

Wood Construction Connectors

2017-2018 | C-C-2017



Strength Beyond Steel

From testing to service to availability,
everything we do is engineered to
ensure your project's success.



With every Simpson Strong-Tie connector, fastener or anchor, you know you're getting more than just a piece of steel. Each product comes with the quality, value, service and on-time delivery that we have built our reputation on for the past 60 years. A team of forward-thinking engineers designs and meticulously tests every product. That attention to detail gives you the confidence that our products will perform under the toughest conditions, and that your structures will be strong and safe.

And only with Simpson Strong-Tie do you have access to a complete support team of engineers, customer service and sales staff whenever you need them — on the phone and at the jobsite.

Welcome to our catalog of products. If you need any help finding the right product for your job, give us a call at (800) 999-5099.



























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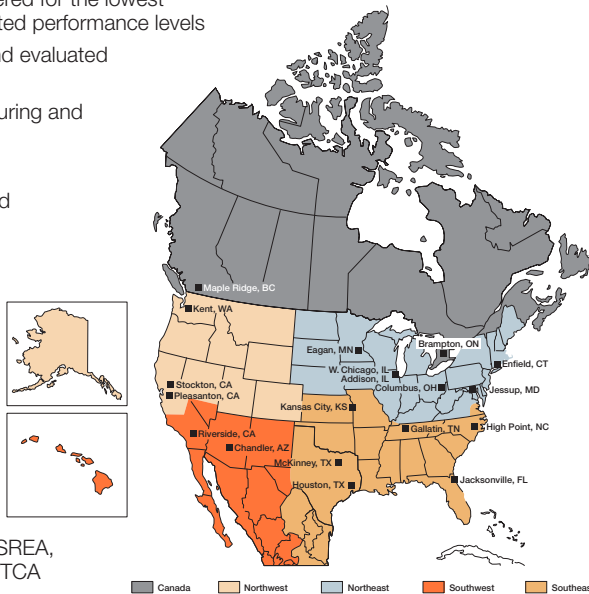
Introduction

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

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

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

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



The Simpson Strong-Tie Quality Policy

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

Karen Colonias
Chief Executive Officer

Getting Fast Technical Support

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

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

We Are ISO 9001-2008 Registered



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

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New Products for 2017



APA/APB/APL/APT Outdoor Accents

The patent-pending Outdoor Accents™ decorative hardware product line features connectors and fasteners that bring strength and style to custom outdoor living structures.

See p. 367 for more information.



CBTZ Concealed Beam Tie

The patent-pending CBTZ concealed beam tie is the newest addition to the concealed structural connector line. It combines structural strength with a clean, concealed look. Designed to connect horizontal beams atop a vertical post, the CBTZ continues the structural load path into the foundation through the CPTZ.

See p. 110 for more information.



FBZ Fence Bracket

The patent-pending FBZ is the latest addition to our line of fence brackets for connecting fence rails and posts. The flat design of the FBZ offers a more concealed install look. The diversity of the FBZ also offers a concealed look for hand rail to post attachments in some applications.

See p. 350 for more information.



FRFP Foundation Plate

The next-generation FRFP flat retrofit foundation plate connects the mudsill to the foundation and provides lateral load resistance. This new design maintains the same prescriptive requirements while allowing Designers the option of increased loads.

See p. 45 for more information.



UA/HUA Heavy-Duty Ornamental Hangers

UA/HUA hangers are heavy-duty, load-rated joist hangers that are attached with Strong-Drive® ¼" x 3" SDS Heavy-Duty Connector screws. Available in a flat black paint and HDG, these hangers offer a decorative finish for indoor and outdoor applications.

See p. 377 for more information.



HWP/HWPH Hangers

The HWP and HWPH are new additions to the series of purlin hangers. Designed for high-wind applications, these two hangers have enhanced uplift.

See pp. 151 and 211 for more information.

New Products for 2017



LSSJ Hanger

The new and innovative patent-pending LSSJ field-adjustable hanger is ideal for connecting jack rafters to hip members. Featuring a one-sided connection point for ease of installation, and a versatile, hinged seat, the LSSJ is easily field adjustable to all typical rafter skew or slopes, ranging from 0° to 45° and 0:12 to 12:12, respectively.

See p. 142 for more information.



MPBZ Moment Post Base

The new patent-pending MPBZ moment post base is the first post base specifically designed to provide moment resistance for columns or posts. An innovative overlapping sleeve design encapsulates the post, helping to resist rotation around its base. It is available for 4x4 and 6x6 posts.

See p. 105 for more information.



PSQ Pile Strap

PS/PSQ pile straps are ideal for attaching girders to piles bringing strength to the connection when the wood members are notched. The new PSQ installs faster and easily with the patented Strong-Drive® SDWH Timber-Hex HDG screws and offers higher loads.

See p. 303 for more information.



URFP Foundation Plate

The patent-pending URFP universal retrofit foundation plate offers increased load with the same adjustability during installation. It is an ideal solution in conditions where there is minimum vertical clearance for securing the mudsill to the foundation.

See p. 45 for more information.



HCJTZ Heavy-Concealed Joist Tie

The patent-pending HCJTZ offers higher capacity connections for larger beams (5 1/8" x 15" min.) to the CJT line. The rounded bottom form of this new tie allows for the bottom of the carried beam to be installed without revealing a kerf cut at the bottom.

See p. 380 for more information.



HSLQ Heavy Shear Transfer Angle

The HSLQ heavy shear transfer angle transfers lateral loads from wood solid sawn joists or blocking into a wood solid sawn element such as a moment frame nailer. This versatile angle allows up to a 2" gap between the structural members.

See p. 313 for more information.

Discontinued Products

Products to Be Discontinued in 2017



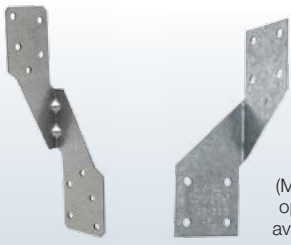
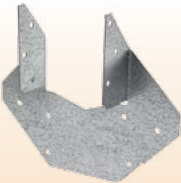














Simpson Strong-Tie is dedicated to continuously expanding our line of structural connectors with innovative new products that address the changing needs of our customers. As new connectors are introduced that improve upon older designs, it becomes necessary to discontinue the old versions in the name of efficiency and product-line simplicity.

The table below lists products that are no longer included in the *Wood Construction Connectors* catalog as well as the products recommended to replace them. While technical information for discontinued products will be maintained on our website for a number of months, Simpson Strong-Tie asks that our customers begin to substitute the replacement products shown below in their designs and inventories. While it is hard to say when they will no longer be available from our distribution partners, production of some of these connectors ended in 2016 and others will be phased out of production in 2017. Verify with Designer prior to substituting replacement product for specified product.


























For the most current information on discontinued products, visit strongtie.com/discontinued. If you have questions about any of the products shown below, please call (800) 999-5099 for assistance.

Discontinued Product		Replacement Product (C-C-2017 Page #)	
Foundation Anchor and Plate			
<p>UFP</p>	<p>UFP (Limited availability)</p>		<p>URFP (p. 45)</p> <p>URFP</p>
<p>FAP</p>	<p>FAP (Limited availability)</p>		<p>FRFP (p. 45)</p> <p>FRFP</p>
Bearing Plate			
<p>BP^{3/4}</p>	<p>BP^{3/4} (Limited availability)</p>		<p>BP^{3/4}-3 (p. 66)</p> <p>BP^{3/4}-3</p>
Holddown and Anchor			
<p>HDC</p>	<p>HDC (Limited availability)</p>		<p>HDU11 HDQ8 or others similar (pp. 77-79)</p> <p>HDU11 HDQ8</p>
<p>MA6 (MA4 similar)</p>	<p>MA4 MA6 (Limited availability)</p>		<p>LMA4 LMA6 (p. 50)</p> <p>LMA4 (LMA6 similar)</p>

Discontinued Products


Discontinued Product		Replacement Product (C-C-2017 Page #)	
Hurricane Ties			
 <p>H4 H5 (H5A similar)</p>	<p>H4 H5 H5A (Limited availability)</p>	 <p>H2.5A H3 (p. 314)</p>	 <p>H2.5A H3 (Multiple options available)</p>
 <p>H10-2</p>	<p>H10-2 (Limited availability)</p>	 <p>H10A-2 (p. 314)</p>	 <p>H10A-2</p>
Hangers			
 <p>HUSC</p>	<p>HUSC (Limited availability)</p>	 <p>HUC (pp. 126 and 168)</p>	 <p>HUC</p>
 <p>HUSCTF</p>	<p>HUSCTF (Limited availability)</p>	 <p>HUCTF (p. 150)</p>	 <p>HUCTF</p>
 <p>MSCPT</p>	<p>MSCPT (Limited availability)</p>	 <p>HTHMQ (p. 258)</p>	 <p>HTHMQ</p>
 <p>WM (WMI similar)</p>	<p>WM WMI (Limited availability)</p>	 <p>WMU (p. 276)</p>	 <p>WMU</p>

Discontinued Products

Discontinued Product		Replacement Product (C-C-2017 Page #)	
Hip Ridge Connector			
 <p>HRC44</p>	<p>HRC42 HRC44 (Limited availability)</p>		<p>HHRC42 HHRC44 (p. 145)</p>  <p>HHRC44 (HHRC42 similar)</p>
Hinge Connectors			
 <p>HC2CTA</p>	<p>HC2CTA (Limited availability)</p>		<p>HCCTA (p. 179)</p>  <p>HCCTA</p>
 <p>HCC3TA</p>	<p>HCC3TA (Limited availability)</p>		<p>HC4C3TA (p. 179)</p>  <p>HC4C3TA</p>
 <p>HC4CTA</p>	<p>HC4CTA (Limited availability)</p>		<p>HC4C3TA (p. 179)</p>  <p>HC4C3TA</p>
Straps and Tie			
 <p>FSC</p>	<p>FSC (Limited availability)</p>		<p>SDWF-TUW and SDWC (pp. 308, 319) or DTT2Z (pp. 78, 337)</p>   <p>SDWF-TUW and SDWC DTT2Z</p>
 <p>FTA</p>	<p>FTA (Limited availability)</p>		<p>HDU (p. 78) HTT (p. 80)</p>   <p>HDU HTT</p>
 <p>PCT</p>	<p>PCT (Limited availability)</p>		<p>HDU (p. 78) HDB HD (p. 82)</p>    <p>HDU HDB HD</p>

How To Use This Catalog

• New Products

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

• Changes In Red

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



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 pp. 15–18 for information on corrosion, and visit our website strongtie.com/info for more technical information on this topic.



Strong-Drive® SD Connector Screw Compatible

This icon identifies products approved for installation with the Simpson Strong-Tie® Strong-Drive® SD Connector screw. See pp. 39–43 for more information.

How We Determine Allowable Loads

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

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

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

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

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

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

Load Table Explanation

Hanger Load Table Explanation, see p. 120.

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

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

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

Uplift **Down**

Model No.	W	L	H	Nails	Allowable Loads			Code Ref.
					Uplift		Download	
					Non-Cracked	Cracked		
Wind and Seismic Design Category A and B								
EPB44A	3¾"	3	2¾"	(8) 16d	1,120	785	2,670	128
EPB44	3¾"	3¼"	2½"	(8) 16d	1,035	725	3,465	
EPB46	5½"	3¾"	3	(12) 16d	1,035	725	3,465	
EPB66	5½"	5½"	3	(12) 16d	1,035	725	3,465	
Seismic Design Category C-F								
EPB44A	3¾"	3	2¾"	(8) 16d	940	660	2,670	128
EPB44	3¾"	3¼"	2½"	(8) 16d	870	605	3,465	
EPB46	5½"	3¾"	3	(12) 16d	870	605	3,465	
EPB66	5½"	5½"	3	(12) 16d	870	605	3,465	

Code Ref.: See p. 14 for the Code Reference Key Chart, to determine which code reports include this product.

Wind or Seismic: Some cast-in-place concrete products have different load ratings based on wind or seismic design category.

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

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

Nails: 16d = 0.162" dia. x 3½" long. See pp. 26–27 for other nail sizes and information.

Throughout this catalog a footnote will typically be provided indicating the required nail diameter and length. All installations should be designed only in accordance with the allowable load values set forth in this catalog.

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Code Reports

Code Reference Column in Load Tables

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

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

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

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

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

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

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

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

In November 2010, the California Division of the State Architect, issued a revised IR 23-1. The revised Interpretation of Regulation (IR) addresses and clarifies issues relating to Pre-fabricated Wood Construction Connectors. IR 23-1 defines the Purpose and Scope and clarifies Listing Requirements, Acceptable Load Capacities, Design Requirements, Installation Requirements Connector Fabrication (which addresses corrosion-resistant material and/or coatings) and testing requirements. Also IRA-5, updated in October 2012, addresses product and evaluation report acceptance.

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

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

Code Reference Key Chart

Agency	Code Listing	Code Ref.	Agency	Code Listing	Code Ref.		
ICC-ES	ESR-1161	I1	City of Los Angeles, California	RR 25711	L1		
	ESR-2203	I2		RR 25712	L2		
	ESR-1622	I3		RR 25713	L3		
	ESR-2105	I4		RR 25714	L4		
	ESR-2236	I5		RR 25910	L5		
	ESR-2330	I6		RR 25718	L6		
	ESR-2549	I7		RR 25719	L7		
	ESR-2551	I8		RR 25720	L8		
	ESR-2552	I9		RR 25725	L9		
	ESR-2553	I10		RR 25726	L10		
	ESR-2554	I11		RR 25800	L11		
	ESR-2604	I12		RR 25801	L12		
	ESR-2605	I13		RR 25803	L14		
	ESR-2607	I15		RR 25804	L15		
	ESR-2608	I16		RR 25806	L16		
	ESR-2613	I17		RR 25807	L17		
	ESR-2615	I19		RR 25814	L18		
	ESR-2616	I20		RR 25818	L19		
	ESR-2877	I21		RR 25827	L20		
	ESR-2555	I22		RR 25828	L21		
	ESR-2611	I23		RR 25851	L22		
	ESR-3046	I24		RR25906	L23		
	ESR-2920	I25		RR25907	L24		
	ESR-2320	I26		RR25952	L25		
	ESR-3096	I27		RR25962	L26		
	ESR-3050	I28		RR25985	L27		
	IAPMO UES	ER-112		IP1	No Code Listing	Call us for Test Data	170
		ER-130		IP2			
ER-143		IP3					
ER-192		IP4	No Load Rating	—	180		
ER-262		IP5					
ER-280		IP6					
ER-417		IP7	Prescriptive Code	—	190		
ER-449		IP8					
ER-466		IP9					
Submitted for Listing	Call us for Status and Test Data	160	Calculated per Code	—	200		
State of Florida	Florida Product Approval	Visit strongtie.com/codes or floridabuilding.org for accurate and up-to-date product approval and code evaluation reports.			FL		

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

Corrosion Information

Understanding the Corrosion Issue

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

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

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

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

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

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

Galvanic Corrosion

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

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

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

Galvanic Series of Metals

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

Hydrogen-Assisted Stress-Corrosion Cracking

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

Treatment Use Categories and Exposure Conditions

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

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

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

Corrosion Information

Simpson Strong-Tie General Recommendations

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

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

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

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

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

Due to the many variables involved, Simpson Strong-Tie cannot provide estimates of service life of connectors and fasteners. We suggest that all users and specifiers obtain recommendations on corrosion from the treated wood supplier or for the type of wood used. As long as Simpson Strong-Tie recommendations are followed, Simpson Strong-Tie stands behind its product performance and our standard warranty applies (p. 23).

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

Guidelines for Selecting Corrosion-Resistant Connectors and Fasteners

Evaluate the Application

Consider the importance of the connection.

Evaluate the Exposure

Consider these moisture and treatment chemical exposure conditions:

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

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

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

Use the Simpson Strong-Tie® Corrosion Classification Table

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

Corrosion Information

Corrosion Resistance Recommendations

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

Corrosion Resistance Classifications

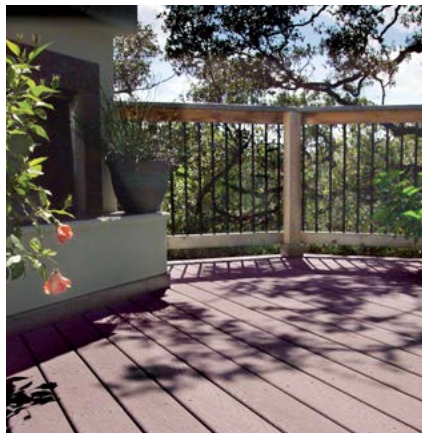
Environment	Material to Be Fastened						
	Untreated Wood or Other Material	Preservative-Treated Wood					FRT Wood ⁹
		SBX-DOT Zinc Borate	Chemical Retention ≤ AWPA, UC4A	Chemical Retention > AWPA, UC4A	ACZA	Other or Uncertain	
Dry Service	Low	Low	Low	High	Med	High	Med
Wet Service	Med	N/A	Med	High	High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

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

Dry Service



Wet Service



Severe







Corrosion Information

Coatings Available

Not all products are available in all finishes.

Contact Simpson Strong-Tie for product availability, ordering information and lead times.

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

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

Important Information and General Notes

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.
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 gun 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, do not bend more than once.
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.

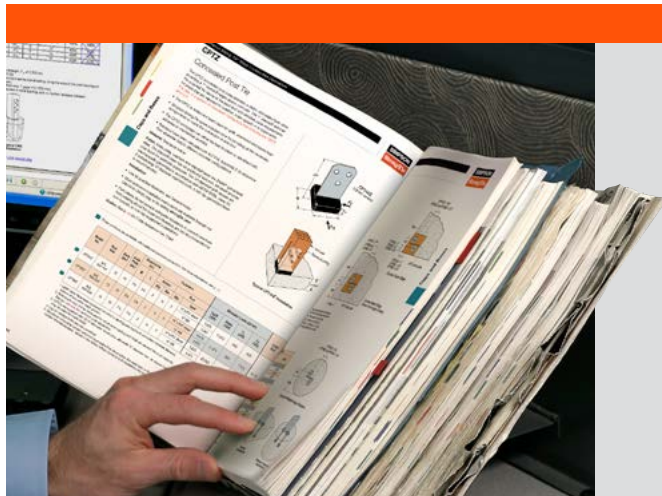
Failure to follow fully all of the notes and instructions provided by Simpson Strong-Tie Company Inc. may result in improper installation of products. Improperly installed products may not perform to the specifications set forth in this catalog and may reduce a structure's ability to resist the movement, 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, including:

- Instructional builder/contractor training kits containing an instructional video, an instructor guide and a student guide in both English and Spanish;
- *Installer's Pocket Guide* (form S-C-INSTALL), which is designed specifically for installers and uses detailed graphics and minimal text in both English and Spanish to explain visually how to install many key products;
- Information on workshops Simpson Strong-Tie conducts at various training centers throughout the country;
- Product-specific installation videos;
- Specialty catalogs;
- Code reports – Simpson Strong-Tie® Code Report Finder software;
- Technical fliers and bulletins;
- Engineering letters;
- Master format specifications;
- Safety data sheets;
- Corrosion information;
- Connector selection guides for engineered wood products (by manufacturer);
- Simpson Strong-Tie® Connector Selector® software;
- Simpson Strong-Tie® Joist Hanger Selector;
- Simpson Strong-Tie® AutoCAD® menu;
- Simpson Strong-Tie® CFS Designer™ software;
- Simpson Strong-Tie® Anchor Designer software;
- Simpson Strong-Tie® Strong-Wall® Selector software;
- Simpson Strong-Tie® Strong Frame® Selector;
- Simpson Strong-Tie® Fastener Finder;
- Simpson Strong-Tie® YouTube Channel; and
- Answers to frequently asked questions and technical topics.
- For all our web and mobile apps, visit strongtie.com/software.



Keep this catalog – it is valid for two years

Simpson Strong-Tie publishes the *Wood Construction Connectors* catalog every two years. Please be sure to visit our website regularly for updates that occur throughout the year – strongtie.com.

Important Information and General Notes

General Notes

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

- a. Simpson Strong-Tie Company Inc. reserves the right to change specifications, designs and models without notice or liability for such changes.
- b. Steel used for each Simpson Strong-Tie® product is individually selected based on the product's steel specifications, including strength, thickness, formability, finish and weldability. Contact Simpson Strong-Tie for steel information on specific products.
- c. Unless otherwise noted, dimensions are in inches, loads are in pounds.
- d. Unless otherwise noted, welds, screws, bolts and nails may not be combined to achieve highest load value. 8d (0.131" x 2½"), 10d (0.148" x 3") and 16d (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 8d 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 info.
- e. Do not overload. Do not exceed catalog allowable loads, which would jeopardize the connection.
- f. Unless otherwise noted, allowable loads are for Douglas Fir-Larch under continuously dry conditions. Allowable loads for other species or conditions must be adjusted according to the code. The section from the AC13 criteria indicating the range of specific gravity reads as follows: 3.2.3 The species of lumber used shall have a specific gravity not greater than 0.55 as determined in accordance with the NDS. This chart shows specific gravity and perpendicular-to-grain compression capacities for the different wood species:

Species	Fc⊥	Specific Gravity
Douglas Fir-Larch (DF)	625 psi	0.50
Southern Pine (SP)	565 psi	0.55
Spruce-Pine-Fir (SPF)	425 psi	0.42
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 or machine bolts (MBs) are for structural quality through bolts (not lag screws or carriage bolts) equal to or better than ASTM Standard A307, Grade A.
- 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

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. (Contact Simpson Strong-Tie for information on Takeup 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 (Simpson Strong-Tie Hanger Options Matrix and Hanger Option General Notes pp. 121–123) – 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. Truss plates shown are the responsibility of the Truss Designer.
- r. Do not weld products listed in this catalog unless this publication specifically identifies a product as acceptable for welding, or unless specific approval for welding is provided in writing by Simpson Strong-Tie. Some steels have poor weldability and a tendency to crack when welded. Cracked steel will not carry load and must be replaced. See Simpson Strong-Tie Hanger Options Matrix and Hanger Option General Notes on pp. 121–123 for hangers that may be welded.
- s. Unless noted otherwise, all references to standard-cut washers refer to Type A plain washers (W) conforming to the dimensions shown in ASME B18.22.1 for the appropriate rod size in accordance with 2012 NDS Appendix L. Some products require SAE narrow washers (N) to fit in a tight space and are noted accordingly.
- t. 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 the Fastener Guide in this catalog.
 - 16d fasteners are common nails (0.162" dia. x 3 1/2" long) and cannot be replaced with 16d sinkers (0.148" dia. x 3 1/4" long) for full load value unless otherwise specified.
 - Unless otherwise noted screws may not be used to replace nails in connectors unless approved and recommended by the Designer/Engineer of Record. Unless stated otherwise, Simpson Strong-Tie cannot and does not make any representations regarding the suitability of use or load-carrying capacities of connectors with screws replacing nails.
 - When using stainless-steel connectors, use stainless-steel fasteners. When using ZMAX®/HDG galvanized connectors, use fasteners that meet the zinc coating specifications of ASTM A153 or other fasteners allowed in this catalog.
- b. Fill all fastener holes as specified in the installation instructions for that product. Refer to p. 27 for the requirements of the various shapes of fastener hole.
- c. Do not overdrive nails. Overdriven nails reduce shear capacity.
- d. Use the materials specified in the installation instructions. Substitution of or failure to use specified materials may cause the connection to fail.
- e. Do not add fastener holes or otherwise modify Simpson Strong-Tie Company Inc. products. The performance of modified products may be substantially weakened. Simpson Strong-Tie will not warrant or guarantee the performance of such modified products.
- f. Install products in the position specified in the catalog.
- g. Do not alter installation procedures from those set forth in this catalog.
- h. The proper use of certain products requires that the product be bent. For those products, installers must not bend the product more than one time (one full cycle).
- i. Bolt holes shall be at least a minimum of 1/32" and no more than a maximum of 1/16" larger than the bolt diameter (per the 2012 NDS, Section 11.1.3.2 and AISI S100-07, Table E3a if applicable).
- j. Install all specified fasteners before loading the connection.
- k. Some hardened fasteners may have premature failure if exposed to moisture. These fasteners are recommended to be used in dry interior applications.
- l. Use proper safety equipment.
- m. Welding galvanized steel may produce harmful fumes; follow proper welding procedures and safety precautions. Welding should be in accordance with A.W.S. (American Welding Society) standards. Unless otherwise noted Simpson Strong-Tie® connectors cannot be welded.
- n. Pneumatic or powder-actuated fasteners may deflect and injure the operator or others. Pneumatic nail tools may be used to install connectors, provided the correct quantity and type of nails (length and diameter) are properly installed in the nail holes. Tools with nail hole-locating mechanisms should be used. Follow the manufacturer's instructions and use the appropriate safety equipment. Overdriving nails may reduce allowable loads. Contact Simpson Strong-Tie. Powder-actuated fasteners should not be used to install connectors, **unless noted otherwise. Reference pp. 207 and 209 for top-flange hanger installation with powder-actuated fasteners.**
- o. Joist shall bear completely on the connector seat, and the gap between the joist end and the header shall not exceed 1/8" per ICC-ES AC261, ASTM D1761 and ASTM D7147 test standards (unless specifically noted otherwise).
- p. Fasteners are permitted to be installed through metal truss plates when approved by the Truss Designer in accordance with ANSI/TPI 1-2014, Section 7.5.3.4 and 8.9.2. Installation of Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws through metal connector plates requires the plates to be pre-drilled using a maximum of a 5/32" bit. Do not drive nails through the truss plate on the opposite side of single-ply trusses which could force the plate off the truss.
- q. For cold-formed steel applications, all screws shall be installed in accordance with the screw manufacturer's recommendations. All screws shall penetrate and protrude through the joined materials a minimum of 3 full exposed threads per AISI Standard for Cold Formed Steel Framing — General Provisions, Section D1.3, if applicable.
- r. Nuts shall be installed such that the end of the threaded rod or bolt is at least flush with the top of the nut.
- s. 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.
- t. 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. Unless otherwise noted, connector allowable loads published in this catalog are limited to the lowest of: average recorded test load at 1/8" deflection, lowest ultimate recorded test load of three tests specimens divided by three (or the average of six specimens divided by three), or the calculated value based on steel, wood bearing, and/or fastener capacity.
- e. When a connector is loaded simultaneously in more than one direction, the allowable load must be evaluated as shown here. For all connectors use the following equation:

$$\frac{\text{Design Uplift/Allowable Uplift} + \text{Design Lateral Parallel to Plate} / \text{Allowable Lateral Parallel to Plate} + \text{Design Lateral Perpendicular to Plate} / \text{Allowable Lateral Perpendicular to Plate}}{1.0} < 1.0.$$

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

As an alternate, certain roof-to-wall connectors (Embedded Truss Anchors, pp. 290–291, Seismic and Hurricane Ties, pp. 314–316, and Twist Straps, pp. 326–327) can be evaluated using the following: The design load in each direction shall not exceed the published allowable load in that direction multiplied by 0.75. **For connections involving members with different specific gravities, use the allowable load corresponding to the lowest specific gravity in the connection, unless noted otherwise.**
- f. Loads are based on the 2015 National Design Specifications (NDS) and AISI S100-12 if applicable, unless otherwise specified. Other code agencies may use different allowable loads.
- 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-graintension or bending of the wood during loading if not sufficiently reinforced. In this case, mechanical reinforcement should be considered.
- l. For holdowns, anchor bolt nuts should be finger-tight plus 1/4 to 1/2 turn with a hand wrench, with consideration given to possible future wood shrinkage. Care should be taken to not over-torque the nut. Impact wrenches should not be used as they may preload the holdown.
- m. Simpson Strong-Tie will provide upon request code testing data on all products that have been code tested.
- n. 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 2012 NDS Appendix N, which contains a conversion procedure that can be used to derive LRFD capacities.
- o. 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.**
- p. For cold-formed steel applications, as a minimum all screws must comply with Society of Automotive Engineers (SAE) Standard J78, Steel Self-Drilling/Tapping Screws, and must have a Type II coating in accordance with ASTM B 633, Electrodeposited Coatings of Zinc on Iron and Steel. Screw strength shall be calculated in accordance with AISI S100-07 Section E4, if applicable, or shall be based on the manufacturer’s design capacity determined from testing.
- q. 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.
- r. Holdown and Tension Tie allowable loads are based on installations with an anchor rod length of 6" from the concrete to top of holdown seat, yet these products may be raised to any height with consideration of the increased deflection due to additional bolt elongation. For cases where the anchor bolt is offset, Simpson Strong-Tie offers recommendations, subject to the approval of the Designer, which permit holdowns to be raised up to 18" maximum with a corresponding horizontal anchor bolt offset of 1 1/2". See “General Instructions for the Installer” (p. 21 note q).
- s. 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.
- t. Top flange hanger allowable loads are typically based on testing with solid headers. Load reductions may apply when using headers comprised of multiple plies of dimensioned lumber or SCL. See technical bulletin T-C-MPLYHEADER at strongtie.com for more information.

Important Information and General Notes

Limited Warranty

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

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

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

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

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

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

Terms and Conditions of Sale

Product Use

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

Indemnity

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

Non-Catalog and Modified Products

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

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

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

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	0.239	—	—
7	171	3/16	4.5	0.179	0.186	—
10	118	9/64	3.5	0.134	0.138	0.140
11	111	1/8	3.1	0.120	0.123	0.125
12	97	7/64	2.7	0.105	0.108	0.110
14	68	5/64	2.0	0.075	0.078	0.080
16	54	1/16	1.6	0.060	0.063	0.065
18	43	3/64	1.3	0.048	0.052	0.054
20	33	1/32	1.0	0.036	0.040	0.042
22	27	1/32	1.0	0.030	0.033	0.035

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.

Steel thickness may vary according to industry mill standards.

Fasteners



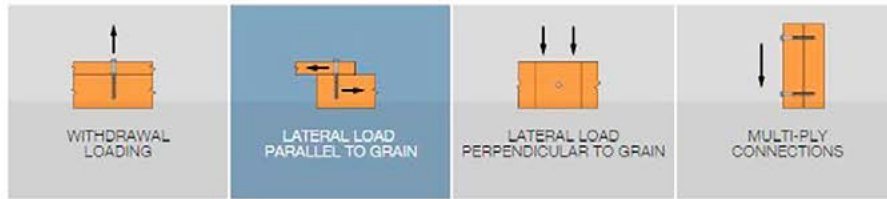
Fastener Types

Select the Right Fastener for Your Job — Screw Substitution Calculator

The Screw Substitution Calculator is a quick, easy-to-use tool for providing Simpson Strong-Tie® structural screw alternatives to specified standard NDS fasteners in withdrawal, lateral load parallel-to-grain, lateral load perpendicular-to-grain and multi-ply connections. The Calculator provides detailed load calculations for both the NDS fastener and the recommended Simpson Strong-Tie structural screw.

