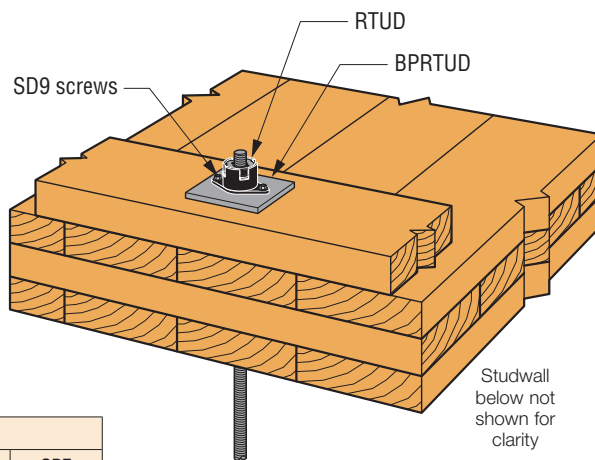
BPRTUD5-6A

RTUD Models

Model No.	Threaded Rod Diameter (in.)	Dimensions (in.)			Allowable Load (lb.)	Seating Increment ΔR (in.)	Deflection at Allowable Load ΔA (in.)	Compatible Bearing Plates
		Length	Width	Height				
RTUD3B	3/8	2 3/4	1 1/2	1	5,180	0.044	0.010	BPRTUD3-4B
RTUD4B	1/2	2 3/4	1 1/2	1	9,210	0.045	0.003	BPRTUD3-4B
RTUD5	5/8	3 3/8	2	1 3/8	14,495	0.056	0.007	BPRTUD5-6
RTUD6	3/4	3 3/8	2	1 3/8	20,830	0.057	0.010	BPRTUD5-6
RTUD7	7/8	4 1/2	2 1/4	2	28,185	0.059	0.012	BPRTUD7-8, 5-8
RTUD8	1	4 1/2	2 1/4	2	36,815	0.066	0.031	BPRTUD7-8, 5-8

For SI: 1 inch = 25.4 mm, 1 pound = 4.45 N, 1 ksi = 6.89 Mpa.

- Allowable loads for the RTUD only. The attached components (including anchors, tension rods, bearing plates, wood framing members, etc.) must be designed to resist design loads in accordance with the applicable code.
- Thread specification for threaded rod used with the RTUD must be UNC Class 2A, in accordance with ANSE/ASME B1.1.
- No further increase in allowable load is permitted.
- The RTUD compensates for an unlimited amount of wood shrinkage, provided there are no obstructions to the travel of the RTUD along the length of the threaded rod.
- RTUD4B fastens to the wood plate with the BPRTUD bearing plate and (2) #9 x 1 1/2" or 2 1/2" Strong-Drive SD Connector screws. RTUD5-6 and RTUD7-8 fastens to the wood plate with the BPRTUD bearing plate and (2) #9 x 2 1/2" Strong-Drive SD Connector screws.
- The specified minimum tensile strength, F_u , of the threaded rod must not exceed 125 ksi.



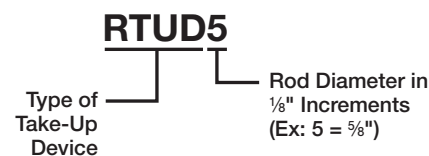
Ratcheting Take-Up Device Assembly Installation

BPRTUD Models

Model No.	Length (in.)	Width (in.)	Thickness	Hole Dia. (in.)	Allowable Loads (lb.)			
					DF	SP	HF	SPF
BPRTUD3-4B	3 1/2	3	3 ga.	5/8	6,415	5,975	4,475	4,700
BPRTUD5-6A	4 1/2	3	3 ga.	1	7,070	6,565	5,170	5,350
BPRTUD5-6B	5 1/2	3	1/2"	1	10,295	9,305	6,670	7,000
BPRTUD5-6C	7 1/2	3	3/4"	1	13,385	12,100	8,675	9,105
BPRTUD5-8	5	3	3 ga.	1 1/8	7,195	6,675	5,245	5,430
BPRTUD7-8A	5 1/2	3	1/2"	1 1/8	10,055	9,090	6,515	6,835
BPRTUD7-8B	8 1/2	3	3/4"	1 1/8	14,990	13,595	9,745	10,225
BPRTUD7-8C	5 1/2	5	1/2"	1 1/8	17,400	15,730	11,275	11,830

- No further increase in allowable load permitted.
- Plate bearing area based on rod diameter plus 1/4"-diameter drilled hole through wood plate below steel bearing plate. Reduce allowable load per code for larger holes.
- Bearing plate load capacity is based on the steel plate bearing on the wood sole plate perpendicular to the grain and steel plate bending in cantilever action.

Naming Legend

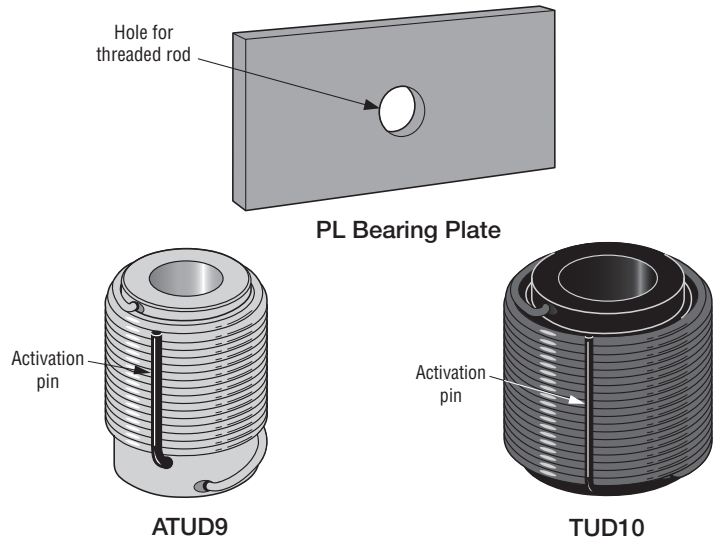


Strong-Rod™ Anchor Tiedown System (ATS)

Components (cont.)

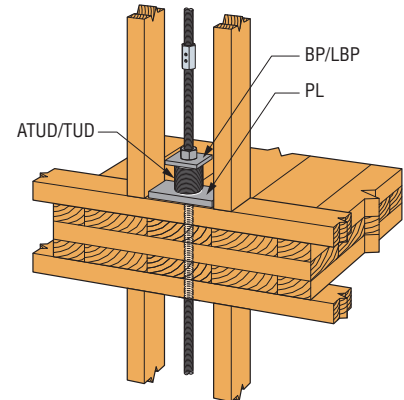
ATUD/TUD Take-Up Devices

The ATUD and TUD expanding take-up devices are suitable for rod diameters from 1/2" up to 1 3/4" and shrinkage up to 3". Expanding screw-style take-up devices provide the lowest device displacements. For installation, ensure that the activation pin is pointing up and facing toward the inside of the building space. The pin can be pulled anytime after the nut has been tightened onto the top bearing plate and must be pulled by the time the building is fully loaded. Shrinkwrap should remain on the device until the pin is ready to be pulled. Before activating an ATUD make sure the pin on the take-up device on the floor below has been pulled.



ATUD/TUD Models

Model No.	Threaded Rod Diameter (in.)	Dimensions (in.)		Rated Compensation Capacity (in.)	Allowable Load (lb.) ^{1,2}	Seating Increment, Δ _R (in.) ³	Deflection at Allowable Load, Δ _A (in.) ³	Bearing Plate Above ATUD/TUD	Bearing Plate Below ATUD/TUD
		Width	Length						
TUD9	1 1/8	2 1/8	2 1/4	1	34,655	0.001	0.014	BP	PL9
TUD10	1 1/4	2 3/8	2 1/4	1	45,400	0.001	0.033	BP	PL10
ATUD5	5/8	1 3/8	1 7/8	3/4	6,565	0.001	0.009	LBP	PL5
ATUD6-2	3/4	1 3/4	3 1/8	2	11,430	0.004	0.022	BP	PL5/PL6
ATUD9	1 1/8	2 1/8	2 1/4	1	15,560	0.002	0.013	BP	PL9
ATUD9-2	1 1/8	2 1/8	3 7/8	2	12,790	0.002	0.037	BP	PL9
ATUD9-3	1 1/8	2 1/8	5	3	11,830	0.002	0.034	BP	PL9
ATUD14	1 3/4	2 7/8	2 1/4	3/4	24,395	0.005	0.015	BP	PL14
ATUD14-2	1 3/4	3	3 7/8	2	28,310	0.002	0.013	BP	PL14



Typical Take-Up Device Assembly Installation

1. Allowable compression capacities are for TUD or ATUD only and are based on ICC-ES ESR-2320.
2. No further increase in allowable load is permitted.
3. Total device deflection = Δ_T = Δ_R + Δ_A(P_D/P_C), where P_D = Demand Load; P_C = Allowable Load.

Bearing Plate Models

Model No.	Dimensions (in.)				Allowable Load (lb.) (160)			
	Width	Length	Thickness	Hole Dia.	DF	SP	HF	SPF
BP5/8	2 1/2	2 1/2	1/4	1 1/8	4,060	3,670	2,630	2,760
BP3/4	2 3/4	2 3/4	5/8	1 3/8	4,815	4,350	3,120	3,275
PL5-3x3.5	3	3 1/2	3/8	1 1/8	6,850	6,190	4,440	4,660
PL5-3x5.5	3	5 1/2	1/2	1 1/8	9,900	9,325	6,880	7,220
PL6-3x3.5	3	3 1/2	3/8	1 3/8	6,720	6,075	4,355	4,570
PL6-3x5.5	3	5 1/2	1/2	1 3/8	10,275	9,485	6,800	7,135
PL9-3x5.5	3	5 1/2	1/2	1 3/8	10,025	9,060	6,495	6,815
PL9-3x8.5	3	8 1/2	7/8	1 3/8	15,010	13,570	9,725	10,205
PL14-3x8.5	3	8 1/2	7/8	1 13/16	13,975	12,635	9,055	9,500
PL9-3x12	3	12	1 1/4	1 3/8	21,570	19,500	13,980	14,670
PL14-3x12	3	12	1 1/4	1 13/16	20,535	18,565	13,310	13,965
PL9-3x15	3	15	1 1/2	1 3/8	25,690	24,315	17,625	18,495
PL10-3x15	3	15	1 1/2	1 5/8	25,985	24,425	17,510	18,375
PL14-3x15	3	15	1 1/2	1 13/16	26,060	23,650	16,955	17,790
PL9-5x5.5	5	5 1/2	1/2	1 3/8	17,370	15,700	11,255	11,810
PL14-5x5.5	5	5 1/2	1/2	1 13/16	16,260	14,700	10,540	11,060
PL9-5x8.5	5	8 1/2	7/8	1 3/8	25,635	23,175	16,610	17,430
PL14-5x8.5	5	8 1/2	7/8	1 13/16	24,600	22,240	15,940	16,725
PL9-5x12	5	12	1 1/4	1 3/8	36,570	33,060	23,700	24,870
PL10-5x12	5	12	1 1/4	1 5/8	36,395	32,900	23,585	24,750

1. Secure BP and PL bearing plates to framing with washer and ATS-N_nut over ATUD or TUD.
2. Secure ATS-BP bearing plates to framing with ATS-IN_KT isolator nut kit.
3. Bearing plate loads are based on a hole through the wood plate below that is 1/4" larger in diameter than the rod.
4. No further increase in allowable load permitted.

CBH

Concealed Beam Hanger

Computer modeling and CNC manufacturing enables glulam to be delivered to the job site in precise lengths and with preinstalled concealed hangers. The CBH concealed beam hanger is specifically designed for such applications, and is installed with readily available Simpson Strong-Tie® SDS Heavy-Duty Connector screws. The CBH hanger design provides for a $\pm 1/2$ " beam length tolerance at each connector, making it easier to crane into place than other concealed hanger designs that use machined aluminum.

Material: 3 gauge

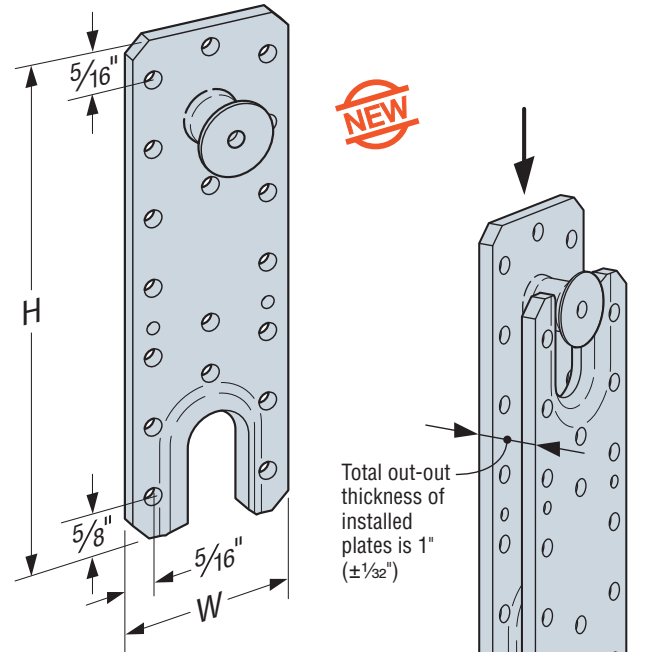
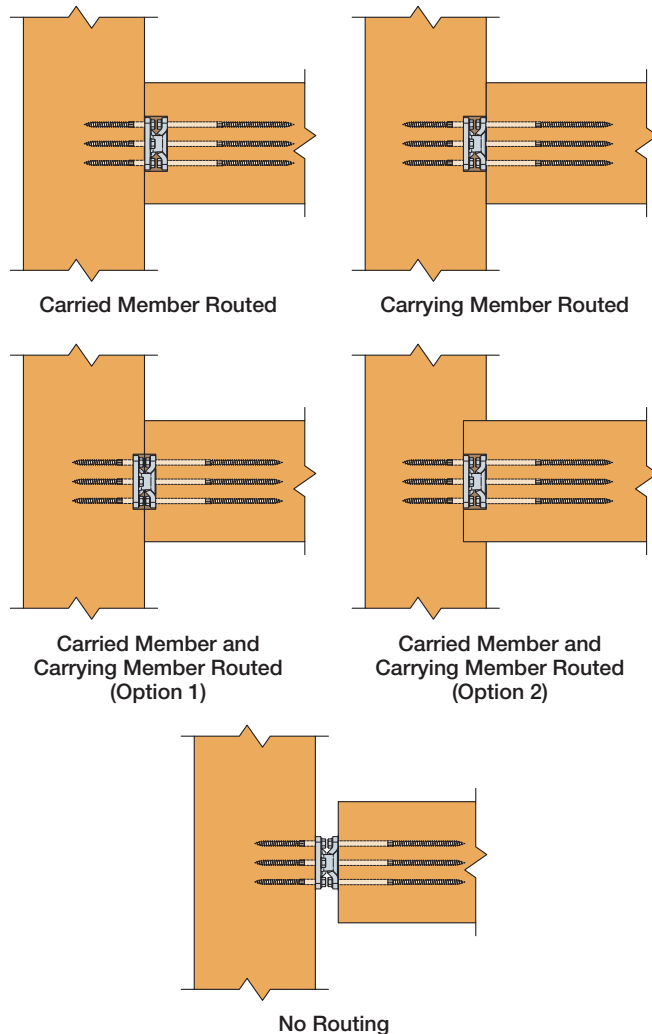
Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- Rout carried and/or carrying member according to application needs
- Install CBH plates on carried and carrying members using all specified SDS fasteners
- Mate carried member to carrying member according to installation illustrations

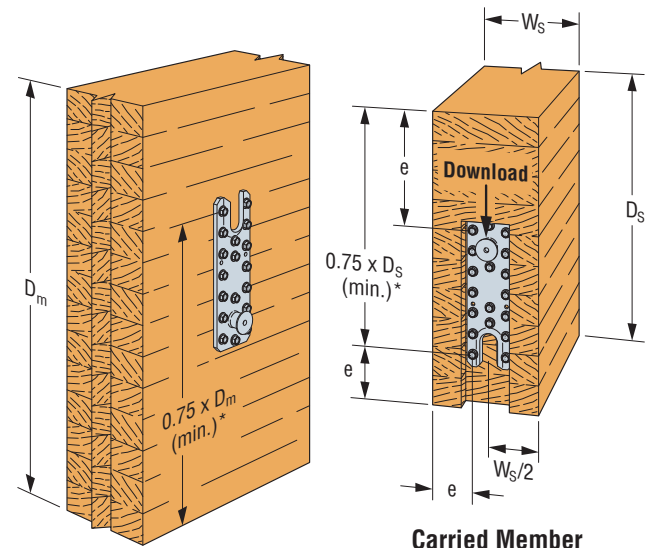
Codes: Code report is pending

Plan View



CBH2.37x7.63
(CBH2.37x5.5,
CBH2.37x9.75 similar)

CBH2.37x7.63
Plates Mate
Together in
Direction of Arrows
(CBH2.37x5.5,
CBH2.37x9.75
similar)

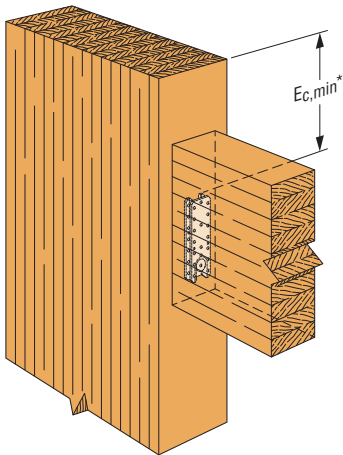


* Dimension line is to centerline of first row of fasteners
 $e = 1\frac{1}{2}$ " (min.)

CBH Placement Relative to Member Depth/Width

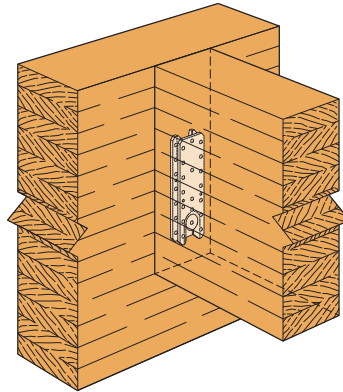
CBH

Concealed Beam Hanger (cont.)

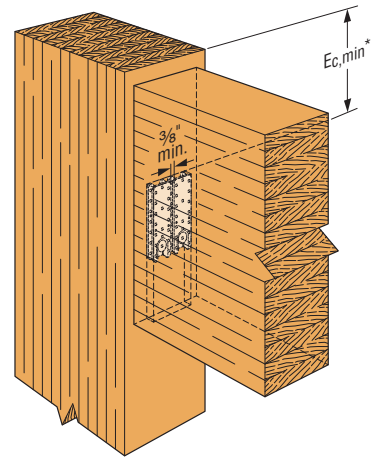


*Reference Simpson Strong-Tie engineering letter L-C-CBHDRIFT20 for guidance on CBH drift behavior at columns and $E_{c,min}$ requirement.

Typical CBH2.37x7.63 Installation at Column
(CBH2.37x5.5 and CBH2.37x9.5 similar)



Typical CBH2.37x7.63 Installation at Girder
(CBH2.37x5.5 and CBH2.37x9.5 similar)



*Reference Simpson Strong-Tie engineering letter L-C-CBHDRIFT20 for guidance on CBH drift behavior at columns and $E_{c,min}$ requirement.

Typical Double CBH2.37x7.63 Installation at Column
(CBH2.37x5.5 and CBH2.37x9.5 and installation at girder similar)

Table 1 — CBH Joist to Beam Allowable Loads

Model No.	Connector Dimension (in.)			Fasteners (SDS)		Allowable Downloads						Code Ref.
	Width	Height	Route Depth	Joist	Beam	DF/SP			SPF/HF			
						Uplift (160)	Floor (100)	Snow/Roof (115/125)	Uplift (160)	Floor (100)	Snow/Roof (115/125)	
CBH2.37x5.5B	2½	5½	1	(13) ¼" x 6"	(13) ¼" x 3"	555	4,830	4,830	485	3,900	4,135	—
CBH2.37x7.63B	2½	7½	1	(18) ¼" x 6"	(18) ¼" x 3"	555	6,510	6,510	485	5,400	5,570	
CBH2.37x9.75B	2½	9¾	1	(23) ¼" x 6"	(23) ¼" x 3"	555	8,785	8,785	485	6,900	7,525	

See footnotes below.

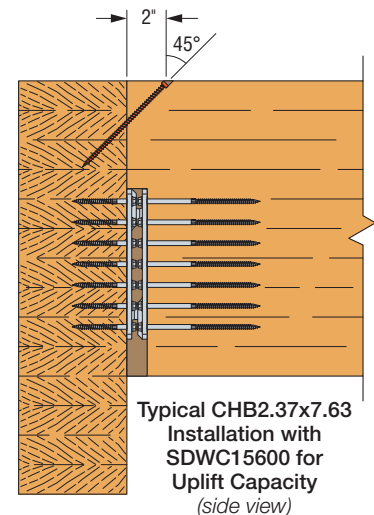
Table 2 — CBH Joist to Column Allowable Loads

Model No.	Connector Dimension (in.)			Fasteners (SDS)		Allowable Downloads						Code Ref.
	Width	Height	Route Depth	Joist	Beam	DF/SP			SPF/HF			
						Uplift (160)	Floor (100)	Snow/Roof (115/125)	Uplift (160)	Floor (100)	Snow/Roof (115/125)	
CBH2.37x5.5C	2½	5½	1	(13) ¼" x 6"	(13) ¼" x 6"	555	5,455	5,455	485	3,900	4,485	—
CBH2.37x7.63C	2½	7½	1	(18) ¼" x 6"	(18) ¼" x 6"	555	6,630	6,630	485	5,400	5,675	
CBH2.37x9.75C	2½	9¾	1	(23) ¼" x 6"	(23) ¼" x 6"	555	8,940	8,940	485	6,900	7,655	

- Member sizes based on minimum fastener edge distances will achieve tabulated allowable download, but do not consider required char edge distances for desired fire ratings. Member sizes required to achieve desired fire ratings shall be determined by the Engineer of Record.
- Use Simpson Strong-Tie® Strong-Drive® SDWC15600 (6" length) to achieve table uplift capacities. Tabulated loads are for a single fastener. Use multiple screws for additional uplift.
- Minimum SDS edge distance 1 ½".

Ordering Information

Model No.	Application	Ordering SKU	Kit Contents		
			CBH Plates	Number of Screws	
				SDS25300	SDS25600
CBH2.37x5.5B	Joist to beam	CBH2.37x5.5B-KT	Each kit contains two backplates that make up one connection	13	13
CBH2.37x7.63B		CBH2.37x7.63B-KT		18	18
CBH2.37x9.75B		CBH2.37x9.75B-KT		23	23
CBH2.37x5.5C	Joist to column	CBH2.37x5.5C-KT	—	—	26
CBH2.37x7.63C		CBH2.37x7.63C-KT		—	36
CBH2.37x9.75C		CBH2.37x9.75C-KT		—	46



Typical CBH2.37x7.63 Installation with SDWC15600 for Uplift Capacity
(side view)

CJTZ/HCJTZ

Light and Heavy-Duty Concealed Joist Ties

The CJTZ/HCJTZ are concealed connectors. They can be installed three ways: with no routing of header/post or beam; a routed header/post, or a routed beam.

The HCJTZ is a heavy concealed beam tie to be used with large glulam beams resisting heavy loads. The HCJTZ features a unique shape that allows installers to insert the connector into the end of the beam without a visible slot cut into the bottom of the beam.

Material: CJTZ — 12 gauge; HCJTZ — 10 gauge

Finish: Galvanized

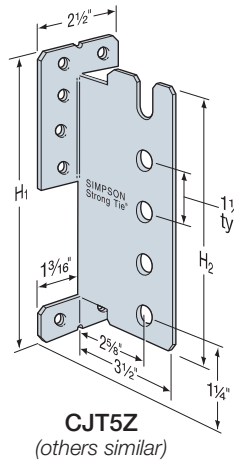
Installation:

- Use all specified fasteners; see General Notes.
- The CJTZ/HCJTZ is supplied with all dowels and screws required. Screws require a hex-head driver.
- Router end of beam for screw heads for flush installation.
- The carried member may be sloped up or down to 45° with full table loads.
- The CJTZ only is available with two dowel lengths. To order: specify short (e.g. CJTZ3S) or long dowels (e.g. CJTZ3L) (see footnote #1 below).

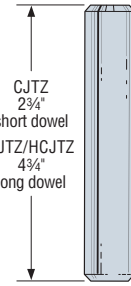
Options:

- See technical bulletin T-C-CJTZ at strongtie.com

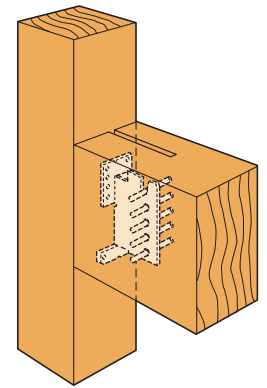
Codes: See p. 7 for Code Reference Key Chart



CJTZ5Z
(others similar)

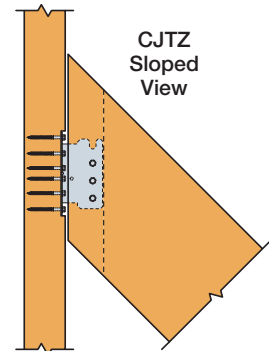


Chamfered Steel Dowel
(galvanized)



Typical CJTZ Installation
(dowels should be centered in beam; HCJTZ similar)

Warning: This connector requires special attention to ensure correct installation. The beam must be installed perpendicular to the support member. The connection's components may be damaged if the beam is rotated from its opposite end during or after installation. Damaged components may not be noticeable and may reduce the connector's load carrying capacity.

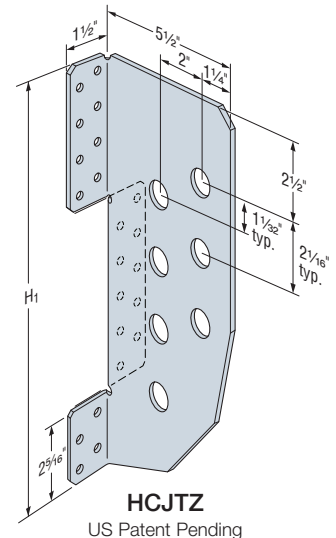


CJTZ Sloped View

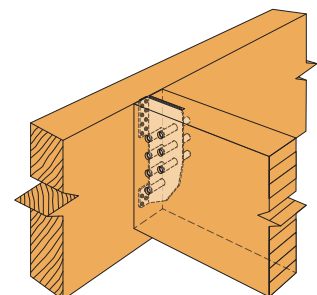
These products are available with additional corrosion protection. For more information, see p. 10.

Model No.	Min. Joist Size	Dimensions (in.)		Fasteners (Quantity – Type)		Allowable Loads				Code Ref.
		H ₁	H ₂	Header	Joist Pins (2 3/4" or 4 3/4")	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
Douglas Fir–Larch										
CJT3Z	4x6	5 9/16	4 7/16	(6) 1/4" x 3" SDS	(3) 1/2"	985	1,050	1,050	1,050	IBC, FL, LA
	4x8	5 9/16	4 7/16	(6) 1/4" x 3" SDS	(3) 1/2"	1,540	1,730	1,730	1,730	
CJT4Z	4x10	7	5 19/16	(8) 1/4" x 3" SDS	(4) 1/2"	2,625	2,970	2,970	2,970	
CJT5Z	4x12	8 9/16	7 7/16	(10) 1/4" x 3" SDS	(5) 1/2"	3,160	3,935	4,520	4,580	
CJT6Z	4x12	10	8 15/16	(12) 1/4" x 3" SDS	(6) 1/2"	4,305	4,220	4,220	4,220	
Glulam										
CJT3Z	3 1/8" x 7 1/2"	5 9/16	4 7/16	(6) 1/4" x 3" SDS	(3) 1/2"	1,540	1,835	1,835	1,835	IBC, FL, LA
CJT4Z	3 1/8" x 9"	7	5 19/16	(8) 1/4" x 3" SDS	(4) 1/2"	2,625	3,180	3,180	3,180	
CJT5Z	3 1/8" x 10 1/2"	8 9/16	7 7/16	(10) 1/4" x 3" SDS	(5) 1/2"	3,160	3,900	4,480	4,570	
CJT6Z	3 1/8" x 12"	10	8 15/16	(12) 1/4" x 3" SDS	(6) 1/2"	4,305	4,510	4,860	4,860	
HCJTZ	5 1/8" x 15"	13 1/16	13 1/16	(22) 1/4" x 3" SDS	(7) 3/4"	9,210	8,465	8,465	8,465	
PSL										
CJT3Z	3 1/2" x 9 1/2"	5 9/16	4 7/16	(6) 1/4" x 3" SDS	(3) 1/2"	1,540	2,220	2,220	2,220	IBC, FL, LA
CJT4Z	3 1/2" x 9 1/2"	7	5 19/16	(8) 1/4" x 3" SDS	(4) 1/2"	2,625	2,810	2,810	2,810	
CJT5Z	3 1/2" x 9 1/2"	8 9/16	7 7/16	(10) 1/4" x 3" SDS	(5) 1/2"	3,160	3,980	4,285	4,285	
CJT6Z	3 1/2" x 11 7/8"	10	8 15/16	(12) 1/4" x 3" SDS	(6) 1/2"	4,305	4,640	4,640	4,640	
HCJTZ	5 1/8" x 15"	13 1/16	13 1/16	(22) 1/4" x 3" SDS	(7) 3/4"	9,210	8,465	8,465	8,465	

1. Center dowel in beam. Short dowel (1/2" x 2 3/4") is for use with 3 1/8" glulam beam, 4x sawn lumber, or 3 1/2" wide PSL. Long dowel (1/2" x 4 3/4") is for use with 5 1/8" glulam beam, 6x sawn lumber, or greater widths.



HCJTZ
US Patent Pending



Typical HCJTZ Installation

HUS/HHUS/HGUS

Double-Shear Face-Mount Hangers



This product is preferable to similar connectors because of (a) easier installation, (b) higher loads, (c) lower installed cost, or a combination of these features.

See hanger tables on pp. 51–53.

These hangers are designed for applications where higher loads are needed (also see HUC and HUCQ).

All hangers in this series have double-shear nailing. This innovation distributes the load through two points on each joist nail for greater strength. It also allows the use of fewer nails, faster installation and the use of common nails for all connections. (Do not bend or remove tabs.)

Material: HHUS — 14 gauge; HGUS — 12 gauge; HUS 2x and 1¼ sizes — 16 gauge; HUS — 14 gauge

Finish: Galvanized. Some products available in stainless steel or ZMAX®. See Corrosion Information, pp. 8–10.

Installation:

- Use all specified fasteners; see General Notes.
- Do not use double-shear hangers with I-joists.
- Nails must be driven at an angle through the joist or truss into the header to achieve the table loads.
- Not designed for welded or nailer applications.
- 0.148" x 3¼" nails may be used where 0.148" x 3" nails are specified with no reduction in load. Where 0.162" x 3½" nails are specified, 0.148" x 3" or 0.148" x 3¼" nails may be used at 0.85 of the table load.
- With 3x carrying members, use 0.162" x 2½" (Simpson Strong-Tie® N16) nails into the header and 0.162" x 3½" nails into the joist with no load reduction. With 2x carrying members, use 0.148" x 1½" nails into the header and 0.148" x 3" nails into the joist, and reduce the load to 0.64 of the table value.

Options:

- HUS cannot be modified
- Other sizes available; contact Simpson Strong-Tie for details

HHUS — Sloped and/or Skewed Seat

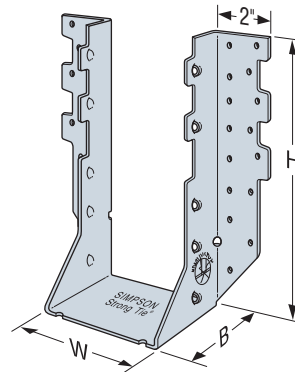
- HHUS hangers can be skewed to a maximum of 45° and/or sloped to a maximum of 45°
- For skew only, maximum allowable download is 0.85 of the table load
- For sloped only or sloped and skewed hangers, the maximum allowable download is 0.65 of the table load
- Uplift loads for sloped/skewed conditions are 0.72 of the table load, not to exceed 2,475 lb.
- The joist must be bevel-cut to allow for double shear nailing

HGUS — Skewed Seat

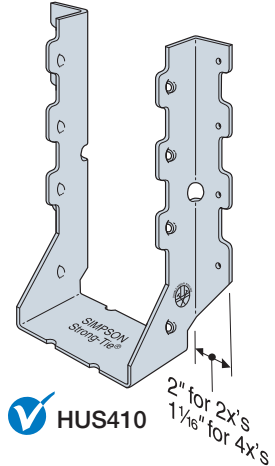
- HGUS hangers can be skewed only to a maximum of 45°. Allowable loads are:

HGUS Seat Width	Joist	Down Load	Uplift
W < 2"	square cut	0.62 of table load	0.46 of table load
W < 2"	bevel cut	0.72 of table load	0.46 of table load
2" < W < 6"	bevel cut	0.85 of table load	0.41 of table load
W > 6"	bevel cut	0.85 of table load	0.41 of table load

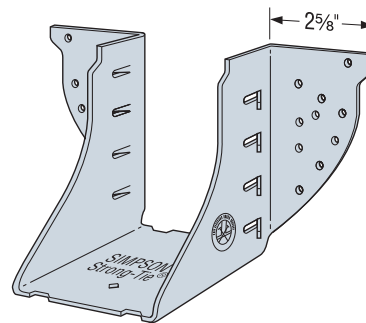
Codes: See p. 7 for Code Reference Key Chart



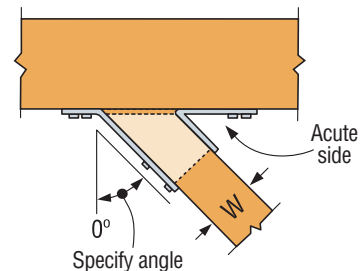
✓ HHUS410



✓ HUS410
2" for 2x's
1 1/8" for 4x's



✓ HGUS46



Top View HHUS Hanger Skewed Right
(joist must be bevel cut)

U/HU/HUC/HUCQ

Face-Mount Hangers

See hanger tables on pp. 51–53.

U — The standard U hanger provides flexibility of joist to header installation. Versatile fastener selection with tested allowable loads.

HU/HUC — Most models have triangle and round holes. To achieve maximum loads, fill both round and triangle holes with common nails.

HUCQ — Features concealed flanges so it can be installed close to the end of the supporting beam or on a post. They install with Strong-Drive® SDS Heavy-Duty Connector screws (supplied with the hanger) for high capacity and ease of installation.

Material: U— 16 gauge; HU/HUC/HUCQ — 14 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- HU/HUC — Can be installed filling round holes only, or filling round and triangle holes for maximum values.
- HUCQ — When using structural composite lumber columns, the capacities shown in the tables are for fasteners applied to the wide face of the column.
- Web stiffeners are required for all I-joists used with these hangers.
- HU/HUC/HUCQ hangers can be welded to a steel member. Allowable loads are the lesser of the values in the hanger tables on pp. 51–53 or the weld capacity — refer to technical bulletin T-C-HUHUC-W at strongtie.com.
- When nailing into carrying member's end grain, the allowable load is adjusted by a factor of 0.67.

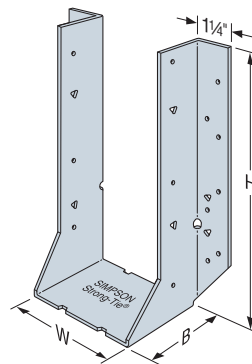
Options:

- Order HUC_X hanger. For both flanges concealed, order HUC.

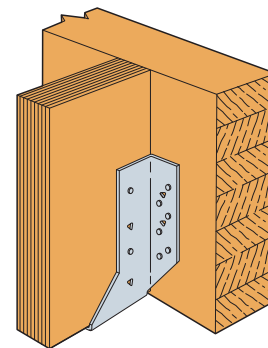
Sloped, Skewed and Sloped/Skewed:

- See modification table for available options and associated load capacities for U and HU hangers.
- HUCQ cannot be modified.

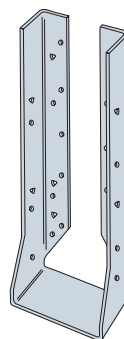
Codes: See p. 7 for Code Reference Key Chart



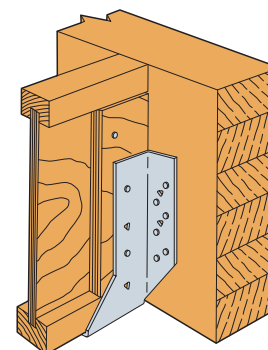
HU410



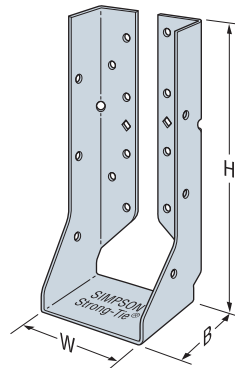
Typical HU7 Installation



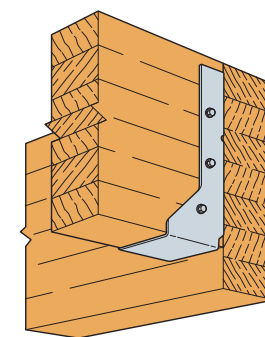
HUC412
Concealed Flanges



Typical HU7 Installation



HUCQ



Typical HUCQ Installed
on End of a Beam

Model configurations may differ from those shown.
Some HU models do not have triangle holes.
Contact Simpson Strong-Tie for details.

U/HU/HUC/HUCQ

Face-Mount Hangers (cont.)

U/HU/HUC Series Modifications and Associated Load Reductions

Seat			Flange	Fastener Substitutions
Seat Sloped Up or Down 45° Max.	Seat Skewed 67½° Max. ³ for W ≤ 6 45° Max. for W ≥ 6	Seat Sloped and Skewed	One or Both HU Flanges Concealed ²	0.162" x 3½" Stainless-Steel Nails
1.00	W ≤ 3⅝ use 1.00 W > 3⅝ use 0.80	0.80	1.00 (normal) 0.80 (when sloped and skewed)	Ring shank 1.00 Smooth shank (normal seat) 1.00 Smooth shank (modified seat ¹) 0.50

1. Modified seat is sloped, skewed, or both. If sloped only or skewed only, use a smooth-shank stainless-steel reduction of 0.65.
2. For hanger applications with both flanges concealed, W must be at least 2⅝". To order, ask for HUCXXX.
For skewed HUC, only flange on acute side is concealed.
3. Skews over 50° require a square-cut joist.