Select fasteners based on:

- Withdrawal loading
- Lateral loads, parallel or perpendicular to grain
- Multi-ply connections



General

Select Application: Fastener Substitution Load Entry (e.g., 250 lb)

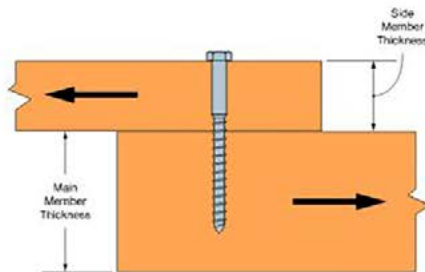
Design Method: Allowable Stress Design (ASD)

Code: NDS 2005 NDS 2012

Side Member

Choose Member: Side Member Species (Select One) OR Specific Gravity (e.g., 0.49)

Side Member Thickness (e.g., 1.0) in



Main Member

Choose Member: Main Member Species (Select One) OR Specific Gravity (e.g., 0.49)

Main Member Thickness (e.g., 1.0) in

Fastener Information

Fastener (Select One) Fastener Type Fastener Diameter/Type Length

Fastener Options: One Fastener OR Rows (e.g., 2) Spacing (e.g., 12) in

Fastener Types

Fastener Types and Sizes Specified for Simpson Strong-Tie® Connectors

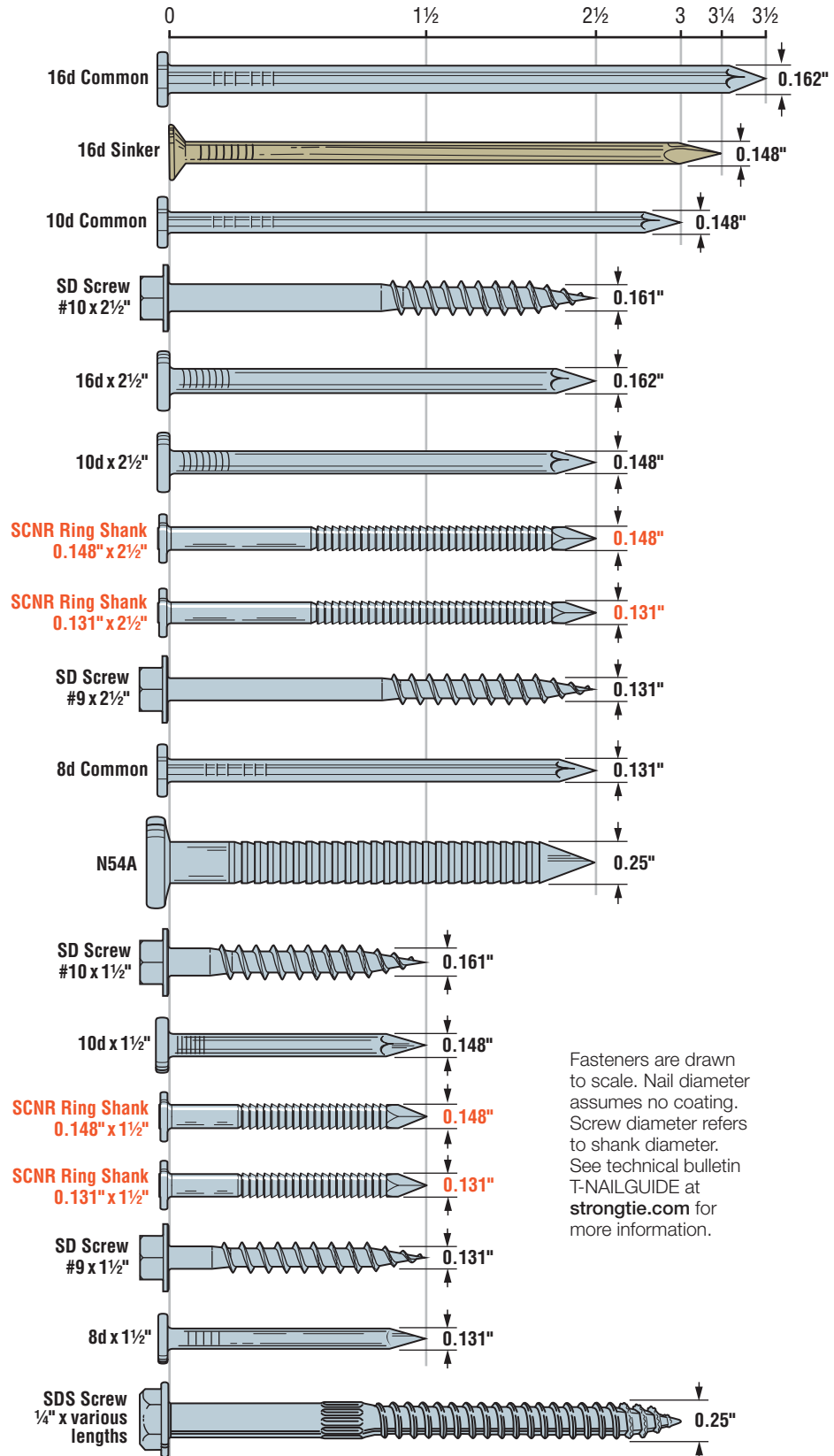
Many Simpson Strong-Tie connectors have been designed and tested for use with specific types and sizes of fasteners. The specified quantity, type and size of fastener must be installed in the correct holes on the connector to achieve published loads. Other factors such as fastener material and finish 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® SD Connector screw is the only screw approved for use with our connectors. See pp. 39-40 for more information.



The allowable loads of stainless-steel connectors match those of carbon-steel connectors when installed with Simpson Strong-Tie® stainless-steel, SCNR ring-shank 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. See technical bulletin T-NAILGUIDE at strongtie.com for more information.

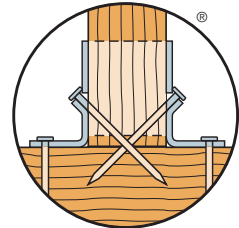
Fastener Design Information

In some cases, it is desirable to install Simpson Strong-Tie face-mount joist hangers and straight straps with nails 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.

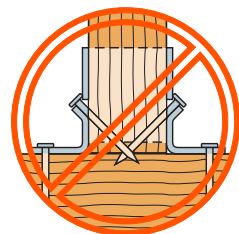
Load Adjustment Factors for Optional Fasteners Used with Face-Mount Hangers and Straight Straps

Catalog Nail	Replacement	Allowable Load Adjustment Factor	
		Face-Mount Hangers	Straight Straps ⁷
16d common (0.162" x 3½")	10d x 1½ (0.148" x 1½")	0.64	0.84 ⁸
16d common (0.162" x 3½")	10d common (0.148" x 3")	0.84	0.84
	12d common (0.148" x 3¼")		
	16d sinker (0.148" x 3¼")		
16d common (0.162" x 3½")	16d x 2½ (N16) (0.162" x 2½")	1.00	1.00
10d common (0.148" x 3")	10d x 2½ (0.148" x 2½")	0.85	1.00
10d common (0.148" x 3")	10d x 1½ (0.148" x 1½")	0.77	1.00 ⁹
16d sinker (0.148" x 3¼")			
10d common (0.148" x 3")			
16d sinker (0.148" x 3¼")	10d x 1¼ (0.148" x 1¼")	0.64	1.00 ⁹
10d common (0.148" x 3")	16d sinker (0.148" x 3¼")	1.00	1.00
8d common (0.131" x 2½")	8d x 1½ (0.131" x 1½")	0.85	1.00
10d common (0.148" x 3")	8d common (0.131" x 2½")	0.83	0.83
16d common (0.162" x 3½")	SD #10 x 1½ (0.161 x 1½")	1.00 ⁵	1.00
16d x 2½ (N16) (0.162 x 2½)			
10d common (0.148" x 3")	SD #9 x 1½ (0.131 x 1½")	1.00 ⁵	1.00
16d sinker (0.148" x 3¼")			
10d x 1½ (0.148" x 1½)			
8d common (0.131" x 2½")			
8d x 1½ (0.131" x 1½")			

For LUS, MUS, HUS, HHUS and HGUS Hangers



Double-shear nailing shall use minimum 3" long nails



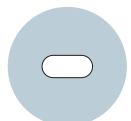
Shorter nails may not be used as double-shear nails

1. Allowable load adjustment factors shown in the table are applicable for all face-mount hangers and straight straps throughout this catalog, except as noted in the footnotes below.
2. Some products have been tested specifically with alternate fasteners and have allowable load adjustment factors or reduced capacities published on the specific product page. *Those values on the product page may be used in lieu of the values calculated using this table.*
3. *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.*
4. *Strong-Drive® SD Connector screw substitutions in this table do not apply to sloped, skewed or double-shear hangers. However, Strong-Drive SD Connector screws may be used in these connectors. For additional information and specific allowable loads, refer to strongtie.com/sd.*
5. Nails and Strong-Drive SD Connector screws may not be combined in a connection.
6. Do not substitute 10d x 1½" nails for face nails on slope and skew combinations or skewed only LSU and LSSU.
7. For straps installed over sheathing use a 2½" long fastener minimum.
8. Where noted, use 0.80 for 10 ga., 11 ga., and 12 ga. products when using SPF lumber.
9. Where noted, use 0.92 for 10 ga., 11 ga., and 12 ga. products when using SPF lumber.

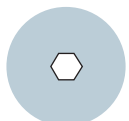
Fastening Identification



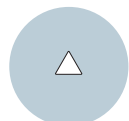
Round Holes
Purpose: To fasten a connector.
Fill Requirements: Always fill, unless noted otherwise.



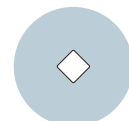
Obround Holes
Purpose: To make fastening a connector in a tight location easier.
Fill Requirements: Always fill.



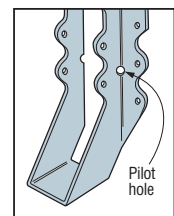
Hexagonal Holes
Purpose: To fasten a connector to concrete or masonry.
Fill Requirements: Always fill when fastening a connector to concrete or masonry.



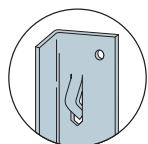
Triangular Holes
Purpose: To increase a connector's strength or to achieve max. strength.
Fill Requirements: When the Designer specifies max. nailing.



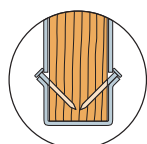
Diamond Holes
Purpose: To temporarily fasten a connector to make installing it easier.
Fill Requirements: None.



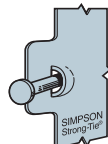
Pilot Holes
Tooling holes for manufacturing purposes. No fasteners required.



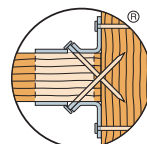
Speed Prongs
Used to temporarily position and secure the connector for easier and faster installation.



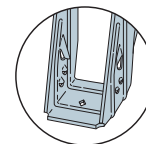
Positive Angle Nailing (PAN)
Provided when wood splitting may occur, and to speed installation.



Dome Nailing
This feature guides the nail into the joist and header at a 45° angle. U.S. Patent 5,603,580



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.

Strong-Drive® Connector Nails

Simpson Strong-Tie® nails and structural fasteners have been developed as the optimum fasteners for connector products. Special lengths afford economy of purchase and installation, and depth compatibility with framing members.

For pneumatic nail use, see Instructions to the Installer, p. 21 and visit strongtie.com for technical bulletins.

Nails Sold by the Pound

Nail	Simpson Strong-Tie Model No.	Dimensions	Wire Gauge	Finish	Fasteners per lb. ⁵
8d x 1½"	N8	0.131" x 1½" (3.3mm x 38.1mm)	10¼	HDG	150
	SSNA8			SS	
8d common	SSA8D	0.131" x 2½" (3.3mm x 63.5mm)	10¼	SS	90
10d x 1½"	N10	0.148" x 1½" (3.8mm x 38.1mm)	9	HDG	120
	SSNA10			SS	
10d common	10DHDG	0.148" x 3" (3.8mm x 76.2mm)	9	HDG	65
	SSA10D		9	SS	
16d x 2½"	N16	0.162" x 2½" (4.1mm x 63.5mm)	8	Bright	60
16d common	16DHDG	0.162" x 3½" (4.1mm x 88.9mm)	8	HDG	40
	SSA16D			SS	
N54A	N54A	0.250" x 2½" (6.4mm x 63.5mm)	3	Bright	25
	N54AHDG			HDG	

1. HDG = hot-dip galvanized; SS = stainless steel; Bright = no finish.
2. Use HDG nails with ZMAX® and HDG products.
3. 16d sinker with GV finish is not acceptable for ZMAX or HDG applications.
4. HDG nails sold by Simpson Strong-Tie meet the specifications of ASTM A153. Stainless-steel nails are Type 316 stainless.
5. Quantities listed are approximate.

Retail Packaging



1 lb. Retail Tub



5 lb. Retail Bucket

Simpson Strong-Tie® hot-dip galvanized nails are packed in 1 lb. and 5 lb. plastic retail containers for easy handling.

Collated Strong-Drive® Connector Nails

Simpson Strong-Tie® Strong-Drive® **SCN Smooth-Shank Carbon-Steel Connector nails** and **SCNR Ring-Shank Connector nails** are designed to provide installers with a **power-driven** alternative to hand-driven nails. The nails are approved for use in many popular Simpson Strong-Tie® products and serve as a replacement for 8d, 10d and 16d hand-driven common nails in a variety of Simpson Strong-Tie connector applications. Available in 25-nail, paper-collated strips.

Material: Carbon steel, hot-dip galvanized, **electro-galvanized**, stainless steel

Installation:

- Use all specified fasteners; see General Notes.
- Follow the **tool** manufacturer's instructions and use the appropriate safety equipment.
- Tools with nail hole-locating mechanisms should be used.
- Overdriving nails may reduce allowable loads. **More information about acceptable overdriven nails can be found in technical bulletin T-PNEUMATIC at strongtie.com.**
- **Paper-collated nails** are compatible with a variety of popular **power** nailers. For more information, access our Fastener Finder software or download the Simpson Strong-Tie *Fastening Systems* catalog at strongtie.com.
- For applications involving **power-driven** nails, refer to technical bulletin T-PNEUMATIC at strongtie.com.

Model No.	Nominal Size	Diameter (in.)	Length (in.)
Hot-Dip Galvanized			
N8HDGPT500	8d	0.131	1½
8DHDGPT500	8d	0.131	2½
N10HDGPT500	10d	0.148	1½
N10DHDGPT500	10d	0.148	2½
N16HDGPT500	16d	0.162	2½
Stainless Steel			
T9A150MCN	10d	0.148	1½
T9A250MCN	10d	0.148	2½
T10A150MCN	8d	0.131	1½
T10A250MCN	8d	0.131	2½
Electro-Galvanized			
N10EGPT3000	10d	0.148	1½
N10DEGPT2500	10d	0.148	2½

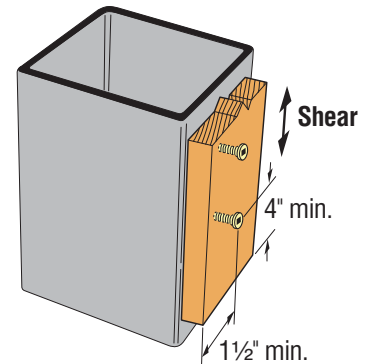
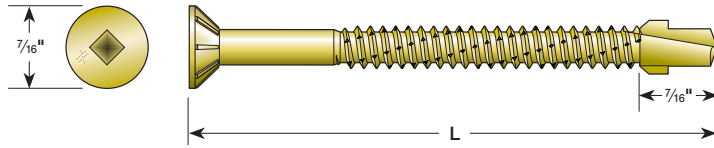


Strong-Drive®
33° SCNR Ring Shank
Connector Nail

Strong-Drive® Fasteners

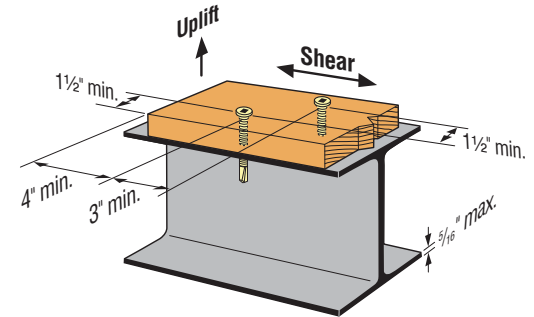
Strong-Drive® TB Wood-to-Steel Screw

Simpson Strong-Tie® Quik Drive® auto-feed systems with TB series screw strips are a fast and reliable way to fasten wood to steel members. Available in loose and collated options. They are self-drilling so no predrilling is required.



TB – Allowable Loads – DF and SP Lumber Attachment to Steel (Steel Members 16 ga. – 5/16" Thick)

Model No.	Length in. (mm)	Wood Thickness (in.)	Steel Thickness mil (ga.)	DF/SP Allowable Load (lb.)			
				Uplift		Shear	
				C _D = 1.0	C _D = 1.6	C _D = 1.0	C _D = 1.6
TB1460S TBP1460 TBP1460S	2 3/8" (60)	1 1/2	54 (16)	195	195	210	335
			68 (14)	225	225	210	335
			97 – 312 (12 – 5/16")	245	390	215	345
TB1475S TBP1475 TBP1475S	3" (75)	1 1/2	54 (16)	195	195	210	335
			68 (14)	225	225	210	335
			97 – 312 (12 – 5/16")	245	390	215	345



1. For use with structural steel members up to 5/16" thick or cold-formed steel members 54 mil (16 ga.) or thicker.
2. Standard product available in a black phosphate, yellow zinc or N2000 coating for additional corrosion protection (TBG1460S or TBG1475S).
3. For use with 2x (1 1/2") DF/SP only.
4. For use with Quik Drive® HSD60 or HSD75 tool.
5. Use increased allowable loads (C_D = 1.6) only when resisting wind or seismic forces.

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

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Designing with Steel?

If you are designing a structure using Cold-Formed Steel, comprehensive design information on using connectors, Simpson Strong-Tie® anchoring products and Quik Drive® screws can be found in the latest issue of the Simpson Strong-Tie *Cold-Formed Steel Connectors* catalog. You can access this information via the web at strongtie.com.

Have you tried our Simpson Strong-Tie CFS Designer™ software? It gives cold-formed steel (CFS) Designers the ability to design CFS beam-column members according to AISI specifications and to analyze complex beam loading and span conditions. To learn more, visit strongtie.com.



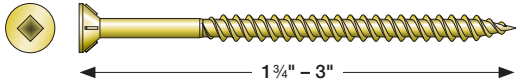
Strong-Drive® Fasteners

Strong-Drive® WSNTL Subfloor Screw

Fasteners for the Simpson Strong-Tie® Quik Drive® auto-feed screw driving systems offer superior performance and reduced installation time in subfloor applications. The holding power of screws reduces the gaps that cause floor squeaks and the tool extension enables stand-up-and-drive installation.

Installing WSNTL screws removes the need for gluing in diaphragm applications, which can eliminate the precise timing, labor and materials that the process requires. For guidelines on fastening diaphragms without glue, see flier F-Q-WSNTL at strongtie.com.

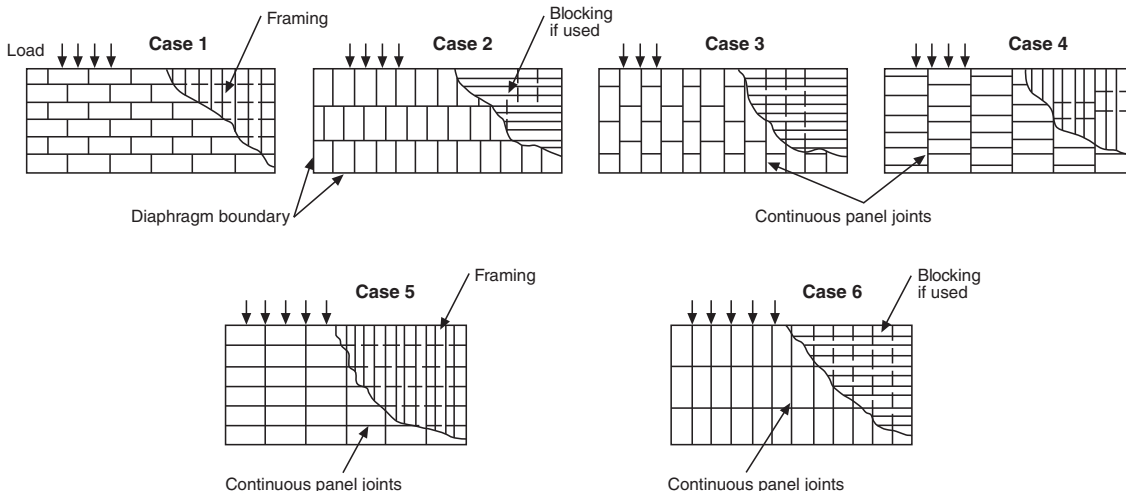
Codes: ICC-ES ESR-1472; City of L.A. RR25661; Florida FL 13731



Allowable Shear (in Pounds per Foot) for Wood Structural Panel Diaphragms with Framing of Douglas Fir-Larch or Southern Pine for Wind or Seismic Loading

Panel Grade	Minimum Nominal Panel Thickness (in.)	Minimum Nominal Width of Framing Members at Adjoining Panel Edges and Boundaries ^{4,5} (in.)	Blocked Diaphragms				Unblocked Diaphragms	
			Screw spacing (in.) at diaphragm boundaries (all cases), at continuous panel edges parallel to load (Cases 3 and 4), and at all edges (Cases 5 and 6) ⁶				Screws spaced 6 inches, maximum, at support edges ⁵	
			6	4	2½	2	Case 1 (No unblocked edges or continuous joints parallel to load)	All other configurations (Cases 2, 3, 4, 5 and 6)
			Screw Spacing (in.) at Other Panel Edges					
6	6	4	3					
Structural 1/OSB	¾	2	270	360	530	600	240	180
		3	300	400	600	675	265	200
	1½/32	2	320	425	640	730	285	215
		3	360	480	720	820	320	240
Sheathing single floor, and other grades covered in DOC PS1 and PS2	¾	2	240	320	480	545	215	160
		3	270	360	540	610	240	180
	7/16	2	255	340	505	575	230	170
		3	285	380	570	645	255	190
	1½/32	2	290	385	575	655	255	190
		3	325	430	650	735	290	215
	1¾/32	2	320	421	640	730	285	215
		3	360	480	720	820	320	240

1. Minimum fastener penetration of 1¼" into the framing member is required.
2. For wind design, shear capacities may be increased 40% per section 2306.2 of the 2012 and 2015 IBC.
3. For shear loads of normal or permanent load duration as defined by the NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.
4. The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2".
5. Framing at adjoining panel edges must be 3" nominal or wider, and screws must be staggered where both of the following conditions are met: (1) Screws having penetration into framing of more than 1½" and (2) Screws are spaced 3" o.c. or less.
6. Space screws maximum 12" o.c. along intermediate framing members (6" o.c. where supports are spaced 48" o.c.).
7. Framing at adjoining panel edges must be 3" nominal or wider, and screws must be staggered where screws are spaced 2" or 2½" o.c.
8. See ESR-1472, Table 3 for allowable shear loads for high load diaphragms.
9. WSNTL withdrawal and pull-thru values exceed those for a 10d common nail.



Strong-Drive® Fasteners

Strong-Drive® WSNTL Subfloor Screw (cont.)

Simpson Strong Tie® Quik Drive WSNTL series #8 flathead, countersunk wood screws are a fast and reliable method for attaching 2-ply and 3-ply girder trusses.

WSNTL – Allowable Load Comparison of Common Fasteners Used to Attach Truss Plies Together¹⁻⁶

Fastener	Length (in.)	Diameter (in.)	Shear (lb.)			Withdrawal (lb.)		
			DFL	SP	SPF	DFL	SP	SPF
WSNTL212S	2½	0.132	85	95	70	133	175	93
WSNTL3S	3	0.132	100	110	85	200	263	140
0.120" Collated Nail ⁵	3	0.120	81	89	69	44	56	28
0.131" Collated Nail ⁵	3	0.131	97	106	82	48	61	31

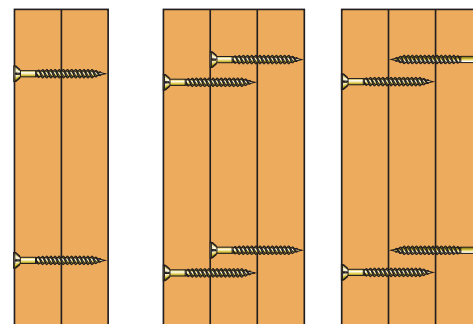
1. Table values are based on attachment of a 1½" side member to a 1½" main member of the same species and grade.
2. Table values are based on the 2012 NDS, C_D = 1.0. Values shall be multiplied by all applicable factors, such as duration of load, etc. except where noted
3. Specific Gravities (G) assumed: DFL G = 0.50, SP G = 0.55, SPF G = 0.42.
4. The spacing of applied uniform loads to the multi-ply member shall not exceed 24 inches on center.
5. Assumes collated nail F_y = 100 ksi.
6. WSNTL212S and WSNTL3S withdrawal values based on testing per AC233.

Installation:

- Screw spacing shall be in accordance with the fastener schedule provided on the Truss Design Drawing or as otherwise approved by the Truss Designer. Screw spacing shall not exceed 12" on center and shall not be less than 3" on center.
- WSNTL series screws may be installed with the screw heads in either the loaded or unloaded ply. Do not overdrive screws.
- For 3-ply girder assemblies, the WSNTL screws may be installed from the same side as each ply is applied (no flipping of the truss is required) in accordance with BCSI (2006 edition). Girders that are fastened together at the jobsite must have the fastener heads visible for inspection.
- Stagger the screws in the 3rd ply a minimum of 1" from the screws installed into the first two plies.
- Individual screw locations may be adjusted up to ½ of the required screw spacing to avoid conflicts with other hardware or to avoid lumber defects. (3" minimum spacing still required.)
- Use minimum of 3" long fasteners to attach hangers to the girder truss.
- A 2,500-rpm motor is recommended.

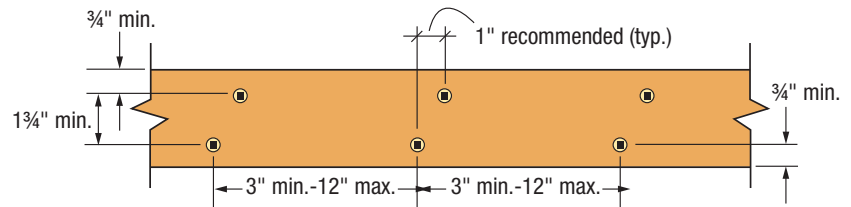
2-Ply Assembly

3-Ply Assemblies



Truss Plant Installation

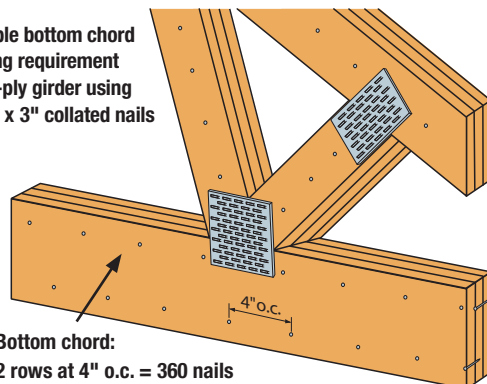
Jobsite Installation



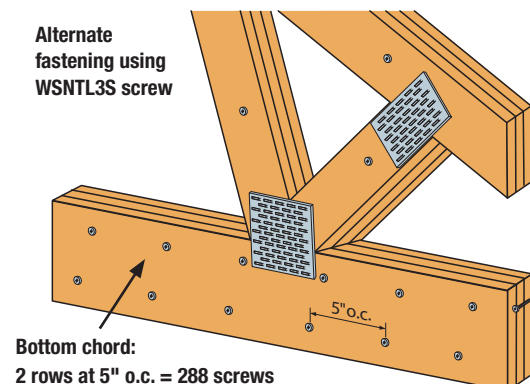
Typical Spacing for WSNTL Screw

Ply-To-Ply Connection Comparison for a 30' Long 3-Ply Girder – Bottom Chord Loading

Sample bottom chord nailing requirement for 3-ply girder using 0.120 x 3" collated nails



Alternate fastening using WSNTL3S screw



Examples based on 3-ply girder spanning 30', 2x6 Southern Pine bottom chords, 825 plf bottom chord load and 1.15 load duration. Nail and screw spacing is repeated for each layer.

Strong-Drive® SDS

Heavy-Duty Connector Screw

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

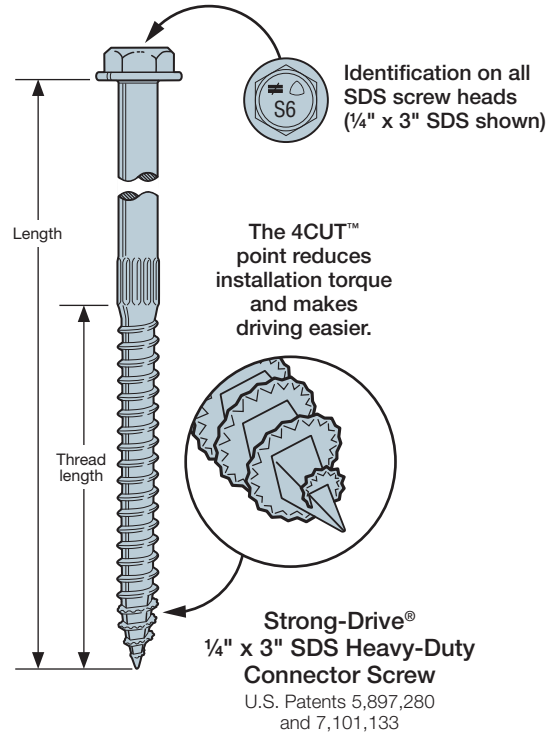
Features:

- The patented 4CUT point has a square core and serrated threads to reduce installation torque and make driving easier with no predrilling and minimal wood splitting.
- Available with a double-barrier coating or in Type 316 stainless steel. Carbon steel loads apply to corresponding stainless steel models.
- 5/8" hex washer head is stamped with the No-Equal sign and fastener length for easy identification after installation.
- For the 5/8" hex head driver bit, order model no. DB6H1.75.

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

Finish: Double Barrier (all lengths); Type-316 Stainless Steel (1 1/2" thru 3 1/2" lengths)

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Strong-Drive® SDS Heavy-Duty Connector Screw

Size (in.)	Model No.	Thread Length (in.)	Fasteners per Carton ⁶	DF/SP Allowable Loads ⁴						SPF/HF Allowable Loads ⁴						Code Ref.
				Shear (100) ¹					Withdrawal ⁵ (100)	Shear (100)					Withdrawal ⁵ (100)	
				Wood Side Plate ³		Steel Side Plate				Wood Side Plate ³		Steel Side Plate				
1 1/2"	1 3/4" SCL	16 ga.	14 ga. and 12 ga.	10 ga. or Greater	Wood or Steel Side Plate	1 1/2"	1 3/4" SPF LVL	16 ga.	14 ga. and 12 ga.	10 ga. or Greater	Wood or Steel Side Plate					
SS 1/4 x 1 1/2	SDS25112	1	1,500	—	—	250	250	250	170	—	—	180	180	180	120	15, L1, FL
SS 1/4 x 2	SDS25200	1 1/4	1,300	—	—	250	290	290	215	—	—	180	210	210	150	
SS 1/4 x 2 1/2	SDS25212	1 1/2	1,100	190	—	250	390	420	255	135	—	180	280	300	180	
SS 1/4 x 3	SDS25300	2	950	280	—	250	420	420	345	200	—	180	300	300	240	
SS 1/4 x 3 1/2	SDS25312	2 1/4	900	340	340	250	420	420	385	245	245	180	300	300	270	
1/4 x 4 1/2	SDS25412	2 3/4	800	350	340	250	420	420	475	250	245	180	300	300	330	
1/4 x 5	SDS25500	2 3/4	500	350	340	250	420	420	475	250	245	180	300	300	330	
1/4 x 6	SDS25600	3 1/4	600	350	340	250	420	420	560	250	245	180	300	300	395	
1/4 x 8	SDS25800	3 1/4	400	350	340	250	420	420	560	250	245	180	300	300	395	

1. Screws may be provided with the 4CUT or Type-17 point.
2. Strong-Drive® SDS Heavy-Duty Connector screws install best with a low-speed 1/2" drill with a 5/8" hex-head driver.
3. Shear values are valid for connections between two members with full thread penetration into the main member. For other wood side plate values, see *Fastening Systems* catalog (C-F-2017) at strongtie.com.
4. Allowable loads are shown at the wood load duration factor of C_D = 1.00. Loads may be increased for load duration per the building code up to a C_D = 1.60.
5. Withdrawal loads shown are in pounds (lb.) and are based on the entire threaded section installed into the main member. If thread penetration into the main member is less than the Thread Length as shown in the table for DF/SP, reduce allowable load by 172 lb./in. of thread not in main member. Use 121 lb./in. for SPF/HF.