Reduction Factor Instructions

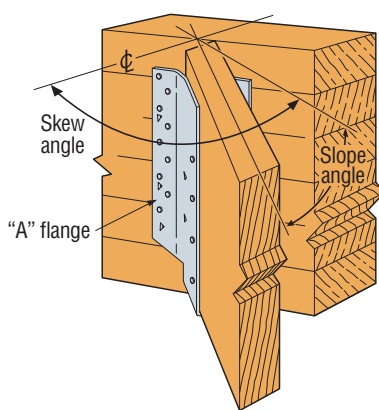
Allowable Download = Seat x Flange x Stainless Steel Nails x Other Fastener Substitutions x (Table Load)

Allowable Uplift = 0.75 x Face Fastener Type x (Table Load) for skewed or sloped
1.00 x Face Fastener Type x (Table Load) for non-skewed or non-sloped

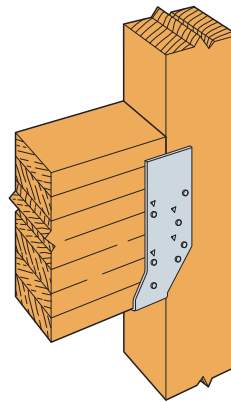
I-Joist, Glulam and SCL Hangers

Maximum Skew Degree for Skewed HUC Hangers

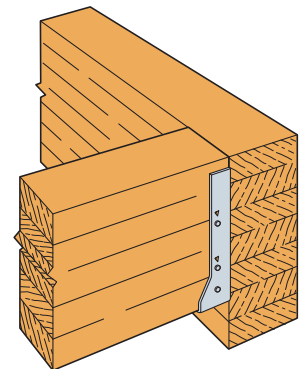
Hanger Width (in.)	Maximum Skew (degree)
2⅝	31
2¾	31
2⅞	34
2¾	37
3⅛	41
3¼	42
> 3¼	45



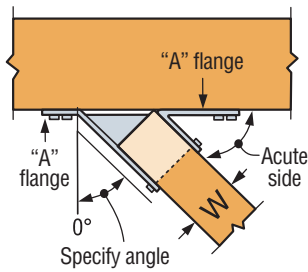
Typical HU Sloped Down, Skewed Right Installation



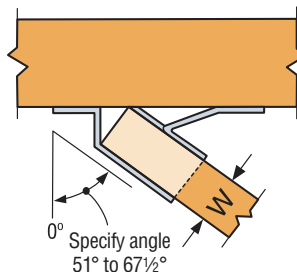
Typical HU Installation Manufactured with Flanges Straight



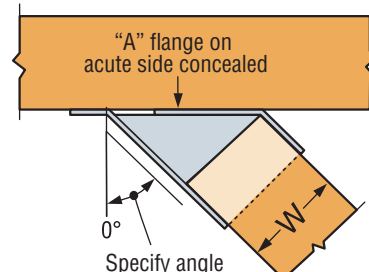
Typical HUC Installed on a Beam



Top View U Hanger Skewed Right < 51° (square cut)



Top View U Hanger Skewed Right ≥ 51° (square cut)



Top View HUC Concealed Hanger Skewed Right (square cut)

LGU/MGU/HGU/HHGU

High-Capacity Girder Hangers

The GU hangers are high-capacity girder hangers designed for situations where the header and joist are flush at top. This part can be used for retrofit on the framing members after they are temporarily placed in position. It uses Strong-Drive® SDS Heavy-Duty Connector screws to make installation fast and easy, with no predrilling required.

Material: See table

Finish: Galvanized, HHGU — Simpson Strong-Tie gray paint

Installation:

- Use all specified fasteners; see General Notes.
- Install with ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws, which are provided with the GUs. (Note: lag screws will not achieve the same loads.)
- Alternatively, the ¼" x 2½" Strong-Drive SDS face screws supplied with these hangers may be replaced with ¼" x 3½" SDS or ¼" x 5" SDS screws for two-ply or three-ply LVL headers to transfer the hanger load to all plies. This alternate fastener option does not eliminate the need for uniform fastener requirements along the length of the multi-ply header.
- All multiple members must be fastened together to act as a single unit.
- Multiple-member headers may require additional fasteners at the hanger locations. The quantity and location of the additional fasteners must be determined by the designer.

Options:

- Hot-dip galvanized available. Order as "X" version; specify HDG.
- Other seat widths available. Order as "X" version; specify width.

Concealed Flange

- LGU, MGU, HGU and HHGU are available with one flange concealed. Specify flange to conceal.
- Allowable loads for one flange-concealed option:

LGU	1.00 of published load
MGU	0.88 of published load
HGU	0.75 of published load
HHGU	0.75 of published load
- On LGU with W 3¼" or less, MGU with W 4" or less and HGU with W 4 11⁄16" or less, flanges cannot be concealed.

Skewed

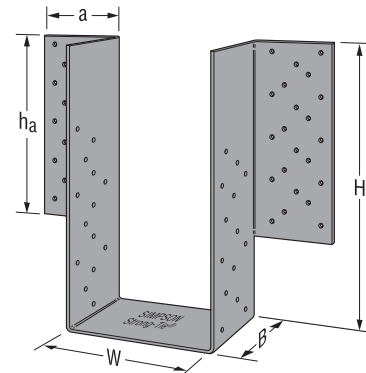
- LGU, MGU, HGU, LGUM and HGUM hangers are available skewed up to 45°.
- Apply the following reduction factors to published loads:

Reduction Factors for Skewed LGU, MGU, HGU

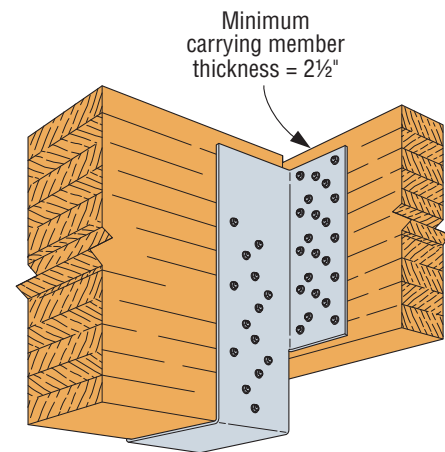
Model	Beam Cut	Download	Uplift
LGU	Square cut	0.90	0.60
	Bevel cut	0.90	0.60
MGU/HGU less than 6" wide	Square cut	0.75	0.65
	Bevel cut	0.80	0.65
MGU/HGU 6" and wider	Bevel cut	0.80	0.55

- Concealed flanges are not available with skewed models.

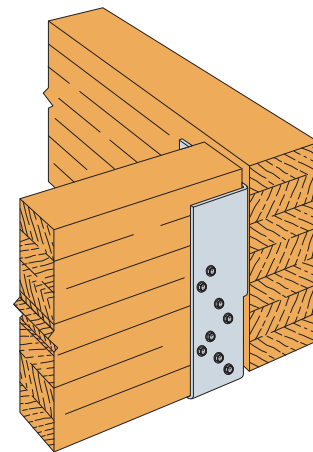
Codes: See p. 7 for Code Reference Key Chart



HHGU
(LGU, MGU, HGU similar)



Typical HHGU Installation



Typical MGU Installation with Right Flange Concealed

LGU/MGU/HGU/HHGU

High-Capacity Girder Hangers (cont.)

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

I-Joist, Glulam and SCL Hangers

Actual Carried Beam Width (in.)	Model No.	Ga.	Dimensions (in.)						SDS Fasteners		Allowable Loads				Code Ref.
			W	Min. H	Max. H	B	h _a	a	Face	Joist	DF/SP		SPF/HF		
											Uplift	Download	Uplift	Download	
											160	100/115/125	160	100/115/125	
3 1/8	LGU3.25-SDS	10	3 1/4	8	30	4 1/2	7 3/8	3 1/4	(16) 1/4" x 2 1/2"	(12) 1/4" x 2 1/2"	5,555	6,720	4,775	4,840	IBC, FL, LA
	LGU3.63-SDS	10	3 5/8	8	30	4 1/2	7 3/8	3 1/4	(16) 1/4" x 2 1/2"	(12) 1/4" x 2 1/2"	5,555	6,720	4,775	4,800	
3 1/2	MGU3.63-SDS	10	3 5/8	9 1/4	30	4 1/2	8 5/8	4	(24) 1/4" x 2 1/2"	(16) 1/4" x 2 1/2"	7,260	9,450	6,245	7,200	
	HGU3.63-SDS	7	3 5/8	11	30	5 1/4	10 3/8	4 1 1/16	(36) 1/4" x 2 1/2"	(24) 1/4" x 2 1/2"	9,460	13,160	8,135	10,800	
5 1/8	MGU5.25-SDS	10	5 1/4	9 1/4	30	4 1/2	8 5/8	4	(24) 1/4" x 2 1/2"	(16) 1/4" x 2 1/2"	7,260	9,450	6,245	7,200	
	HGU5.25-SDS	7	5 1/4	11	30	5 1/4	10 3/8	4 1 1/16	(36) 1/4" x 2 1/2"	(24) 1/4" x 2 1/2"	9,460	13,160	8,135	10,800	
5 1/4	MGU5.50-SDS	10	5 1/2	9 1/4	30	4 1/2	8 5/8	4	(24) 1/4" x 2 1/2"	(16) 1/4" x 2 1/2"	7,260	9,450	6,245	7,200	
	HGU5.50-SDS	7	5 1/2	11	30	5 1/4	10 3/8	4 1 1/16	(36) 1/4" x 2 1/2"	(24) 1/4" x 2 1/2"	9,460	13,160	8,135	10,800	
	HHGU5.50-SDS	3	5 1/2	13	30	5 1/4	12 3/8	4 1 1/16	(44) 1/4" x 2 1/2"	(28) 1/4" x 2 1/2"	14,145	17,345	12,515	13,200	
6 3/4	MGU7.00-SDS	10	7	9 1/4	30	4 1/2	8 5/8	4	(24) 1/4" x 2 1/2"	(16) 1/4" x 2 1/2"	7,260	9,450	6,245	7,200	
	HGU7.00-SDS	7	7	11	30	5 1/4	10 3/8	4 1 1/16	(36) 1/4" x 2 1/2"	(24) 1/4" x 2 1/2"	9,460	13,160	8,135	10,800	
	HHGU7.00-SDS	3	7	13	30	5 1/4	12 3/8	4 1 1/16	(44) 1/4" x 2 1/2"	(28) 1/4" x 2 1/2"	14,145	17,345	12,165	13,200	
7	HGU7.25-SDS	7	7 1/4	11	30	5 1/4	10 3/8	4 1 1/16	(36) 1/4" x 2 1/2"	(24) 1/4" x 2 1/2"	9,460	13,160	8,135	10,800	
	HHGU7.25-SDS	3	7 1/4	13	30	5 1/4	12 3/8	4 1 1/16	(44) 1/4" x 2 1/2"	(28) 1/4" x 2 1/2"	14,145	17,345	12,165	13,200	
8 3/4	HGU9.00-SDS	7	9	11	30	5 1/4	10 3/8	4 1 1/16	(36) 1/4" x 2 1/2"	(24) 1/4" x 2 1/2"	9,460	13,160	8,135	10,800	
	HHGU9.00-SDS	3	9	13	30	5 1/4	12 3/8	4 1 1/16	(44) 1/4" x 2 1/2"	(28) 1/4" x 2 1/2"	14,145	17,345	12,165	13,200	
10 3/4	HGU11.00-SDS	7	11	11	30	5 1/4	10 3/8	4 1 1/16	(36) 1/4" x 2 1/2"	(24) 1/4" x 2 1/2"	9,460	13,160	8,135	10,800	
	HHGU11.00-SDS	3	11	13	30	5 1/4	12 3/8	4 3/4	(44) 1/4" x 2 1/2"	(28) 1/4" x 2 1/2"	14,145	18,480	12,165	13,305	

- Uplift loads have been increased for earthquake or wind loading with no further increase allowed. Reduce where other loads govern.
- Header height shall be greater than or equal to flange height (h_a).
- Fasteners:** SDS screws are Simpson Strong-Tie® Strong-Drive® Heavy-Duty Connector screws. See p. 334 of the *Wood Construction Connectors* catalog (C-C-2019) at strongtie.com for fastener information.

Face-Mount Hangers — I-Joists, Glulam and SCL

Codes: See p. 7 for Code Reference Key Chart.

Actual Joist Size (in.)	Model No.	Carried Member			Dimensions (in.)			Min./Max.	Fasteners (in.)		Allowable Loads (lb.)						Code Ref.			
		Glulam	SCL	I-Joist	Web Stiff Req'd.	W	H		B	Face	Joist	DF/SP Species Header				SPF/HF Species Header				
												Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Floor (100)		Snow (115)	Roof (125)	
3 1/8 glulam	HU3.25/12 / HUC3.25/12	•				3 1/4	11 3/4	2 1/2	—	(24) 0.162 x 3 1/2	(12) 0.148 x 3	1,795	3,570	4,030	4,335	3,075	3,470	3,735	IBC, FL, LA	
	HU3.25/16 / HUC3.25/16	•				3 1/4	13 13/16	2 1/2	Min.	(20) 0.162 x 3 1/2	(8) 0.148 x 3	1,515	2,975	3,360	3,610	2,560	2,890	3,105	—	
		•							Max.	(26) 0.162 x 3 1/2	(12) 0.148 x 3	1,795	3,870	4,365	4,695	3,330	3,755	4,040		
		HUCQ210-2-SDS	•				3 1/4	9	3	—	(12) 1/4 x 2 1/2 SDS	(6) 1/4 x 2 1/2 SDS	2,345	4,315	4,315	4,315	3,600	3,710	3,710	FL
		HGUS3.25/10	•				3 1/4	8 5/8	4	—	(46) 0.162 x 3 1/2	(16) 0.162 x 3 1/2	4,095	9,100	9,100	9,100	7,825	7,825	7,825	IBC, FL
		HGUS3.25/12	•				3 1/4	10 5/8	4	—	(56) 0.162 x 3 1/2	(20) 0.162 x 3 1/2	5,040	9,400	9,400	9,400	8,085	8,085	8,085	
	LGU3.25-SDS	•			—	3	8 to 30	4 1/2	—	(16) 1/4 x 2 1/2 SDS	(12) 1/4 x 2 1/2 SDS	5,555	6,720	7,310	7,310	4,840	5,265	5,265		
3 1/2 x 5 1/4	HHUS46	•	•		—	3	5 1/8	3	—	(14) 0.162 x 3 1/2	(6) 0.162 x 3 1/2	1,320	2,785	3,155	3,405	2,395	2,715	2,930		
	HGUS46	•	•		—	3	4 7/16	4	—	(20) 0.162 x 3 1/2	(8) 0.162 x 3 1/2	2,155	4,360	4,885	5,230	3,750	4,200	4,500		
3 1/2 x 7 1/4	HUS48	•	•		—	3 3/16	6 15/16	2	—	(6) 0.162 x 3 1/2	(6) 0.162 x 3 1/2	1,320	1,595	1,815	1,960	1,365	1,555	1,680		
	HHUS48	•	•		—	3	7 1/8	3	—	(22) 0.162 x 3 1/2	(8) 0.162 x 3 1/2	1,780	4,210	4,770	5,140	3,615	4,095	4,415		
	HGUS48	•	•		—	3	7 1/16	4	—	(36) 0.162 x 3 1/2	(12) 0.162 x 3 1/2	3,235	7,460	7,460	7,460	6,415	6,415	6,415		
3 1/2 x 9 1/2	MIU3.56/9	•	•	•	—	3 3/16	8 13/16	2 1/2	—	(16) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	210	2,305	2,615	2,820	1,980	2,245	2,425		
	U410	•	•	•	✓	3 3/16	8 3/8	2	—	(14) 0.162 x 3 1/2	(6) 0.148 x 3	970	2,015	2,285	2,465	1,735	1,965	2,120		
	HUS410	•	•		—	3 3/16	8 15/16	2	—	(8) 0.162 x 3 1/2	(8) 0.162 x 3 1/2	2,990	2,125	2,420	2,615	1,820	2,070	2,240		
	HHUS410	•	•		—	3	9	3	—	(30) 0.162 x 3 1/2	(10) 0.162 x 3 1/2	3,565	5,635	6,380	6,445	4,845	5,486	5,545		
	HU410/HUC410	•	•	•	✓	3 3/16	8 3/8	2 1/2	—	(36) 0.162 x 3 1/2	(12) 0.162 x 3 1/2	3,235	7,460	7,460	7,460	6,415	6,415	6,415		
	HUCQ410-SDS	•	•		—	3 3/16	9	3	—	(12) 1/4 x 2 1/2 SDS	(6) 1/4 x 2 1/2 SDS	2,265	4,500	4,500	4,500	3,240	3,240	3,240		
	HGUS410	•	•		—	3	9 1/16	4	—	(46) 0.162 x 3 1/2	(16) 0.162 x 3 1/2	4,095	9,100	9,100	9,100	7,825	7,825	7,825		
	LGU3.63-SDS	•	•		—	3	8 to 30	4 1/2	—	(16) 1/4 x 2 1/2 SDS	(12) 1/4 x 2 1/2 SDS	5,555	6,720	6,720	6,720	4,840	4,840	4,840		
	MGU3.63-SDS	•	•		—	3	9 1/4 to 30	4 1/2	—	(24) 1/4 x 2 1/2 SDS	(16) 1/4 x 2 1/2 SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805	IBC, FL, LA	
3 1/2 x 11 1/8	U414	•	•	•	✓	3 3/16	10	2	—	(16) 0.162 x 3 1/2	(6) 0.148 x 3	970	2,305	2,615	2,820	1,980	2,245	2,425		
	HHUS410	•	•		—	3	9	3	—	(30) 0.162 x 3 1/2	(10) 0.162 x 3 1/2	3,565	5,635	6,380	6,445	4,845	5,486	5,545		
	HUS412	•	•		—	3 3/16	10 1/2	2	—	(10) 0.162 x 3 1/2	(10) 0.162 x 3 1/2	3,435	2,660	3,025	3,265	2,275	2,590	2,795		
	HU412 / HUC412	•	•		—	3 3/16	10 5/8	2 1/2	Min.	(16) 0.162 x 3 1/2	(6) 0.148 x 3	1,135	2,380	2,685	2,890	2,050	2,315	2,490		
		•	•		—	3 3/16			Max.	(22) 0.162 x 3 1/2	(10) 0.148 x 3	1,795	3,275	3,695	3,970	2,820	3,180	3,425		
	HUCQ412-SDS	•	•		—	3 3/16	11		—	(14) 1/4 x 2 1/2 SDS	(6) 1/4 x 2 1/2 SDS	2,265	5,045	5,045	5,045	3,630	3,630	3,630		
	HGUS412	•	•		—	3	10 7/16	4	—	(56) 0.162 x 3 1/2	(20) 0.162 x 3 1/2	5,040	9,400	9,400	9,400	8,085	8,085	8,085		
	LGU3.63-SDS	•	•		—	3	8 to 30	4 1/2	—	(16) 1/4 x 2 1/2 SDS	(12) 1/4 x 2 1/2 SDS	5,555	6,720	6,720	6,720	4,840	4,840	4,840		
MGU3.63-SDS	•	•		—	3	9 1/4 to 30	4 1/2	—	(24) 1/4 x 2 1/2 SDS	(16) 1/4 x 2 1/2 SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805			
	HGU3.63-SDS	•	•		—	3	11 to 30	4 1/2	—	(36) 1/4 x 2 1/2 SDS	(24) 1/4 x 2 1/2 SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475		
3 1/2 x 14	U414	•	•	•	✓	3 3/16	10	2	—	(16) 0.162 x 3 1/2	(6) 0.148 x 3	970	2,305	2,615	2,820	1,980	2,245	2,425		
	HHUS410	•	•		—	3	9	3	—	(30) 0.162 x 3 1/2	(10) 0.162 x 3 1/2	3,565	5,635	6,380	6,445	4,845	5,486	5,545		
	HUS412	•	•		—	3 3/16	10 1/2	2	—	(10) 0.162 x 3 1/2	(10) 0.162 x 3 1/2	3,635	2,660	3,025	3,265	2,275	2,590	2,795		
	HU414	•	•	•	✓	3 3/16	12 3/8	2 1/2	Max.	(24) 0.162 x 3 1/2	(12) 0.148 x 3	1,795	3,570	4,030	4,335	3,075	3,470	3,735		
	HU416 / HUC416	•	•	•	✓	3 3/16	13 3/8	2 1/2	Min.	(20) 0.162 x 3 1/2	(8) 0.148 x 3	1,515	2,975	3,360	3,610	2,565	2,895	3,110		
		•	•	•	✓	3 3/16			Max.	(26) 0.162 x 3 1/2	(12) 0.148 x 3	1,795	3,870	4,365	4,695	3,330	3,760	4,045		
	HUCQ412-SDS	•	•		—	3 3/16	11	3	—	(14) 1/4 x 2 1/2 SDS	(6) 1/4 x 2 1/2 SDS	2,265	5,045	5,045	5,045	3,630	3,630	3,630		
	HGUS414	•	•		—	3	12 7/16	4	—	(66) 0.162 x 3 1/2	(22) 0.162 x 3 1/2	5,515	9,695	9,695	9,695	8,340	8,340	8,340		
	LGU3.63-SDS	•	•		—	3	8 to 30	4 1/2	—	(16) 1/4 x 2 1/2 SDS	(12) 1/4 x 2 1/2 SDS	5,555	6,720	6,720	6,720	4,840	4,840	4,840		
MGU3.63-SDS	•	•		—	3	9 1/4 to 30	4 1/2	—	(24) 1/4 x 2 1/2 SDS	(16) 1/4 x 2 1/2 SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805			
	HGU3.63-SDS	•	•		—	3	11 to 30	4 1/2	—	(36) 1/4 x 2 1/2 SDS	(24) 1/4 x 2 1/2 SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475	IBC, FL, LA	

I-Joist, Glulam and SCL Hangers

See footnotes on p. 53.

Face-Mount Hangers — I-Joists, Glulam and SCL

Codes: See p. 7 for Code Reference Key Chart.

Actual Joist Size (in.)	Model No.	Carried Member				Dimensions (in.)			Min./Max.	Fasteners (in.)		Allowable Loads (lb.)						Code Ref.		
		Glulam	SCL	I-joist	Web Stiff Req.	W	H	B		Face	Joist	DF/SP Species Header			SPF/HF Species Header					
												Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Floor (100)	Snow (115)		Roof (125)	
3½ x 16	MIU3.56/16	•	•	•	—	3¾	15¾	2½	—	(24) 0.162 x 3½	(2) 0.148 x 1½	210	3,455	3,920	4,045	2,970	3,370	3,480	IBC, FL, LA	
	HU416 / HUC416	•	•	•	—	3¾	13%	2½	Min.	(20) 0.162 x 3½	(8) 0.148 x 3	1,515	2,975	3,360	3,610	2,565	2,895	3,110		
		•	•	•	—	3¾			Max.	(26) 0.162 x 3½	(12) 0.148 x 3	1,795	3,870	4,365	4,695	3,330	3,760	4,045		
	HGUS414	•	•	•	—	3	12¾	4	—	(66) 0.162 x 3½	(22) 0.162 x 3½	5,515	9,695	9,695	9,695	8,340	8,340	8,340		IBC, FL, LA
	HUCQ412-SDS	•	•	•	—	3¾	11	3	—	(14) ¼ x 2½ SDS	(6) ¼ x 2½ SDS	2,265	5,045	5,045	5,045	3,630	3,630	3,630		
	LGU3.63-SDS	•	•	•	—	3	8 to 30	4½	—	(16) ¼ x 2½ SDS	(12) ¼ x 2½ SDS	5,555	6,720	6,720	6,720	4,840	4,840	4,840		
	MGU3.63-SDS	•	•	•	—	3	9¼ to 30	4½	—	(24) ¼ x 2½ SDS	(16) ¼ x 2½ SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805		
HGU3.63-SDS	•	•	•	—	3	11 to 30	4½	—	(36) ¼ x 2½ SDS	(24) ¼ x 2½ SDS	9,895	14,145	14,145	14,145	10,185	10,185	10,185			
3½ x 18	HU416 / HUC416	•	•	•	✓	3¾	13%	2½	Min.	(20) 0.162 x 3½	(8) 0.148 x 3	1,515	2,975	3,360	3,610	2,565	2,895	3,110	IBC, FL, LA	
	HGUS414	•	•	•	—	3	12¾	4	—	(66) 0.162 x 3½	(22) 0.162 x 3½	5,515	9,695	9,695	9,695	8,340	8,340	8,340		
	HUCQ412-SDS	•	•	•	—	3¾	11	3	—	(14) ¼ x 2½ SDS	(6) ¼ x 2½ SDS	2,265	5,045	5,045	5,045	3,630	3,630	3,630		
	LGU3.63-SDS	•	•	•	—	3	8 to 30	4½	—	(16) ¼ x 2½ SDS	(12) ¼ x 2½ SDS	5,555	6,720	6,720	6,720	4,840	4,840	4,840		
	MGU3.63-SDS	•	•	•	—	3	9¼ to 30	4½	—	(24) ¼ x 2½ SDS	(16) ¼ x 2½ SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805		
	HGU3.63-SDS	•	•	•	—	3	11 to 30	4½	—	(36) ¼ x 2½ SDS	(24) ¼ x 2½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475		
3½ x 21 to 30	LGU3.63-SDS	•	•	•	—	3	8 to 30	4½	—	(16) ¼ x 2½ SDS	(12) ¼ x 2½ SDS	5,555	6,720	6,720	6,720	4,840	4,840	4,840	IBC, FL, LA	
	MGU3.63-SDS	•	•	•	—	3	9¼ to 30	4½	—	(24) ¼ x 2½ SDS	(16) ¼ x 2½ SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805		
	HGU3.63-SDS	•	•	•	—	3	11 to 30	4½	—	(36) ¼ x 2½ SDS	(24) ¼ x 2½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475		
4 x 9½	MIU4.12/9	•	•	•	—	4¾	9¾	2½	—	(16) 0.162 x 3½	(2) 0.148 x 1½	210	2,305	2,615	2,820	1,980	2,245	2,425		
5½ glulam	HUCQ5.25/9-SDS	•	•	•	—	5¼	9	3	—	(12) ¼ x 2½ SDS	(6) ¼ x 2½ SDS	2,265	4,500	4,500	4,500	3,240	3,240	3,240	IBC, FL, LA	
	HUCQ5.25/11-SDS	•	•	•	—	5¼	11	3	—	(14) ¼ x 2½ SDS	(6) ¼ x 2½ SDS	2,265	5,045	5,045	5,045	3,630	3,630	3,630		
	LGU5.25-SDS	•	•	•	—	5¼	8 to 30	4½	—	(16) ¼ x 2½ SDS	(12) ¼ x 2½ SDS	5,555	6,720	6,720	6,720	4,840	4,840	4,840		
	MGU5.25-SDS	•	•	•	—	5¼	9¼ to 30	4½	—	(24) ¼ x 2½ SDS	(16) ¼ x 2½ SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805		
	HGUS5.25/10	•	•	•	—	5¼	9¾	4	—	(46) 0.162 x 3½	(16) 0.162 x 3½	4,095	9,100	9,100	9,100	7,825	7,825	7,825		
	HGU5.25-SDS	•	•	•	—	5¼	11 to 30	5¼	—	(36) ¼ x 2½ SDS	(24) ¼ x 2½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475		
	HU5.125/12 / HUC5.125/12	•	•	•	—	5¼	10¼	2½	—	(22) 0.148 x 3½	(8) 0.148 x 3½	1,515	3,275	3,695	3,970	2,820	3,180	3,425		
	HGUS5.25/12	•	•	•	—	5¼	10¾	4	—	(56) 0.162 x 3½	(20) 0.162 x 3½	5,040	9,400	9,400	9,400	8,085	8,085	8,085		
	HU5.125/13.5 / HUC5.125/13.5	•	•	•	—	5¼	13¼	2½	—	(26) 0.148 x 3½	(12) 0.148 x 3½	2,695	3,870	4,365	4,695	3,330	3,760	4,045		
HU5.125/16 / HUC5.125/16	•	•	•	—	5¼	13¾	2½	—	(26) 0.148 x 3½	(12) 0.148 x 3½	2,695	3,870	4,365	4,695	3,330	3,760	4,045			
5½ glulam	HGUS5.50/10	•	•	•	—	5½	8½	4	—	(46) 0.162 x 3½	(16) 0.162 x 3½	4,095	9,100	9,100	9,100	7,825	7,825	7,825	IBC, FL, LA	
	HUCQ610-SDS	•	•	•	—	5½	9	3	—	(12) ¼ x 2½ SDS	(6) ¼ x 2½ SDS	2,325	4,680	5,185	5,185	3,370	3,735	3,735		
	HHUS5.50/10	•	•	•	—	5½	9	3	—	(30) 0.162 x 3½	(10) 0.162 x 3½	3,565	5,635	6,380	6,880	4,845	5,490	5,915		
	MGU5.62-SDS	•	•	•	—	5%	9¼ to 30	4½	—	(24) ¼ x 2½ SDS	(16) ¼ x 2½ SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805		
	HU612 / HUC612	•	•	•	—	5½	9%	2½	Max.	(22) 0.162 x 3½	(8) 0.162 x 3½	1,795	3,275	3,695	3,970	2,820	3,180	3,425		
	HUCQ612-SDS	•	•	•	—	5½	11	3	—	(14) ¼ x 2½ SDS	(6) ¼ x 2½ SDS	2,325	5,185	5,185	5,185	3,735	3,735	3,735		
	HGU5.62-SDS	•	•	•	—	5%	11 to 30	5¼	—	(36) ¼ x 2½ SDS	(24) ¼ x 2½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475		
	HGUS5.50/14	•	•	•	—	5½	12½	4	—	(66) 0.162 x 3½	(22) 0.162 x 3½	5,515	9,695	9,695	9,695	8,340	8,340	8,340		
	HHGU5.62-SDS	•	•	•	—	5%	13 to 30	5¼	—	(44) ¼ x 2½ SDS	(28) ¼ x 2½ SDS	14,145	17,345	17,345	17,345	12,490	12,490	12,490		

See footnotes on p. 53.

I-Joist, Glulam and SCL Hangers

Face-Mount Hangers — I-Joists, Glulam and SCL

Codes: See p. 7 for Code Reference Key Chart.

Actual Joist Size (in.)	Model No.	Carried Member			Dimensions (in.)			Min./Max.	Fasteners (in.)		Allowable Loads (lb.)						Code Ref.		
		Glulam	SCL	I-joist	Web Stiff Req.	W	H		B	Face	Joist	DF/SP Species Header				SPF/HF Species Header			
												Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Floor (100)		Snow (115)	Roof (125)
6¾ glulam	HGUS6.88/10	•			—	6¾	8 13⁄16	4	—	(46) 0.162 x 3 ½	(16) 0.162 x 3 ½	4,095	9,100	9,100	9,100	7,825	7,825	7,825	
	MGU7.00-SDS	•			—	7	9 ¼ to 30	4 ½	—	(24) ¼ x 2 ½ SDS	(16) ¼ x 2 ½ SDS	7,260	9,450	9,450	9,450	6,805	6,805	6,805	
	HGUS6.88/12	•			—	6¾	10 19⁄16	4	—	(56) 0.162 x 3 ½	(20) 0.162 x 3 ½	5,040	9,400	9,400	9,400	8,085	8,085	8,085	
	HGUS6.88/14	•			—	6¾	12 19⁄16	4	—	(66) 0.162 x 3 ½	(22) 0.162 x 3 ½	5,515	9,695	9,695	9,695	8,340	8,340	8,340	
	HGU7.00-SDS	•			—	7	11 to 30	5 ¼	—	(36) ¼ x 2 ½ SDS	(24) ¼ x 2 ½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475	
	HHGU7.00-SDS	•			—	7	13 to 30	5 ¼	—	(44) ¼ x 2 ½ SDS	(28) ¼ x 2 ½ SDS	14,145	17,345	17,345	17,345	12,490	12,490	12,490	
7 x 9 ½	HGUS7.25/10	•	•		—	7 ¼	8 5⁄8	4	—	(46) 0.162 x 3 ½	(16) 0.162 x 3 ½	4,095	9,100	9,100	9,100	7,825	7,825	7,825	
	HU410-2 / HUC410-2	•	•	•		7 5⁄8	8 ¾	2 ½	Max.	(18) 0.162 x 3 ½	(18) 0.162 x 3 ½	1,795	2,680	3,020	3,250	2,305	2,605	2,800	
	HHUS7.25/10	•	•		—	7 ¼	9	3 5⁄8	—	(30) 0.162 x 3 ½	(10) 0.162 x 3 ½	3,565	5,635	6,380	6,880	4,845	5,490	5,915	
7 x 11 7⁄8	HHUS7.25/10	•	•		—	7 ¼	9	3 5⁄8	—	(30) 0.162 x 3 ½	(10) 0.162 x 3 ½	3,565	5,635	6,380	6,880	4,845	5,490	5,915	
	HGUS7.25/12	•	•		—	7 ¼	10 5⁄8	4	—	(56) 0.162 x 3 ½	(20) 0.162 x 3 ½	5,040	9,400	9,400	9,400	8,085	8,085	8,085	
	HU412-2 / HUC412-2	•	•	•	✓	7 5⁄8	10 19⁄16	2 ½	Max.	(22) 0.162 x 3 ½	(8) 0.162 x 3 ½	1,795	3,275	3,695	3,970	2,820	3,180	3,425	
	HGU7.25-SDS	•			—	7 ¼	11 to 30	5 ¼	—	(36) ¼ x 2 ½ SDS	(24) ¼ x 2 ½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475	
7 x 14	HHUS7.25/10	•	•		—	7 ¼	9	3 5⁄8	—	(30) 0.162 x 3 ½	(10) 0.162 x 3 ½	3,565	5,635	6,380	6,880	4,845	5,490	5,915	
	HGUS7.25/14	•	•		—	7 ¼	12 5⁄8	4	—	(66) 0.162 x 3 ½	(22) 0.162 x 3 ½	5,515	9,695	9,695	9,695	8,340	8,340	8,340	
	HGU7.25-SDS	•	•		—	7 ¼	11 to 13 7⁄8	5 ¼	—	(36) ¼ x 2 ½ SDS	(24) ¼ x 2 ½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475	
	HHGU7.25-SDS	•	•		—	7 ¼	13 to 13 7⁄8	5 ¼	—	(44) ¼ x 2 ½ SDS	(28) ¼ x 2 ½ SDS	14,145	17,345	17,345	17,345	12,490	12,490	12,490	
	HU414-2 / HUC414-2	•	•	•	✓	7 5⁄8	13 7⁄8	2 ½	Max.	(26) 0.162 x 3 ½	(12) 0.162 x 3 ½	2,695	3,870	4,365	4,695	3,330	3,760	4,045	
7 x 16	HHUS7.25/10	•	•		—	7 ¼	9	3 5⁄8	—	(30) 0.162 x 3 ½	(10) 0.162 x 3 ½	3,565	5,635	6,380	6,880	4,845	5,490	5,915	
	HGUS7.25/14	•	•		—	7 ¼	12 7⁄16	4	—	(66) 0.162 x 3 ½	(22) 0.162 x 3 ½	5,515	9,695	9,695	9,695	8,340	8,340	8,340	
	HGU7.25-SDS	•	•		—	7 ¼	11 to 15 7⁄8	5 ¼	—	(36) ¼ x 2 ½ SDS	(24) ¼ x 2 ½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475	
	HHGU7.25-SDS	•	•		—	7 ¼	13 to 15 7⁄8	5 ¼	—	(44) ¼ x 2 ½ SDS	(28) ¼ x 2 ½ SDS	14,145	17,345	17,345	17,345	12,490	12,490	12,490	
	HU414-2 / HUC414-2	•	•	•	✓	7 5⁄8	13 7⁄8	2 ½	Max.	(26) 0.162 x 3 ½	(12) 0.162 x 3 ½	2,695	3,870	4,365	4,695	3,330	3,760	4,045	
7 x 18	HHUS7.25/10	•	•		—	7 ¼	9	3	—	(30) 0.162 x 3 ½	(10) 0.162 x 3 ½	3,565	5,635	6,380	6,880	4,845	5,490	5,915	
	HGUS7.25/14	•	•		—	7 ¼	12 7⁄16	4	—	(66) 0.162 x 3 ½	(22) 0.162 x 3 ½	5,515	9,695	9,695	9,695	8,340	8,340	8,340	
	HGU7.25-SDS	•	•		—	7 ¼	11 to 17 7⁄8	5 ¼	—	(36) ¼ x 2 ½ SDS	(24) ¼ x 2 ½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475	
	HHGU7.25-SDS	•	•		—	7 ¼	13 to 17 7⁄8	5 ¼	—	(44) ¼ x 2 ½ SDS	(28) ¼ x 2 ½ SDS	14,145	17,345	17,345	17,345	12,490	12,490	12,490	
	HU414-2 / HUC414-2	•	•	•	✓	7 5⁄8	13 7⁄8	2 ½	Max.	(26) 0.162 x 3 ½	(12) 0.162 x 3 ½	2,695	3,870	4,365	4,695	3,330	3,760	4,045	
7 x 20 to 30	HGU7.25-SDS	•	•		—	7 ¼	11 to 30	5 ¼	—	(36) ¼ x 2 ½ SDS	(24) ¼ x 2 ½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475	
	HHGU7.25-SDS	•	•		—	7 ¼	13 to 30	5 ¼	—	(44) ¼ x 2 ½ SDS	(28) ¼ x 2 ½ SDS	14,145	17,345	17,345	17,345	12,490	12,490	12,490	
8¾ glulam	HGU9.00-SDS	•			—	9	11 to 30	5 ¼	—	(36) ¼ x 2 ½ SDS	(24) ¼ x 2 ½ SDS	9,460	13,160	13,160	13,160	9,475	9,475	9,475	
	HHGU9.00-SDS	•			—	9	13 to 30	5 ¼	—	(44) ¼ x 2 ½ SDS	(28) ¼ x 2 ½ SDS	14,145	17,345	17,345	17,345	12,490	12,490	12,490	
10¾ glulam	HHGU11.00-SDS	•			—	11	13 to 30	5 ¼	—	(44) ¼ x 2 ½ SDS	(28) ¼ x 2 ½ SDS	14,145	17,345	17,345	17,345	12,490	12,490	12,490	

IBC, FL, LA

I-Joist, Glulam and SCL Hangers

- Uplift loads have been increased for earthquake or wind loading with no further increase allowed. Reduce where other loads govern.
- Uplift loads are based on DF/SP. For SPF/HF, use 0.86 x DF/SP Uplift Load for products requiring nails and 0.72 x DF/SP Uplift Load for products requiring screws.
- For minimum nailing quantity and load values, fill all round holes; for maximum nailing quantity and load values, fill all round and triangular holes.
- Hangers sorted in order of recommended selection for best overall performance and installation value.
- Web stiffeners are required where noted in the table, or when the joist top flange isn't supported laterally by the hanger, or when it supports double I-joists with flanges less than 1 5⁄8" thick.
- Allowable downloads are based on a joist-bearing capacity of 750 psi.
- Fasteners:** Nail dimensions in the table are listed diameter by length. See pp. 16–17 for fastener information.

WP/HWP/HWPH/WMU

High-Capacity Top-Flange Hangers

The WP, HWP and HWPH series are designed to support joists on wood purlins or beams. WMU hangers are designed for use on standard 8"-grouted masonry block wall construction.