6. Fasteners per Carton represent the quantity of screws that are available in bulk packaging. Screws are also available in mini bulk and retail packs. Refer to Simpson Strong-Tie® *Fastening Systems* catalog (C-F-2017) at strongtie.com.
7. LSL wood-to-wood applications that require 4 1/2", 5", 6" or 8" SDS Heavy-Duty Connector screws are limited to interior-dry use only.
8. Where predrilling is required for Strong-Drive® SDS Heavy-Duty Connector screws, predrill diameter is 5/32".
9. Minimum spacing, edge, and end spacing distance requirements are listed in ICC-ES ESR-2236. For smaller spacing, please contact Simpson Strong-Tie Engineering.

Strong-Drive® SDS / Strong-Drive® SDWS

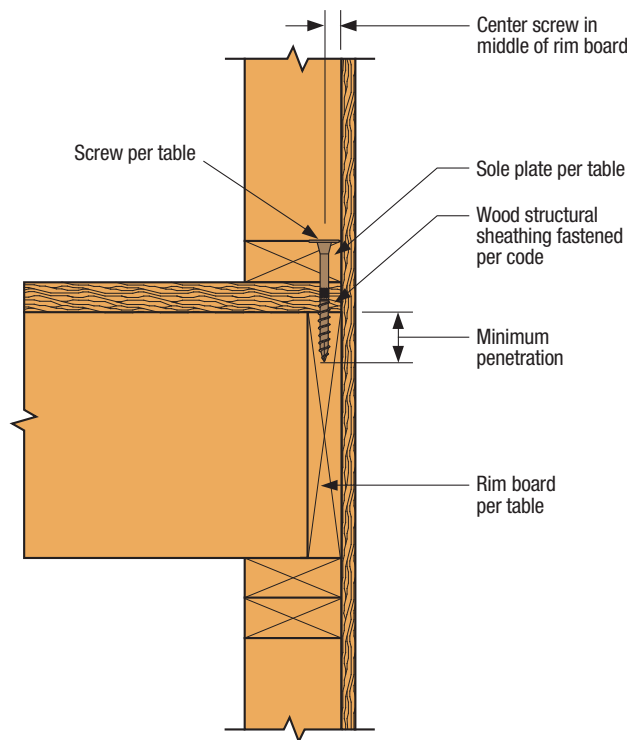
Heavy-Duty Connector Screw / Timber Screw

These products are available with additional corrosion protection. For more information, see p. 18.

Strong-Drive® SDS and SDWS — Allowable Shear Values for Sole-to-Rim Connections

Size (in.)	Model No.	Sole Plate Nominal Size	Minimum Penetration into Rim Board (in.)	Allowable Loads (lb.)							
				2x DF/SP Rim Board		2x SPF/HF Rim Board		1 1/4" Min. LVL Rim Board		1 1/4" Min. LSL Rim Board	
				DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate	DF/SP Sole Plate	SPF/HF Sole Plate
1/4 x 4 1/2	SDS25412	2x	2	250	190	190	190	190	190	220	190
1/4 x 5	SDS25500	2x	2	250	190	190	190	190	190	220	190
1/4 x 6	SDS25600	2x or 3x	2	250	190	190	190	190	190	220	190
0.220 x 4	SDWS22400DB	2x	1 3/4	345	295	295	295	275	275	275	275
0.220 x 5	SDWS22500DB	2x	2	345	295	295	295	275	275	275	275
0.220 x 6	SDWS22600DB	2x or 3x	2	345	295	295	295	275	275	275	275

1. Allowable loads are based on testing per ICC-ES AC233 and are limited to parallel-to-grain loading.
2. Allowable loads are shown at the wood load duration factor of $C_D = 1.00$. Loads may be increased for load duration by the building code up to a $C_D = 1.60$.
3. Minimum spacing of the SDWS is 6" o.c., minimum end distance is 6", and minimum edge distance is 5/8".
4. Minimum spacing of the SDS for solid sawn applications is 3" o.c., minimum end distance is 3", and minimum edge distance is 5/8".
5. Minimum spacing of the SDS for LVL and LSL applications is 6" o.c., minimum end distance is 6" o.c., and minimum edge distance is 5/8".
6. Wood structural panel up to 1 1/8" thick (3/32" for SDWS22400DB) is permitted between the sole plate and rim board provided it is fastened to the rim board per code and the minimum penetration of the screw into the rim board is met.
7. A double 2x sole plate is permitted provided it is independently fastened per the code and the minimum screw penetration per the table is met.
8. Additional sole-to-rim fasteners are available. See engineering letter L-F-SOLRMSCRW at strongtie.com.



Strong-Drive® SDWS Timber Screw
Sole-to-Rim Connection
(SDS similar)

Strong-Drive® SDW

Truss-Ply and EWP-Ply Screws

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

- Low-profile head for reduced interference during handling or installation of hardware on the assembly
- High shear values enable wider screw spacing
- Bold thread design firmly cinches plies together to close gaps in multi-ply assemblies
- Optimal screw lengths provide maximum penetration

Material: Heat-treated carbon steel

Finish: Black E-coat™

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

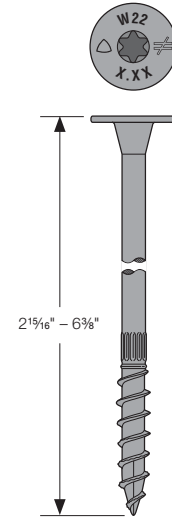
Warning: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, the Strong-Drive SDW Truss-Ply and EWP-Ply screws should only be used in dry, interior and non-corrosive environments.

Installation:

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

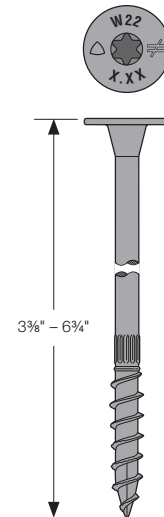
Notes to the Designer:

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



Strong-Drive® SDW Truss-Ply Screw

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



Strong-Drive® SDW EWP-Ply Screw

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



T-40 Driver Bit
(Included)
BIT40-R1

Strong-Drive® SDW

Truss-Ply and EWP-Ply Screws (cont.)

Product Information

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

1. Typical screw application key:

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

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

SCL = 1³/₄" plies of structural-composite lumber.

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

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

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

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

4. If assembly is less than or equal to 4³/₁₆" thick, use the SDW22438.

5. If assembly is less than or equal to 6³/₁₆" thick, use the SDW22600.

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

Assembly	Model No.	Nominal Screw Length (in.)	Thread Length (in.)	Nominal Side Member Thickness (in.)	Main Member Penetration (in.)	DF/SP Allowable Shear	SPF/HF Allowable Shear	Code Ref.
2-ply 2x/Truss	SDW22300	2 ¹ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	1 ³ / ₈ ¹	325	255	IP4, FL, L23
3-ply 2x/Truss desert	SDW22438	4 ³ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	2 ⁷ / ₈	400	325	
3-ply 2x/Truss	SDW22458	4 ⁵ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	2 ⁷ / ₈	400	325	
4-ply 2x/Truss desert	SDW22600	6	1 ⁷ / ₁₆	1 ¹ / ₂	4 ¹ / ₂	400	340	
4-ply 2x/Truss	SDW22638	6 ³ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	4 ¹ / ₂	400	340	

1. For minimum penetration into main member of 1³/₈", use 235 lb. for DF/SP and 210 lb. for SPF/HF.

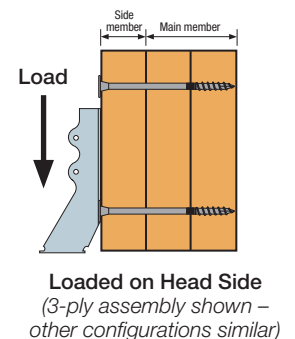
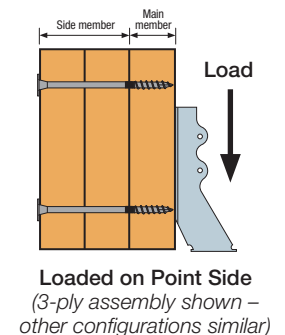


Table 2 – Strong-Drive® SDW Truss-Ply and EWP-Ply Screws Allowable Shear Loads – DF, SP, SPF, HF Lumber and 2x Truss Loaded on Point Side

Assembly	Model No.	Nominal Screw Length (in.)	Thread Length (in.)	Nominal Side Member Thickness (in.)	Main Member Penetration (in.)	DF/SP Allowable Shear	SPF/HF Allowable Shear	Code Ref.
2-ply 2x/Truss	SDW22300	2 ¹ / ₁₆	1 ⁷ / ₁₆	1 ¹ / ₂	1 ³ / ₈ ¹	325	255	IP4, FL
3-ply 2x/Truss desert	SDW22438	4 ³ / ₁₆	1 ⁷ / ₁₆	3	1 ³ / ₈ ¹	275	255	
3-ply 2x/Truss	SDW22458	4 ⁵ / ₁₆	1 ⁷ / ₁₆	3	1 ³ / ₈ ¹	275	255	
4-ply 2x/Truss desert	SDW22600	6	1 ⁷ / ₁₆	4 ¹ / ₂	1 ³ / ₈ ¹	275	255	
4-ply 2x/Truss	SDW22638	6 ³ / ₁₆	1 ⁷ / ₁₆	4 ¹ / ₂	1 ³ / ₈ ¹	275	255	

1. For minimum penetration into main member of 1³/₈", use 235 lb. for DF/SP and 210 lb. for SPF/HF.



Strong-Drive® SDW

Fasteners

Truss-Ply and EWP-Ply Screws (cont.)



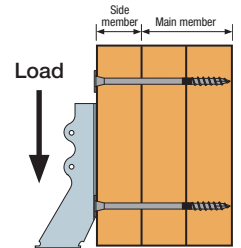
Lumber Fastening in Dry Climates

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

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

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

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

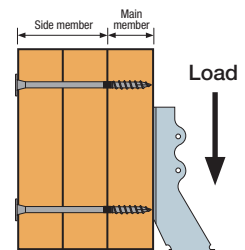


Loaded on Head Side
(3-ply assembly shown – other configurations similar)

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

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

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



Loaded on Point Side
(3-ply assembly shown – other configurations similar)

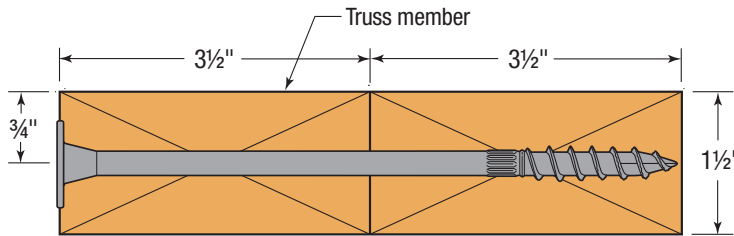
Strong-Drive® SDW

Truss-Ply and EWP-Ply Screws (cont.)

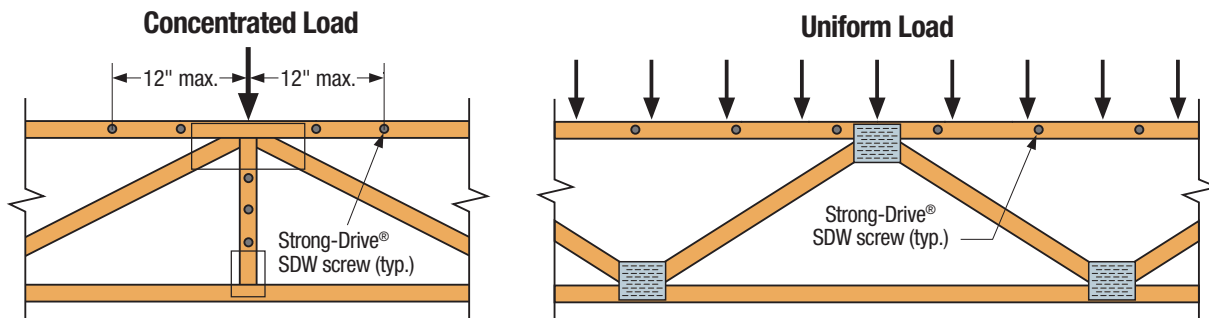
Table 5 – Strong-Drive® SDW Truss-Ply and EWP-Ply Screws Allowable Shear Loads – Two-Ply 3x2/4x2 Parallel-Chord Trusses Loaded on Either Side

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

- To transfer uniform or concentrated loads applied to simply supported spans on assembly top chord:
 - Space screws as required to transfer half the load into the supporting truss.
 - Minimum screw spacing shall be 4" o.c.
- To transfer concentrated loads applied to simply supported spans on an assembly top chord or vertical web:
 - Concentrated loads must be applied at a panel point.
 - Screws to be installed within 12" of the concentrated load on top-chord assembly
- Gap between the trusses shall not exceed ⅛".
- Floor sheathing shall be screwed or nailed to each top-chord ply.
(Fastener spacing per the applicable Code requirements, or 12" o.c.)
- Strong-Drive® SDW screws shall not be installed in areas where lumber wane exceeds ¼".
- Hangers on skewed girders:
 - Hanger loads not exceeding 34" o.c. on a skewed girder (resulting from uniformly spaced joists up to 24" o.c.) may be converted to a uniform load.
 - For girders with hanger load spacing in excess of 34" o.c. the loads shall be considered as concentrated loads at the applicable locations.
- Other configurations acceptable as long as approved by Truss Designer.



Strong-Drive® SDW Screw Position
in 2-Ply 4x2 Truss
(2-ply 3x2 similar)



Strong-Drive® SDW

Truss-Ply and EWP-Ply Screws (cont.)

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

Multiple Members		Nominal Screw Length (in.)	Loaded Side	DF/SP						SPF/HF					
Assembly	Components			12" o.c.		16" o.c.		24" o.c.		12" o.c.		16" o.c.		24" o.c.	
				2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows
A-W	2-ply 2x/Truss	2 7/8	Either	1,300	1,950	975	1,465	650	975	1,020	1,530	765	1,150	510	765
B-W	3-ply 2x/Truss	4 5/8 or 4 3/4	Head	1,200	1,800	900	1,350	600	900	975	1,465	730	1,095	490	730
			Point	825	1,240	620	930	415	620	765	1,150	575	860	385	575
C-W	4-ply 2x/Truss	6 or 6 3/4	Head	1,065	1,600	800	1,200	535	800	905	1,360	680	1,020	455	680
			Point	735	1,100	550	825	365	550	680	1,020	510	765	340	510

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

3. When hangers are installed on point side, hanger face fasteners must be a minimum of 3" long.
4. Tables are based on Main Member Penetration as noted in Tables 1 and 2.
5. Hanger load spacing on the multi-ply assembly should not exceed 24" o.c. Exception: On a skewed girder, hanger loads up to 34" o.c. (resulting from joists uniformly spaced up to 24" o.c.) may be converted to a uniform load.

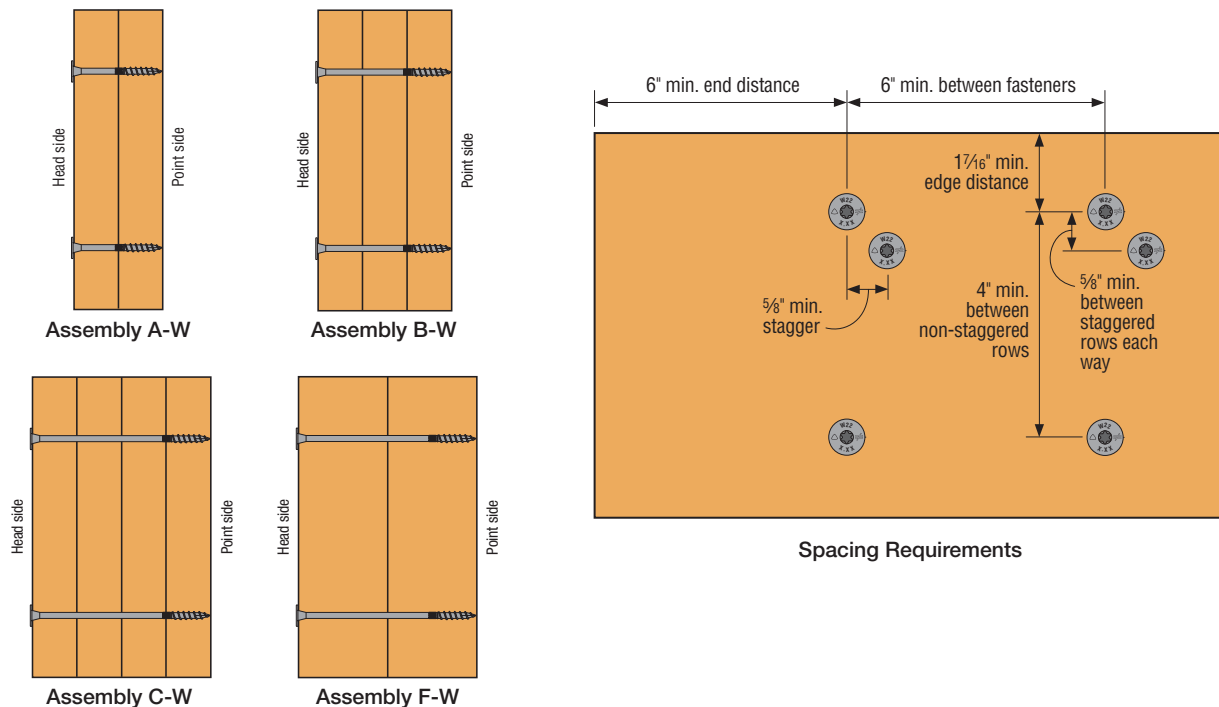


Table 7 – Strong-Drive® SDW EWP-Ply Screws Allowable Uniform Load Applied to Either Outside Member – Side-Loaded Multi-Ply LVL, PSL and LSL Assemblies

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

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

3. When hangers are installed on point side, hanger face fasteners must be a minimum of 3" long.
4. Tables are based on Main Member Penetration as noted in single-fastener load tables 3 and 4.

Strong-Drive® SD

Connector Screw

Simpson Strong-Tie offers the Strong-Drive® SD Connector screw for use with our connectors. Designed to replace nails in certain products, the load-rated Strong-Drive SD Connector screw has been tested and approved for use in many popular Simpson Strong-Tie® connectors. In certain applications screws are easier and more convenient to install than nails, and the single-fastener load values achieved by the SD9 and SD10 exceed those of typical 10d common or 16d common nails, respectively. In addition, the galvanized coating makes the Strong-Drive® SD Connector screw ideal for interior and most exterior conditions.

The Strong-Drive® SD Connector screw features an optimized shank, specifically designed for capability with the fastener holes in Simpson Strong-Tie connectors. The hex head virtually eliminates cam-out and helps avoid stripping of the head during installation. The sharp point of the screw enables fast starts, and the patented serrated threads reduce torque for improved drivability.

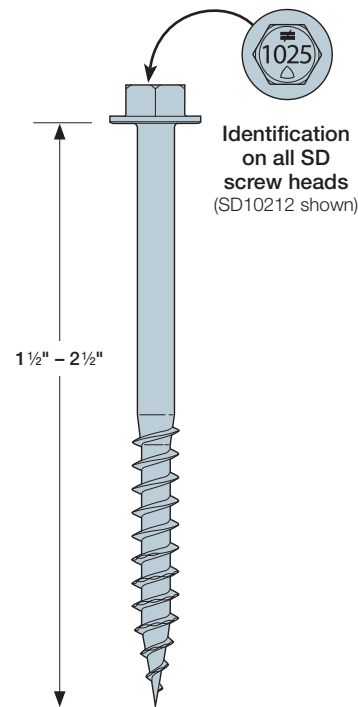
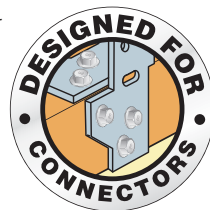
Features:

- Tested and approved for use in many of our best-selling connectors for interior and most exterior applications.
- The single-fastener steel-side-plate load capacity of the SD9 exceeds the capacity of a 10d common nail, while the single-fastener load capacity of the SD10 exceeds that of the 16d common nail.
- Ideal for use in tight spaces where using a hammer is inconvenient.
- Optimized heat-treating for ductility and strength.
- Mechanically galvanized coating meets ASTM B695 Class 55, is recommended for use with certain preservative-treated woods and recognized as an alternate to hot-dip galvanized in ESR-3046. It is compliant with the **2009, 2012 and 2015** International Residential Code® (Section R317.3.1).
- ¼" hex drive included. **Model no. Hex DBHEX.**
- Head identification.

Material: Heat-treated carbon steel

Finish: Mechanically galvanized (ASTM Class 55)

Codes: See p. 14 for Code Reference Key Chart



**Strong-Drive® SD10
CONNECTOR Screw**
(SD9 similar)
U.S. Patent 7,101,133



See pp. 41–43 for a list of connectors with the Strong-Drive® SD Connector screw.

You can also reference the list of approved connectors, load values and applications at strongtie.com/sd, or reference the ICC-ES evaluation report ESR-3096 for a list of connectors and allowable loads using the Strong-Drive® SD Connector screws.

Strong-Drive® SD

Connector Screw (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Product Information

Model No.	Quantity	Shank Size ga. (in.)	Length (in.)
SD9112R100	100	#9 (0.131")	1½
SD9112R500	500		
SD9112MB	3,000		
SD9212R100	100		2½
SD9212R500	500		
SD9212MB	2,000		
SD10112R100	100	#10 (0.161")	1½
SD10112R500	500		
SD10112MB	3,000		
SD10212R100	100		2½
SD10212R500	500		
SD10212MB	2,000		

Size (ga. x in.)	Model No.	Thread Length (in.)	DF/SP Allowable Loads (100)		SPF/HF Allowable Loads (100)		Code Ref.
			Shear	Withdrawal	Shear	Withdrawal	
			Steel Side Plate		Steel Side Plate		
			20 ga. – 12 ga.		20 ga. – 12 ga.		
#9 x 1½"	SD9112	1	171	173	112	122	I24, I27, FL, L5, L24
#9 x 2½"	SD9212	1	200		112		
#10 x 1½"	SD10112	1	173	173	138	122	
#10 x 2½"	SD10212	1	215		165		

- Withdrawal loads and steel-side-plate shear loads are based on testing per AC233.
- Allowable loads are shown at the wood load duration factor of $C_D = 1.00$.
Loads may be increased for load duration per the building code up to a $C_D = 1.60$.
- Withdrawal loads are based on the entire threaded section installed into the main member.
- Visit strongtie.com for wood-to-wood shear values and wood-side-plate details.

Strong-Drive® SD

Connector Screw (cont.)

Connectors Approved for Use with the Strong-Drive® SD Structural-Connector Screw

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
A21	(4)	—	—	—
A23	(8)	—	—	—
A33	(8)	—	—	—
A34	(8)	—	—	—
A35	(12)	—	—	—
A44	(8)	—	—	—
ABA44Z	(6)	—	—	—
ABA44RZ	(6)	—	—	—
ABA46Z	—	—	(8)	—
ABA66Z	—	—	(8)	—
ABA66RZ	—	—	(8)	—
ABU44Z	—	—	(12)	—
ABW44Z	(8)	—	—	—
ABW44RZ	(8)	—	—	—
ABW46Z	(10)	—	—	—
ABW46RZ	(10)	—	—	—
ABW66Z	(12)	—	—	—
ABW66RZ	(12)	—	—	—
AC4	—	—	(28)	—
AC6	—	—	(28)	—
BC4	—	—	(12)	—
BC40	—	—	(10)	—
BC60	—	—	(10)	—
BCS2-2/4	—	(14)	—	—
CS/CMST Straps	See p. 27 for straight strap fastener substitutions and reduction factors.			
CTS218	(24)	—	—	—
DJT14Z	—	—	—	(8)
DPT5Z	(5)	—	—	—
DPT7Z	(5)	—	—	—
EPB44	—	—	(8)	—
EPB44PHDG	—	—	(8)	—
EPC4Z	(18)	—	—	—
EPC6Z	(18)	—	—	—
EPC8Z	(18)	—	—	—
FB24Z	(5)	—	—	—
FB24R	(5)	—	—	—
FB26	(6)	—	—	—
FBFZ	(4)	—	—	—
FBR24Z	(5)	—	—	—
FPBM44	(8)	—	—	—
FWH2	(16)	—	—	—
GA1	(4)	—	—	—
GA2	(6)	—	—	—
H1	(10)	—	—	—
H2.5	(10)	—	—	—
H2.5A	(10)	—	—	—
H4	(8)	—	—	—
H8	(10)	—	—	—
H10A	(18)	—	—	—
H10A-2	(18)	—	—	—
HGUS26	—	—	—	(28)
HGUS28	—	—	—	(48)
HGUS26-2	—	—	—	(28)
HGUS28-2	—	—	—	(48)
HGUS210-2	—	—	—	(62)
HGUS26-3	—	—	—	(28)
HGUS28-3	—	—	—	(48)
HGUS210-3	—	—	—	(62)
HGUS212-3	—	—	—	(76)
HGUS214-3	—	—	—	(88)

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
HGUS26-4	—	—	—	(28)
HGUS28-4	—	—	—	(48)
HGUS210-4	—	—	—	(62)
HGUS212-4	—	—	—	(76)
HGUS214-4	—	—	—	(88)
HGUS46	—	—	—	(28)
HGUS48	—	—	—	(48)
HGUS410	—	—	—	(62)
HGUS412	—	—	—	(76)
HGUS414	—	—	—	(88)
HGUS2.75/10	—	—	—	(62)
HGUS2.75/12	—	—	—	(76)
HGUS2.75/14	—	—	—	(88)
HGUS3.25/10	—	—	—	(62)
HGUS3.25/12	—	—	—	(76)
HGUS5.25/10	—	—	—	(62)
HGUS5.25/12	—	—	—	(76)
HGUS5.50/8	—	—	—	(48)
HGUS5.50/10	—	—	—	(62)
HGUS5.50/12	—	—	—	(76)
HGUS5.50/14	—	—	—	(88)
HGUS5.62/10	—	—	—	(62)
HGUS5.62/12	—	—	—	(76)
HGUS5.62/14	—	—	—	(88)
HGUS6.88/10	—	—	—	(62)
HGUS6.88/12	—	—	—	(76)
HGUS6.88/14	—	—	—	(88)
HGUS7.25/8	—	—	—	(48)
HGUS7.25/10	—	—	—	(62)
HGUS7.25/12	—	—	—	(76)
HGUS7.25/14	—	—	—	(88)
HHUS26-2	—	—	—	(20)
HHUS28-2	—	—	—	(30)
HHUS210-2	—	—	—	(40)
HHUS210-3	—	—	—	(40)
HHUS210-4	—	—	—	(40)
HHUS46	—	—	—	(20)
HHUS48	—	—	—	(30)
HHUS410	—	—	—	(40)
HHUS5.50/10	—	—	—	(40)
HHUS7.25/10	—	—	—	(40)
HHRC2-2	—	—	—	(62)
HHRC42-2	—	—	—	(62)
HHRC4/1.81	—	—	—	(62)
HHRC44	—	—	—	(62)
HHRC5.25/3.25	—	—	—	(62)
HHRC5.37/3.12	—	—	—	(62)
HHRC5.37/3.56	—	—	—	(62)
HHRC5.25/3.62	—	—	—	(62)
HHRC64	—	—	—	(67)
HHRC66	—	—	—	(67)
HPTZ	—	—	(8)	—
HRS6	(6)	—	—	—
HRS8	(10)	—	—	—
HRS12	(14)	—	—	—
HTP37Z	(20)	—	—	—
HU Hangers	See p. 27 for face-mount hanger fastener substitutions and reduction factors.			
HSUR/L26-2	—	(16)	—	—
HSUR/L210-2	—	(26)	—	—
HSUR/L214-2	—	(34)	—	—

1. Strong-Drive® SD Connector screw substitutions may have load reductions. For additional information and specific allowable loads, refer to strongtie.com/sd.
2. See p. 27 for face-mount hanger and straight strap fastener substitutions and reduction factors.

Strong-Drive® SD

Connector Screw (cont.)