The HWP and HWPH high-wind purlin hangers have enhanced uplift and are ideal for high-wind applications.

Material: (Top flange/stirrup): WP — 7/12 gauge; HWP — 7/12 gauge; HWPH — 3/7 gauge

Finish: Simpson Strong-Tie gray paint. HDG available; contact Simpson Strong-Tie.

Installation:

- Use all specified fasteners.
- The WP may be used for weld-on applications. The minimum size weld is a 1 1/2" long fillet weld to each side of the top flange; weld size to match hanger material thickness. See p. 13 note k for weld information. Weld-on applications have the maximum allowable capacity listed. Uplift loads do not apply to this application. For uplift loads refer to technical bulletin T-C-WELDUPLFT at strongtie.com.
- Non-modified hangers can support joists sloped up to 1/4:12 using table loads. For joists sloping between 1/4:12 and 3/4:12 use 85% of the table loads. See technical bulletin T-C-SLOPEJST at strongtie.com.
- Web stiffeners are required for these hangers.
- If joist is shorter than hanger by more than 1/2" use only 50% of the table loads.
- For attaching to multi-ply headers, refer to technical bulletin T-C-MPLYHEADR at strongtie.com.

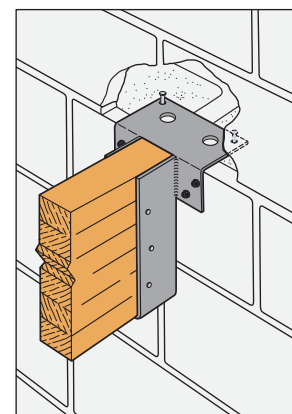
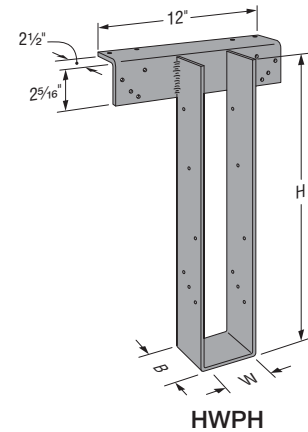
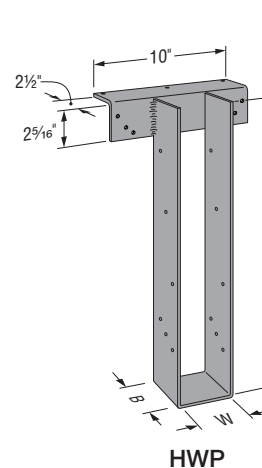
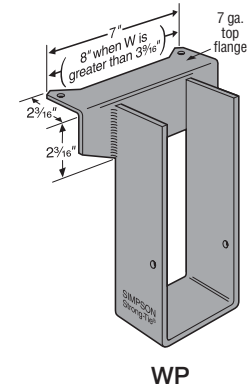
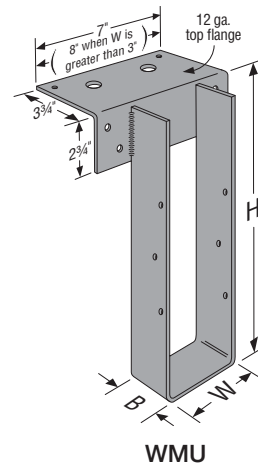
Options:

- The WP, HWP and HWPH may have a sloped and/or skewed seat up to 45°. The WP may be skewed up to 84°. See p. 56 for reduction associated with modifications.
- The top flange of the WP, HWP and HWPH may be offset and/or sloped down up to 35°. The top flange may also be opened/closed up to 30°. See p. 56 for reduction associated with modifications.
- All models are available in Type A (joist bevel cut up to 45°). See p. 56. WP is also available in Type B style (square-cut joist). Contact Simpson Strong-Tie when ordering.
- Hangers with a skew greater than 15° may have all the joist nails on the outside angle.
- Specify the slope up or down in degrees from the horizontal plane and/or the skew right or left in degrees from the perpendicular vertical plane.
- When combining skews and slopes specify whether low side, high side, or center of joist will be flush with the top of the header (see illustration on p. 56).
- Uplift loads are not available for open/closed TF, TF sloped and offset options.

Ridge Hanger (WP only)

- Top flange may be sloped to a maximum of 35° to accommodate a ridge (see illustration). Specify angle of the slope. Reduce allowable load using straight-line interpolation. See open/closed example.

Codes: See p. 7 for Code Reference Key Chart



WMU Midwall Installation

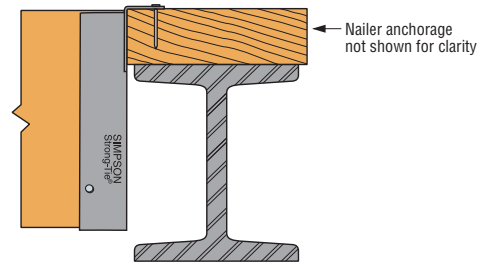
WP/HWP/HWPH/WMU

High-Capacity Top-Flange Hangers (cont.)

Nailer Table

The table indicates the maximum allowable loads for WP, HWP and HWPH hangers used on wood nailers. Nailers are wood members attached to the top of a steel I-beam, concrete or masonry wall.

Model	Nailer	Top Flange Nailing (in.)	Uplift ¹ (160)	Allowable Loads		
				DF/SP	SPF/HF	LSL
WP	2x	(2) 0.148 x 1 ½	—	2,525	2,500	3,375
	(2) 2x	(2) 0.148 x 3	—	3,255	3,255	—
	3x	(2) 0.162 x 2 ½	—	3,000	2,510	3,375
	4x	(2) 0.148 x 3	—	3,255	3,255	—
HWP	(2) 2x	(3) 0.148 x 3	710	4,615	—	—
	3x	(3) 0.162 x 2 ½	970	4,615	—	—
	4x	(3) 0.162 x 2 ½	1,535	5,045	—	—
HWPH	(2) 2x	(4) 0.162 x 2 ½	710	6,400	—	—
	3x	(4) 0.162 x 2 ½	970	6,470	—	—
	4x	(4) 0.162 x 3 ½	1,550	6,470	—	—



Installation on Wood Nailer

1. Attachment of nailer to supporting member is the responsibility of the designer.

Various Header Applications

Model	Joist (in.)		Fasteners (in.)			Allowable Loads Header Type								Code Ref.	
	Width	Depth	Top	Face	Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	I-Joist	GFCMU		
WMU	1 ½ to 1 ¾	9 to 28	(2) 0.162 x 3 ½ DPLX	(4) ¼ x 1 ¾ Titen® 2	(6) 0.148 x 1 ½	625	Midwall Installation							3,380	—
	2 ½ to 7 ½	9 to 28	(2) 0.162 x 3 ½ DPLX	(4) ¼ x 1 ¾ Titen 2	(6) 0.148 x 1 ½	625								4,175	
	1 ½ to 7 ½	9 to 28	(2) ¼ x 1 ¾ Titens	(4) ¼ x 1 ¾ Titen 2	(6) 0.148 x 1 ½	545	Top-of-Wall Installation							3,380	
WP	1 ½ to 7 ½	3 ½ to 30	(2) 0.148 x 1 ½	—	(2) 0.148 x 1 ½	—	2,865	3,250	—	2,500	2,000	2,030	—	IBC, FL, LA	
	1 ½ to 7 ½	3 ½ to 30	(2) 0.148 x 3	—	(2) 0.148 x 1 ½	—	2,525	3,250	3,650	3,330	2,525	—	—		
	1 ½ to 7 ½	3 ½ to 30	(2) 0.162 x 3 ½	—	(2) 0.148 x 1 ½	—	3,635	3,320	3,650	3,330	2,600	—	—		
HWP	1 ½ to 7	6 to 15 ¾	(3) 0.162 x 3 ½	(6) 0.162 x 3 ½	(10) 0.148 x 1 ½	1,535	3,995	4,500	4,350	3,955	3,955	—	—	IBC, FL, LA	
	1 ½ to 7	15 ¾ to 32	(3) 0.162 x 3 ½	(6) 0.162 x 3 ½	(12) 0.148 x 1 ½	1,570	3,995	4,500	4,350	3,955	3,955	—	—		
HWPH	2 ½ to 7	6 to 15 ¾	(4) 0.162 x 3 ½	(8) 0.162 x 3 ½	(10) 0.148 x 1 ½	1,685	6,595	7,025	5,450	5,920	4,740	—	—	IBC, FL, LA	
	2 ½ to 7	15 ¾ to 32	(4) 0.162 x 3 ½	(8) 0.162 x 3 ½	(12) 0.148 x 1 ½	2,075	6,595	7,025	5,450	5,920	4,740	—	—		

1. Uplift loads have been increased for earthquake or wind loading with no further increase allowed. Reduce where other loads govern.
2. Uplift loads are based on DF/SP lumber. For SPF/HF, use 0.86 x DF/SP uplift load.
3. LVL headers are assumed to be made primarily from Douglas fir or southern pine. For LVL made from spruce-pine-fir or similar less-dense veneers, use the values found in the SPF/HF column.
4. WP quantity of nail holes in the top flange varies.
5. Grout-filled CMU (GFCMU) shall have a minimum compressive strength of $f'_m = 1,500$ psi.
6. For hanger heights exceeding the joist height, the allowable load is 0.50 of the table load.
7. **Fasteners:** Nail dimensions in the table are diameter by length. Titen 2 screws are Simpson Strong-Tie® masonry screws. See pp. 16–17 for fastener information.

WP/HWP/HWPH/WMU

High-Capacity Top-Flange Hangers (cont.)

Modifications and Associated Load Reductions for WP/HWP/HWPH

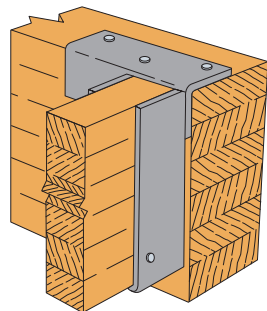
Model	Seat						Top Flange			Top Flange and Seat				Joist Height			
	Seat Sloped 45° Max.		Seat Skewed Type A		Seat Skewed Type B		Seat Sloped and Skewed		Top Flange Sloped 30° Max.	Top Flange Bent Open or Closed 30° Max.	Top Flange Offset		Top Flange Offset and Skewed Seat Type A, Bevel Cut		Top Flange Offset and Skewed Seat Type B, Plumb Cut		
	Slope Up	Slope Down	45° Max.	45° Max.	46°-84° Max.	Up	Down	Narrow			Wide	Narrow	Wide		Narrow	Wide	
WP		1.0		1.0			1.0			0.5		0.50		0.25	0.3	By more than ½" 0.50 By ½" or less 1.00	
HWP	1.0	0.8	1.0	N/A		1.0	0.8	(90 - a)/90	(90 - a)/90	0.5	0.6	0.5	0.6	N/A			
HWPH				0.8	0.7										0.5		

1. For straight-line interpolation, "a" is the specified angle.
2. Reduction factors are not cumulative. Use the lowest factors that apply.
3. Narrow ≤ 3½", Wide > 3½".
4. HWP and HWPH options receive catalog uplift loads except: skewed type A is 75% of the table load, skewed type B is 50% of the table load, top flange offset is 30% of the table load.
5. Top flange bent closed is not available for HWP or HWPH.

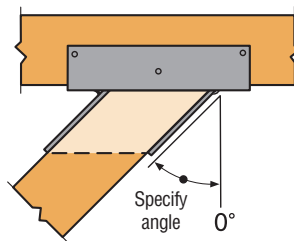
Reduction Factor Instructions

Allowable Download = (lowest of Seat, Top Flange, or Joist Height) × (Table Load)

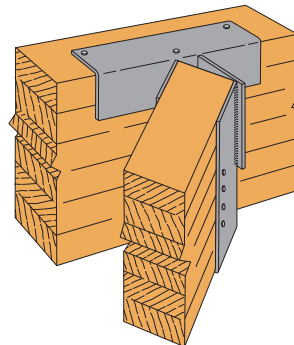
Allowable Uplift = as noted in table per height



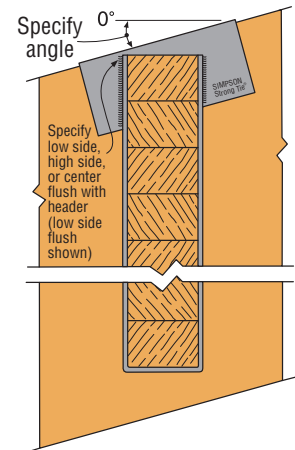
Typical WP Top Flange Offset Left



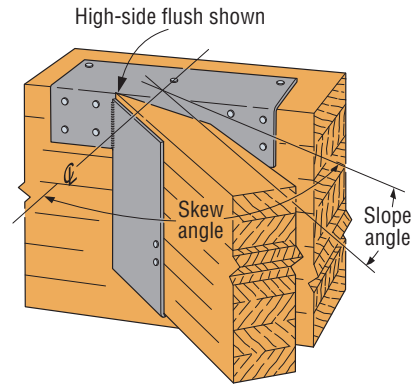
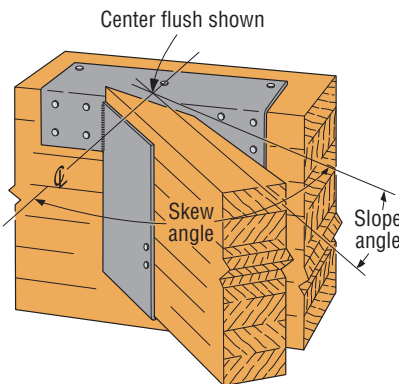
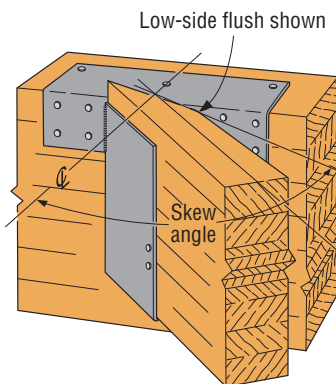
WP Skewed Left Type A Hanger
(bevel-cut joist shown)



WP Skewed Left Type B Hanger
(square-cut joist shown)



Typical HWP Top Flange Sloped Down Left with Low-Side Flush



Typical HWP Sloped Down, Skewed Right with Type A Hanger
(Joist end must be bevel cut. When ordering, specify low-side flush, center flush or high-side flush.)

HGLT/HGLTV/HGLS

Heavy-Duty Top-Flange Hangers

HGLTV hangers are designed for structural composite lumber header applications that require high loads. The top-flange nails are sized and specifically located to prevent degradation of the header due to splitting of laminations.

HGLT accommodate typical structural requirements for timber and glulam beams. Not acceptable for nailer applications. The Funnel Flange™ design allows easy installation of beams.

For heavy loads with a face-mount application, see the HGUS and GU series.

Material: 3 ga. top flange; 7 ga. stirrup

Finish: Simpson Strong-Tie® gray paint.
Hot-dip galvanized is available; specify HDG.

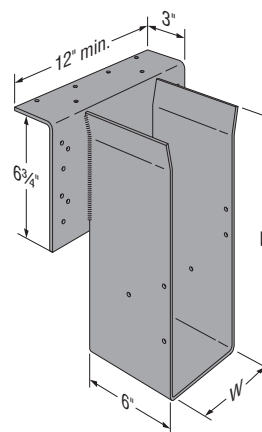
Installation:

- Use all specified fasteners. Verify that the header can take the required fasteners specified in the table.
- For attaching to multi-ply headers, refer to technical bulletin T-C-MPLYHEADR at strongtie.com.
- Flatten edge of header to match top flange radius.
- Bevel cut the carried beam for skewed hangers.
- For hangers exceeding the joist height by more than 1/2", allowable load is 50% of the table roof load.
- HGLTV hangers may be installed on ledgers provided the ledgers are made of 4x solid sawn or 3 1/2" SCL shown in the table below. Thinner lumber must be evaluated by the building designer.
- N54A nails are included with HGLT and HGLS hangers. N54A nails should not be used with structural composite lumber or I-joists; use HGLTV. When installing HGLS on structural composite lumber, use 1/4" x 2 1/2" Strong-Drive® SDS Heavy Duty Connector screw in lieu of the N54A nails.
- For HGLS loads, shown are per side.
- To order HGLS specify H₁, H₂, W₁, W₂ and S dimensions (see illustration).

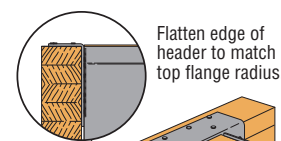
Options:

- Hot-dip galvanized; specify HDG.
- HGLT/HGLTV and HGLS series seats may be skewed to a maximum of 50° or sloped to a maximum of 45°.
- For sloped seat, the maximum allowable load for the HGLT/HGLS/HGLTV is 9,165 lb.
- For skewed seat, the maximum allowable load for the HGLT/HGLS/HGLTV is 7,980 lb. The deflection at full loading may reach 1/4". For skews greater than 15°, multiply the table uplift load by 0.50.
- Sloped and skewed seat combinations are not available for the HGLT/HGLS/HGLTV.
- Sloped or skewed seat hangers may not be installed in non-backed header installations.
- Top flange may be sloped down to the left or right up to 30°. Reduce allowable loads using the following reduction factor based on linear interpolation (90-α)/90; where α is the angle measure from the horizontal. This reduction is not cumulative with other load reductions.
- Top flange may be offset left or right for placement at the end of a header. Minimum seat width 3 1/4". The maximum allowable load is 0.45 for the HGLT/HGLS/HGLTV. No uplift load is available.
- For skewed and offset top-flange HGLS/HGLT/HGLTV hangers with inward or outward configuration, the maximum allowable load is the lesser of a) 45% of the catalog load or b) 4,300 lb.

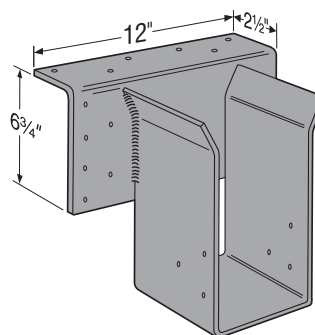
Codes: See p. 7 for Code Reference Key Chart



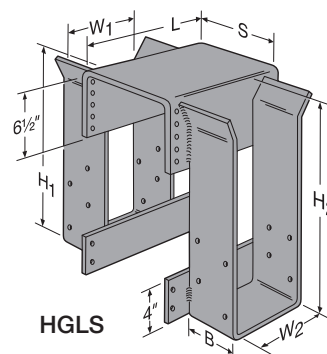
HGLTV



Typical HGLTV Installation



HGLT
(fasteners included)

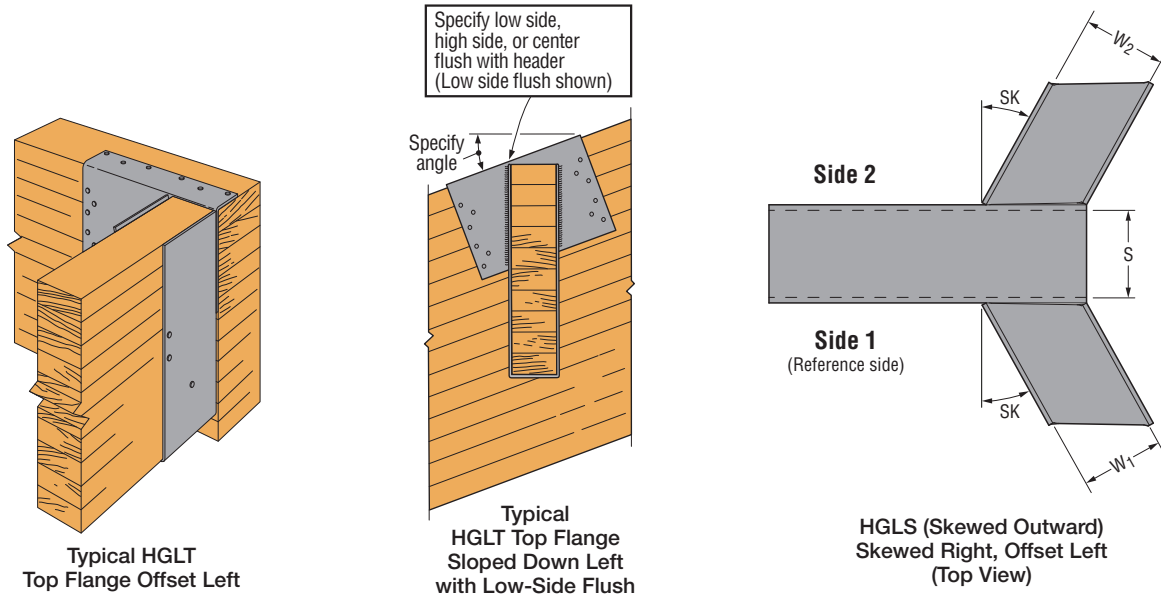


HGLS

Model	Stirrup Width (W) (in.)	Top Flange Length (L) (in.)
HGLT	3 1/4 – 8 1/4	12
	8 7/8	14
HGLS	5 1/4 – 8 7/8	12

HGLT/HGLTV/HGLS

Heavy-Duty Top-Flange Hangers (cont.)



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

Model	Fasteners (in.)			Allowable Loads Header Type						Code Ref.
	Top	Face	Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	
HGLTV series	(6) 0.162 x 3 1/2	(12) 0.162 x 3 1/2	(6) 0.162 x 3 1/2	1,120	10,585	9,485	9,500	7,805	6,770	IBC, FL, LA
HGLS	—	(14) N54A	(8) N54A	2,265	—	—	—	13,850	—	

- Uplift loads have been increased for earthquake or wind loading with no further increase allowed. Reduce where other loads govern.
- Uplift loads apply only when "H" is 28" or less.
- For hanger heights exceeding the joist height, the allowable load is 0.50 of the table load.
- LVL headers are assumed to be made primarily from Douglas fir or southern pine.
For LVL made from spruce-pine-fir or similar less-dense veneers, use the values found in the SPF/HF column.
- For SCL products made primarily from Douglas fir or southern pine, use 1,640 lb. for uplift. For SPF members, use 1,115 lb. for uplift.
- Fasteners:** Nail dimensions in the table are listed diameter by length. See pp. 16–17 for fastener information.

EQQ

High-Capacity Top-Flange Hanger



This product is preferable to similar connectors because of (a) easier installation, (b) higher loads, (c) lower installed cost, or a combination of these features.

The EQQ hanger is a high-capacity top-flange connector designed for use with structural composite lumber beams. It utilizes Strong-Drive® SDS Heavy-Duty Connector screws for higher capacity and ease of installation. Available in standard SCL widths and made to specified heights. SDS screws are included.

Material: Top flange — 3 gauge; stirrups — 7 gauge

Finish: Simpson Strong-Tie® gray paint. HDG available; contact Simpson Strong-Tie.

Installation:

- Use all specified fasteners; see General Notes.
- Install with 1/4" x 3" Strong-Drive SDS Heavy-Duty Connector screws, which are provided with the EQQ. (Lag screws will not achieve the same load.)
- All multiple members must be fastened together per the designer.
- Multiple member headers may require additional fasteners at hanger locations. Quantity and location to be determined by designer.

Options:

Skewed Seat

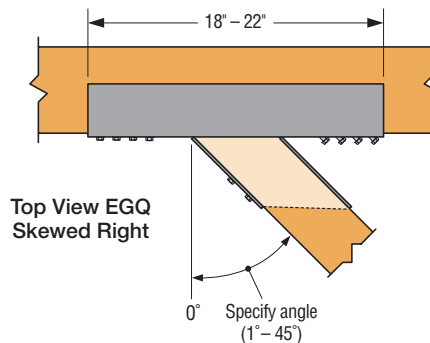
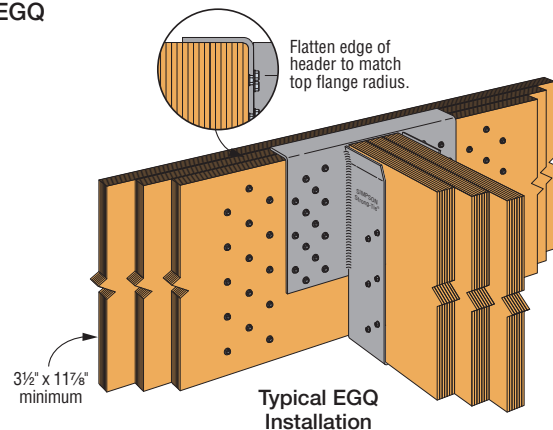
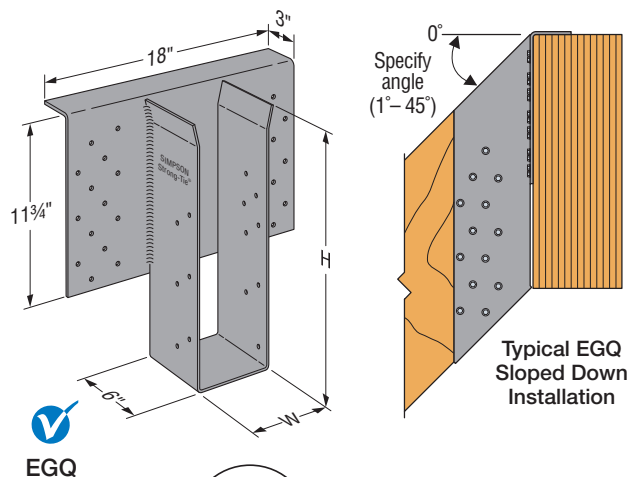
- The EQQ can be skewed a maximum of 45°
- The maximum allowable download when skewed is 16,300 lb.
- The maximum allowable uplift when skewed is 5,770 lb.
- Joist must be bevel cut for skewed seat installation

Sloped Seat

- The EQQ can be sloped up or down a maximum of 45°
- The maximum allowable download when sloped is 15,360 lb.
- The allowable uplift when sloped is 100% of the table load
- Sloped seat installation requires an additional 14 joist screws (supplied with the connector)

No Sloped and Skewed Combo Available

Codes: See p. 7 for Code Reference Key Chart



I-Joist, Glulam and SCL Hangers

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

Model No.	Joist or Purlin Size (in.)	Dimensions (in.)			SDS Fasteners		Allowable Loads Header Type				Code Ref.
		W	H (Min.)	H (Max.)	Header	Joist	Uplift (160)	LVL/LSL	PSL	DF/SP	
EQQ3.62-SDS3	3 1/2	3%	11 1/4	32	(28) 1/4" x 3"	(12) 1/4" x 3"	7,670	19,800	18,680	17,085	IBC, FL, LA
EQQ5.25-SDS3	5 1/8	5 1/4	11 1/4	32	(28) 1/4" x 3"	(12) 1/4" x 3"	7,670	19,800	18,680	17,085	
EQQ5.37-SDS3	5 1/4	5%	11 1/4	32	(28) 1/4" x 3"	(12) 1/4" x 3"	7,670	19,800	18,680	17,085	
EQQ5.62-SDS3	5 1/2	5%	11 1/4	32	(28) 1/4" x 3"	(12) 1/4" x 3"	7,670	19,800	18,680	17,085	
EQQ6.88-SDS3	6 3/4	6 7/8	11 1/4	32	(28) 1/4" x 3"	(12) 1/4" x 3"	7,670	19,800	18,680	17,085	
EQQ7.25-SDS3	7	7 1/4	11 1/4	32	(28) 1/4" x 3"	(12) 1/4" x 3"	7,670	19,800	18,680	17,085	

1. Uplift loads have been increased for earthquake or wind loading with no further increase allowed. Reduce where other loads govern.
2. "H (Min.)" is the minimum H dimension that may be specified.
3. Loads are based on 750 psi wood bearing for SCL.
4. For normal loading, such as in cantilever construction, use an uplift value of 4,800 lb.

Top-Flange Hangers — I-Joists, Glulam and SCL

I-Joist, Glulam and SCL Hangers

Actual Joist Size (in.)	Model No.	Joist Types			Dimensions (in.)				Fasteners (in.)		Allowable Loads Header Type							
		Glulam	SCL	I-Joist	Web Stiff Req'd.	W	H	B	TF	Header	Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	DF/SCL I-Joist [†]
3 1/8 LAM	WP3.25	•		✓	3/4	5 1/2 to 30	2 1/2	2 3/16	(2) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	—	3,635	3,320	3,635	3,300	2,600	2,030	
	HWP3.56	•		✓	3/4	6 to 30	3	2 1/2	(9) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,560	3,995	4,500	4,350	3,955	3,955	—	
	HWP3.56	•		✓	3/4	6 to 32	3 1/4	2 1/2	(12) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	2,075	6,595	7,025	5,450	5,920	4,740	—	
	HGLT3	•		—	3/4	7 1/2 to 33	6	2 1/2	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—	
3 1/2 LAM	HB3.56	•	•	✓	3 1/8	8 to 33	3 1/2	3	(22) 0.162 x 3 1/2	(10) 0.126 x 3 1/2	2,075	5,815	5,640	6,395	5,395	3,820	—	
	WP3.56	•	•	✓	3 1/8	5 1/2 to 30	2 1/2	2 3/16	(2) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	—	3,635	3,320	3,635	3,300	2,600	2,030	
	HWP2.56X	•	•	✓	3 1/8	6 to 30	3	2 1/2	(9) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,560	3,995	4,500	4,350	3,955	3,955	—	
	HWP2.56X	•	•	✓	3 1/8	6 to 30	3 1/4	2 1/2	(12) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	2,075	6,595	7,025	5,450	5,920	4,740	—	
	HGLT4	•		—	3/4	7 1/2 to 33	6	2 1/2	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—	
	HGLTV4	•	•	✓	3 1/8	7 1/2 to 33	6	2 7/8	(18) 0.162 x 3 1/2	(6) 0.126 x 3 1/2	1,120	10,585	9,485	9,500	7,805	6,770	—	
3 1/2 x 9 1/2	HB3.56/9.5	•	•	•	✓	3 1/8	9 1/2	3 1/2	3	(22) 0.162 x 3 1/2	(10) 0.126 x 3 1/2	2,075	5,815	5,640	6,395	5,395	3,820	—
	WP3.56 H=9.5	•	•	•	✓	3 1/8	5 1/2 to 30	2 1/2	2 3/16	(2) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	—	3,635	3,320	3,635	3,300	2,600	2,030
	HWP3.56 H=9.5	•	•	•	✓	3 1/8	6 to 28	3	2 1/2	(9) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,535	3,995	4,500	4,350	3,955	3,955	—
3 1/2 x 10 1/2	HB3.56X	•		✓	3 1/8	11 1/4	3 1/2	3	(22) 0.162 x 3 1/2	(10) 0.126 x 3 1/2	2,075	5,815	5,640	6,395	5,395	3,820	—	
	WP3.56 H=10.5	•		✓	3 1/8	5 1/2 to 30	2 1/2	2 3/16	(2) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	—	3,635	3,320	3,635	3,300	2,600	2,030	
	HWP3.56 H=10.5	•		✓	3 1/8	6 to 28	3	2 1/2	(9) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,535	3,995	4,500	4,350	3,955	3,955	—	
3 1/2 x 11 1/4	HB3.56/11.25	•	•	✓	3 1/8	11 1/4	3 1/2	3	(22) 0.162 x 3 1/2	(10) 0.126 x 3 1/2	2,075	5,815	5,640	6,395	5,395	3,820	—	
	WP3.56 H=11.25	•	•	✓	3 1/8	5 1/2 to 30	2 1/2	2 3/16	(2) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	—	3,635	3,320	3,635	3,300	2,600	2,030	
	HWP3.56 H=11.25	•	•	✓	3 1/8	6 to 28	3	2 1/2	(9) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,535	3,995	4,500	4,350	3,955	3,955	—	
3 1/2 x 11 7/8	WP3.56 H=11.875	•	•	•	✓	3 1/8	5 1/2 to 30	2 1/2	2 3/16	(2) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	—	3,635	3,320	3,635	3,300	2,600	2,030
	HWP3.56 H=11.875	•	•	•	✓	3 1/8	6 to 28	3	2 1/2	(9) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,535	3,995	4,500	4,350	3,955	3,955	—
	HWP3.56 H=11.875	•	•	•	✓	3 1/8	6 to 32	3 1/4	2 1/2	(12) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,685	6,595	7,025	5,450	5,920	4,740	—
	HGLT4 H=11.875	•		—	3 1/8	7 1/2 to 33	6	2 1/2	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—	
	HGLTV3.511	•	•	•	✓	3 1/8	11 7/8	6	2 7/8	(18) 0.162 x 3 1/2	(6) 0.126 x 3 1/2	1,120	10,585	9,485	9,500	7,805	6,770	—
3 1/2 x 14	WP3.56 H=14	•	•	•	✓	3 1/8	5 1/2 to 30	2 1/2	2 3/16	(2) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	—	3,635	3,320	3,650	3,300	2,600	2,030
	HWP3.56 H=14	•	•	•	✓	3 1/8	6 to 28	3	2 1/2	(9) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,535	3,995	4,500	4,350	3,955	3,955	—
	HWP3.56 H=14	•	•	•	✓	3 1/8	6 to 32	3 1/4	2 1/2	(12) 0.162 x 3 1/2	(10) 0.148 x 1 1/2	1,685	6,595	7,025	5,450	5,920	4,740	—
	HGLT4 H=14	•		—	3 1/8	7 1/2 to 33	6	2 1/2	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—	
	HGLTV3.514	•	•	•	✓	3 1/8	14	6	2 7/8	(18) 0.162 x 3 1/2	(6) 0.126 x 3 1/2	1,120	10,585	9,485	9,500	7,805	6,770	—
3 1/2 x 16	WP3.56 H=16	•	•	•	✓	3 1/8	5 1/2 to 30	2 1/2	2 3/16	(2) 0.162 x 3 1/2	(2) 0.148 x 1 1/2	—	3,635	3,320	3,650	3,300	2,600	2,030
	HWP3.56 H=16	•	•	•	✓	3 1/8	6 to 28	3	2 1/2	(9) 0.162 x 3 1/2	(12) 0.148 x 1 1/2	1,560	3,995	4,500	4,350	3,955	3,955	—
	HWP3.56 H=16	•	•	•	✓	3 1/8	6 to 32	3 1/4	2 1/2	(12) 0.162 x 3 1/2	(12) 0.148 x 1 1/2	2,075	6,595	7,025	5,450	5,920	4,740	—
	HGLT4 H=16	•		—	3 1/8	7 1/2 to 33	6	2 1/2	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—	
	HGLTV3.516	•	•	•	✓	3 1/8	16	6	2 7/8	(18) 0.162 x 3 1/2	(6) 0.126 x 3 1/2	1,120	10,585	9,485	9,500	7,805	6,770	—

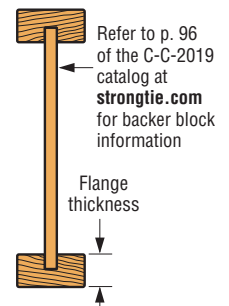
See footnotes on p. 61.

Top-Flange Hangers — I-Joists, Glulam and SCL

Actual Joist Size (in.)	Model No.	Joist Types				Dimensions (in.)				Fasteners (in.)		Allowable Loads Header Type						
		Glulam	SCL	I-Joist	Web Stiff Req.	W	H	B	TF	Header	Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	DF/SCL I-Joist ⁴
3½ x 18	WP3.56 H=18	•	•	•	✓	3¾	5½ to 30	2½	2¾	(2) 0.162 x 3½	(2) 0.148 x 1½	—	3,635	3,320	3,650	3,300	2,600	2,030
	HWP3.56 H=18	•	•	•	✓	3¾	6 to 28	3	2½	(9) 0.162 x 3½	(12) 0.148 x 1½	1,560	3,995	4,500	4,350	3,955	3,955	—
	HWP3.56 H=18	•	•	•	✓	3¾	6 to 32	3¼	2½	(12) 0.162 x 3½	(12) 0.148 x 1½	2,075	6,595	7,025	5,450	5,920	4,740	—
	HGLT4 H=18	•			—	3%	7½ to 33	6	2½	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—
	HGLTV3.518	•	•	•	✓	3¾	18	6	2¾	(18) 0.162 x 3½	(6) 0.126 x 3½	1,120	10,585	9,485	9,500	7,805	6,770	—
5½ LAM	HWP5.25	•	•	•	✓	5¼	6 to 28	3	2½	(9) 0.162 x 3½	(12) 0.148 x 1½	1,560	3,995	4,500	4,350	3,955	3,955	—
	HWP5.25	•	•	•	✓	5¼	6 to 28	3¼	2½	(12) 0.162 x 3½	(12) 0.148 x 1½	2,075	6,595	7,025	5,450	5,920	4,740	—
	HGLTV5	•	•			5¼	7½ to 32½	6	2¾	(18) 0.162 x 3½	(6) 0.126 x 3½	1,120	10,585	9,485	9,500	7,805	6,770	—
	HGLT5	•				5¼	7½ to 32½	6	2½	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—
	HGLS5	•				5¼	7½ to 32½	6	SPEC	(14) N54A	(6) N54A	2,265	—	—	—	13,850	—	—
	EGQ5.25-SDS	•				5¼	11¼ to 32	6	3	(28) ¼ x 3 SDS	(12) ¼ x 3 SDS	7,670	19,800	18,600	19,800	17,085	12,915	—
5½ LAM	HWP5.62	•			✓	5%	6 to 28	3	2½	(9) 0.162 x 3½	(12) 0.148 x 1½	1,560	3,995	4,500	4,350	3,955	3,955	—
	HWP5.62	•			✓	5%	6 to 28	3¼	2½	(12) 0.162 x 3½	(12) 0.148 x 1½	2,075	6,595	7,025	5,450	5,920	4,740	—
	HGLTV6	•			✓	5¾	7½ to 32	6	2¾	(18) 0.162 x 3½	(6) 0.126 x 3½	1,120	10,585	9,485	9,500	7,805	6,770	—
	HGLT6	•			—	5¾	7½ to 32	6	2½	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—
	EGQ5.62-SDS	•				5%	11¼ to 32	6	3	(28) ¼ x 3 SDS	(12) ¼ x 3 SDS	7,670	19,800	18,600	19,800	17,085	12,915	—
6¾ LAM	HWP6.88	•	•	•	✓	5%	6 to 28	3¼	2½	(12) 0.162 x 3½	(12) 0.148 x 1½	2,075	6,595	7,025	5,450	5,920	4,740	—
	HGLTV7	•	•	•	✓	6¾	7½ to 31½	6	2¾	(18) 0.162 x 3½	(6) 0.126 x 3½	1,120	10,585	9,485	9,500	7,805	6,770	—
	HGLT7	•			—	6¾	7½ to 32	6	2½	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—
	HGLS7	•				6¾	7½ to 32½	6	SPEC	(14) N54A	(6) N54A	2,265	—	—	—	13,850	—	—
	EGQ6.88-SDS	•	•			6¾	11¼ to 32	6	3	(28) ¼ x 3 SDS	(12) ¼ x 3 SDS	7,670	19,800	18,600	19,800	17,085	12,915	—
8¾ LAM	HGLT9	•				8¾	7½ to 30½	6	2½	(18) N54A	(6) N54A	2,450	—	—	—	10,720	—	—
	HGLS9	•				8¾	7½ to 30½	6	SPEC	(14) N54A	(6) N54A	2,265	—	—	—	13,850	—	—

1. Loads may not be increased for duration of load.
2. Uplift loads have been increased for earthquake or wind loading with no further increase allowed. Reduce where other loads govern.
3. Uplift loads are based on DF/SP lumber. For SPF/HF, use 0.86 x DF/SP uplift load.
4. When an I-joist is used as header, all nails must be 0.148" x 1½", and allowable loads assume flanges that are at least 1½" thick and made of Douglas fir, LVL, or LSL. For other flange thicknesses, apply load adjustment factors found in the table below.
5. Hangers sorted in order of recommended selection for best overall performance and installation value.
6. Other nail schedules and loads are listed on product pages.
7. Web stiffeners are required where noted, when hanger is sloped or skewed, and when it supports double I-joists with flanges less than 1¾" thick in hangers that are 14 gauge and thinner.
8. HGLS saddle hanger allowable loads are for each stirrup. Joist fasteners listed are for one side only. Fasteners are provided for both sides of the saddle.
9. **Fasteners:** Nail dimensions in the table are listed diameter by length. See pp. 16–17 for fastener information.