Connectors Approved for Use with the Strong-Drive® SD Structural-Connector Screw

Fasteners

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
HSUR/L46	—	(16)	—	—
HSUR/L410	—	(26)	—	—
HSUR/L414	—	(34)	—	—
HSUR/L4.12/9	(12)	(2)	—	—
HSUR/L4.12/11	(16)	(2)	—	—
HSUR/L4.12/14	(20)	(2)	—	—
HSUR/L4.12/16	(24)	(2)	—	—
HSUR/L4.28/9	(12)	(2)	—	—
HSUR/L4.28/11	(16)	(2)	—	—
HSUR/L4.28/11	(16)	(2)	—	—
HSUR/L4.75/9	(12)	(2)	—	—
HSUR/L4.75/11	(16)	(2)	—	—
HSUR/L4.75/14	(20)	(2)	—	—
HSUR/L4.75/16	(24)	(2)	—	—
HSUR/L5.12/9	(12)	(2)	—	—
HSUR/L5.12/11	(16)	(2)	—	—
HSUR/L5.12/14	(20)	(2)	—	—
HSUR/L5.12/16	(24)	(2)	—	—
HTT4	—	—	(18)	—
HTT5	—	—	(26)	—
HTU26	(31)	—	—	—
HTU26 (Min.)	(34)	—	—	—
HTU26 (Max.)	(40)	—	—	—
HTU28 (Min.)	(40)	—	—	—
HTU28 (Max.)	(52)	—	—	—
HTU210 (Min.)	(46)	—	—	—
HTU210 (Max.)	(64)	—	—	—
HTU26-2 (Min.)	(34)	—	—	—
HTU26-2 (Max.)	(40)	—	—	—
HTU28-2 (Min.)	(40)	—	—	—
HTU28-2 (Max.)	(52)	—	—	—
HTU210-2 (Min.)	(46)	—	—	—
HTU210-2 (Max.)	(64)	—	—	—
HUS26	—	—	—	(20)
HUS28	—	—	—	(30)
HUS210	—	—	—	(40)
HUS26-2	—	—	—	(8)
HUS28-2	—	—	—	(12)
HUS210-2	—	—	—	(16)
HUS212-2	—	—	—	(20)
HUS46	—	—	—	(8)
HUS48	—	—	—	(12)
HUS410	—	—	—	(16)
HUS412	—	—	—	(20)
HUS1.81/10	—	—	—	(40)
IUS Hangers	See p. 27 for face-mount hanger fastener substitutions and reduction factors.			
KBS1Z	(12)	—	—	—
L30	(4)	—	—	—
L50	(6)	—	—	—
L70	(8)	—	—	—
L90	(10)	—	—	—
LCE4	—	—	(24)	—
LPC4Z	(16)	—	—	—
LRU26Z	—	—	—	(9)
LRU28Z	—	—	—	(10)
LRU210Z	—	—	—	(12)
LRU212Z	—	—	—	(13)
LSCZ	(17)	—	—	—
LSTA9	(8)	—	—	—
LSTA12	(10)	—	—	—
LSTA15	(12)	—	—	—
LSTA18	(14)	—	—	—
LSTA21	(14)	—	—	—
LSTA24	(14)	—	—	—
ST292	—	—	(12)	—
ST2122	—	—	(12)	—
ST2115	—	—	(6)	—
ST2215	—	—	(14)	—
LSTA30	(14)	—	—	—
LSTA36	(14)	—	—	—
LSTI49	(16)	—	—	—
LSTI73	(16)	—	—	—
LTP4	(12)	—	—	—
LU Hangers	See p. 27 for face-mount hanger fastener substitutions and reduction factors.			
LU24 (10d)	(6)	—	—	—
LU26 (10d)	(10)	—	—	—
LU28 (10d)	(10)	—	—	—
LU210 (10d)	—	—	(10)	—
LUC26Z (10d)	(10)	—	—	—
LUC210Z (10d)	(16)	—	—	—
LUS24	(4)	(2)	—	—
LUS26	(4)	(4)	—	—
LUS28	(6)	(4)	—	—
LUS210	(8)	(4)	—	—
LUS36	(4)	(4)	—	—
LUS310	(6)	(4)	—	—
LUS24-2	(4)	(2)	—	—
LUS26-2	(4)	(4)	—	—
LUS28-2	(6)	(4)	—	—
LUS210-2	(8)	(6)	—	—
LUS214-2	(10)	(6)	—	—
LUS26-3	(4)	(4)	—	—
LUS28-3	(6)	(4)	—	—
LUS210-3	(8)	(6)	—	—
LUS44	(4)	(2)	—	—
LUS46	(4)	(4)	—	—
LUS48	(6)	(4)	—	—
LUS410	(8)	(6)	—	—
LUS414	(10)	(6)	—	—
LSU26	(11)	—	—	—
LSSU28	(15)	—	—	—
LSSU210	(7)	(10)	—	—
LSSUI25	(7)	(10)	—	—
LSSUI2.06	(7)	(10)	—	—
LSSU2.1	(7)	(10)	—	—
LSSUI35	(7)	(10)	—	—
LSSUH310	—	(30)	—	—
LSSU210-2	—	(30)	—	—
LSSU410	—	(30)	—	—
LSU4.12	—	(40)	—	—
LSU4.28	—	(40)	—	—
LSU3510-2	—	(40)	—	—
LSU5.12	—	(40)	—	—
LSU26	(11)	—	—	—
LSSU28	(15)	—	—	—
LSSU210	(7)	(10)	—	—
LSSUI25	(7)	(10)	—	—
LSSUI2.06	(7)	(10)	—	—
LSSU2.1	(7)	(10)	—	—
LSSUI35	(7)	(10)	—	—

1. Strong-Drive® SD Connector screw substitutions may have load reductions.

For additional information and specific allowable loads, refer to strongtie.com/sd.

2. See p. 27 for face-mount hanger and straight strap fastener substitutions and reduction factors.

Strong-Drive® SD

Connector Screw (cont.)

Connectors Approved for Use with the Strong-Drive® SD Structural-Connector Screw

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
LSSUH310	—	(30)	—	—
LSSU210-2	—	(30)	—	—
LSSU410	—	(30)	—	—
LSU4.12	—	(40)	—	—
LSU4.28	—	(40)	—	—
LSU3510-2	—	(40)	—	—
LSU5.12	—	(40)	—	—
MIU Hangers	See p. 27 for face-mount hanger fastener substitutions and reduction factors.			
MST27	—	—	(30)	—
MST37	—	—	(40)	—
MST48	—	—	(52)	—
MST60	—	—	(68)	—
MST72	—	—	(70)	—
MSTA12	(12)	—	—	—
MSTA15	(10)	—	—	—
MSTA18	(14)	—	—	—
MSTA21	(14)	—	—	—
MSTA24	(14)	—	—	—
MSTA30	(16)	—	—	—
MSTA36	(16)	—	—	—
MSTA49	(16)	—	—	—
MSTA9	(8)	—	—	—
MSTC28	(36)	—	—	—
MSTC40	(46)	—	—	—
MSTC52	(42)	—	—	—
MSTC66	(44)	—	—	—
MSTC78	(44)	—	—	—
MSTI26	(26)	—	—	—
MSTI36	(36)	—	—	—
MSTI48	(38)	—	—	—
MSTI60	(38)	—	—	—
MSTI72	(60)	—	—	—
MTS12	(14)	—	—	—
MTS16	(14)	—	—	—
MTS20	(14)	—	—	—
NS1	(2)	—	—	—
NS2	(2)	—	—	—
PA51	(10)	—	—	—
PA68	(10)	—	—	—
PBS44A	—	—	(14)	—
PC4Z	(18)	—	—	—
PC6Z	(18)	—	—	—
PC8Z	(18)	—	—	—
PBS44A	—	—	(14)	—
PF24	—	(6)	—	—
PF26	—	(4)	—	—
PSPN58Z	—	—	(4)	—
RR	(8)	—	—	—
RSP4	(8)	—	—	—
RTA12	(16)	—	—	—
RTA2Z	(8)	—	—	—
RTA4	(12)	—	—	—
RTB22	(8)	—	—	—
RTC22Z	(11)	—	—	—
RTC2Z	(12)	—	—	—
RTC42	—	—	(22)	—
RTC44	—	—	(29)	—
RTF2Z	(13)	—	—	—
RTT22Z	(10)	—	—	—
ST9	—	—	(8)	—

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
ST12	—	—	(10)	—
ST18	—	—	(12)	—
ST22	—	—	(12)	—
ST292	—	—	(12)	—
ST2115	—	—	(6)	—
ST2122	—	—	(12)	—
ST2215	—	—	(14)	—
ST6215	—	—	(16)	—
ST6224	—	—	(20)	—
ST6236	—	—	(28)	—
SUR/L24	(8)	—	—	—
SUR/L26	(12)	—	—	—
SUR/L210	(20)	—	—	—
SUR/L214	(24)	—	—	—
SUR/L1.81/9	(14)	—	—	—
SUR/L1.81/11	(18)	—	—	—
SUR/L1.81/14	(22)	—	—	—
SUR/L2.06/9	(16)	—	—	—
SUR/L2.06/11	(18)	—	—	—
SUR/L2.06/14	(20)	—	—	—
SUR/L2.06/14	(20)	—	—	—
SUR/L2.1/9	(16)	—	—	—
SUR/L2.1/11	(18)	—	—	—
SUR/L2.1/14	(20)	—	—	—
SUR/L2.1/14	(20)	—	—	—
SUR/L2.37/9	(16)	—	—	—
SUR/L2.37/11	(18)	—	—	—
SUR/L2.37/14	(20)	—	—	—
SUR/L2.37/14	(20)	—	—	—
SUR/L2.56/9	(16)	—	—	—
SUR/L2.56/11	(18)	—	—	—
SUR/L2.56/14	(20)	—	—	—
SUR/L2.56/14	(20)	—	—	—
SUR/L26-2	(12)	—	—	—
SUR/L210-2	(20)	—	—	—
SUR/L214-2	(26)	—	—	—
SUR/L46	(12)	—	—	—
SUR/L410	(20)	—	—	—
SUR/L414	(26)	—	—	—
THASR/L29	(7)	(12)	—	—
THASR/L29-2	—	(20)	—	—
THASR/L422	—	(20)	—	—
TJC57	(24)	—	—	—
TP15	Varies	—	—	—
TP311	Varies	—	—	—
TP35	Varies	—	—	—
TP37	Varies	—	—	—
TP39	Varies	—	—	—
TP411	Varies	—	—	—
TP45	Varies	—	—	—
TP47	Varies	—	—	—
TP57	Varies	—	—	—
TP49	Varies	—	—	—
TPA37	Varies	—	—	—
TPA39	Varies	—	—	—
TPA57	Varies	—	—	—
U Hangers	See p. 27 for face-mount hanger fastener substitutions and reduction factors.			
VTCR	(7)	—	—	—

1. Strong-Drive® SD Connector screw substitutions may have load reductions. For additional information and specific allowable loads, refer to strongtie.com/sd.
2. See p. 27 for face-mount hanger and straight strap fastener substitutions and reduction factors.

Concrete Connectors and Anchors



URFP/FRFP

Retrofit Foundation Plates

The URFP universal retrofit foundation plate is the new, improved version of the UFP, offering increased load while maintaining the same adjustability during installation. Ideal where there is minimum vertical clearance, the URFP provides a retrofit method to secure the mudsill to the foundation. This new design allows installation flexibility when the mudsill is offset or inset from the foundation edge. With its combination of longitudinal embossments, stiffening darts and scalloped slotted holes, the URFP allows for a one-for-one replacement of 1/2" or 5/8" mudsill anchors as well as fixity to both the SDS screws and required concrete anchorage.

The next generation FRFP flat retrofit foundation plate connects the mudsill to the foundation and provides lateral load resistance. This new design allows the Designer to maintain the same prescriptive requirements when filling the original three holes, or as an alternate, fill the newly added two optional triangle holes and Designers can utilize increased loads and greater allowable spacing.

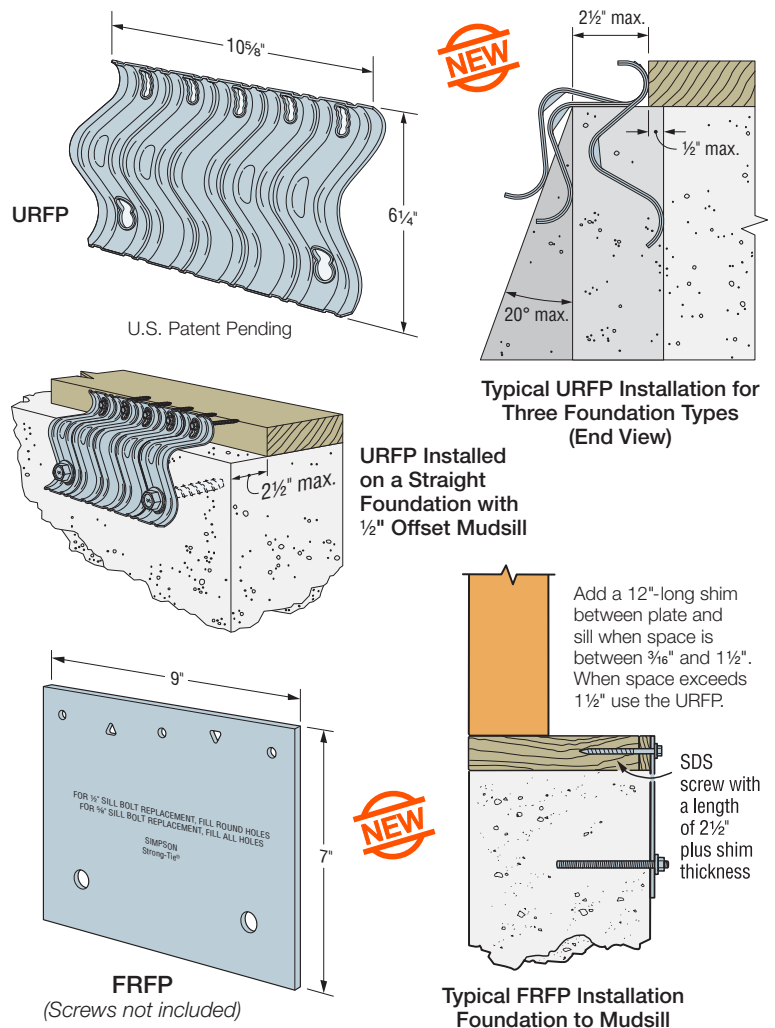
Material: URFP — 14 gauge; FRFP — 7 gauge

Finish: Galvanized. May be ordered HDG; contact Simpson Strong-Tie. See Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes.
- Loads are based on test results using Simpson Strong-Tie® Strong-Drive® 1/4" x 3" SDS Heavy-Duty Connector screws, which are supplied with the URFP.
- For URFP, alternate lag screws will not achieve published loads.
- FRFP shall use a minimum Strong-Drive SDS Heavy-Duty Connector screw length of 2 1/2" plus the shim thickness. FRFP may be installed with 1/4" HDG lag screws. Follow code requirements for predrilling.

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Fasteners			Allowable Loads DF/SP (160)		Code Ref.
	Anchor Bolt Qty.	Anchor Bolt Dia.	Sill Plate	F ₁	F ₂	
URFP	2	1/2"	(5) 1/4" x 3" SDS	1,530	—	120
FRFP	2	1/2"	(3) 1/4" x 2 1/2" SDS + shim thickness	1,065	365	
	2	1/2"	(5) 1/4" x 2 1/2" SDS + shim thickness	1,810	365	

1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other load durations apply.
2. Each anchor bolt requires a standard-cut washer. The Simpson Strong-Tie Titen HD® heavy-duty screw anchor does not require a washer.
3. Nominal embedment depth for post-installed anchors must be a minimum of 4" and is for use with SET-XP® or AT-XP® structural anchoring adhesives or Titen HD screw anchors.
4. For redwood mudsills, reduce F₁ on FRFP to 820 lb. (1,395 lb. for five screws) and on URFP 10 1,180 lb.
5. For installation on SPF/HF sill plates, use 0.86 x DF/SF allowable load.
6. For additional retrofit information see flier F-SEISRETRGD at strongtie.com.

Prescriptive Spacing for URFP and FRFP to Replace Sill Anchor Bolts

Number of Building Stories	Anchor Bolt Size	Anchor Bolt Spacing	Retrofit Foundation Anchor Model		
			URFP	FRFP with Three Fasteners	FRFP with Five Fasteners
One story	1/2" dia.	6' o.c.	6'	6'	6'
	5/8" dia.	6' o.c.	6'	4'-3" ³	6'
Two stories	1/2" dia.	4' o.c.	4'	4'	4'
	5/8" dia.	6' o.c.	6'	4'-3" ³	6'
Three stories	5/8" dia.	4' o.c.	4'	2'-10" ³	4'

1. 'Prescriptive' denotes spacing requirements per the IBC and designs per the IRC and conventional provisions of the IBC.
2. For design in accordance with the IBC Chapter A3, the URFP may be used as a one-for-one replacement for the alternate connections shown in Figures A3-4A, A3-4B, and A3-4C.
3. FRFP with five Strong-Drive® SDSs may be used as a one-for-one replacement for 5/8" anchor bolts.
4. Spacing is based on the parallel to plate load direction.
5. 5/8" anchor bolt required for Seismic Design Category E.

FJA/FSA

Foundation Anchors

The FJA foundation joist anchor nails or bolts directly into floor joists, providing a direct connection between the foundation and joist to resist uplift and lateral forces.

The FSA foundation stud anchor nails or bolts to floor joists, or nails to the stud. Plywood sheathing may require notching with stud-to-foundation installation.

Material: 12 gauge

Finish: Galvanized. May be ordered HDG; contact Simpson Strong-Tie. See Corrosion Information, pp. 15–18.

Installation:

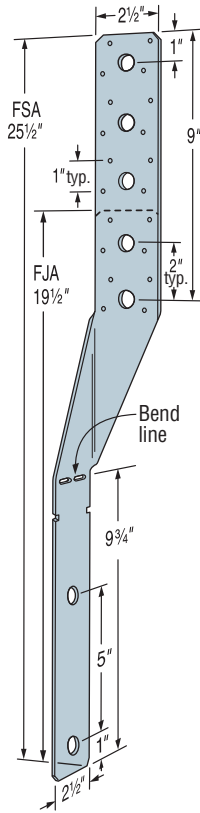
- Use all specified fasteners; see General Notes.
- FJA and FSA may be bent along bend line up to 20° to accommodate installation. Bend one time only.

Codes: See p. 14 for Code Reference Key Chart

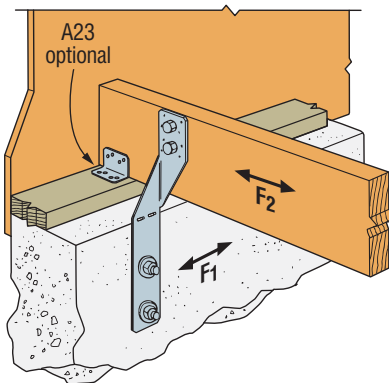
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Fasteners		Stud / Joist / Plate	Allowable Loads DF/SP			Code Ref.
	Anchor Bolt			(160)			
	Qty.	Dia.	Uplift	F ₁	F ₂		
FJA	2	1/2"	(8) 10d x 1 1/2"	1,205	185	60	I20, L10, FL
			(2) 1/2" MB	690	185	60	
FSA	2	1/2"	(8) 10d x 1 1/2"	1,205	—	—	
			(2) 1/2" MB	690	—	—	

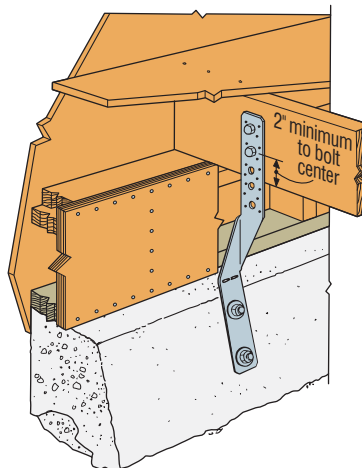
1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other load durations govern.
2. Spacing to be specified by the Designer.
3. For additional retrofit information, see flier F-C-SEISRETRGD at strongtie.com.
4. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.



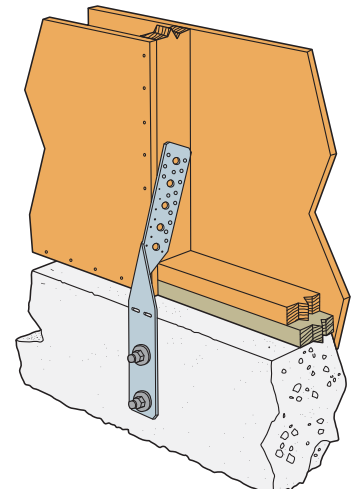
FJA/FSA



Typical FJA Installation
Foundation to Joist



Typical FSA Installation
Foundation to Joist



Typical FSA Installation
Foundation to Stud

WT

Wedge Form Tie

The wedge tie (WT) is a form tie that secures concrete forms in place while the concrete is poured. It easily installs between form boards and accurately spaces the forms. Several models are available for varying wall thickness and types of form boards.

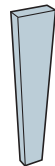
Designed for low foundation wall applications. 5/8"-wide formed "V" design for rigidity allows accurate form spacing and support. Sizes now available for composite form board.

Material: W1 – 14 gauge; WT – 18 gauge

Finish: Galvanized

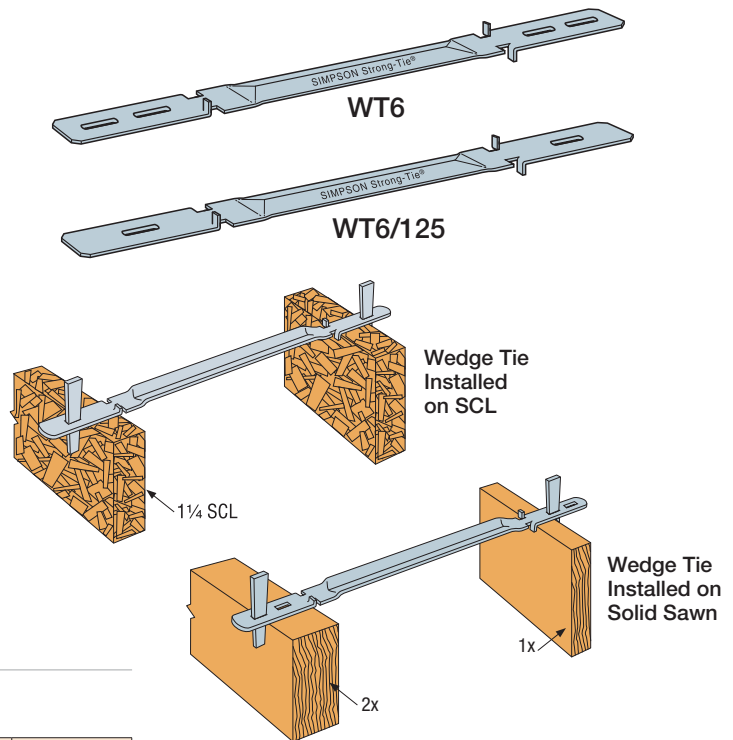
Installation:

- Two **W1** wedges **required** for each tie
- Not recommended for wall pours greater than 4' high
- Wall thickness from 6" to 12"



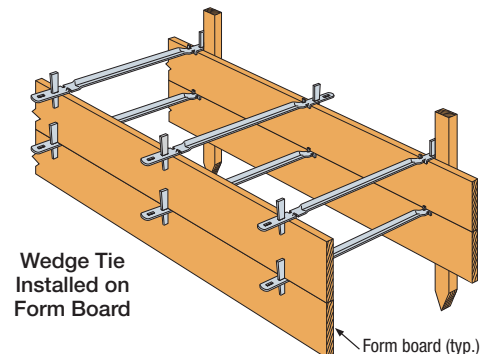
Order wedges separately. Specify W1.

The spacing of the WTs along the length of the form depends on the depth of the WT in the form. The spacing does not depend on the thickness of the wall. The maximum recommended spacing for WTs used with 1x, 2x and 1 1/4" thick forms is outlined in the tables below. The tables give spacing guidelines for various form heights and types of form boards. In general, the higher the form is, the closer the spacing of the WTs should be.



For Solid Sawn

Location (see Fig. 1)	Depth of Form (in.)	1x6	2x6	Depth of Form (in.)	1x8	2x8
		Spacing (in.)	Spacing (in.)		Spacing (in.)	Spacing (in.)
Top of Form	0	27	46	0	25	43
1	5.5	27	46	7.25	25	43
2	11	23	38	14.5	21	36
3	16.5	22	35	21.75	19	32
4	22	19	32	29	18	30
5	27.5	18	31	36.25	17	29
6	33	17	29	43.5	15	26
7	38.5	16	28	—	—	—
8	44	15	27	—	—	—



For Solid Sawn

Location (see Fig. 1)	Depth of Form (in.)	1x10	2x10	Depth of Form (in.)	1x12	2x12
		Spacing (in.)	Spacing (in.)		Spacing (in.)	Spacing (in.)
Top of Form	0	24	40	0	23	38
1	9.25	24	40	11.25	23	38
2	18.5	20	34	22.5	19	32
3	27.75	18	31	33.75	17	22
4	37	17	24	45	15	16
5	46.25	15	19	—	—	—

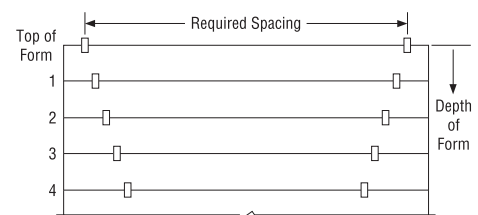


Figure 1 - Spacing Locations

For SCL

Location (see Fig. 1)	Depth of Form (in.)	1 1/4" x 9 1/2"	Depth of Form (in.)	1 1/4" x 11 7/8"	Depth of Form (in.)	1 1/4" x 14"	Depth of Form (in.)	1 1/4" x 16"
		Spacing (in.)	Spacing (in.)	Spacing (in.)	Spacing (in.)	Spacing (in.)	Spacing (in.)	
Top of Form	0	34	0	32	0	30	0	29
1	9.25	34	11.875	32	14	30	16	29
2	19	28	23.75	27	28	21	32	16
3	28.5	26	35.625	20	42	14	48	11
4	38	23	47.5	15	—	—	—	—
5	47.5	18	—	—	—	—	—	—

Model No.		Wall Thickness (in.)
Solid Sawn	SCL	
WT6	WT6/125	6
WT8	WT8/125	8
WT10	—	10
WT12	—	12

Note: Form board design by others.

MASA/MASAP

Mudsill Anchors



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.

Mudsill anchors have always been a time-saving alternative to anchor bolts, and the MASA anchors provide even greater load-carrying capacity alternative for 5/8" and 1/2" mudsill anchor bolts on 2x, double-2x and 3x mudsills. It also eliminates the need for 3" square plate washers for seismic design and, in some cases, has load capacities that meet or exceed the parallel- and perpendicular-to-plate shear capacity of other cast-in-place anchors. Two versions of the MASA are available – the standard MASA for installation on standard forms and the MASAP for panelized forms.

The MASA and MASAP are code listed by ICC-ES under the 2012 and 2015 IBC® and IRC®.

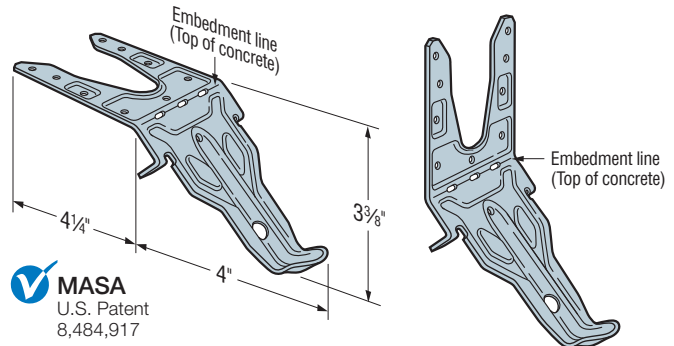
Material: 16 gauge

Finish: Galvanized, all available in ZMAX® coating; see Corrosion Information, pp. 15–18

Installation:

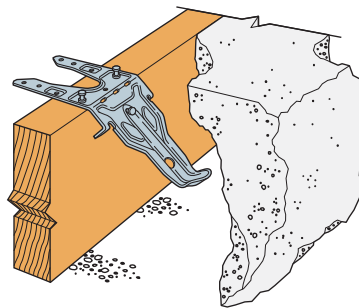
- Use all specified fasteners; see General Notes.
- **MASA/MASAP**
 - Concrete shall have a minimum $f'_c = 2,500$ psi.
 - Spalling — Full loads apply for spalls up to a maximum height of 1 1/4" and a maximum depth of 7/8". Any exposed portion of the mudsill anchor must be protected against possible corrosion.
 - For prescriptive anchor spacing refer to table below.
 - Testing shows that these mudsill anchors can be used in lieu of code-required anchor bolts and square washer in high seismic zones. Refer to flier F-C-MASA at strongtie.com for additional information.
 - Minimum MASA end distance is 4" and minimum center-to-center spacing is 8" for full load.
 - For continuous load path, MASA should be installed on the same side of wall as uplift connectors.
 - For installation in severe corrosion environments, refer to strongtie.com/cipcorrosion for additional considerations.

Codes: See p. 14 for Code Reference Key Chart

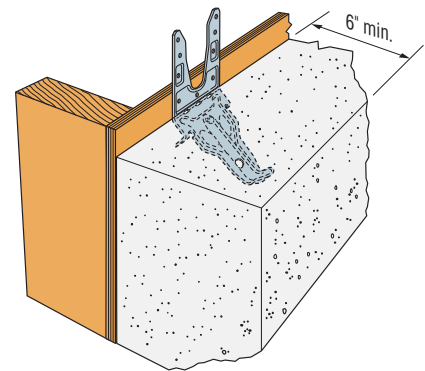


MASA
U.S. Patent
8,484,917

MASAP
U.S. Patent
D656,391S



Typical MASA Installation in Concrete

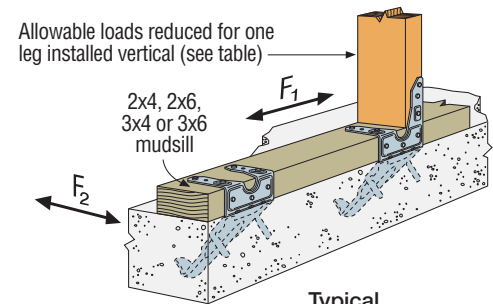


Typical MASAP Installation in Concrete

Prescriptive Spacing for MASA/MASAP to Replace Sill Anchor Bolts

Model No.	Anchor Bolt Size to Replace	Anchor Bolt Spacing to Replace	MASA/MASAP Spacing			
			DF/SP 2x Sill Plate		HF 2x Sill Plate	
			Wind and SDC A&B	SDC C-E	Wind and SDC A&B	SDC C-E
MASA MASAP	1/2" diameter	6' o.c.	6'-0"	6'-0"	6'-0"	6'-0"
		4' o.c.	4'-0"	4'-0"	4'-0"	4'-0"
MASA MASAP	5/8" diameter	6' o.c.	5'-7"	4'-7"	5'-4"	4'-4"
		4' o.c.	3'-9"	3'-1"	3'-6"	2'-11"

1. "Prescriptive" denotes designs per the IRC or conventional provisions of the IBC for wind speeds 100 mph or less, or for Seismic Design Category D and less (SDC E and less in IBC).
2. Detached one- and two-family dwellings in SDC C may use the "Wind and SDC A&B" spacing.
3. Spacing is based on the parallel to plate load direction for MASA Standard installation only.
4. 5/8"-diameter AB required in SDC E.
5. When replacing 1/2"-diameter sill bolts use (7) 10d x 1 1/2" nails for standard installation. One out of three MASAs (33%) may be installed in One-Leg-Up installation along a wall line.
6. When replacing 5/8"-diameter sill bolts use (9) 10d x 1 1/2" nails for standard installation. One out of five MASAs (20%) may be installed in One-Leg-Up installation along a wall line.
7. Per Section 1613 of the 2012/2015 IBC, detached one- and two-family dwellings in SDC C may use the "Wind and SDC A&B" spacing.



Typical MASA/MASAP Installation on Sill Plate

MASA/MASAP

Mudsill Anchors (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Sill Size	Fasteners		Allowable Loads												Code Ref.
		Sides	Top	Non-Cracked						Cracked						
				Wind and SDC A&B ^{5,6}			SDC C-F ⁶			Wind and SDC A&B ^{5,6}			SDC C-F ⁶			
Uplift	F ₁	F ₂	Uplift	F ₁	F ₂	Uplift	F ₁	F ₂	Uplift	F ₁	F ₂	Uplift	F ₁	F ₂		
Standard Installation – Attached to DF/SP Sill Plate																
MASA or MASAP	2x4, x6, x8, x10	(3) 10d x 1 1/2"	(6) 10d x 1 1/2"	920	1,515	1,095	745	1,235	1,045	785	1,515	910	660	1,235	765	I22, L22, FL
	3x4, 3x6	(5) 10d x 1 1/2"	(4) 10d x 1 1/2"	650	1,215	725	550	1,020	725	495	1,215	725	415	1,020	640	
One-Leg-Up Installation – Attached to DF/SP Sill Plate																
MASA or MASAP	2x4, x6, x8, x10	(6) 10d x 1 1/2"	(3) 10d x 1 1/2"	785	1,005	995	660	845	995	595	1,005	965	500	845	810	I22, L22, FL
	3x4, 3x6	(7) 10d x 1 1/2"	(2) 10d x 1 1/2"	—	815	—	—	685	—	—	815	—	—	685	—	
Two-Legs-Up Installation – Attached to DF/SP Sill Plate and Rimboard																
MASA or MASAP	2x4, x6, x8, x10	(9) 10d x 1 1/2"	—	810	1,150	900	740	965	755	665	1,150	660	560	965	550	I22, L22, FL
Double 2x Installation – Attached to DF/SP Sill Plate																
MASA or MASAP	Double 2x4, Double 2x6	(5) 10d x 1 1/2"	(2) 10d x 1 1/2"	875	1,075	785	735	900	785	660	1,075	785	555	900	785	I22, L22, FL
Standard Installation – Attached to Hem Fir Sill Plate																
MASA or MASAP	2x4, x6, x8, x10	(3) 10d x 1 1/2"	(6) 10d x 1 1/2"	790	1,305	940	640	1,060	900	675	1,305	785	570	1,060	660	170
	3x4, 3x6	(5) 10d x 1 1/2"	(4) 10d x 1 1/2"	560	1,045	625	475	875	625	425	1,045	625	355	875	550	
One-Leg-Up Installation – Attached to Hem Fir Sill Plate and HF/SPF Stud																
MASA or MASAP	2x4, x6, x8, x10	(6) 10d x 1 1/2"	(3) 10d x 1 1/2"	675	865	855	565	725	855	510	865	830	430	725	695	170
	3x4, 3x6	(7) 10d x 1 1/2"	(2) 10d x 1 1/2"	—	700	—	—	590	—	—	700	—	—	590	—	
Two-Legs-Up Installation – Hem Fir Sill Plate and HF/SPF Rimboard																
MASA or MASAP	2x4, x6, x8, x10	(9) 10d x 1 1/2"	—	700	990	775	635	830	650	570	990	565	480	830	475	170
Double 2x Installation – Attached to Hem Fir Sill Plate																
MASA or MASAP	Double 2x4, Double 2x6	(5) 10d x 1 1/2"	(2) 10d x 1 1/2"	750	925	675	630	775	675	660	925	675	555	775	675	170

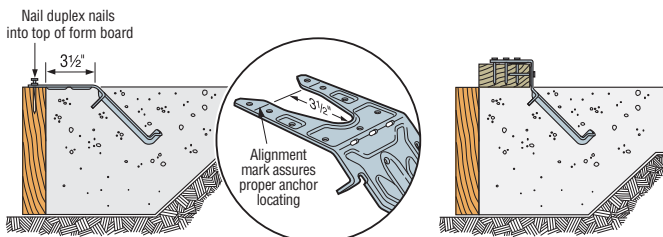
1. Loads are based on allowable stress design (ASD) and include the load duration factor C_D (with C_D = 1.6) for wind/earthquake loading. No further increase is allowed. Reduce where other loads govern.
2. Minimum concrete compression strength, f'_c is 2,500 psi.
3. Allowable loads are based on a minimum stemwall width of 6".
4. For simultaneous loads in more than one direction, the connector must be evaluated using the Unity Equation.

5. Per Section 1613 of the 2012/2015 IBC, detached one- and two-family dwellings in SDC C may use the "Wind and SDC A&B" allowable loads.
6. For designs under the 2012/2015 IBC, sill plate size shall comply with the shearwall requirements of the 2015 Special Design Provisions for Wind and Seismic.
7. MASA/MASAP may be installed using 7-nails when being used to replace a 1/2"-diameter sill bolt for use on a 2x mudsill. Install minimum 3-side fasteners.
8. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

Alternative Mudsill Anchor Installations

Alternate Installation for Inside of Wall Continuity

Full catalog loads apply.

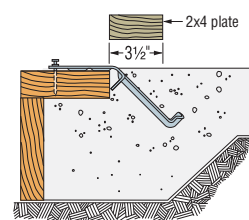


1 Step 1:
Attach MASA 3/2" from inside of form. After concrete cures, remove nails and bend straps up 90°.

2 Step 2:
Place mudsill on concrete and nail MASA over mudsill.

Alternate Installation for Brick Ledges

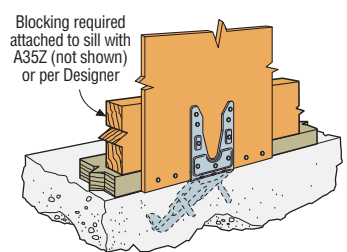
Full catalog loads apply.



Alternate MASA Installation for Brick Ledges

Alternate Installation for Rim Board or Blocking

Full catalog loads apply.



Maximum 1/2" Sheathing

LMAZ/MAB/MASB

Mudsill Anchors

Mudsill anchors provide an alternative to anchor bolts. They easily mount on forms and make finishing easier. The unique design provides installation flexibility, eliminating problems with misplaced anchor bolts. Suitable for stemwall or slab foundations, mudsill anchors are one piece so there are no more nuts and washers to lose.

LMAZ — an economical replacement for ½" sill plate anchor bolts

MAB/MASB — anchors mudsill to concrete block, poured walls or slab foundations

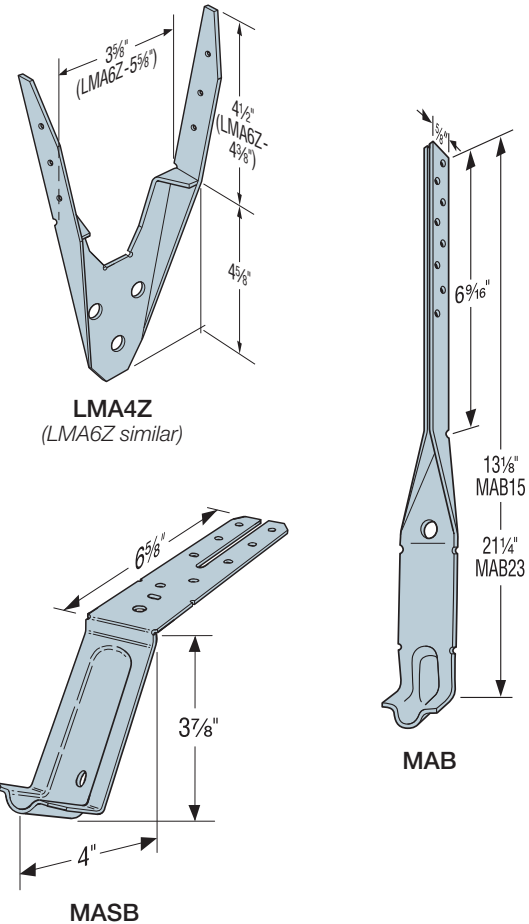
Material: LMAZ, MAB — 18 gauge; MASB — 16 gauge

Finish: MAB, MASB — galvanized (also available in ZMAX® coating); LMAZ — ZMAX only. See Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes.
- **LMAZ/MAB:**
 - CMU shall have a minimum $f'_m = 1,500$ psi and concrete shall have a minimum $f'_c = 2,000$ psi.
 - Not for use where a horizontal cold joint exists between the slab and foundation wall or footing beneath, unless provisions are made to transfer the load.
 - Not for use in slabs poured over foundation walls formed of concrete block or with brick and 4" masonry block stemwalls.
- **MASB**
 - Fill CMU cell with concrete grout first, then place MASB into the grouted cell and adjust into position. Attach mudsill to anchor only after the concrete grout cures.
 - CMU shall have a minimum $f'_m = 1,500$ psi.
 - The MASB mudsill anchors were tested in standard 8" CMU.

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Sill Size	Fasteners		GFCMU and Concrete Allowable Loads ¹ DF/SP (160)			Code Ref.
		Sides	Top	Uplift ²	Parallel to Plate (F ₁)	Perp. to Plate (F ₂)	
MASB (Standard)	2x4, x6	(2) 10d x 1½"	(6) 10d x 1½"	130	860	410	IP7
MASB (One Leg Up)	2x4, x6	(3) 10d x 1½"	(4) 10d x 1½"	—	860	360	
LMA4Z	2x4	(2) 10d x 1½"	(4) 10d x 1½"	905	675	520	170
	3x4	(4) 10d x 1½"	(2) 10d x 1½"	905	675	520	
LMA6Z	2x6	(2) 10d x 1½"	(4) 10d x 1½"	905	825	650	
	3x6	(4) 10d x 1½"	(4) 10d x 1½"	1,110	825	650	
MAB15	2x4, x6, x8, x10, x12	(2) 10d x 1½"	(4) 10d x 1½"	565	670	500	IP7
MAB23	2x4, x6, x8, x10, x12	(2) 10d x 1½"	(4) 10d x 1½"	565	670	500	

1. Loads have been increased for short-term loading.

2. For uplift loads, provide attachment from mudsill to building's structural components to prevent cross-grain bending.

3. LMAZ installed attached to the stud has no load reduction for parallel and perpendicular loads and an uplift of 600 lb. for LMA4 and 835 lb. for LMA6.

4. For concrete stemwall applications, allowable loads are based on a minimum concrete stemwall width of 6".

5. Uplift loads do not apply to MAB installed on 2x8, 2x10, 2x12 sill plates.

6. Nails: 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

LMAZ/MAB/MASB

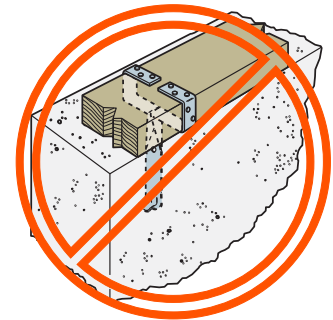
Mudsill Anchors (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

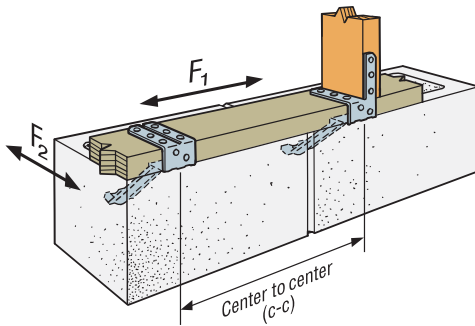
Prescriptive Anchor Spacing

Model No.	O.C. Spacing to Replace 1/2" Anchor Bolt 6" O.C. (160)	O.C. Spacing to Replace 5/8" Anchor Bolt 6" O.C. (160)	Minimum Concrete End Distance	Minimum C-C Spacing
MASB	5'-0"	3'-5"	3 3/4"	7 1/2"
LMA4Z	3'-8"	2'-7"	4 5/8"	9 1/4"
LMA6Z	4'-6"	3'-2"		
MAB15	3'-10"	2'-8"	6 1/2"	13"
MAB23	3'-10"	2'-8"	12"	24"

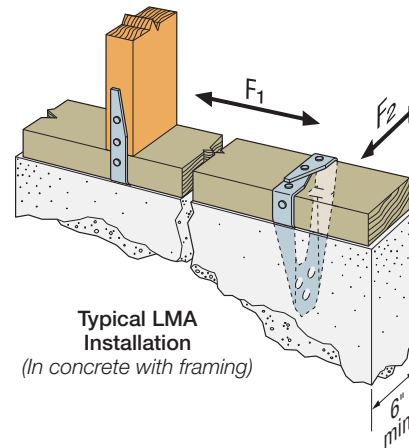
1. "Prescriptive" denotes designs per the IRC or conventional provisions of the IBC for wind speeds 100 mph or less, or for Seismic Design Category D and less (SDC E and less in IBC).
2. Spacing is based on parallel to plate load direction only.
3. Place anchors not more than 12" from the end of sill and splices per code.
4. CMU shall have a minimum $f_m = 1,500$ psi and concrete shall have a minimum $f_c = 2,500$ psi.
5. Spacings apply to DF, SP and HF sill plates.



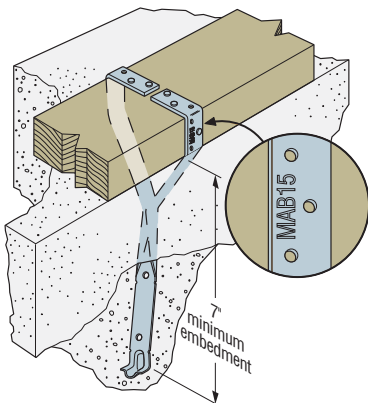
MAB Misinstallation
(MAB straps must be separated before the concrete is poured)



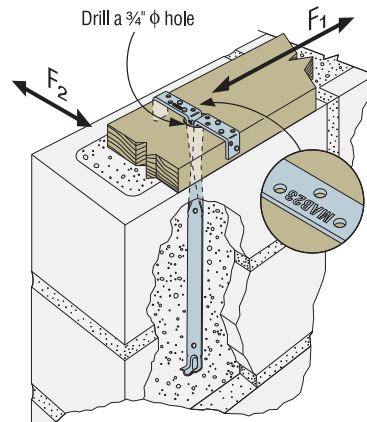
Typical MASB Installation



Typical LMA Installation
(In concrete with framing)



Typical MAB15 Installation in Concrete
(MAB23 similar, with 15" minimum embedment)
Not applicable for concrete-block installation.



Typical MAB23 Installation in Concrete Block
(MAB15 similar)
MAB23 provides a two-block embedment, if required by the local code jurisdiction.
Concrete installation similar.

FWAZ/FWANZ

Foundation Wall Angles

FWA foundation anchors connect the foundation or basement walls to the floor system to resist out-of-plane forces imposed by soil pressure. The FWAZ attaches through the mudsill into the foundation using the Simpson Strong-Tie® Titen HD® heavy-duty screw anchor, eliminating the need for separate anchor bolts into the sill plate. The FWANZ fastens to the mudsill with nails, relying on other anchorage (by Designer) to anchor the sill plate to the foundation. Spacing of the FWA anchors is independent of the joist spacing, allowing for a multitude of options based on soil pressures.

Special Features:

- Compatible with solid sawn joists, I-joists and floor trusses.
- Testing performed on most common rim materials and types.
- Addresses design needs set forth in Section 1610.1 in the IBC and Section R404.1 in the IRC.
- Eliminates the need of costly cantilevered foundation designs.

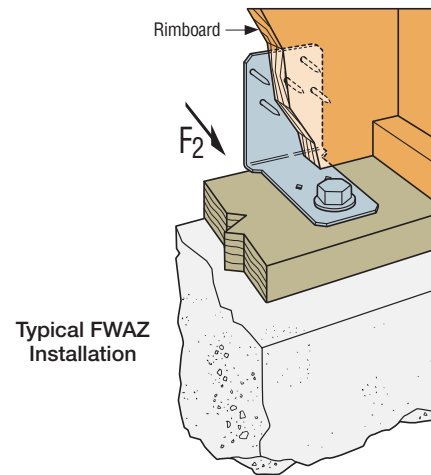
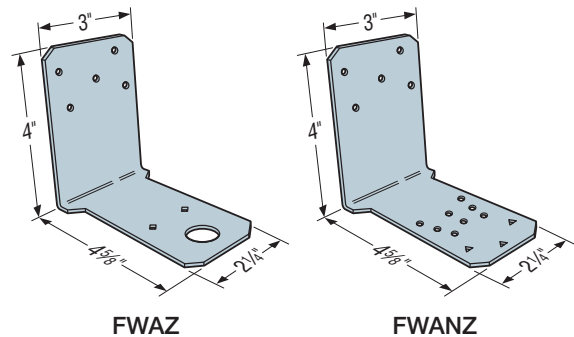
Material: 14 gauge

Finish: ZMAX® coating; see Corrosion Information, pp. 15–18

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

- Connectors must be fastened directly to the outside face of the rim board with (5) 10d x 1½" (0.148" dia. x 1½") long nails.
- Connectors must be located within 4" of adjacent joist/blocking for floor joist spacing up to 48" o.c. and may be centered between joists / blocking for 16" o.c. floor joist spacing.
- When floor joists are parallel to the rim board, full depth blocking shall be used in the first two bays of the floor per 2012/2015 IRC Section R404.1.
- Splice joint not permitted on rim board in same bay unless blocking is placed on both sides of the splice. The maximum sill plate thickness to be used for the FWAZ only shall be 1½".
- FWAZ only—must be anchored to the foundation wall with ⅝" x 6" mechanically galvanized Titen HD heavy-duty screw anchor (included).
- Cast-in-place anchor bolts may not be used as a substitute.
- When I-joist rim material is used, backer blocks must be used. Installed per manufacturer's recommendations.

Codes: See p. 14 for Code Reference Key Chart; refer to IBC 1610.1



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Fasteners		Foundation Wall Thickness	Rim Board Material	Allowable Lateral F ₂ Loads				Code Ref.
	Rim	Concrete			Concrete f _c = 2,500 psi	Concrete f _c = 3,000 psi	Concrete f _c = 4,000 psi	CMU f _m = 1,500 psi	
FWAZ	(5) 10d x 1½"	(1) ⅝" x 6" Titen HD® Anchor (included)	6"	1" OSB rim	705	705	705	—	170
				1¼" I-joist rim	880	880	880		
				1⅝" OSB rim	880	880	880		
				2x rim	880	880	880		
				1¼" LSL rim	880	880	880		
				1¼" LVL rim	880	880	880		
			8"	1" OSB rim	705	705	705	615	
				1¼" I-joist rim	880	1,000	1,000		
				1⅝" OSB rim	880	1,050	1,050		
				2x rim	880	1,055	1,170		
				1¼" LSL rim	880	1,055	1,280		
				1¼" LVL rim	880	1,055	1,280		

1. Lateral (F₂) loads are based on load duration factor C_D = 0.90 with no further increase allowed.
2. FWAZ spacing shall be per Designer.
3. FWAZ must be located within 4" of adjacent joist/blocking for floor joist spacing up to 48" o.c. and may be centered between joists/blocking for 16" o.c. floor joist spacing.
4. Maximum sill plate thickness shall be 1½".
5. The Titen HD® heavy-duty screw anchor used in the FWAZ to resist the out-of-plane (F₂) forces may also be used to resist in-plane shear forces provided the Designer determines the Titen HD heavy-duty screw anchor allowable loads (refer to C-SAS catalog) and evaluates the combined loading condition with the published F₂ loads.
6. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

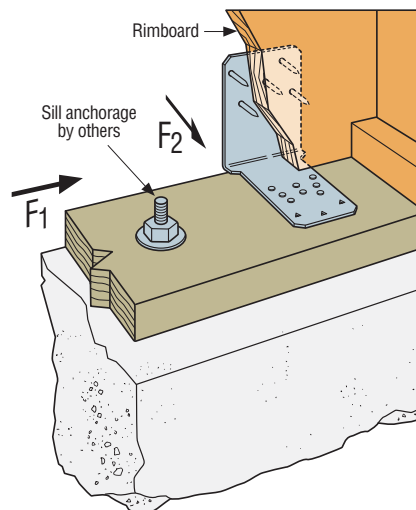
FWAZ/FWANZ

Foundation Wall Angles (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Sill Plate	Fastener (Quantity) Type		Rim Board Material	Allowable F ₂ Load (DF/SP Sill Plate)			Allowable F ₂ Load (HF Sill Plate)			Code Ref.
		Sill Plate	Rim Board		(90) ⁷	(100)	(160)	(90) ⁷	(100)	(160)	
FWANZ	2x4, (2) 2x4, 3x4, 4x4	(8) 10d x 1½"	(5) 10d x 1½"	1" OSB rim	895	895	895	815	895	895	FL, IP1
				1½" OSB rim	945	970	970	815	905	970	
				1¾" I-joist rim	945	1,050	1,275	815	905	1,275	
				1¼" LSL rim	945	1,050	1,315	815	905	1,315	
				2x rim	945	1,050	1,410	815	905	1,345	
				1¾" LVL rim	945	1,050	1,485	815	905	1,345	
	2x6, (2) 2x6, 3x6, 4x6	(11) 10d x 1½"	(5) 10d x 1½"	1" OSB rim	895	895	895	895	895	895	
				1½" OSB rim	1,110	1,110	1,110	1,110	1,110	1,110	
				1¾" I-joist rim	1,135	1,135	1,135	1,120	1,135	1,135	
				1¼" LSL rim	1,220	1,220	1,220	1,120	1,220	1,220	
				2x rim	1,300	1,440	1,445	1,120	1,245	1,445	
				1¾" LVL rim	1,300	1,440	1,645	1,120	1,245	1,645	

- FWANZ may be used to transfer F₁ loads up to 310 lb. No further increase in load permitted.
- For simultaneous F₁ and F₂ loads, the connector must be evaluated using the unity equation (see p. 22).
- Designer shall evaluate rim board and sill plate design based on demand load.
- FWANZ spacing and sill plate anchorage to be specified by the Designer.
- FWANZ must be located within 4" of adjacent joist/blocking for floor joist spacing up to 48" o.c. and may be centered between joists/blocking for 16" o.c. floor joist spacing.
- When floor joists are parallel to the rimboard, Designer must ensure proper load transfer from rimboard into diaphragm.
- Values based on a load duration factor C_D = 0.90.
- Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.



Typical FWANZ Installation

SB

Anchor Bolt



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 SB anchor bolt offers an anchorage solution for our holdowns that call for a 5/8"-diameter, a 7/8"-diameter and a 1"-diameter anchor.

SB anchor bolts are code listed by ICC-ES under the 2012/2015 IBC and IRC.

Features:

- Identification on the bolt head showing embedment angle and model
- Sweep geometry to optimize position in form
- Rolled thread for higher tensile capacity
- Hex nuts and plate washer fixed in position
- Available in HDG for additional corrosion resistance

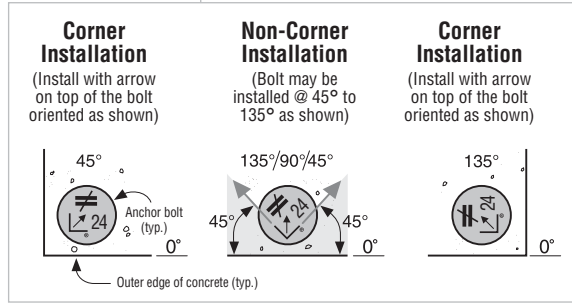
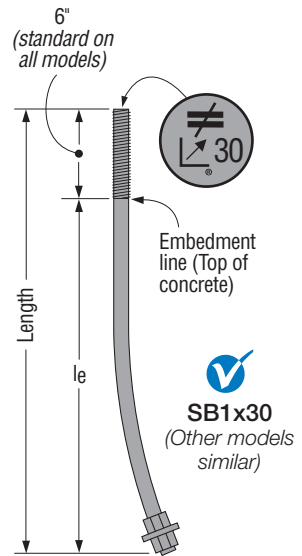
Material: ASTM F-1554, Grade 36

Finish: None. May be ordered HDG; contact Simpson Strong-Tie

Installation:

- SB is only for concrete applications poured monolithically except where noted.
- Top nuts and washers for holdown attachment are not supplied with the SB; install standard nuts, couplers and/or washers as required.
- On HDG SB anchors, chase the threads to use standard nuts or couplers or use overlapped products in accordance with ASTM A563, for example Simpson Strong-Tie® NUT5/8-OST, NUT7/8-OST and NUT1-OST, CNW5/8-OST, CNW7/8-OST and CNW1-OST.
- Install SB before the concrete pour using AnchorMates®. Install the SB per the plan view detail.
- Minimum concrete compressive strength is 2,500 psi.
- When rebar is required it does not need to be tied to the SB.

Codes: See p. 14 for Code Reference Key Chart



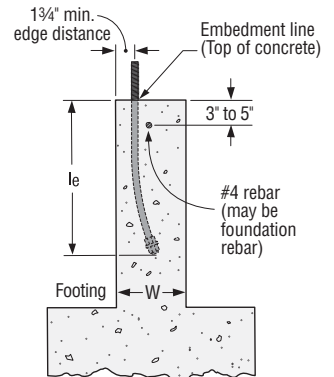
Plan View of SB Placement in Concrete

These products are available with additional corrosion protection. For more information, see p. 18.

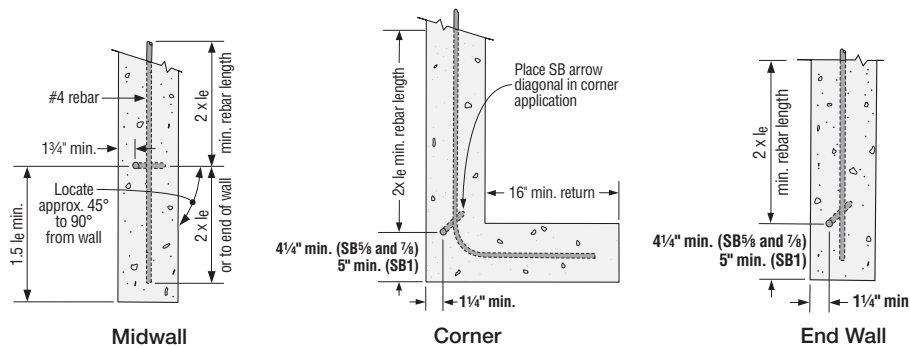
SB Bolts at Stemwall

Model No.	Dimensions (in.)				Allowable Tension Loads						Code Ref.
	Stemwall Width	Dia.	Length	Min. Embed. (le)	Wind and SDC A&B			SDC C-F			
					Midwall	Corner	End Wall	Midwall	Corner	End Wall	
SB5/8x24	6	5/8	24	18	6,675	6,675	6,675	6,675	5,730	5,730	I23, FL, L20
SB7/8x24	8	7/8	24	18	10,470	9,355	6,820	8,795	7,855	5,730	
SB1x30	8	1	30	24	13,665	9,905	7,220	11,470	8,315	6,065	

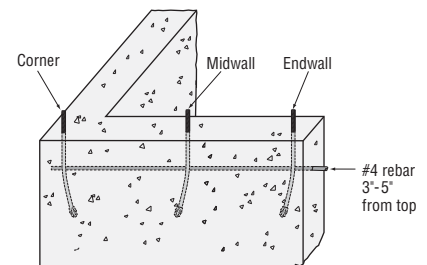
See p. 55 for notes to the Designer.



Typical SB Installation



Stemwall Plan Views



Perspective View

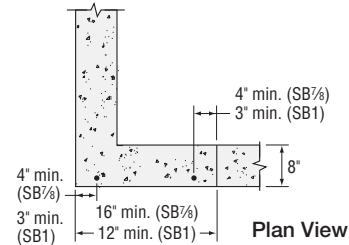
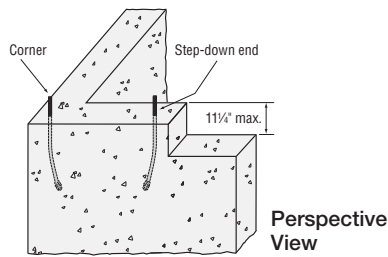
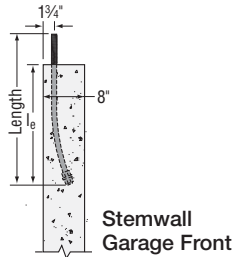
SB

Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

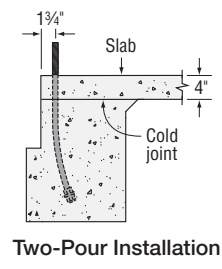
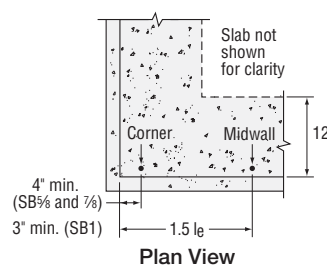
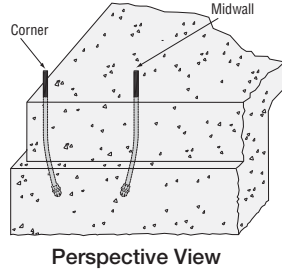
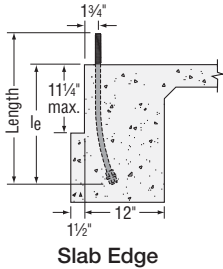
SB Bolts at Stemwall: Garage Front

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Stemwall Width	Diameter	Length	Min. Embed. (l _e)	Wind and SDC A&B		SDC C-F		
					Step-Down End	Corner	Step-Down End	Corner	
SB7/8x24	8	7/8	24	18	7,225	7,660	6,070	6,435	I23, FL, L20
SB1x30	8	1	30	24	11,305	9,635	9,495	8,030	



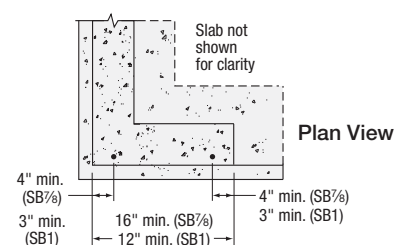
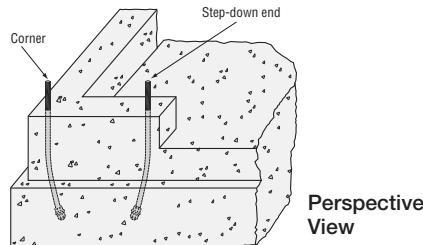
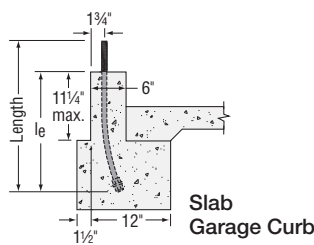
SB Bolts at Slab on Grade: Edge

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Footing Width	Diameter	Length	Min. Embed. (l _e)	Wind and SDC A&B		SDC C-F		
					Midwall	Corner	Midwall	Corner	
SB7/8x24	12	5/8	24	18	6,675	6,675	6,675	5,730	I23, FL, L20
SB7/8x24	12	7/8	24	18	13,080	12,135	12,320	10,190	
SB1x30	12	1	30	24	17,080	15,580	16,300	13,090	



SB Bolts at Slab on Grade: Garage Curb

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Curb Width	Diameter	Length	Min. Embed. (l _e)	Wind and SDC A&B		SDC C-F		
					Step-Down End	Corner	Step-Down End	Corner	
SB7/8x24	6	7/8	24	18	9,175	11,075	7,705	9,305	I23, FL, L20
SB1x30	6	1	30	24	15,580	15,580	13,090	13,090	



Notes to the Designer:

- Rebar is required at top of stemwall foundations but is not required for Slab-on-Grade Edge and Garage Curb, or Stemwall Garage Front installations.
- Minimum end distances for SB bolts are as shown in graphics.
- To obtain LRFD values for cast-in-place anchor bolts, multiply ASD seismic load values by 1.4 and wind load values by 1.6 (1.67 for 2015 IBC).
- Per Section 1613 of the IBC, detached one- and two-story dwellings in SDC C may use "Wind and SDC A&B" allowable loads.
- See ESR-2611 for additional information.
- Minimum loads apply when anchor is 1.5 l_e or greater from the end. For bolts acting in tension simultaneously, the minimum bolt center-to-center spacing is 3 l_e.
- Full catalog loads apply for two-pour installation for slab-on-grade: edge.

SSTB®

Anchor Bolt



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 SSTB anchor bolt is designed for maximum performance as an anchor bolt for holdowns and Simpson Strong-Tie® Strong-Wall® shearwalls. Extensive testing has been done to determine the design load capacity of the SSTB when installed in many common applications.

The Simpson Strong-Tie® SSTB anchor bolts are code listed by ICC-ES under the 2012 and 2015 IBC® and IRC®.