I-Joist Header Load Adjustment Factors					
Flange Material or Thickness	Hanger Series				
	ITS	MIT	LBV	WP	BA
1½" to 1¼"	0.75	0.75	0.75	0.75	0.75
1¾" to 1¾"	0.85	0.85	0.85	0.85	0.85
SPF	0.86	0.72	0.90	1.00	1.00



HCA

Hinge Connectors

Hinge connectors are designed to transfer loads between two beams aligned end to end through a combination of bearing plates, side plates and bolts. In addition to supporting vertical loads, hinge connectors can also be specified with additional slotted bolt holes to resist horizontal loads as part of a continuous load path.

Material: Side plates — 7 gauge; top and bottom plates — see PT dimensions in table

Finish: Simpson Strong-Tie gray paint

Installation: • Use all specified fasteners; see General Notes

- Bolt holes shall be a minimum of 1/32" and a maximum of 1/16" larger than the bolt diameter (per 2015 NDS 12.1.2.2)
- The model size (suffix) column in the Allowable Download table gives the basic HCA model with two rotation bolts
- Contact Simpson Strong-Tie for heights greater than 60"
- Position 3/4"-diameter bolts in slots away from bearing seat to allow for wood shrinkage
- For retrofit hinge connector strap applications, see strongtie.com.

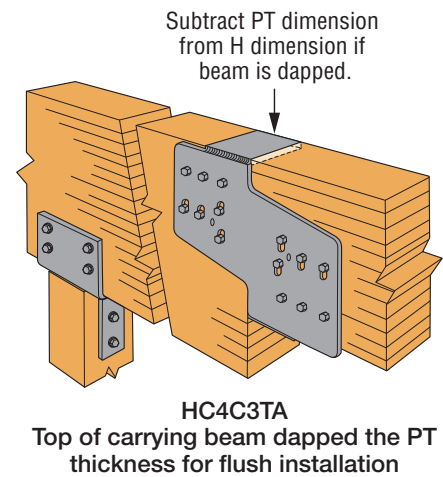
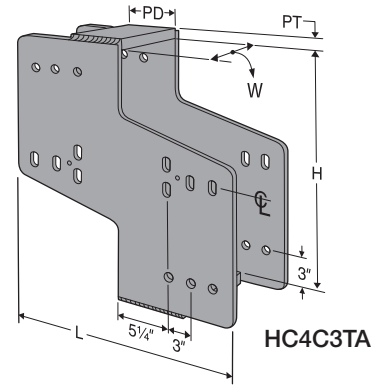
Options: • The Horizontal Load table gives other bolt options

Ordering: • To order, add the width (W) and bearing plate size (PD) designation after the model name. Specify the H dimension.

- For dapped beams, reduce the H dimension by the PT dimension for each dap. See strongtie.com/dap.

- Specify model no., model size, and height H. Ordering example: HC4C3TA5-6 H = 18".

Codes: See p. 7 for Code Reference Key Chart

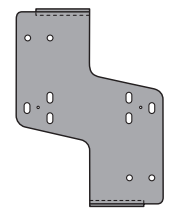


1. Loads have been increased for wind or earthquake loading, with no further increase allowed. Reduce where other loads govern.
2. Horizontal loads are for Douglas fir-larch glulams with minimum W = 3 1/8". For other wood types, adjust the load according to the code.
3. H min. is the absolute minimum height. Reduce downloads according to footnote 1 in the Allowable Download table.

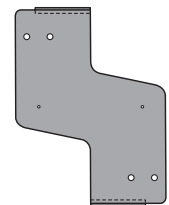
Model No. (Prefix)	Dimensions (in.)			Rotation Bolts per Beam	Slotted Tension Bolts	Allowable Horizontal Loads ^{2,3} (160)
	L	H ₃ Min.	H Max.			
HCA	19 1/2	8	60	2	—	—
HCCTA	19 1/2	14	60	2	3	14,850
HC3A	25 1/2	8	60	3	—	—
HC4C3TA	25 1/2	14	60	3	4	19,720

Allowable Download Table

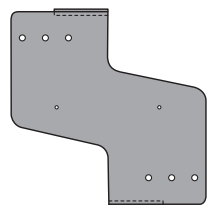
Model Size (Suffix)	Dimensions (in.)				Bolt Dia. (in.)	Two Rotation Bolts per Beam				Three Rotation Bolts per Beam				Code Ref.
	Beam Width	W	PT	PD		H ₁	H ₁ Allowable Roof Loads	Min. H	Min. H Allowable Roof Loads	H ₁	H ₁ Allowable Roof Loads	Min. H	Min. H Allowable Roof Loads	
3-5	3 3/8	3 3/4	3/4	5	3/4	12	8,750	8	3,070	10	8,750	8	4,465	IBC, LA
3-7	3 3/8	3 3/4	3/4	7	3/4	18	12,250	15	9,240	14	12,250	12	9,235	
5-5	5 1/8	5 1/4	3/4	5	3/4	16	14,350	8	3,100	13	14,350	8	4,560	
5-7	5 1/8	5 1/4	3/4	7	3/4	25	20,090	20	14,835	19	20,090	16	15,505	
5-9	5 1/8	5 1/4	3/4	9	3/4	36	25,830	25	16,365	27	25,830	19	16,030	
5.62-5	5 1/2	5 5/8	3/4	5	3/4	18	17,190	8	3,100	14	17,190	8	4,640	
5.62-7	5 1/2	5 5/8	3/4	7	3/4	28	24,065	19	14,495	21	24,065	15	15,020	
7-5	6 3/4	6 7/8	1	5	3/4	19	18,900	8	3,100	15	18,900	8	4,605	
7-7	6 3/4	6 7/8	1	7	3/4	30	26,460	24	19,850	22	26,460	18	19,845	
7-9	6 3/4	6 7/8	1	9	3/4	40	29,615	30	20,905	33	34,020	22	20,190	
9-5	8 3/4	8 7/8	1 1/4	5	3/4	22	24,500	8	3,100	17	24,500	8	4,605	
9-7	8 3/4	8 7/8	1 1/4	7	3/4	37	34,300	29	25,455	27	34,300	22	26,145	
9-9	8 3/4	8 7/8	1 1/4	9	3/4	40	29,615	37	27,000	40	43,975	27	27,160	
11-5	10 3/4	10 7/8	1 1/2	5	3/4	26	30,100	8	3,100	20	30,100	8	4,605	
11-7	10 3/4	10 7/8	1 1/2	7	3/4	40	37,925	34	31,230	32	42,140	25	30,815	
11-9	10 3/4	10 7/8	1 1/2	9	3/4	40	29,615	40	29,615	40	43,975	32	33,630	
3.62-5	3 1/2	3 3/8	3/4	5	3/4	15	13,125	8	3,100	12	13,125	8	4,625	
3.62-9	3 1/2	3 3/8	3/4	9	3/4	34	23,625	16	8,710	25	23,625	13	9,125	
5.37-5	5 1/4	5 3/8	1	5	3/4	19	19,690	8	3,100	15	19,690	8	4,640	
5.37-9	5 1/4	5 3/8	1	9	3/4	40	29,605	20	12,190	34	35,440	16	13,040	
7.12-5	7	7 1/8	1 1/4	5	3/4	23	26,250	8	3,100	18	26,250	8	4,635	
7.12-9	7	7 1/8	1 1/4	9	3/4	40	29,600	24	15,670	40	44,330	19	16,950	



HCCTA



HCA



HC3A

1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
2. Loads are based on 560 psi perpendicular-to-grain bearing stress.
3. H₁ is the minimum dimension required to achieve full load for the hinge connector. For H dimensions between H₁ and Minimum H, loads may be linearly interpolated.
4. See Horizontal Load table for models available with three rotation bolts.
5. Beams must be the same width for both members in the connection.

GLB/HGLB

Beam Seats

The GLB series provides a connection between beam and concrete or CMU pilaster.

Finish: Simpson Strong-Tie gray paint. Hot-dip galvanized available; specify HDG.

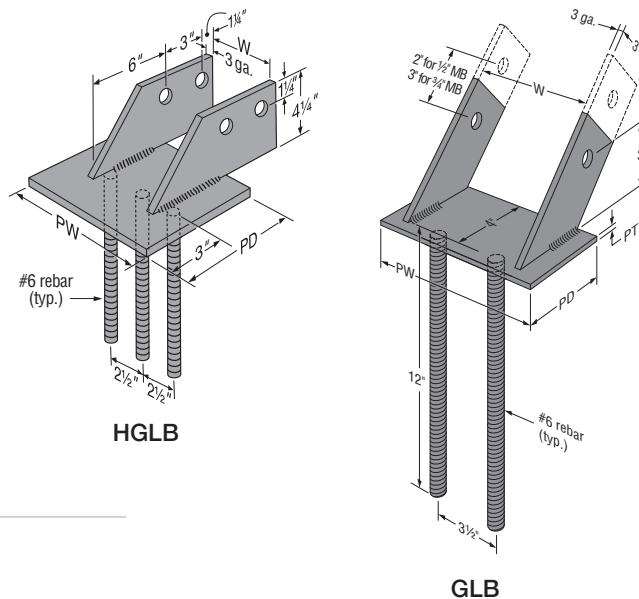
Installation:

- Use all specified fasteners; see General Notes
- Bolt holes in wood shall be a minimum of 1/32" to a maximum of 1/16" larger than the bolt diameter (per the 2015 NDS, section 11.1.3.2)
- Check the rebar spacing requirements on all installations

Options:

- Beam seats for sawn timber and other sizes may be ordered by specifying special dimensions; use the letter designations shown on the illustrations
- Specify if two-bolt GLB model is desired; see illustration

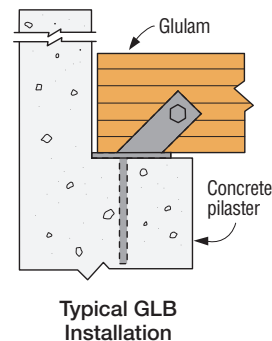
Codes: See p. 7 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 15.

Model No.	Dimensions (in.)				Bolts	Allowable Bearing Loads		Code Ref.
	W	PD	PW	PT		Masonry @ 375 psi	Wood f _{c-perp}	
GLB5A	5 1/4	5	7	3 ga.	(1) 1/2	13,125	16,655	IBC, FL, LA
GLB5B	5 1/4	6	7	3/8	(1) 1/2	15,750	19,990	
GLB5C	5 1/4	7	7	3/8	(1) 1/2	18,375	23,320	
GLB5D	5 1/4	8	7	3/8	(1) 1/2	21,000	26,650	
GLB7A	6 7/8	5	9	3 ga.	(1) 3/4	16,875	21,940	
GLB7B	6 7/8	6	9	3/8	(1) 3/4	20,250	26,325	
GLB7C	6 7/8	7	9	3/8	(1) 3/4	23,625	30,715	
GLB7D	6 7/8	8	9	3/8	(1) 3/4	27,000	35,100	

See footnotes below.



Model No.	Dimensions (in.)				Bolts (Qty. - Dia.)	Masonry Bearing @ 375 psi	Allowable Bearing Loads					Allowable Horizontal Bolt Loads	Code Ref.
	Width for Beam (W)	Bearing Plate					Wood Bearing @ 650 psi on Glulam Width						
		Depth PD	Width PW	Thickness PT			Glulam Beam Width (in.)						
HGLBA	3 1/4 to 9	5	10	3/8	(2) 3/4	18,750	10,155	16,655	21,940	28,440	—	10,305	IBC, FL, LA
HGLBB		6	10	3/8	(2) 3/4	22,500	12,190	19,990	26,325	34,125	—	10,305	
HGLBC		7	10	3/8	(2) 3/4	26,250	14,220	23,320	30,715	39,815	—	10,305	
HGLBD		8	10	3/8	(2) 3/4	30,000	16,250	26,650	35,100	45,500	—	10,305	

1. Allowable bearing stress for masonry is based on an f_c of 1,500 psi using the IBC (ACI 530) Allowable Stress Design. Wood bearing is based on an f_{c-perp} of 650 psi.
2. When installing on masonry, use the lesser of the masonry or the wood allowable load values. When installing on concrete, use a minimum f_c = 2,500 psi and use the wood values as the limiting allowable bearing load values.
3. Allowable horizontal loads are bolt values and include increase for wind or earthquake loading. Loads must be reduced if stresses in masonry or concrete are limiting.
4. Beams must fully bear on base plate.
5. Specify "W" dimension when ordering.
6. Uplift loads do not apply for this connector.

SET-3G™

High-Strength Epoxy Adhesive

SET-3G is the latest innovation in epoxy anchoring adhesives from Simpson Strong-Tie. Formulated to provide superior performance in cracked and uncracked concrete at elevated temperatures, SET-3G installs and performs in a variety of environmental conditions and temperature extremes. The exceptional bond strength of SET-3G results in high design strengths.

Features

- Exceptional performance — superior bond-strength values at even long-term elevated temperature of 110°F (43°C)
- Tested in accordance with ICC-ES AC308 and ACI 355.4 for use in cracked and uncracked normal-weight and lightweight concrete (ICC-ES ESR-4057)
- Code listed equivalent to cast-in-place reinforcing bars governed by ACI 318 and IBC Chapter 19
- Design flexibility — can be specified for dry or water-saturated conditions when in-service temperatures range from -40°F (-40°C) to 176°F (80°C)
- Jobsite versatility — can be installed in dry, water-saturated or water-filled holes in base materials with temperatures between 40°F (4°C) and 100°F (38°C)
- Maximized production and safety — qualified for installation using the Speed Clean™ DXS dust extraction drilling system as an alternative to the conventional blow-brush-blow hole-cleaning method
- Wire brush hole-cleaning system for conventional blow-brush-blow cleaning method
- Available in three cartridge configuration for maximum versatility — 8.5 oz. coaxial, 22 oz. side-by-side or 56 oz. size-by-side cartridges dispensed using manual, battery or pneumatic dispensing tools
- With higher bond strengths, ductile solutions can often be achieved with SET-3G in high seismic areas
- 1:1 ratio, two-component, high-strength, epoxy-based anchoring adhesive formula
- Two-year shelf life for unopened cartridges stored between 45°F (7°C) and 90°F (32°C)
- Low-odor formulation
- When properly mixed, SET-3G will be a uniform gray color
- Volatile organic compound (VOC) — 1.9 g/L
- Manufactured in the USA using global materials
- Code listed for installation with the Speed Clean™ DXS drill bits without any further cleaning (ICC-ES ESR-4057)

Applications

- Threaded rod anchor and rebar dowel installations in cracked and uncracked concrete under a wide variety of environmental installation and use conditions
- Recognized per AC308 to be used for rebar development and splice length design provisions of ACI 318
- Installation in downward, horizontal and upwardly inclined (including overhead) orientations
- Qualified for use in structures assigned to Seismic Design Categories A through F

Codes

ICC-ES ESR-4057 (concrete); City of LA (see ICC-ES ESR-4057); AASHTO M235 and ASTM C881, FL17449.2 (concrete) Types I and IV, Grade 3, Class C; NSF/ANSI Standard 61 (300 in.² / 1,000 gal.)

Chemical Resistance

Contact Simpson Strong-Tie for information.



SET-3G Adhesive

Installation and Application Instructions

- Surfaces to receive adhesive must be clean per approved hole cleaning method.
- Base-material temperatures must be 40°F (4°C) or above at the time of installation. For best results, adhesive should be conditioned to a temperature between 70°F (21°C) and 80°F (37°C) at the time of installation.
- To warm cold adhesive, store cartridges in a warm, uniformly heated area or storage container. Do not immerse cartridges in water or use microwave to facilitate warming.
- Mixed material can harden in the dispensing nozzle within 30 minutes at 70°F (21°C).

Note: For full installation instructions, see product packaging or visit strongtie.com/set3g.

AT-XP®

High-Strength Acrylic Adhesive

Formulated for high-strength anchorage of threaded rod and rebar into cracked and uncracked concrete and masonry under a wide range of conditions, AT-XP adhesive dispenses easily in cold or warm environments and in below-freezing temperatures with no need to warm the cartridge. When mixed properly, this low-odor formula is a dark teal color for easy post-installation identification.

Features

- Passed the demanding ICC-ES AC308 adverse-condition tests pertaining to reduced and elevated temperatures and long-term sustained loads
- Tested per ACI 355.4 and AC308
- Code listed under the IBC/IRC for cracked and uncracked concrete per IAPMO UES ER-263
- Code listed under the IBC/IRC for masonry per IAPMO UES ER-281
- AT-XP is code listed for installation with the Speed Clean™ DXS system without any further cleaning (IAPMO-UES ER-263)
- 10:1 two-component high-strength, acrylic-based anchoring adhesive
- Suitable for use under static and seismic loading conditions in cracked and uncracked concrete as well as masonry
- Easy hole-cleaning procedure — no power-brushing required
- Suitable for use in dry or water-saturated concrete
- For best results, store between 14°F (–10°C) and 80°F (27°C)
- Cures in substrate temperatures as low as 14°F (–10°C) in 24 hours or less
- Available in 9.4 oz., 12.5 oz. and 30 oz. cartridges for application versatility
- Volatile Organic Compound (VOC) — 30 g/L
- Manufactured in the USA using global materials

Applications

- Threaded rod anchoring and rebar doweling into concrete and masonry
- Suitable for horizontal, vertical and overhead applications

Codes

IAPMO UES ER-263 (concrete); IAPMO UES ER-281 (masonry); City of L.A. (see IAPMO UES ER-263 for concrete and ER-281 for masonry); FL-16230.1; NSF/ANSI Standard 61 (43.2 in.³/1,000 gal.); AASHTO M-235 and ASTM C881 (Type I and IV, Grade 3, Class C — except AT-XP is a non-epoxy formulated for fast cure time)

Chemical Resistance

See strongtie.com for more information.

Installation and Application Instructions

- Surfaces to receive adhesive must be clean.
- Base material temperature must be 14°F or above at the time of installation. For best results, material should be 14°F (–10°C) to 80°F (27°C) at time of application.
- To warm cold material, store cartridges in a warm, uniformly heated area or storage container. Do not immerse cartridges in water or use microwave to facilitate warming.
- Mixed material in nozzle can harden in 3–4 minutes at temperatures of 70°F (21°C) and above.

Suggested Specifications

See strongtie.com for more information.



AT-XP Adhesive

Adhesive Accessories

Retrofit Bolts

Retrofit bolts (RFBs) are pre-cut threaded rod, supplied with nut and washer. For use with Simpson Strong-Tie® adhesives. May be ordered in bulk without the nut and washer. Use with Simpson Strong-Tie adhesives to anchor into existing concrete and masonry. Each end of the threaded rod is stamped with the rod length in inches and our No-Equal® symbol for easy identification after installation.