Features:

- Identification on the bolt head showing embedment angle and model
- Offset angle reduces side bursting, and provides more concrete cover
- Rolled thread for higher tensile capacity
- Stamped embedment line aids installation
- Available in HDG for additional corrosion resistance

Material: ASTM F-1554, Grade 36

Finish: None. May be ordered HDG; contact Simpson Strong-Tie

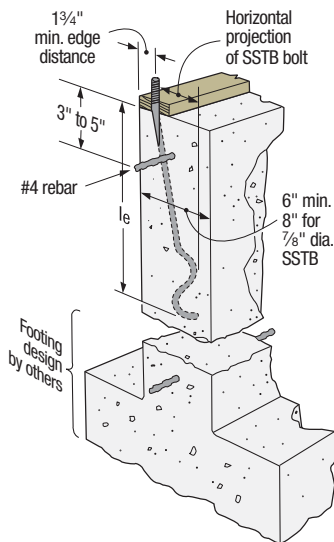
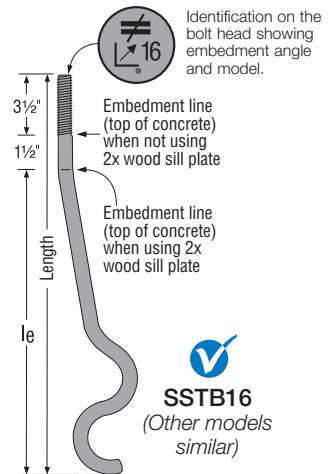
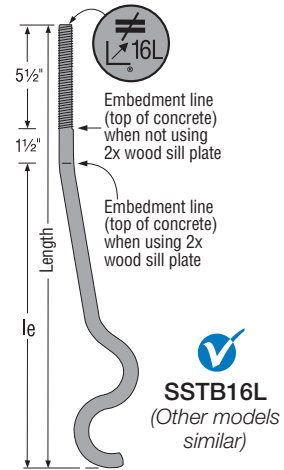
Installation:

- SSTB is suitable for monolithic and two-pour concrete applications.
- Nuts and washers for holdown attachment are not supplied with the SSTB; install standard nuts, couplers and/or washers as required.
- On HDG SSTB anchors, chase the threads to use standard nuts or couplers or use overlapped products in accordance with ASTM A563, for example Simpson Strong-Tie® NUT $\frac{5}{8}$ -OST, NUT $\frac{7}{8}$ -OST, CNW $\frac{5}{8}$ -OST, CNW $\frac{7}{8}$ -OST.
- Install SSTB before the concrete pour using AnchorMates®. Install the SSTB per the plan view detail.
- Minimum concrete compressive strength is 2,500 psi.
- When rebar is required it does not need to be tied to the SSTB.
- Order SSTBL Models (example: SSTB16L) for longer thread length (16L = 5½", 20L = 6½", 24L = 6", 28L = 6½"). SSTB and SSTBL load values are the same. SSTB34 and SSTB36 feature 4½" and 6½" of thread respectively and are not available in "L" versions.

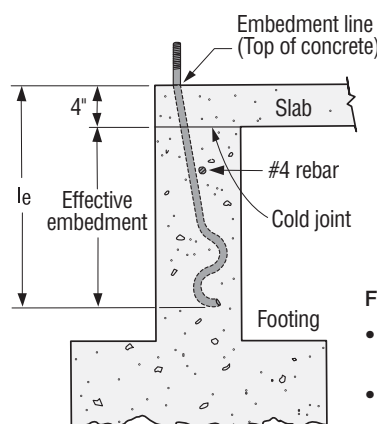
CMU

- One horizontal #4 rebar in the second course.
- One vertical #4 rebar in adjacent cell for ½"-diameter SSTB.
- One vertical #4 rebar in an adjacent cell and additional vertical #4 rebar(s) at 24" o.c. max. for ¾"-diameter SSTBs (2 total vertical rebars for end wall corner, 3 total vertical rebars for midwall).

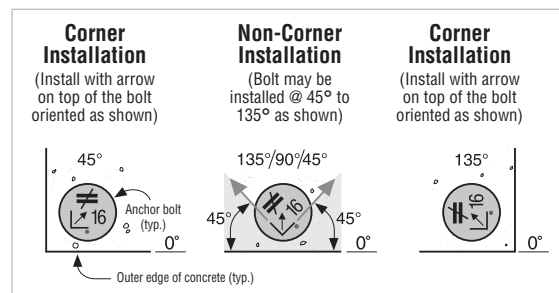
Codes: See p. 14 for Code Reference Key Chart



Typical SSTB Installation in Concrete Foundation
Maintain minimum rebar cover, per ACI-318 concrete code requirements



Two-Pour Installation (SSTB20, 24, 34 and 36)



Plan View of SSTB Placement in Concrete

For two-pour (4" slab) installation loads:

- When using the SSTB20, use the equivalent loads of the SSTB16.
- When using the SSTB24, use the equivalent loads of the SSTB20.
- When using the SSTB34 or 36, use the equivalent loads of the SSTB28.

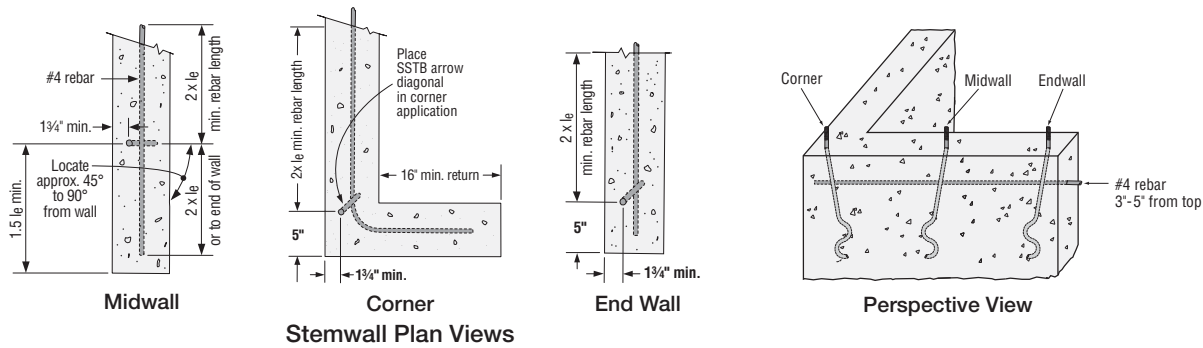
SSTB®

Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

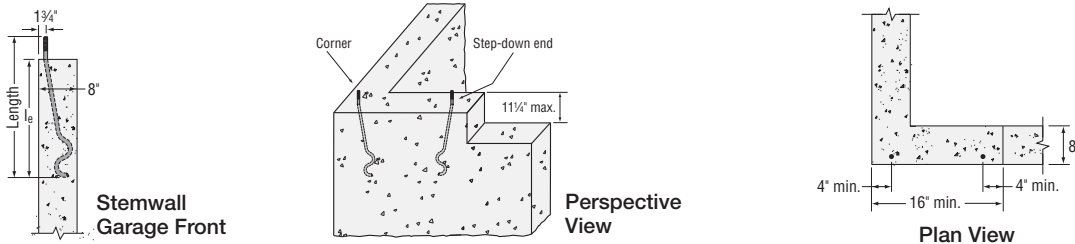
Model No.	Dimensions (in.)				Allowable Tension Loads						Code Ref.
	Stemwall Width	Diameter	Length	Min. Embed. (l _e)	Wind and SDC A&B			SDC C-F			
					Midwall	Corner	End Wall ²	Midwall	Corner	End Wall ²	
SSTB16	6	5/8	17 3/8 (16L = 19%)	12 3/8	3,610	3,610	3,610	2,550	2,550	2,550	I23, FL, L20
SSTB20	6	5/8	21 3/8 (20L = 24%)	16 3/8	4,315	4,040	4,040	3,145	2,960	2,960	
SSTB24	6	5/8	25 3/8 (24L = 28 1/8%)	20 3/8	5,025	4,470	4,470	3,740	3,325	3,325	
SSTB28	8	7/8	29 3/8 (28L = 32 7/8%)	24 3/8	9,900	8,710	7,615	8,315	7,315	6,395	
SSTB34	8	7/8	34 3/8	28 3/8	9,900	8,710	7,615	8,315	7,315	6,395	
SSTB36	8	7/8	36 3/8	28 3/8	9,900	8,710	7,615	8,315	7,315	6,395	

- See p. 58 for notes to the Designer.
- SSTB28, SSTB34 and SSTB36 with 3 3/4" end distance allowable loads are 6,605 lb. (Wind and SDC A&B) and 5,550 lb. (SDC C-F).



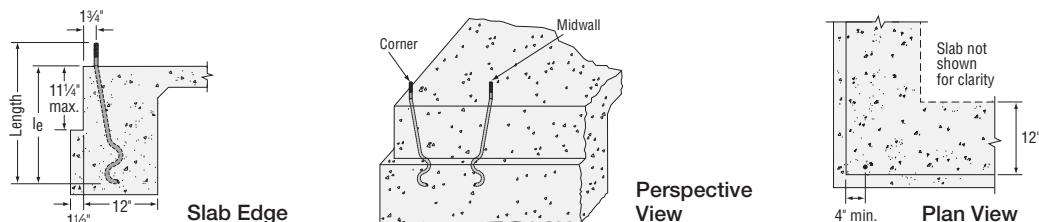
SSTB Bolts at Stemwall: Garage Front

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Stemwall Width	Diameter	Length	Min. Embed. (l _e)	Wind and SDC A&B		SDC C-F		
					Step-Down End	Corner	Step-Down End	Corner	
SSTB28	8	7/8	29 3/8	24 3/8	7,015	7,045	5,895	5,920	I23, FL, L20



SSTB Bolts at Slab on Grade: Edge

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Footing Width	Dia.	Length	Min. Embed. (l _e)	Wind and SDC A&B		SDC C-F		
					Midwall	Corner	Midwall	Corner	
SSTB16	12	5/8	17 3/8	12 3/8	5,355	5,355	3,780	3,780	I23, FL, L20
SSTB20	12	5/8	25 3/8	16 3/8	6,550	6,550	4,785	4,785	
SSTB24	12	5/8	25 3/8	20 3/8	6,675	6,675	5,790	5,790	
SSTB28	12	7/8	29 3/8	24 3/8	13,080	13,080	11,060	11,645	
SSTB34	12	7/8	34 3/8	28 3/8	13,080	13,080	11,060	11,645	
SSTB36	12	7/8	36 3/8	28 3/8	13,080	13,080	11,060	11,645	



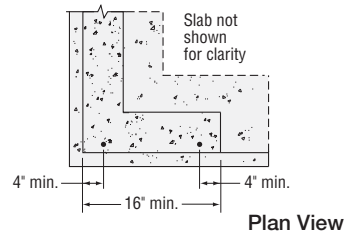
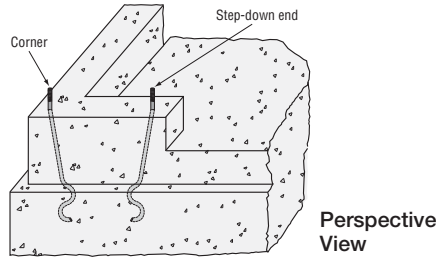
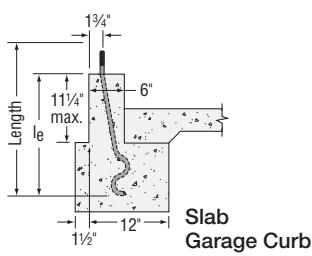
SSTB®

Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

SSTB Bolts at Slab on Grade: Garage Curb

Model No.	Dimensions (in.)				Allowable Tension Loads				Code Ref.
	Curb Width	Dia.	Length	Min. Embed. (l _e)	Wind and SDC A&B		SDC C-F		
					Step-Down End	Corner	Step-Down End	Corner	
SSTB28	6	7/8	29 7/8	24 7/8	10,085	12,375	8,475	10,395	I23, FL, L20



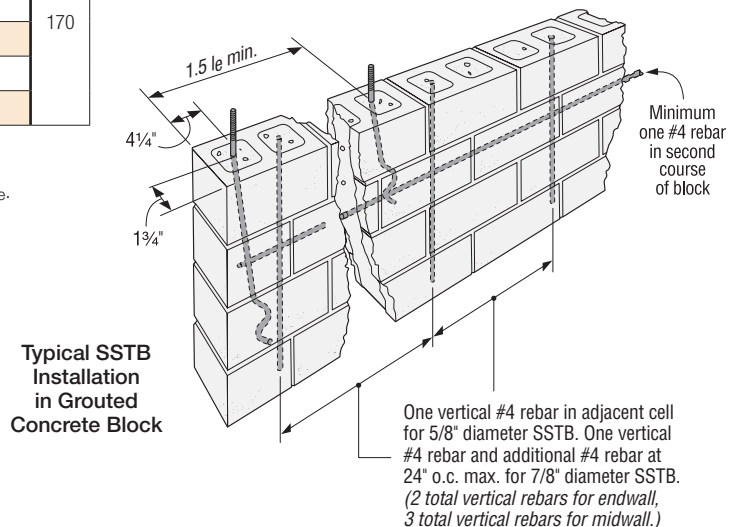
Notes to the Designer:

1. Rebar is required at top of stemwall foundations but is not required for Slab-on-Grade Edge and Garage Curb, or Stemwall Garage Front installations.
2. Minimum end distances for SSTB bolts are as shown in graphics.
3. To obtain LRFD values for cast-in-place anchor bolts, multiply ASD seismic load values by 1.4 and wind load values by 1.6 (1.67 for 2015 IBC).
4. Per Section 1613 of the IBC, detached one- and two-story dwellings in SDC C may use "Wind and SDC A&B" allowable loads.
5. See ESR-2611 for additional information.
6. Midwall loads apply when anchor is 1.5 l_e or greater from the end. For bolts acting in tension simultaneously, the minimum bolt center-to-center spacing is 3 l_e.

SSTB Bolts in 8" GFCMU

Model No.	Dimensions (in.)			Allowable Tension Load		Code Ref.
	Dia.	Length	Min. Embed. (l _e)	Midwall	Corner/End Wall	
SSTB16	5/8	17 5/8 (16L = 19 5/8)	12 5/8	2,865	1,220	170
SSTB20	5/8	21 5/8 (20L = 24 5/8)	16 5/8	2,865	1,220	
SSTB24	5/8	25 5/8 (24L = 28 5/8)	20 5/8	2,865	1,220	
SSTB28	7/8	29 7/8 (28L = 32 7/8)	24 7/8	4,185	3,000	
SSTB34	7/8	34 7/8	28 7/8	4,185	3,000	
SSTB36	7/8	36 7/8	28 7/8	4,185	3,000	

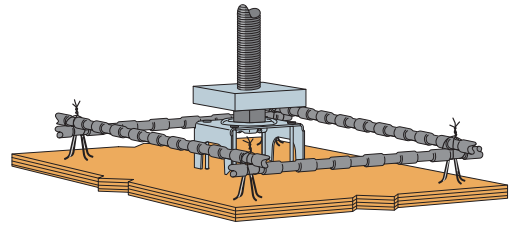
1. Loads are based on a minimum CMU compressive strength, f_m, of 1,500 psi.
2. Minimum end distance required to achieve midwall table loads is 1.5 l_e.
3. Minimum end distance for corner/end wall loads is 4 1/4".
4. Loads may not be increased for duration of load.
5. Allowable loads are based on the average ultimate load with a safety factor of 5.0 per ACI 530.



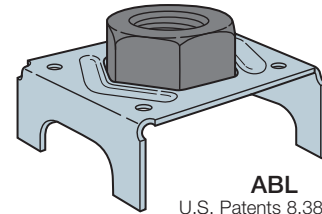
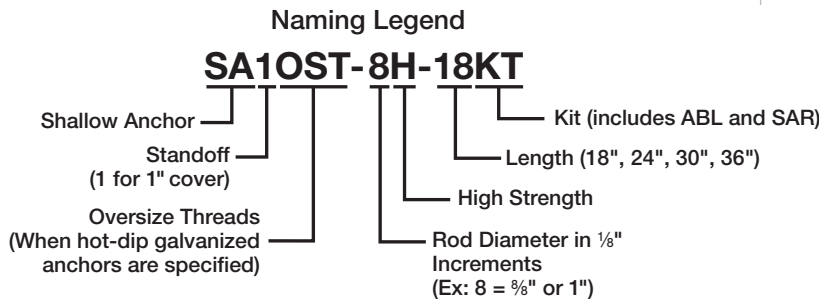
Shallow Podium Slab

Anchor Kit

The Shallow Podium Slab anchor kit includes the patented Anchor Bolt Locator (ABL) and patent-pending Shallow Anchor Rod (SAR). Uniquely suited for installation to concrete-deck forms, the ABL enables accurate and secure placement of anchor bolts. The structural heavy hex nut is attached to a pre-formed steel "chair" and becomes the bottom nut of the anchor assembly. The shallow anchor is provided with a plate washer fixed in place that attaches on the ABL nut when assembled and increases the anchor breakout and pullout capacity. The shallow anchor is easily installed before or after placement of the slab reinforcing steel or tendons. Where higher anchor capacities are needed such as at edge conditions or to meet seismic ductility requirements, the anchor kit is combined with anchor reinforcement.



Shallow Podium Slab Anchor Kit



ABL
U.S. Patents 8,381,482 and 8,621,816
See p. 69 for more information on the ABL.

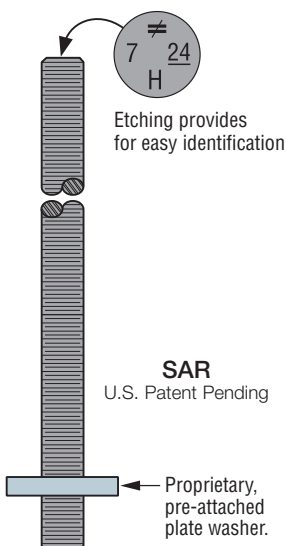
SAR

Shallow Anchor Rod

SAR anchor rods are for use with the ABL anchor bolt locator. They combine to make an economical podium-deck anchorage solution. Anchorage specification is per Designer.

Features:

- Proprietary, pre-attached plate washer
- Available in standard or high strength
- Anchor rod diameters from 1/2" to 1 1/4"
- Standard lengths available 18", 24", 30" or 36"
- Specify "HDG" for hot-dip galvanized



Reference the Shallow Anchor Solutions details for more information.

Visit strongtie.com/sardetails.

PAB

Pre-Assembled Anchor Bolt

The PAB anchor bolt is a versatile cast-in-place anchor bolt ideal for high-tension-load applications, such as rod systems and shearwalls. It features a plate washer at the embedded end sandwiched between two fixed hex nuts and a head stamp for easy identification after the pour.

- Available in diameters from 1/2" to 1 1/4" in lengths from 12" to 36" (in 6" increments)
- Available in standard and high-strength steel
- Head stamp contains the No Equal sign, diameter designation and an "H" on high-strength rods

Material:

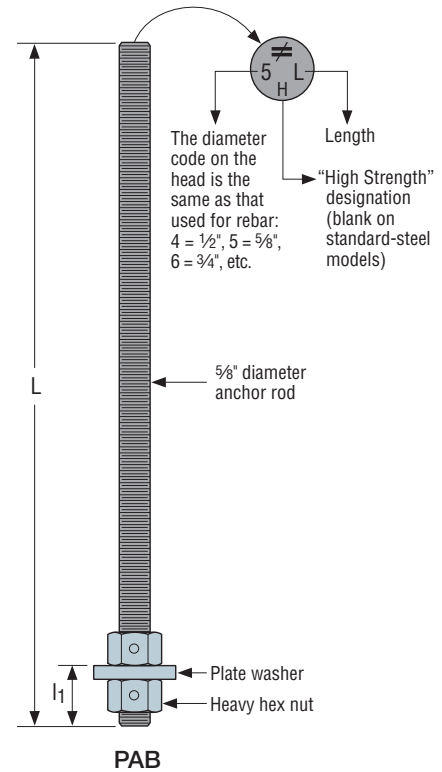
Standard Steel — ASTM F1554 Grade 36, A36 or A307; $F_u = 58$ ksi
 High-Strength Steel (up to 1" dia.) — ASTM A449; $F_u = 120$ ksi
 High-Strength Steel (1 1/8" and 1 1/4" dia.) — ASTM A193 B7 or F1554 Grade 105; $F_u = 125$ ksi

Finish: None. May be ordered in HDG; contact Simpson Strong-Tie.

Installation:

- On HDG PABs, chase the threads to use standard nuts or couplers or use overtapped products in accordance with ASTM A563; for example, Simpson Strong-Tie® NUT 5/8"-OST, NUT 7/8"-OST, CNW 5/8"-OST, CNW 7/8"-OST. Some OST couplers are typically oversized on one end of the coupler nut only and will be marked with an "O" on oversized side. Couplers may be oversized on both ends. Contact Simpson Strong-Tie.

The Simpson Strong-Tie® Anchor Designer™ Software analyzes and suggests anchor solutions using the ACI 318 strength-design methodology (or CAN/CSA A23.3 Annex D Limit States Design methodology). It provides cracked and uncracked-concrete anchorage solutions for numerous Simpson Strong-Tie mechanical and adhesive anchors as well as the PAB anchor bolt. With its easy-to-use graphical user interface, the software makes it easy for the Designer to identify anchorage solutions without having to perform time-consuming calculations by hand.



How to Specify and Order:

When calling out PAB anchor bolts, substitute the desired length for the "XX" in the Root Model Number.

For a 5/8" x 18" anchor bolt, the model number would be PAB5-18 (or PAB5H-18 for high strength).

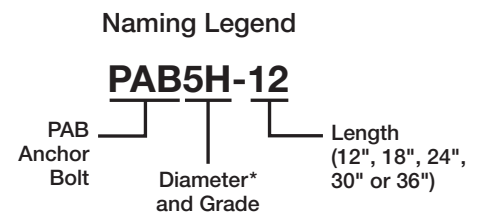
PAB Anchor Bolt – Standard Steel

Diameter (in.)	Plate Washer Size (in.)	l_1 (in.)	Root Model No.	Lengths (in.)
1/2	3/8 x 1 1/2 x 1 1/2	1 1/8	PAB4-XX	12" to 36" (in 6" increments)
5/8	1/2 x 1 3/4 x 1 3/4	1 3/8	PAB5-XX	
3/4	1/2 x 2 1/4 x 2 1/4	1 1/2	PAB6-XX	
7/8	1/2 x 2 1/2 x 2 1/2	1 5/8	PAB7-XX	
1	5/8 x 3 x 2 3/4	1 7/8	PAB8-XX	
1 1/8	5/8 x 3 1/2 x 3 1/4	2	PAB9-XX	
1 1/4	3/4 x 3 1/2 x 3 1/2	2 1/4	PAB10-XX	

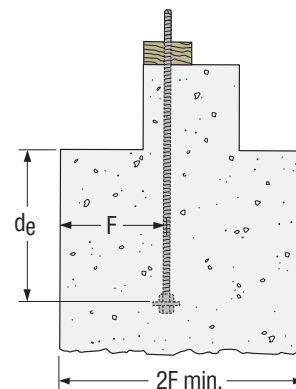
PAB Anchor Bolt – High-Strength Steel

Diameter (in.)	Plate Washer Size (in.)	l_1 (in.)	Root Model No.	Lengths (in.)
1/2	3/8 x 1 1/2 x 1 1/2	1 1/8	PAB4H-XX	12" to 36" (in 6" increments)
5/8	1/2 x 1 3/4 x 1 3/4	1 3/8	PAB5H-XX	
3/4	1/2 x 2 1/4 x 2 1/4	1 1/2	PAB6H-XX	
7/8	1/2 x 2 1/2 x 2 1/2	1 5/8	PAB7H-XX	
1	5/8 x 3 x 2 3/4	1 7/8	PAB8H-XX	
1 1/8	5/8 x 3 1/2 x 3 1/4	2	PAB9H-XX	
1 1/4	3/4 x 3 1/2 x 3 1/2	2 1/4	PAB10H-XX	

1. Lengths longer than 36" available as a special order.
 2. Plate washers are designed to develop the capacity of the bolt.



*Units in 1/8" Increments
 (Ex: 9 = 9/8" or 1 1/8")



Design loads are calculated using a full shear cone. Coverage on each side of the bolt shall be a minimum of F or reductions must be taken.

PAB

Pre-Assembled Anchor Bolt (cont.)

PAB Anchor Bolt – Anchorage Solutions

Design Criteria	Diameter (in.)	Anchor Bolt	2,500 psi Concrete				3,000 psi Concrete			
			Dimensions (in.)		Tension Load		Dimensions (in.)		Tension Load	
			d _e	F	ASD	LRFD	d _e	F	ASD	LRFD
Wind	½	PAB4	4½	7	4,270	6,405	4	6	4,270	6,405
	⅝	PAB5	4	6	4,030	6,720	4	6	4,415	7,360
			6	9	6,675	10,010	5½	8½	6,675	10,010
	¾	PAB6	5½	8½	6,500	10,835	5	7½	6,175	10,290
			7½	11½	9,610	14,415	7	10½	9,610	14,415
	⅞	PAB7	6	9	7,405	12,345	5½	8½	7,120	11,870
			9	13½	13,080	19,620	8½	13	13,080	19,620
		PAB7H	9	13½	13,610	22,680	8½	13	13,680	22,805
	1	PAB8	8	12	11,405	19,005	7½	11½	11,340	18,900
			10½	16	17,080	25,565	10	15	17,080	25,560
		PAB8H	10½	16	17,150	28,580	10	15	17,460	29,100
	1½	PAB9	16½	25	35,345	53,015	15½	23½	35,345	53,015
			9	13½	13,610	22,680	8	12	12,495	20,820
	1¼	PAB10	12½	19	21,620	32,430	12	18	21,620	32,430
14			21	26,690	40,035	13½	20½	26,690	40,035	
Seismic	½	PAB4	5	7½	4,270	6,405	4½	7	4,270	6,405
	⅝	PAB5	6½	10	6,675	10,010	6	9	6,675	10,010
	¾	PAB6	7½	11½	9,060	12,940	7	10½	8,945	12,780
			8	12	9,610	14,415	7½	11½	9,610	14,415
	⅞	PAB7	9	13½	11,905	17,010	8½	13	11,970	17,100
			10	15	13,080	19,620	9½	14½	13,080	19,620
		PAB7H	14½	22	25,350	36,215	13½	20½	24,650	35,215
	1	PAB8	15½	23½	27,060	40,590	14½	22	27,060	40,590
			11	16½	15,996	22,850	10½	16	16,435	23,480
		PAB8H	11½	17½	17,080	25,625	11	16½	17,080	25,625
	1½	PAB9	17	25½	33,045	47,205	16	24	32,720	46,740
			18	27	35,345	53,015	17	25½	35,345	53,015
	1¼	PAB10	12½	19	19,795	28,275	12	18	20,255	28,940
			13½	20½	21,620	32,430	12½	19	21,620	32,430
1	PAB9	14½	22	25,350	36,215	14	21	26,190	37,415	
		15	22½	26,690	40,035	14½	22	26,690	40,035	

1. Anchorage designs conform to ACI 318-14 and assume cracked concrete with no supplementary reinforcement.
2. Seismic indicates Seismic Design Category C-F and designs comply with ACI 318-14 Section 17.2.3.4. Per Section 1613 of the IBC, detached one- and two-family dwellings in SDC C may use wind values.
3. Wind includes Seismic Design Category A and B.
4. Foundation dimensions are for anchorage only. Foundation design (size and reinforcement) by Designer. The registered design professional may specify alternate embedment, footing size, and anchor bolt.
5. Where tension loads are governed by anchor steel, the design provisions from AISC 360-10 are used to determine the tensile steel limit. LRFD values are calculated by multiplying the nominal AISC steel capacity by a 0.75 phi factor and allowable values are calculated by dividing the AISC nominal capacity by a 2.0 omega factor.
6. Where tension loads are governed by an Appendix D concrete limit, the allowable Stress Design (ASD) values are obtained by multiplying Load Factor Resistance Design (LRFD) capacities by 0.7 for Seismic and 0.6 for Wind.

Holdown Anchorage Solutions



The anchor bolt solutions in Table 1 (DF/SP Lumber) and Table 2 (SPF/HF Lumber) provide anchorage solutions for the holdown sizes listed. Unless noted otherwise, the solutions meet the maximum published allowable load of the holdown. Refer to pp. 54–55 for SB anchor bolt installation details, pp. 56–58 for SSTB anchor bolts installation details, and p. 60 for PAB anchor bolt details.

Table 1 — Anchorage Selection Guide for Holdowns Attached to DF/SP Lumber

Holdown on DF/SP Lumber	Stemwall					Slab on Grade			
	Stemwall Width (in.)	Wind and Seismic Design Category A&B		Seismic Design Category C–F		Wind and Seismic Design Category A&B		Seismic Design Category C–F	
		Midwall/Corner	End Wall	Midwall/Corner	End Wall	Midwall/Corner	Garage Curb	Midwall/Corner	Garage Curb
HDU2	6	SSTB16		SSTB24		SSTB16		SSTB16	SSTB20* (2,960)
HDU4	6	SSTB24* (4,470)		SB½x24		SSTB16	SSTB24* (4,470)	SSTB20	SB½x24
HDU5	6	SB½x24		SB½x24		SSTB20	SB½x24	SSTB24	SB½x24
HDU8	8	SSTB28	SSTB28* (7,615)	SB¾x24* (7,855)	PAB7	SSTB28		SSTB28	
HDQ8	8	SB¾x24	PAB7	PAB7	PAB7	SSTB28		SSTB28	PAB7
HDU11	—	PAB8		PAB8		SB1x30		SB1x30	
HHDQ11	—	PAB8		PAB8		SB1x30		SB1x30 (See Note 4)	
HDU14	—	PAB8		PAB8		SB1x30		SB1x30 (See Note 4)	
HHDQ14	—	PAB8		PAB8		SB1x30		SB1x30 (See Note 4)	
LTT19	6	SSTB16		SSTB16		SSTB16		SSTB16	
LTT20B	6	SSTB16		SSTB16		SSTB16		SSTB16	
LT131	6	SSTB16		SSTB16		SSTB16		SSTB16	
HTT4	6	SSTB24		SB½x24		SSTB16	SSTB24	SSTB20	SB½x24
HTT5	6	SB½x24		SB½x24		SSTB16	SB½x24	SSTB24	SB½x24
HD3B	6	SSTB16		SSTB24		SSTB16		SSTB16	SSTB24
HD5B	6	SB½x24		SB½x24	SB½x24	SSTB16	SB½x24	SSTB24	SB½x24
HD7B	8	SSTB28		SSTB28* (7,315)	PAB7	SSTB28		SSTB28	
HD9B	—	PAB7		PAB7		SSTB28		SSTB28	PAB7
HD12	—	PAB8		PAB8		SB1x30		SB1x30 (See Note 4)	

See footnotes below.

Table 2 — Anchorage Selection Guide for Holdowns Attached to SPF/HF Lumber

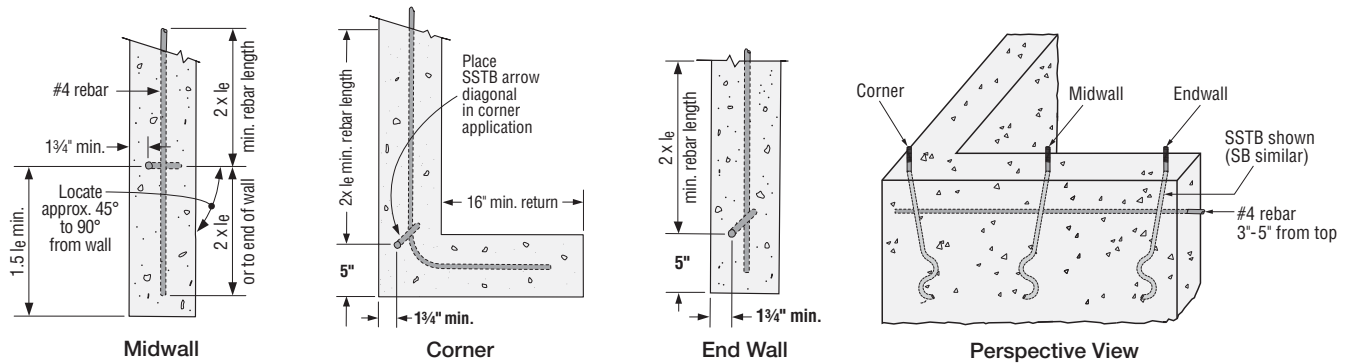
Holdown on SPF/HF Lumber	Stemwall					Slab on Grade			
	Stemwall Width (in.)	Wind and Seismic Design Category A&B		Seismic Design Categories C–F		Wind and Seismic Design Category A&B		Seismic Design Categories C–F	
		Midwall/Corner	End Wall	Midwall/Corner	End Wall	Midwall/Corner	Garage Curb	Midwall/Corner	Garage Curb
HDU2	6	SSTB16		SSTB16		SSTB16		SSTB16	
HDU4	6	SSTB16		SSTB24		SSTB16		SSTB16	SSTB24
HDU5	6	SSTB20* (4,040)		SB½x24		SSTB16	SSTB20* (4,040)	SSTB20	SB½x24
HDU8	8	SSTB28		SSTB28		SSTB28		SSTB28	SSTB28
HDQ8	8	SSTB28		SSTB28	SSTB28* (6,395)	SSTB28		SSTB28	SSTB28
HDU11	8	SB1x30	PAB8	SB1x30	PAB8	SB1x30		SB1x30	
HHDQ11	8	SB1x30	PAB8	PAB8		SB1x30		SB1x30	
HDU14	—	PAB8		PAB8		SB1x30		SB1x30	
HHDQ14	—	PAB8		PAB8		SB1x30		SB1x30	
LTT19	6	SSTB16		SSTB16		SSTB16		SSTB16	
LTT20B	6	SSTB16		SSTB16		SSTB16		SSTB16	
LT131	6	SSTB16		SSTB16		SSTB16		SSTB16	
HTT4	6	SSTB16* (3,610)		SB½x24		SSTB16	SSTB16* (3,610)	SSTB16	SB½x24
HTT5	6	SSTB24		SB½x24		SSTB16	SSTB24	SSTB20	SB½x24
HD3B	6	SSTB16		SSTB24		SSTB16		SSTB16	SSTB20* (2,960)
HD5B	6	SSTB24		SB½x24		SSTB16		SB½x24	
HD7B	8	SSTB28		SSTB28		SSTB28		SSTB28	
HD9B	8	SSTB28	PAB7	PAB7		SSTB28		SSTB28	
HD12	—	PAB8		PAB8		SB1x30		SB1x30	

- Foundation dimensions are for anchorage only. Foundation design, size and reinforcement by Designer. The Designer may specify alternate embedment, footing size and anchor bolt.
- Minimum edge distance is 1¼". Minimum end distance is 5" for SSTBs and the SB1x30; 4¼" for SB½x24 and SB¾x24.
- PAB7 anchor bolts require $d_e = 10"$ with $F = 15"$. PAB8 anchor bolts require $d_e = 12"$ with $F = 18"$. Anchorage design conforms to ACI 318 and assumes $f'_c = 2,500$ psi cracked concrete with no supplementary reinforcement with seismic design conforming to ACI 318-14 Section 17.2.3.4. CNW½ and CNW1 available for cases where longer anchor bolt is required. Select bolt

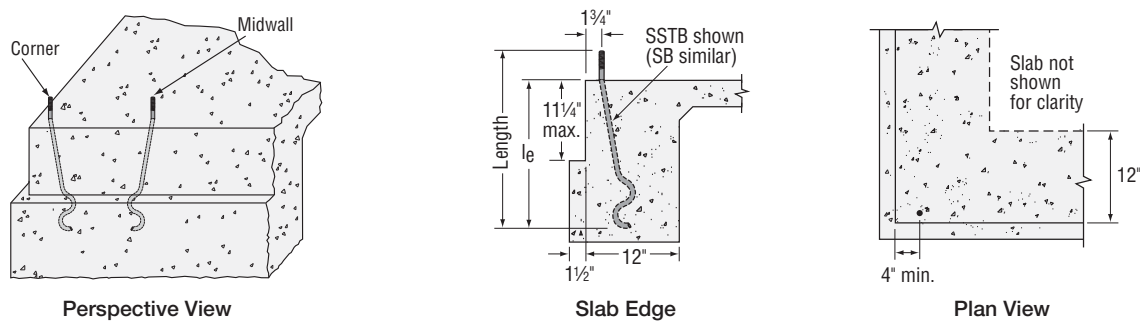
- length based on foundation configuration to meet the required footing embedment.
- Where noted, SB1x30 requires footing width to be 18" wide. PAB8 solution may also be used.
- Anchorage solutions marked with an asterisk (*) are within 5% of the holdowns maximum allowable load. The load in parenthesis is the capacity of the anchor bolt.
- Per Section 1613 of the IBC, detached one- and two-family dwellings in SDC C may use Wind and Seismic Design Category A&B values.

Holdown Anchorage Solutions (cont.)

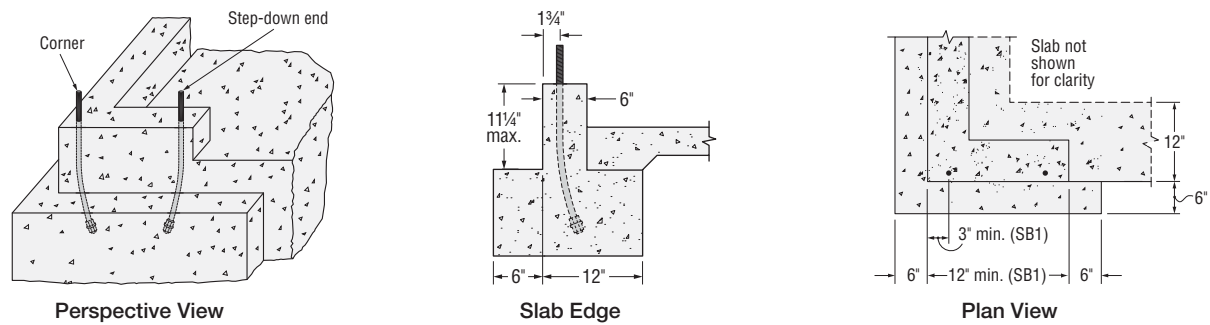
Stemwall Installation



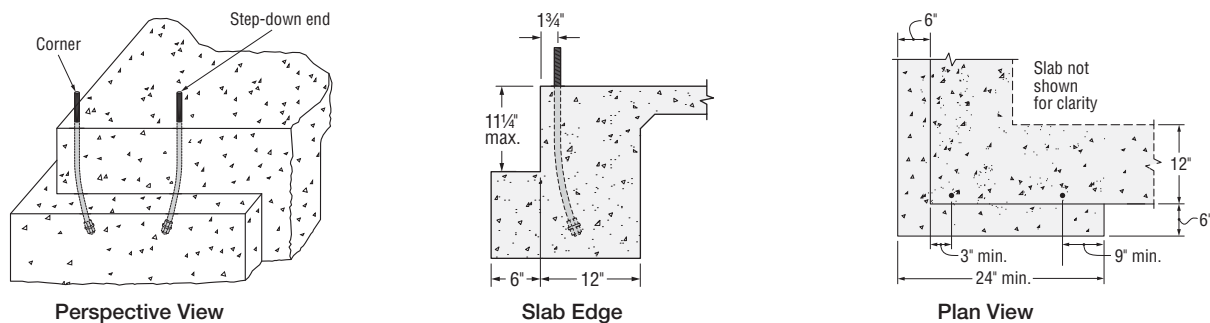
Slab on Grade Installation



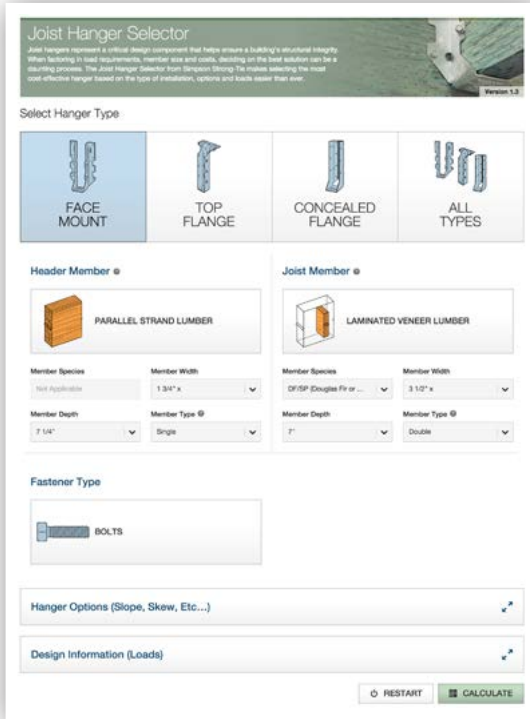
Garage Curb Installation (H DU14, H HDQ14 and H D12)



Slab on Grade Installation (H DU14, H HDQ14 and H D12)



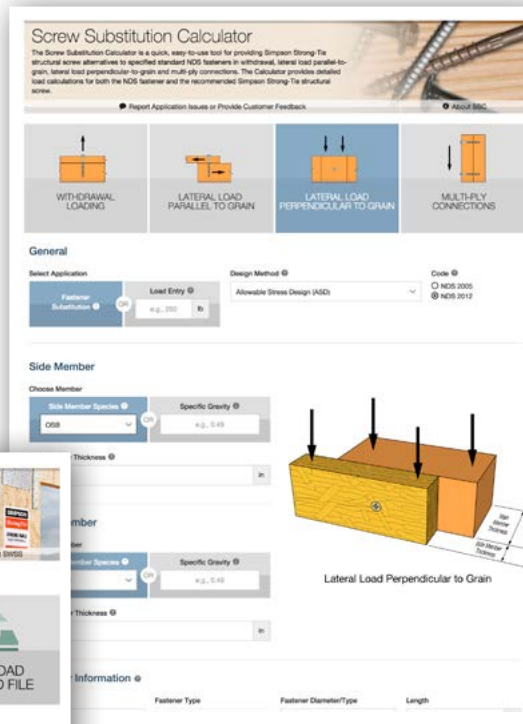
Simpson Strong-Tie® Apps Help You Do Your Job Faster and Easier



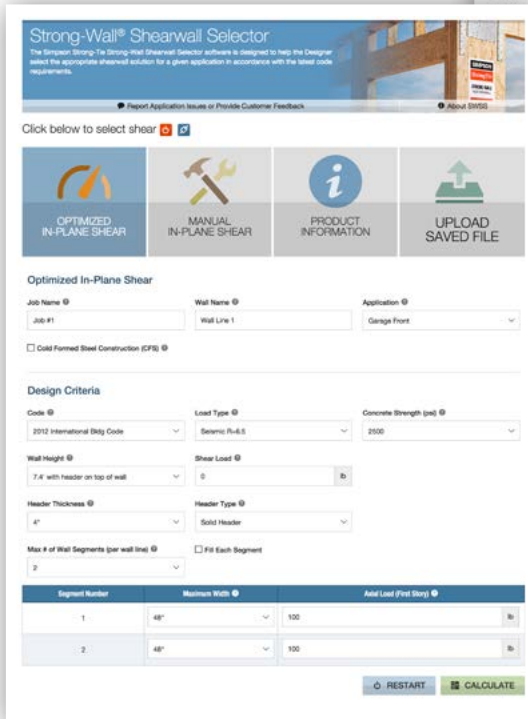
Joist Hanger Selector
strongtie.com/jhs

We leverage the latest technology to help Specifiers and builders create safer, stronger structures in less time than ever before. Our unmatched variety of product selector and calculator apps help you find the best product, information and resources needed to do the job right the first time. And they are all free!

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CONNECT WITH US!
Now you can connect with Simpson Strong-Tie through several social media channels, including our Structural Engineering Blog.

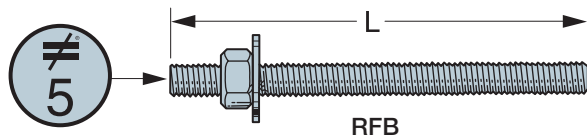
RFB

Retrofit Bolt

The RFB retrofit bolt is a clean, oil-free, pre-cut threaded rod, supplied with nut and washer. It offers a complete engineered anchoring system when used with Simpson Strong-Tie® adhesive. Inspection is easy; the head is stamped with rod length and “No Equal” symbol for identification after installation.

Material: ASTM F1554 Grade 36

Finish: Zinc Plated (unless otherwise noted), available in HDG (per ASTM A153); stainless steel (RFB#5x8SS only)



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Length, L (in.)	Bolt Diameter (in.)
RFB#4X4	4	1/2
RFB#4X5	5	1/2
RFB#4X6	6	1/2
RFB#4X7	7	1/2
RFB#4X10	10	1/2
RFB#4x8HDG-R	8	1/2
RFB#5X5	5	5/8
SS RFB#5X8	8	5/8
RFB#5X10	10	5/8
RFB#5X12HDG-R	12	5/8
RFB#5X16	16	5/8
RFB#6X10.5	10 1/2	3/4

1. RFB#4x8HDG-R and RFB#5X12HDG-R are only available with a hot-dip galvanized coating. They are retail packaged and are sold 10 per carton.
2. Washer provided on all RFB (except RFB#5x8SS).

CNW/HSCNW

Coupler Nuts

Simpson Strong-Tie® coupler nuts are a tested and load-rated method to join threaded rod and anchor bolts. “Witness” holes in the nut provide a means to verify when rods are properly installed. The positive stop feature helps ensure even threading into each end of the nut. The CNW exceeds the **specified minimum** tensile capacity of corresponding ASTM A36 bolts and threaded rod. The HSCNW exceeds the **specified minimum** tensile capacity of corresponding ASTM A449 bolts and threaded rod. Contact Simpson Strong-Tie for other coupler nut sizes.

Finish: Zinc Plated

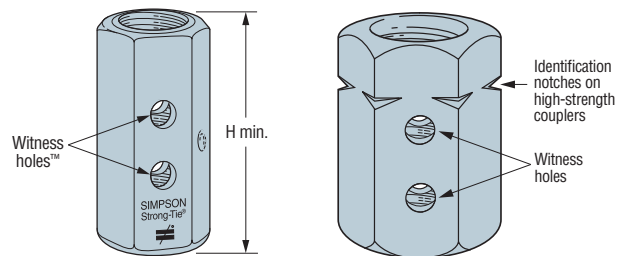
Installation:

- Tighten the two rods until each all-thread rod is visible in the Witness hole. **Any portion of thread visible in the witness hole is a correct installation.**
- **Standard CNW** for use with non-hot-dip galvanized all-thread rod only.
- 5/8" - and 7/8" - diameter couplers available with oversized threads for installation to hot-dip galvanized bolts (order CNW5/8-5/8OST and CNW7/8-7/8OST).
- **Some OST couplers are typically oversized on one end of the coupler nut only and will be marked with an “O” on oversized side. Couplers may be oversized on both ends. Contact Simpson Strong-Tie.**

Codes: See p. 14 for Code Reference Key Chart

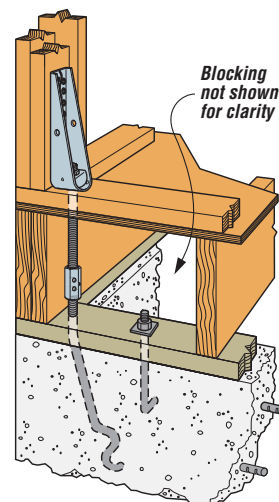
Model No.	Rod Diameter (in.)	H Min. (in.)	Allowable Tension Capacity (100)	Code Ref.
CNW1/2	0.500	1 1/2	4,265	I1, FL
CNW5/8	0.625	1 5/8	6,675	
CNW3/4	0.750	2 1/4	9,610	
CNW7/8	0.875	2 1/2	13,080	
CNW1	1.000	2 3/4	17,080	170
CNW1 1/4	1.250	3	26,690	
HSCNW3/4	0.750	2 1/4	19,880	
HSCNW1	1.000	2 3/4	35,345	
Transition Couplers				
CNW5/8 - 1/2	0.625 to 0.500	1 1/2	4,265	I1, FL
CNW3/4 - 5/8	0.750 to 0.625	1 3/4	6,675	
CNW7/8 - 5/8	0.875 to 0.625	2	6,675	170
CNW1 - 7/8	1.000 to 0.875	2 1/4	13,080	

1. Allowable loads shown are based on AISC 14th Edition A36 and A449 (HS) threaded rod allowable loads.

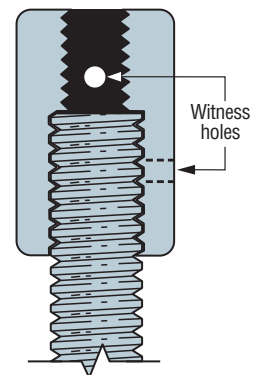


CNW
Allows Fast Visual Check for Correct All Thread Rod Installation

HSCNW
High-Strength Coupler Nut



Typical CNW
Rim Board Installation



CNW
Transition Coupler Nut

BP/LBP/RP6

Bearing Plates

Bearing plates give greater bearing surface than standard cut washers, and help distribute the load at these critical connections.

The BP $\frac{1}{2}$ -3 and BP $\frac{3}{8}$ -3 are 3" x 3" bearing plates that meet the latest requirements of the IRC and IBC. These plate washers are available uncoated or with a hot-dip galvanized (HDG) coating.

The BPS and LBPS are bearing plates that offer increased flexibility while meeting the latest requirements of the code for 2x4 and 2x6 walls. The slotted hole allows for adjustability to account for bolts that are not in the middle of the sill plate.

The BP $\frac{5}{8}$ SKT uses $\frac{1}{4}$ " x $1\frac{1}{2}$ " Strong-Drive® SDS Heavy-Duty Connector screws to provide lateral resistance when $\frac{5}{8}$ " diameter sill holes are overdrilled (screws are provided). The shear capacity of the connection and the sill/anchor bolt shall be determined by the Designer for each installation.

The RP6 retrofit plate is installed on the outside of masonry buildings and helps tie the walls to the roof or floor structure with a $\frac{3}{4}$ "-diameter rod.

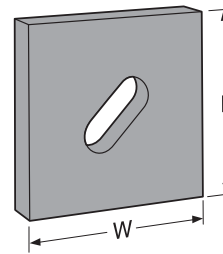
Material: See table

Finish: LBP, LBPS — galvanized; BP $\frac{7}{8}$ -2, BP $\frac{5}{8}$ S — zinc plated; BPS, BP — none; RP6 — Simpson Strong-Tie® gray paint. BPs, BPSs and RP6 may be ordered HDG; LBP and LBPS products may be ordered ZMAX®; contact Simpson Strong-Tie. See Corrosion Information, pp. 15–18.

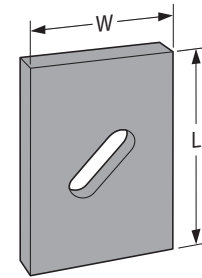
Installation:

- See General Notes.
- BP/BPS — For shearwall applications, position edge of plate washer within $\frac{1}{2}$ " of sheathed edge of sill plate.
- BPS-6 plate washers are sized to accommodate the $\frac{1}{2}$ " from the sheathed edge in single- and double-sheathed 2x6 walls.
- Standard-cut washer required with BPS slotted bearing plates. Washer not required when used with Titen HD® heavy-duty screw anchors.

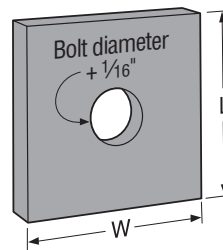
Codes: See p. 14 for Code Reference Key Chart; 2012/2015 IRC R602.11.1, 2015 SDPWS 4.3.6.4.3



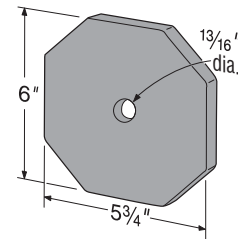
BPS
(LBPS similar)



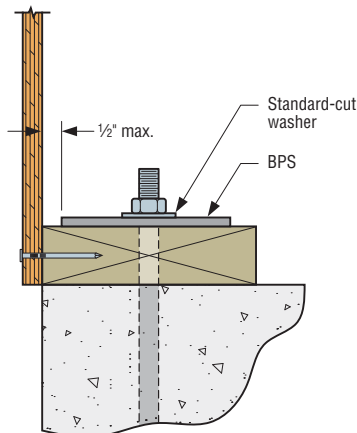
BPS $\frac{1}{2}$ -6
(Other models similar)



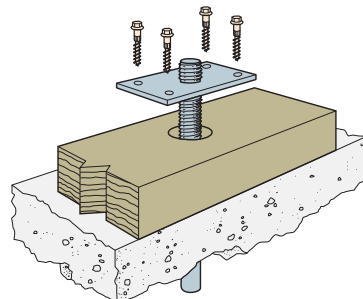
BP
(LBP similar)



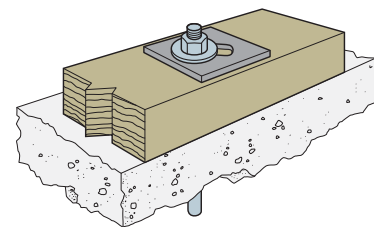
RP6



Typical BPS Installed as a Shear Anchor



The BP $\frac{5}{8}$ SKT is used when $\frac{5}{8}$ " diameter sill bolt holes are overdrilled



Typical BPS Installation

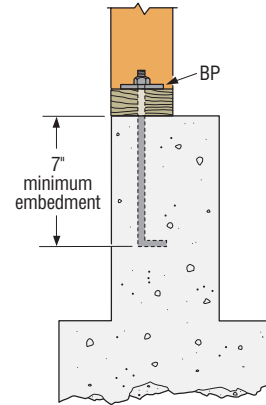
BP/LBP/RP6

Bearing Plates (cont.)

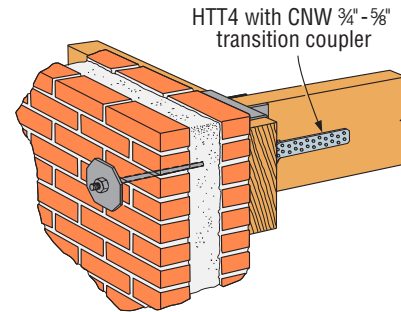
These products are available with additional corrosion protection. For more information, see p. 18.

Bolt Diameter (in.)	Model No.	Thickness	Dimensions (in.)		Code Ref.
			W	L	
3/8	BP3/8-2	3/16"	2	2	I1, FL
1/2	LBP1/2	3/4"	2	2	190
	LBPS1/2	3/4"	3	3	
	BPS1/2-3	3 ga.	3	3	
	BPS1/2-6	3 ga.	3	4 1/2	I1, FL
	BP1/2	3/16"	2	2	
	BP1/2-3	3 ga.	3	3	
5/8	LBP5/8	3/4"	2	2	190
	LBPS5/8	3/4"	3	3	
	BPS5/8-3	3 ga.	3	3	
	BPS5/8-6	3 ga.	3	4 1/2	I1, FL
	BP5/8-2	3/16"	2	2	
	BP5/8SKT	3 ga.	4	2	
	BP5/8	1/4"	2 1/2	2 1/2	190
	BP5/8-3	3 ga.	3	3	I1, FL, 190
3/4	BP3/4-3	3 ga.	3	3	190
	BPS3/4-3	3 ga.	3	3	
	BPS3/4-6	3 ga.	3	4 1/2	
	RP6	3/8"	6	5 3/4	
7/8	BP7/8-2	3/8"	1 15/16	2 1/4	190
	BP7/8	5/16"	3	3	
1	BP1	3/8"	3 1/2	3 1/2	190

1. BP5/8SKT sold as a kit.
2. 3 gauge is 0.229".



Typical BP Installed with a Mudsill Anchor Bolt



Typical RP6 Installation

AnchorMate®

Anchor Bolt Holder

The reusable AnchorMate® anchor bolt holder is designed to hold the anchor in place before the concrete pour, as required in some jurisdictions. The gripping section secures the bolt in place without a nut for quicker setup and teardown. It also protects the threads from wet concrete and simplifies trowel finishing.

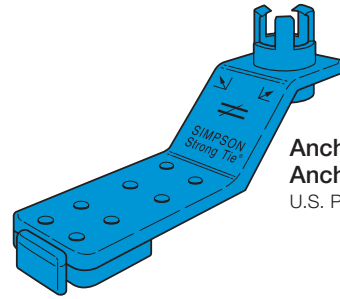
Features:

- Built-in 2x4 and 2x6 stops eliminate measuring.
- Color coded for easy size identification.
- Use the 5/8" and 7/8" AnchorMate to secure the SSTB to the formboard before the concrete pour. Alignment arrows (left or right) match the SSTB bolt head arrow.

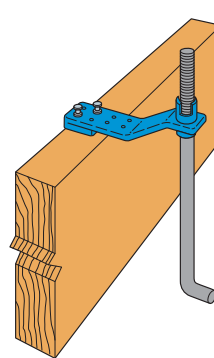
Material: Nylon

Codes: See p. 14 for Code Reference Key Chart

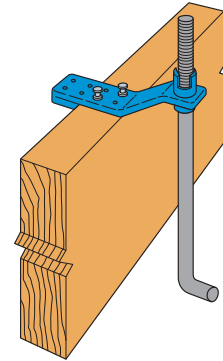
Model No.	Diameter (in.)	Color	Code Ref.
AM1/2	1/2	Yellow	180
AM5/8	5/8	Blue	
AM3/4	3/4	Red	
AM7/8	7/8	Green	
AM1	1	Black	



AnchorMate®
Anchor Bolt Holder
U.S. Patent 6,065,730



Typical AnchorMate Installation for a 2x6 Mudsill



Typical AnchorMate Installation for a 2x4 Mudsill

ABS

Anchor Bolt Stabilizer

The ABS stabilizes the anchor bolt to prevent it from being pushed against the form during the concrete pour.

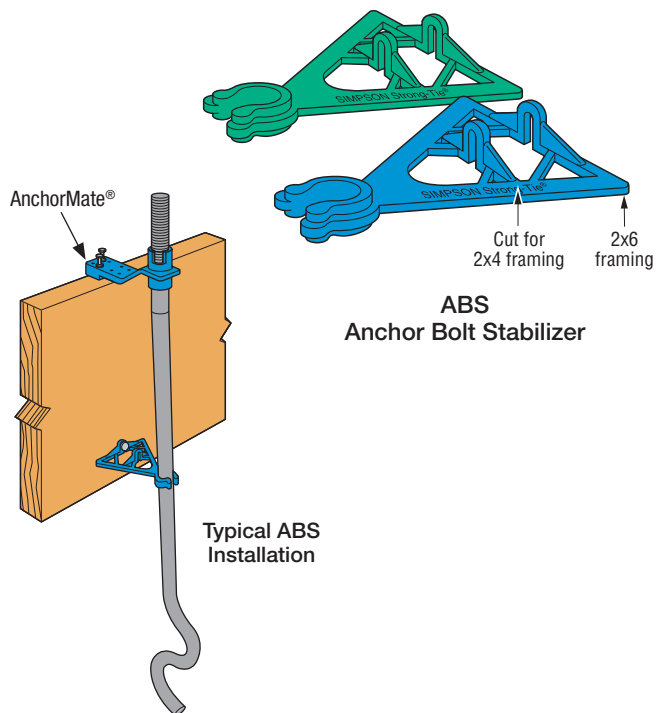
Features:

- Supports the bolt approximately 8" below the top of the concrete
- Model ABS5/8 is for the 5/8" SSTB and ABS7/8 is for the 7/8" SSTB
- Thin section limits the effect of a cold joint
- Sized for 2x4 and 2x6 mudsills

Material: Engineered Composite Plastic

Codes: See p. 14 for Code Reference Key Chart

Model No.	Diameter (in.)	Color	Code Ref.
ABS5/8	5/8	Blue	180
ABS7/8	7/8	Green	



Typical ABS Installation

ABS
Anchor Bolt Stabilizer

StrapMate®

Strap Holder

The StrapMate® is designed to keep the STHD and LSTHD straps vertically aligned during the concrete pour to minimize possibility of spalling. The friction fit allows for quick and easy installation.

Features:

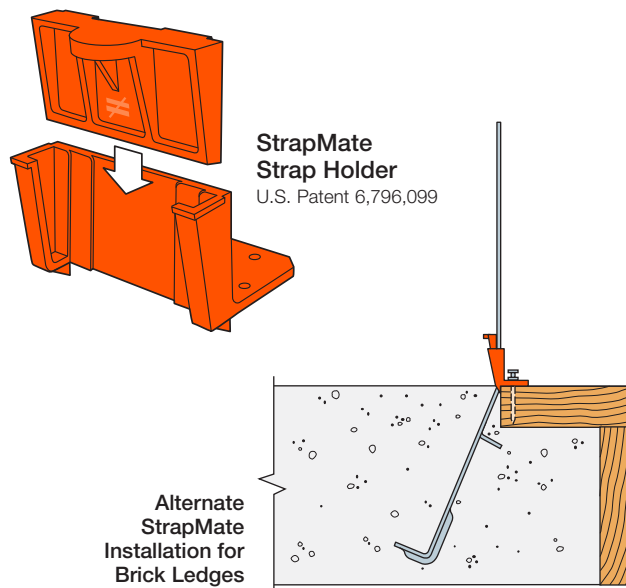
- The StrapMate is reusable
- Works with STHD, LSTHD

Material: Engineered Composite Plastic

- Designed to fit 3/4" plywood forms up to 1 3/4" LVL forms and larger
- The strap is positioned off the front edge of the form board

Codes: See p. 14 for Code Reference Key Chart

Model No.	Nails	Code Ref.
SM1	(2) 8d Duplex	180



ABL

Anchor Bolt Locator

The ABL enables the accurate and secure placement of anchor bolts on concrete-deck forms prior to concrete placement. The structural heavy-hex nut is attached to a pre-formed steel "chair," which eliminates the need for an additional nut on the bottom of the anchor bolt. Electro-galvanized versions available for HDG anchor bolts. Order ABL-OST when using HDG anchor bolts.

Features:

- Designed for optimum concrete flow.
- Installed with nails or screws.
- Meets code requirement for 1" standoff. Also available with 1 1/2" standoff. Order ABLXX-1.5.
- PAB anchors are not designed for use with the ABL. Contact Simpson Strong-Tie for pre-assembled anchor solutions to be used with ABL.

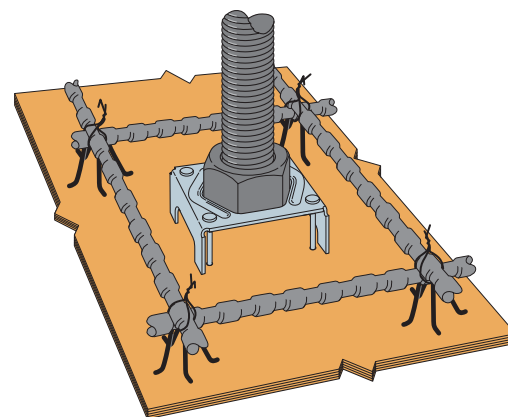
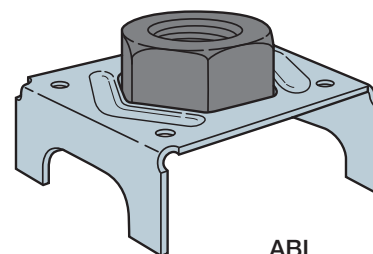
Material: Nut — Heavy hex; Chair — Steel

Finish: Nut — None or Electro-galvanized; Chair — G90; ABL-OST — HDG

Codes: See p. 14 for Code Reference Key Chart

Model No.	Anchor Bolt Diameter (in.)	Code Ref.
ABL4-1	1/2	180
ABL5-1	5/8	
ABL6-1	3/4	
ABL7-1	7/8	
ABL8-1	1	
ABL9-1	1 1/8	
ABL10-1	1 1/4	

See p. 59 for Shallow Anchorage information in podium slabs.