Material: ASTM F1554 Grade 36

Coating: Zinc-plated, hot-dip galvanized



RFB
Retrofit Bolts

Description Diameter Length	Zinc-Plated Model No.	Hot-Dip Galvanized Model No.	Carton Qty.	Retail Pack ²
1/2" x 4"	RFB#4x4	RFB#4x4HDG	50	—
1/2" x 5"	RFB#4x5	RFB#4x5HDG	50	10
1/2" x 6"	RFB#4x6	RFB#4x6HDG	50	10
1/2" x 7"	RFB#4x7	RFB#4x7HDG	50	10
1/2" x 8"	—	RFB#4x8HDG	—	10
1/2" x 10"	RFB#4x10	RFB#4x10HDG	25	10
5/8" x 5"	RFB#5x5	RFB#5x5HDG	50	10
5/8" x 8"	RFB#5x8	RFB#5x8HDG	50	10
5/8" x 10"	RFB#5x10	RFB#5x10HDG	50	10
5/8" x 12"	—	RFB#5x12HDG	—	10
5/8" x 16"	RFB#5x16	RFB#5x16HDG	25	10
3/4" x 10 1/2"	RFB#6x10.5	RFB#6x10.5HDG	25	—

1. Bulk quantities do not include the nut and washer and must be ordered with a "-B" suffix (example: RFB#4x5-B). Hot-dip galvanized RFBs not available in bulk.

2. Retail packs must be ordered with an "-R" suffix (example: RFB#5x12HDG-R).

Titen HD®

Heavy-Duty Screw Anchor

The original high-strength screw anchor for use in cracked and uncracked concrete, as well as uncracked masonry. The Titen HD offers low installation torque and outstanding performance. Designed and tested in dry, interior, non-corrosive environments or temporary outdoor applications, the Titen HD demonstrates industry-leading performance even in seismic conditions.

Features

- Code listed under IBC/IRC in accordance with ICC-ES AC193 and ACI 355.2 for cracked and uncracked concrete per ICC-ES ESR-2713
- Code listed under IBC/IRC in accordance with ICC-ES AC106 for masonry per ICC-ES ESR-1056
- Qualified for static and seismic loading conditions
- Thread design undercuts to efficiently transfer the load to the base material
- Standard fractional sizes
- Specialized heat-treating process creates tip hardness for better cutting without compromising the ductility
- No special drill bit required — designed to install using standard-sized ANSI tolerance drill bits
- Testing shows the Titen HD installs in concrete with 50% less torque than competitor anchors
- Hex-washer head requires no separate washer, unless required by code, and provides a clean installed appearance
- Removable — ideal for temporary anchoring (e.g., formwork, bracing) or applications where fixtures may need to be moved
- Reuse of the anchor to achieve listed load values is not recommended

Codes: ICC-ES ESR-2713 (concrete); ICC-ES ESR-1056 (masonry); Florida FL-15730.6; FM 3017082, 3035761 and 3043442; Multiple DOT listings

Material: Carbon steel

Coating: Zinc plated or mechanically galvanized.

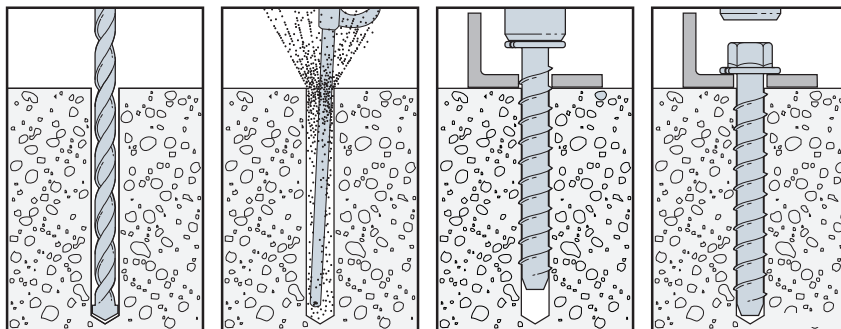
Not recommended for permanent exterior use or highly corrosive environments.

Installation

- ⚠ Holes in metal fixtures to be mounted should match the diameter specified in the table below.
- Use a Titen HD screw anchor one time only — installing the anchor multiple times may result in excessive thread wear and reduce load capacity.
- ⚠ Do not use impact wrenches to install into hollow CMU.
- ⚠ **Caution:** Oversized holes in base material will reduce or eliminate the mechanical interlock of the threads with the base material and reduce the anchor's load capacity.

1. Drill a hole in the base material using a carbide drill bit the same diameter as the nominal diameter of the anchor to be installed. Drill the hole to the specified embedment depth plus minimum hole depth overall (see table below right) to allow the thread tapping dust to settle, and blow it clean using compressed air. (Overhead installations need not be blown clean.) Alternatively, drill the hole deep enough to accommodate embedment depth and the dust from drilling and tapping.
2. Insert the anchor through the fixture and into the hole.
3. Tighten the anchor into the base material until the hex-washer head contacts the fixture.

Installation Sequence



Titen HD
Screw Anchor



Serrated teeth on the tip of the Titen HD screw anchor facilitate cutting and reduce installation torque.

Additional
Installation Information
for Structural Steel

Titen HD Diameter (in.)	Wrench Size (in.)	Recommended Steel Fixture Hole Size (in.)	Minimum Hole Depth Overdrill (in.)
1/4	3/8	3/8 to 7/16	1/8
3/8	9/16	1/2 to 9/16	1/4
1/2	3/4	5/8 to 11/16	1/2
5/8	15/16	3/4 to 13/16	1/2
3/4	1 1/8	7/8 to 15/16	1/2

Suggested fixture hole sizes are for structural steel thicker than 12 gauge only. Larger holes are not required for wood or cold-formed steel members.

Strong-Bolt® 2

Wedge Anchor


A wedge-type expansion anchor designed for optimal performance in cracked and uncracked concrete as well as uncracked masonry. The Strong-Bolt 2 is available in carbon steel, Type 304 and Type 316 stainless steel.


Features

- Code listed under IBC/IRC for cracked and uncracked concrete per ICC-ES ESR-3037
- Code listed under IBC/IRC for masonry per IAPMO UES ER-240
- Qualified for static and seismic loading conditions (seismic design categories A through F)
- Suitable for horizontal, vertical and overhead applications
- Qualified for minimum concrete thickness of 3¼", and lightweight concrete-over-metal deck thickness of 2½" and 3¼"
- Standard (ANSI) fractional sizes: fits standard fixtures and installs with common drill bit and tool sizes
- Tested per ACI355.2 and AC193

Code: ICC-ES ESR-3037 (concrete); IAPMO UES ER-240 (carbon steel in CMU); Florida FL-15731.2; FL-16230.4; UL File Ex3605; FM 3043342 and 3047639; Multiple DOT listings; meets the requirements of Federal Specifications A-A-1923A, Type 4

Installation

 Do not use an impact wrench to set or tighten the Strong-Bolt 2 anchor.

 **Caution:** Oversized holes in the base material will make it difficult to set the anchor and will reduce the anchor's load capacity.

1. Drill a hole in the base material using a carbide drill bit the same diameter as the nominal diameter of the anchor to be installed. Drill the hole to the specified minimum hole depth, and blow it clean using compressed air. (Overhead installations need not be blown clean.) Alternatively, drill the hole deep enough to accommodate embedment depth and dust from drilling.
2. Assemble the anchor with nut and washer so the top of the nut is flush with the top of the anchor. Place the anchor in the fixture, and drive it into the hole until the washer and nut are tight against the fixture.
3. Tighten to the required installation torque.

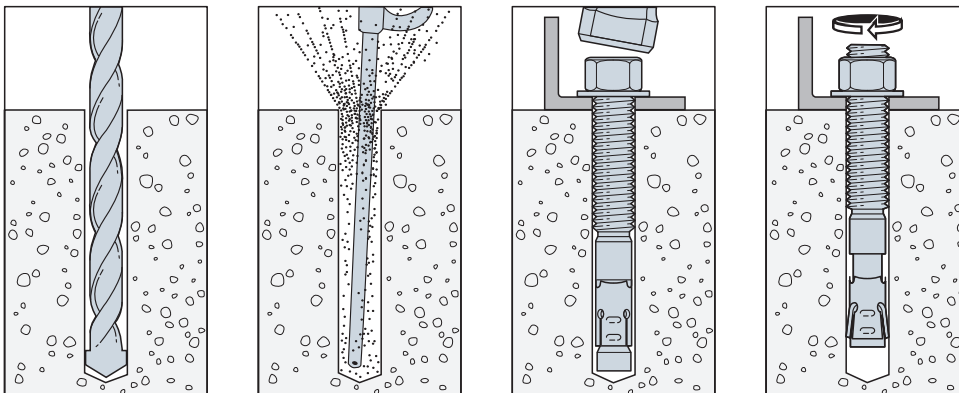


Strong-Bolt 2
Wedge Anchor



Head Stamp
The head is stamped with the length identification letter, bracketed top and bottom by horizontal lines.

Installation Sequence



Titen Turbo™

Concrete and Masonry Screw Anchor

The Titen Turbo concrete and masonry screw is ideal for attaching all types of components to concrete and masonry. The patent-pending Torque Reduction Channel traps dust where it can't obstruct the thread action, enabling smooth driving with less torque while providing superior holding power.

Features

- Patent-pending Torque Reduction Channel that traps dust where it can't obstruct the thread action, reducing the likelihood of binding in the hole
- Availability with either a hex head or, for a smoother installed profile, a 6-lobe-drive countersunk flat head
- The 6-lobe drive's larger contact area provides better bit grip for reduced cam-outs, more torque, better performance and longer bit life
- 6-lobe bit included in packaging for countersunk flat head version
- Superior load performance compared to leading competitors in the market
- Matched-tolerance bit not required; use a standard ANSI drill bit for installation
- Serrated screw point for easier starts when fastening wood
- Designed for installation with an impact driver or cordless drill
- Use in dry interior environments only
- Code listing for installation without cleaning dust from predrilled holes (ICC-ES)

Codes: Evaluation report pending

Material: Carbon steel

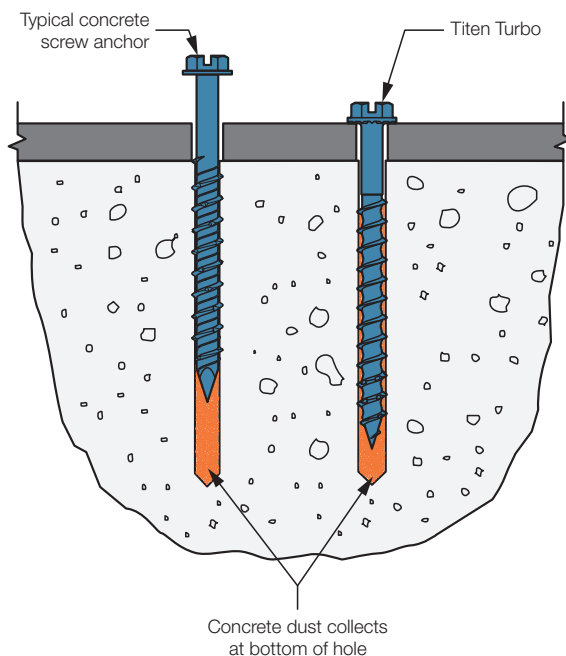
Coating: Zinc plated with baked ceramic coating



6-Lobe Head

Titen Turbo Flat Head Screw
US Patent Pending

Titen Turbo Hex-Head Screw
US Patent Pending



Torque Reduction Channel Traps Dust for Trouble-Free Installation
US Patent Pending

Wood Rod Hanger

Threaded Rod Anchor System

The wood rod hanger from Simpson Strong-Tie is a one-piece fastening system for suspending 1/4" or 3/8" threaded rod. Vertical rod hangers are designed to suspend threaded rod in overhead applications from wood members. Horizontal rod hangers are available for applications requiring installation into the side of joists, columns and overhead members. Both rod hangers provide attachment points for use in pipe hanging, fire protection, electrical conduit and cable-tray applications. Recommended for use in dry, interior, noncorrosive environments only.

Features

- Threaded anchors for rod-hanging applications in wood
- Suitable for installation horizontally or vertically in overhead applications
- No predrilling required
- Easily installed with a drill or screw gun
- Type-17 point provides for fast starts
- UL/FM Listed

Material: Carbon steel

Coating: Zinc plated



RWV
Vertical Wood
Rod Hanger



RWH
Horizontal Wood
Rod Hanger

Wood Rod Hangers

Rod Diameter (in.)	Size (in.)	Model No.	Application	Point Style	Quantity	
					Box	Carton
3/8	5/16 x 2 1/2	RWV37212	Vertical	Type 17	25	250
3/8	5/16 x 2 1/2	RWH37212	Horizontal	Type 17	25	250



Type-17 point for use in wood

Wood Rod Hanger

Threaded Rod Anchor System (cont.)

Tension Wood Rod Hanger Allowable Loads

Model No.	Rod Dia. (in.)	Size (in.)	Minimum Edge Dist. (in.)	Minimum End Dist. (in.)	Minimum Spacing (in.)	Allowable Loads							
						DF		SP		SPF		UL Approval	FM Approval
						Ultimate (lb.)	Allowable (lb.)	Ultimate (lb.)	Allowable (lb.)	Ultimate (lb.)	Allowable (lb.)	Pipe Size (in.)	Pipe Size (in.)
RWV37212	3/8	5/16 x 2 1/2	3/4	3 1/4	3 1/4	3,015	605	2,960	590	2,470	495	4	4

1. Load values are based on full shank penetration into the wood member.
2. Allowable loads may be increased by $C_D = 1.6$ for wind or earthquake.
3. Allowable loads are based on a factor of safety of 5.0.
4. Mechanical and plumbing design codes may prescribe lower allowable loads. Verify with local codes.
5. Allowable loads are based on Douglas fir-larch (DF-L), southern pine (SP) and spruce-pine-fir (SPF) wood members having a specific gravity representative of 0.50, 0.55 and 0.42, respectively.

Shear Wood Rod Hanger Allowable Loads

Model No.	Rod Dia. (in.)	Size (in.)	Minimum Edge Distance (in.)	Minimum End Distance (in.)	Minimum Spacing (in.)	Allowable Loads						UL Approval
						DF		SP		SPF		Pipe Size (in.)
						Ultimate (lb.)	Allowable (lb.)	Ultimate (lb.)	Allowable (lb.)	Ultimate (lb.)	Allowable (lb.)	
RWH37212	3/8	5/16 x 2 1/2	2 1/2	3 1/4	3 1/4	1,145	230	1,320	265	1,190	240	3

1. Load values are based on full shank penetration into the wood member.
2. Allowable loads may not be increased for short-term loading.
3. Allowable loads are based on a factor of safety of 5.0.
4. Mechanical and plumbing design codes may prescribe lower allowable loads. Verify with local codes.
5. Allowable loads are based on Douglas fir-larch (DF-L), southern pine (SP) and spruce-pine-fir (SPF) wood members having a specific gravity representative of 0.50, 0.55 and 0.42, respectively.

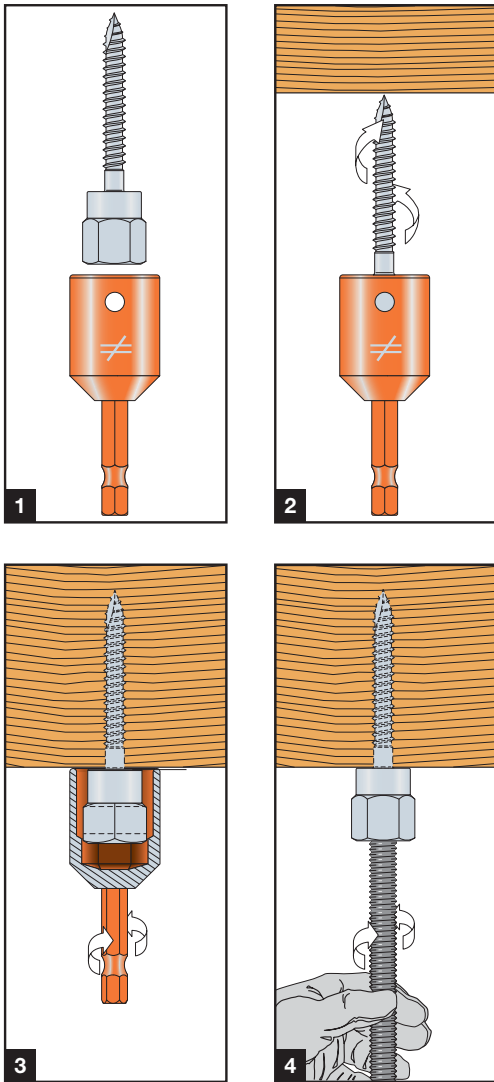
Wood Rod Hanger

Threaded Rod Anchor System (cont.)

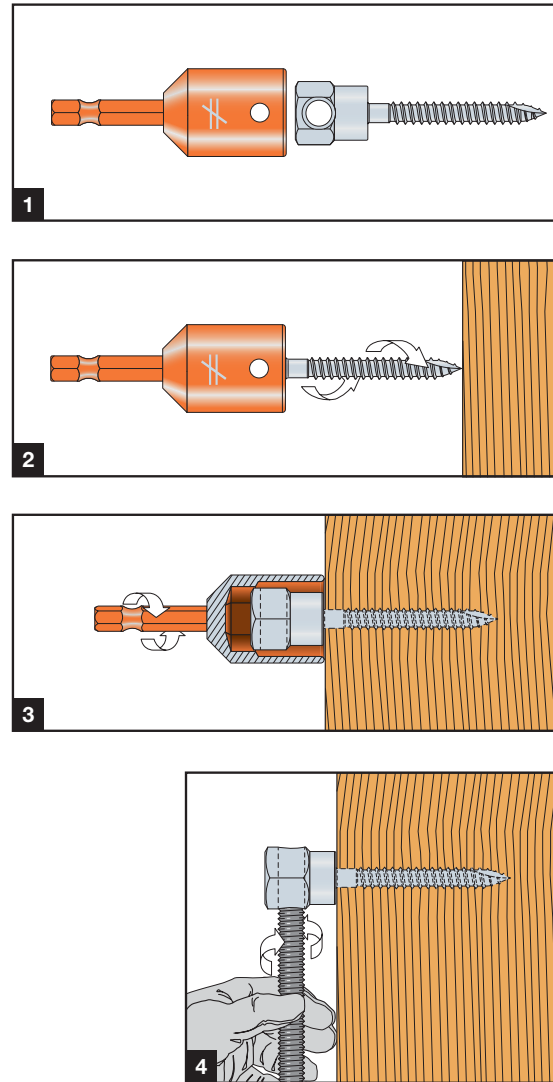
Installation Sequence

1. Attach RND62 nut driver to a drill.
2. Insert rod hanger into the RND62 nut driver.
3. Using rotation-only mode, drive rod hanger until it contacts the surface. Do not over-tighten. RND62 nut driver will disengage the rod hanger at the appropriate depth to prevent over-driving.
4. Insert threaded rod. Minimum thread engagement should be equal to the nominal diameter of the threaded insert.

Vertical Wood Rod Hanger (RWV)



Horizontal Wood Rod Hanger (RWH)





The first strap tested and proven for CLT.

Lab-tested, load-rated CLT tension straps, surface splines and fasteners from Simpson Strong-Tie provide strength, versatility and reliability you can depend on. Since our tabulated values are based on real-world tests, you can value-engineer a solution using fewer screws than calculated solutions typically allow.

To learn more, visit strongtie.com/solutions/clt or call us at (800) 999-5099.