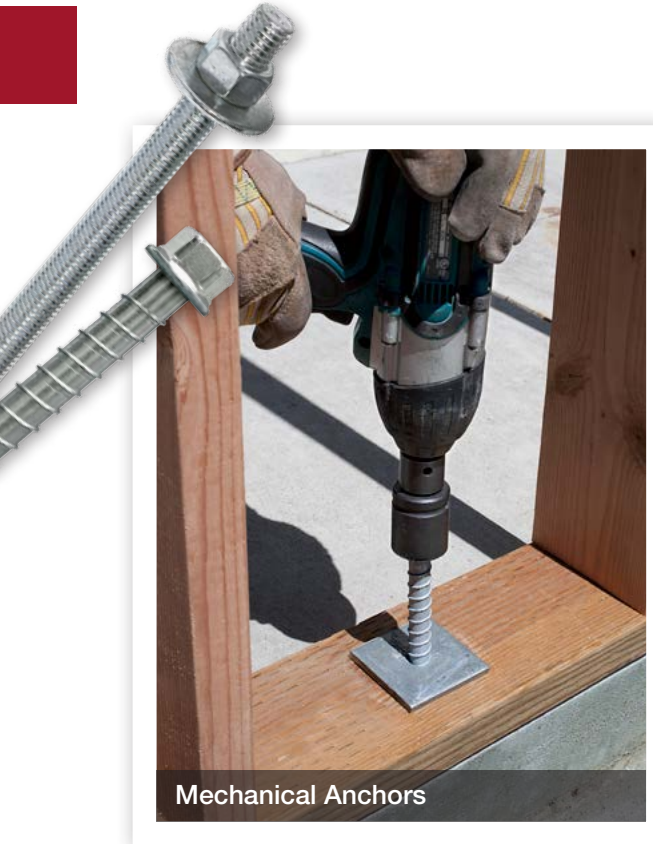


Anchoring Systems

Sill Plate Anchorage and Fastening Solutions

Simpson Strong-Tie offers many fastening and post-installed anchorage solutions for sill plate applications in concrete or concrete block foundations. These products are often used in retrofit/expansion applications or when cast-in-place anchors are omitted or mis-located. Various product finishes are available to address most environmental or preservative-treated wood conditions. For more information on product performance, installation requirements, corrosion and appropriate code listings for Simpson Strong-Tie® products, please visit strongtie.com.

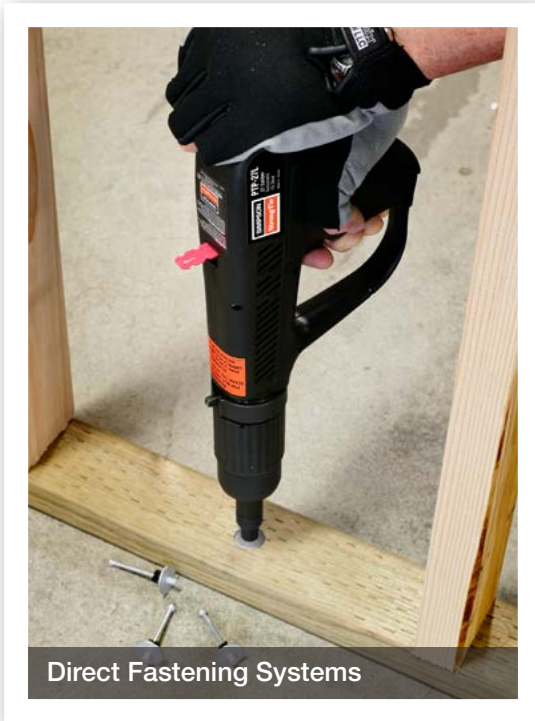
Concrete Connectors
and Anchors



Mechanical Anchors



Anchoring Adhesives



Direct Fastening Systems

Titen HD® concrete screw anchor may be used as a direct replacement for cast-in-place anchor bolts. Reference engineering letters L-A-THDREPLC and L-A-THDSILCMU at strongtie.com.



Anchoring Systems

For Cracked-Concrete Applications

SET-XP® High-Strength Epoxy Adhesive



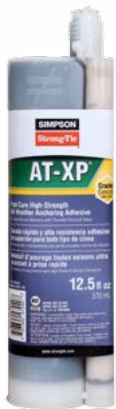
A two-part, high-strength epoxy anchoring adhesive system formulated for threaded rod and rebar anchoring into concrete (cracked/uncracked) and masonry, SET-XP is a teal color when mixed, providing easy post-installation identification.

Features:

- Qualified under ICC-ES AC308 regarding elevated temperature and long-term sustained loading conditions
- Code-listed under the IBC/IRC for cracked and uncracked concrete per ICC-ES ESR-2508
- Code-listed under the IBC/IRC for masonry per IAPMO UES ER-265
- Suitable for use under static and seismic loading conditions in cracked and uncracked concrete
- Multiple DOT listings; refer to strongtie.com/DOT
- Manufactured in the USA using global materials

Codes: ICC-ES ESR-2508 (concrete); IAPMO UES ER-265 (masonry); City of L.A. RR25744 (concrete); City of L.A. RR25965 (masonry); Florida [FL-97449.2](#) (concrete), [FL-162393](#) (masonry); [AASHTO M-235](#) and ASTM C 881 (Type I and IV, Grade 3, Class C); NSF/ANSI Standard 61 (216 in.²/1,000 gal.)

AT-XP® High-Strength, Fast-Cure, All-Weather Acrylic Adhesive



Formulated for high-strength anchorage of threaded rod and rebar into concrete (cracked/uncracked) and masonry under a wide range of conditions, AT-XP dispenses easily in cold or warm environments and, when mixed, is a dark teal color for easy post-installation identification.

Features:

- Qualified under ICC-ES AC308 regarding reduced temperature, elevated temperature, and long-term sustained loading conditions
- 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
- Fully cures in temperatures as low as 14°F (-10°C)
- Suitable for use under static and seismic loading conditions in cracked and uncracked concrete
- Manufactured in the USA using global materials

Codes: IAPMO UES ER-263 (concrete), ER-281 (masonry); City of L.A. RR25960 (concrete), RR25966 (masonry); Florida [FL-16230.1](#), NSF/ANSI Standard 61 (43.2 in.²/1,000 gal.)

ET-HP® Epoxy Adhesive



A two-part epoxy anchoring adhesive system formulated for threaded rod and rebar anchoring into concrete (cracked/uncracked) and masonry.

Features:

- Qualified under ICC-ES AC308 regarding elevated temperature and long-term sustained loading conditions
- Code-listed under the IBC/IRC for cracked and uncracked concrete per ICC-ES ESR-3372
- Code-listed under the IBC/IRC for uncracked masonry per IAPMO UES ER-241
- Suitable for use under static and seismic loading conditions in cracked and uncracked concrete
- Multiple DOT listings; refer to strongtie.com/DOT
- Manufactured in the USA using global materials

Codes: ICC-ES ESR-3372 (concrete); ICC-ES ESR-3638 (unreinforced masonry); IAPMO UES ER-241 (masonry); City of L.A. RR25120 (unreinforced masonry); [AASHTO M-235](#) and ASTM C 881 (Type IV, Grade 3, Class C); Florida [FL-17449.1](#), [FL-16230.2](#)

For complete information on these products, visit strongtie.com.

Anchoring Systems

For Cracked-Concrete Applications (cont.)

Speed Clean™ DXS Dust Extraction System



Developed in conjunction with the Bosch Alliance partnership, the Simpson Strong-Tie® Speed Clean™ DXS dust extraction system reduces dust while producing precise, clean holes for adhesive anchor installation. Speed Clean DXS drill bits work in conjunction with Bosch and other commonly available vacuum systems and rotohammers to offer best-in-class concrete drilling. See strongtie.com for more information.

Strong-Bolt® 2 Wedge Anchor



A wedge-type expansion anchor designed for optimum performance in cracked and uncracked concrete and uncracked masonry, the Strong-Bolt 2 is available in carbon-steel (¼" through 1" diameter) and Type 316 stainless steel (¼" through ¾" diameter).

Features:

- Code-listed under IBC/IRC in accordance with ICC-ES AC193 for cracked and uncracked concrete per ICC-ES ESR-3037
- Code-listed under IBC/IRC in accordance with ICC-ES AC01 for masonry per IAPMO UES ER-240
- Qualified for static and seismic loading conditions

Codes: ICC-ES ESR-3037(concrete); IAPMO UES ER-240 (carbon steel in CMU); City of L.A. RR25891 (concrete), RR25936 (carbon steel in CMU); Florida [FL-15731.2](#), [FL-16230.4](#); UL File Ex3605; FM 3043342 and 3047639; meets the requirements of Federal Specifications A-A-1923A, Type 4

Titen HD® Concrete Heavy-Duty Screw Anchor



The original, patented, high-strength screw anchor that offers industry-leading performance in cracked and uncracked concrete and uncracked masonry, the Titen HD installs with low-installation torque for maximum efficiency.

Features:

- Code-listed under IBC/IRC in accordance with ICC-ES AC193 for cracked and uncracked concrete per ICC-ES ESR-2713; includes Titen HD® Rod Hanger (models THD37212RH and THD50234RH only)
- 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
- Standard fractional sizes; no special drill bits required
- Removable; ideal for temporary anchoring applications like formwork or bracing

Codes: ICC-ES ESR-2713 (concrete), ICC-ES ESR-1056 (masonry); City of L.A. RR25741 (concrete), RR25560 (masonry); Florida [FL-15730.6](#); FM 3017082, 3035761 and 3043442

U.S. Patents
5,674,035 and
6,623,228

For complete information on these products, visit strongtie.com.

Anchoring Systems

For General-Purpose Applications

SET Anchoring Adhesive



A non-shrink, epoxy-based anchoring system, SET is formulated for anchoring threaded rod and rebar in a wide range of base materials.

Features:

- Code-listed under the IBC/IRC for URM per ICC-ES ESR-1772
- Excellent as a pick-proof sealant around doors, windows and fixtures
- CalTrans and multiple DOT listings; refer to strongtie.com/DOT
- Manufactured in the USA using global materials

Codes: ICC-ES ESR-1772 (URM); Florida [FL-15730.5](#); [AASHTO M-235](#) and ASTM C 881 (Type I and IV, Grade 3, Class C); NSF/ANSI Standard 61 (216 in.²/1,000 gal.)

AT Fast-Cure, All-Weather Anchoring Adhesive



An acrylic-based adhesive anchoring system, AT is formulated for use as a high-strength anchoring material for threaded rod and rebar in a wide range of temperatures and base materials.

Features:

- Code-listed under the IBC/IRC for URM per ICC-ES ESR-1958
- Fully cures in temperatures as low as 0°F (-18°C)
- Multiple DOT listings; refer to strongtie.com/DOT
- Manufactured in the USA using global materials

Codes: ICC-ES ESR-1958 (URM); [AASHTO M-235](#) and ASTM C 881 (Type I and IV, Grade 3, Class A, B and C – except AT is a non-epoxy formulated for fast cure time)

Wedge-All® Wedge Anchor



A non-bottom bearing, wedge-style expansion anchor for use in solid concrete or grout-filled masonry, the Wedge-All is available in carbon steel, mechanically galvanized, and Types 303/304/316 stainless steel.

Features:

- Code-listed under the IBC/IRC for CMU per ICC-ES ESR-1396
- One-piece, wrap-around clip ensures uniform holding capacity
- Chamfered thread end for ease of starting nut
- Wide range of diameters and lengths for added versatility

Codes: ICC-ES-ESR-1396 (CMU); Florida [FL-15730.7](#); FM 3017082 and 3131136; UL File Ex3605; meets the requirements of Federal Specifications A-A-1923A, Type 4.

Note: The Tie-Wire Anchor is not code-listed.

For complete information on these products, visit strongtie.com.

Holdowns and Tension Ties



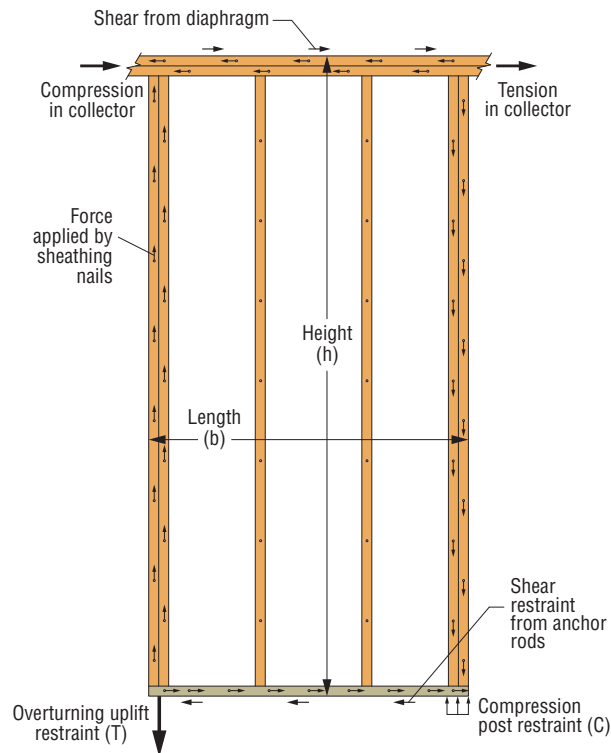
General Information and Notes

Holdowns and tension ties represent key components that comprise a continuous load path. In light-frame construction, holdowns are typically used to resist uplift due to shearwall overturning or wind uplift forces. In panelized roof construction, holdowns are used to anchor the concrete or masonry walls to the roof framing.

Holdowns can be separated into two categories — post-installed or cast-in-place. Cast-in-place holdowns, such as the STHD holdowns or the PA purlin anchors are installed at the time of concrete placement and attached to wood framing with nails. Cast-in-place holdowns are an economical anchorage solution with allowable loads up to 5,300 lb.

After the concrete has been placed, post-installed holdowns are attached to anchor bolts during wall framing. They are attached to the wood framing with nails, Simpson Strong-Tie® Strong-Drive® SD Connector screws and Strong-Drive SDS Heavy-Duty Connector screws or bolts and have allowable loads ranging from about 850 lb. up to nearly 20,000 lb.

The Holddown Selector is a simple web application that selects holddown solutions based on design loads. See strongtie.com/holddownselector for more information.



Idealized Force Diagram on Full-Height Shearwall Segment

Holddown Selector

Holddown connectors are typically used to anchor shearwall segments against overturning. This Holddown Selector is a quick and easy tool that selects the most cost effective holddown connector based on the type of installation, demand load and the species of the post.

Version 3.3

HOLDOWN SELECTOR VIDEO TUTORIAL

Select your country US CA

Select holddown installation method

Cast-in-Place

Select this if the holddown connector is to be installed prior to placement of concrete.

Post Installed

Select this if the holddown connector is to be installed after placement of concrete.

Post installed input information

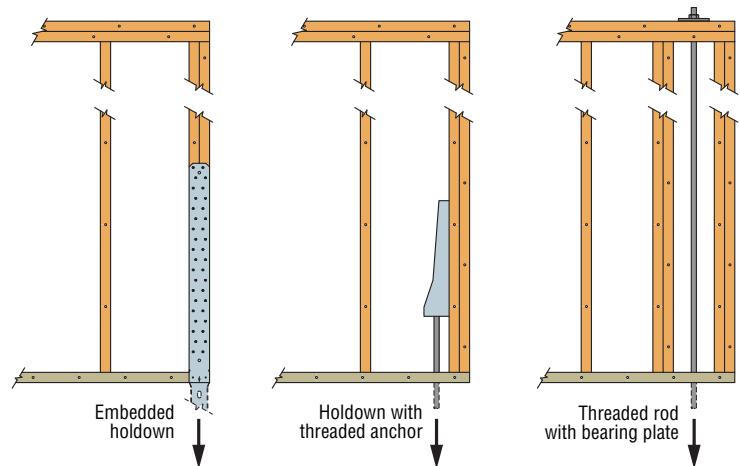
Demand Load (D) Wood Species (S)

RESULTS HOLDOWN SELECTOR (US) OCTOBER 20, 2016

Holddown Application	Holddown Model	Holddown Capacity	Deflection at Demand Load	Minimum Post Thickness	Anchor Bolt Diameter	Required Fasteners	Installed Cost Index
Screwed	DT122	1825 lbs	0.029 in.	1.5 in.	1/2 in.	8-SDS 1/4"x3 1/2"	Lowest
Screwed	DT122-SDS2.5	2145 lbs	0.02 in.	3.0 in.	1/2 in.	8-SDS 1/4"x3 1/2"	+10%
Screwed	HT14	4455 lbs	0.013 in.	3.0 in.	5/8 in.	18-SD #10X 1 1/2"	+94%
Screwed	HQ10-SDS2.5	3075 lbs	0.014 in.	3.0 in.	5/8 in.	8-SDS 1/4"x3 1/2"	+109%
Nailed	LTT19	1319 lbs	0.089 in.	3.0 in.	1/2, 5/8 or 3/4 in.	8-10d x 1 1/2"	+46%
Bolted	H038	1895 lbs	0.041 in.	1.5 in.	5/8 in.	3-3/8"x3" M.S.	+83%

NOTE:
Holddown and Tension Tie allowable loads are based on installation with an anchor rod length of 8" from the concrete to the top of the holddown seat. The products may be rated to any height with consideration of the increased deflection due to additional bolt elongation.

Holddown Selector
strongtie.com/holddownselector

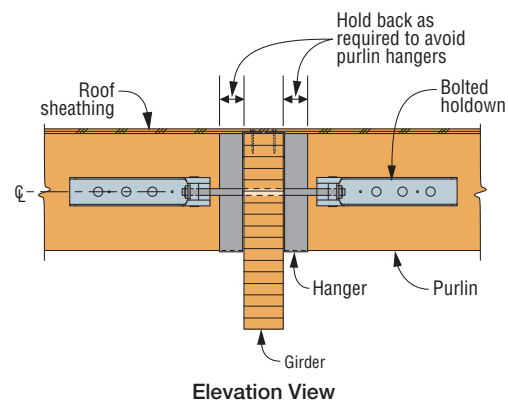
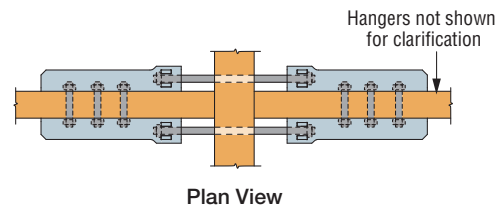
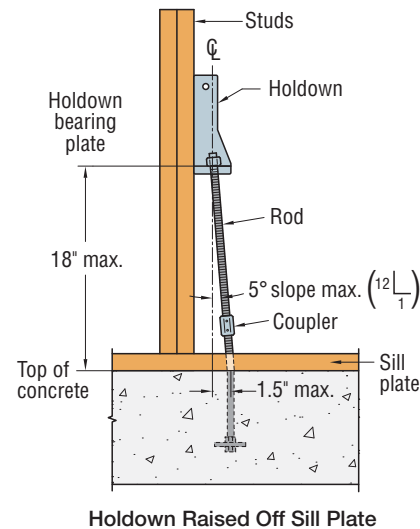


Methods of Providing Overturning Restraint

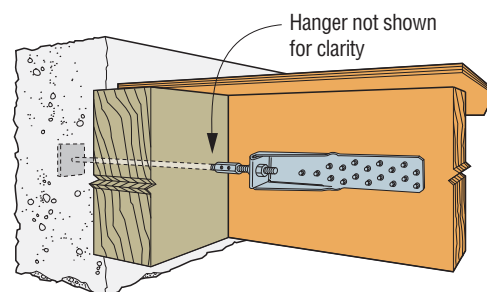
General Information and Notes (cont.)

Holddown and Tension Tie General Notes:

- Allowable loads have been increased for earthquake or wind load durations with no further increase allowed. Reduce where other loads govern.
- To obtain LRFD values for cast-in-place holdowns (STHD and PA), multiply ASD seismic load values by 1.4 and wind load values by 1.6 (1.67 for 2015 IBC). For post-installed holdowns, multiply allowable loads by 1.4.
- Use all specified fasteners.
- The Designer must specify anchor bolt type, length and embedment. See pp. 54–58 for SB and SSTB anchor bolts and p. 60 for PAB anchor bolts. See p. 62 for anchor recommendations for each holddown. Refer to technical bulletin T-A-ANCHORSPEC at strongtie.com for anchor solutions for wind and low seismic applications.
- Anchor bolt nut should be finger tight plus $\frac{1}{3}$ to $\frac{1}{2}$ turn with a hand wrench, with consideration given to possible future wood shrinkage. Care should be taken not to over-tighten the nut. Impact wrenches should not be used.
- Post or beam by Designer. Minimum no. 2 or better. Tabulated loads are based on a minimum 3½"-wide post (in a 3½" wall), unless noted otherwise. Posts may consist of multiple members provided they are connected independently of the holddown fasteners. See pp. 383–385 for common post allowable loads. Posts shall be grade no. 2 or better, unless noted otherwise.
- Holdowns are for use in vertical or horizontal applications.
- Tension values are valid for holdowns installed flush or raised off the sill plate.
- Deflection at Allowable Tension Load is determined by testing on wood posts and includes fastener slip, holddown deformation and anchor rod elongation for holdowns installed 6" above top of concrete (4½" for HTT). Holddown deflections may be linearly reduced for design loads less than the allowable load.
- At 1.5" max. offset anchor bolt, holdowns may be installed raised up to 18" above the top of concrete with no load reduction provided that additional elongation of the anchor rod is accounted for.
- Tabulated loads for bolted holdowns may be doubled when holdowns are installed on opposite sides of the wood member. Designer must evaluate the allowable load of the wood member and the anchorage.
- Tabulated loads for nailed or screwed holdowns may be doubled when holdowns are installed on opposite sides of the wood member. Member must be thick enough to prevent opposing holddown fastener interference or the holdowns are offset to eliminate fastener interference. Designer must evaluate the allowable load of the wood member and the anchorage. See pp. 383–385 for common post allowable loads.
- Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers known as the narrow face. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for load reductions due to narrow face installations.



Purlin-to-Purlin Cross-Tie Detail



HDQ8/HHDQ

Holdowns

The HHDQ series of holdowns combines low deflection and high loads with ease of installation. The unique seat design of the HDQ8 greatly minimizes deflection under load. Both styles of holddown employ the Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws which install easily, reduce fastener slip and provide a greater net section when compared to bolts. They may be installed either flush or raised off the mudsill without a reduction in load value.

Special Features:

- Uses Strong-Drive SDS Heavy-Duty Connector screws which install easily, reduce fastener slip, and provide a greater net section area of the post compared to bolts
- Strong-Drive SDS Heavy-Duty Connector screws are supplied with the holdowns to ensure proper fasteners are used
- No stud bolts to countersink at openings

Material: HDQ8 — 7 gauge; HHDQ — Body: 7 gauge, washer: ½" plate

Finish: HDQ8 — Galvanized; HHDQ — Simpson Strong-Tie® gray paint; **HHDQ11** — Available in stainless steel

Installation:

- See General Notes on pp. 75–76
- No additional washer is required
- Strong-Drive SDS Heavy-Duty Connector screws install best with a low-speed high-torque drill with a ⅜" hex-head driver

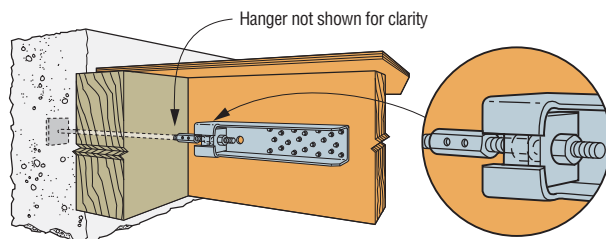
HDQ8:

- ⅝" of adjustability perpendicular to the wall

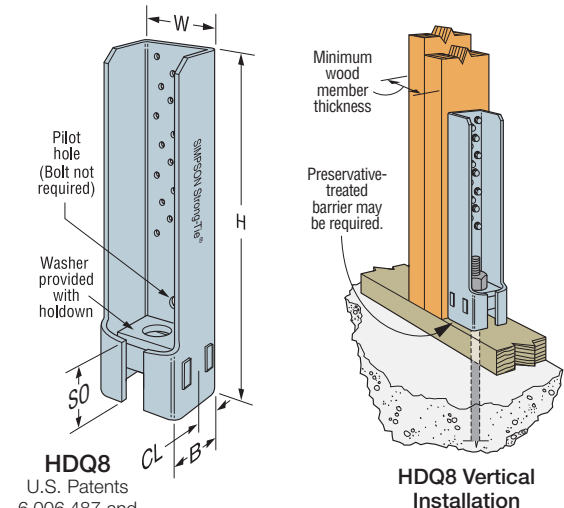
HHDQ11/14:

- No additional washer is required
- HHDQ14 requires a heavy-hex anchor nut (supplied with holddown)

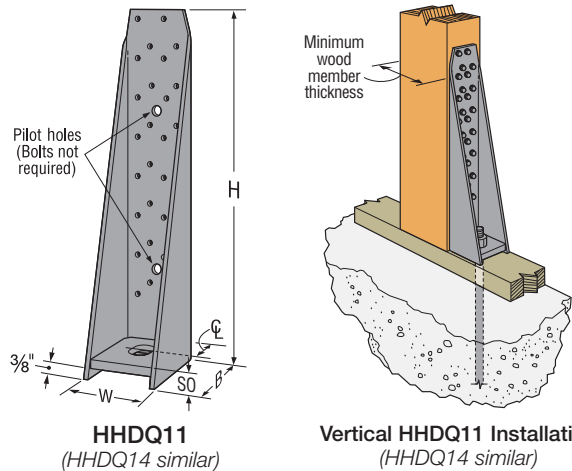
Codes: See p. 14 for Code Reference Key Chart



Horizontal HDQ8 Installation



HDQ8 Vertical Installation



Vertical HHDQ11 Installation (HHDQ14 similar)

Not sure you have the right holddown?
Our Holddown Selector software is a great tool to help you select the best product for the job. Visit strongtie.com/software.

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Ga.	Dimensions (in.)					Fasteners		Minimum Wood Member Thickness (in.)	Allowable Tension Loads (160)			Code Ref.
		W	H	B	CL	SO	Anchor Bolt Dia. (in.)	SDS Screws		DF/SP	SPF/HF	Deflection at Allowable Load (in.)	
HDQ8-SDS3	7	2⅞	14	2½	1¼	2⅞	⅞	(20) ¼" x 3"	3	5,715	4,115	0.064	I6, L8, FL
								(20) ¼" x 3"	3½	7,630	5,495	0.094	
								(20) ¼" x 3"	4½	9,230	6,645	0.095	
SS HHDQ11-SDS2.5	7	3	15½	3½	1½	⅞	1	(24) ¼" x 2½"	5½	11,810	8,505	0.131	
									7¼	13,015	9,370	0.107	
HHDQ14-SDS2.5	7	3	18¾	3½	1½	⅞	1	(30) ¼" x 2½"	5½²	13,710	10,745	0.107	

1. See pp. 75–76 for Holddown and Tension Tie General Notes.
2. Noted HHDQ14 allowable loads are based on a 5½"-wide post (6x6 min.). Other loads based on 3½"-wide post minimum.
3. HHDQ14 requires heavy-hex anchor nut (supplied with holddown).
4. HDQ and HHDQ installed horizontally achieve compression loads with the addition of a standard nut on the underside of the load transfer plate. Refer to ICC-ES ESR 2320 for design values. HDQ8 requires a standard nut and BP⅞-2 (sold separately) load washer on the underside of the holddown for compression load. Design of anchorage rods for compression force shall be per the Designer.

HDU/DTT

Holdowns



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.

HDU holdowns are pre-deflected during the manufacturing process, virtually eliminating deflection under load due to material stretch. They use Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws which install easily, reduce fastener slip and provide a greater net section when compared to bolts.

The DTT tension ties are designed for lighter-duty holddown applications on single 2x posts. The DTT1Z is installed with nails or Simpson Strong-Tie Strong-Drive SD Connector screws and the DTT2Z installs easily with the Strong-Drive SDS Heavy-Duty Connector screws (included). The DTT1Z holddowns have been tested for use in designed shearwalls and prescriptive braced wall panels as well as prescriptive wood-deck applications (see p. 337 for deck applications).

For more information on holddown options, contact Simpson Strong-Tie.

HDU Special Features:

- Holddown designs virtually eliminate deflection due to material stretch
- Uses Strong-Drive SDS Heavy-Duty Connector screws which install easily, reduce fastener slip, and provide a greater net section area of the post compared to bolts
- Strong-Drive SDS Heavy-Duty Connector screws are supplied with the holddowns to ensure proper fasteners are used
- No stud bolts to countersink at openings

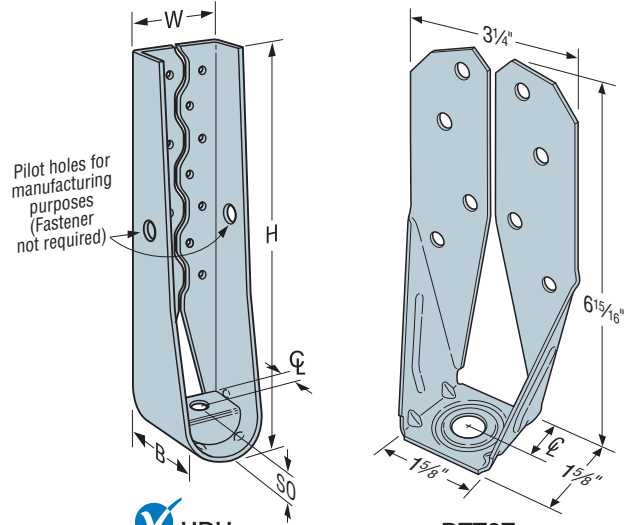
Material: See table

Finish: HDU — Galvanized; DTT1Z and DTT2Z — ZMAX® coating; DTT2SS — stainless steel

Installation:

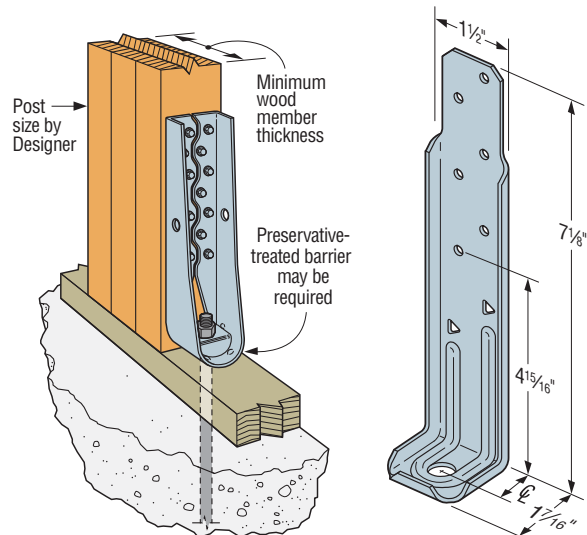
- See General Notes on pp. 75–76
- The HDU requires no additional washer, the DTT requires a standard-cut washer (included with DTT2Z) be installed between the nut and the seat
- Strong-Drive SDS Heavy-Duty Connector screws install best with a low-speed high-torque drill with a 3/8" hex-head driver

Codes: See p. 14 for Code Reference Key Chart



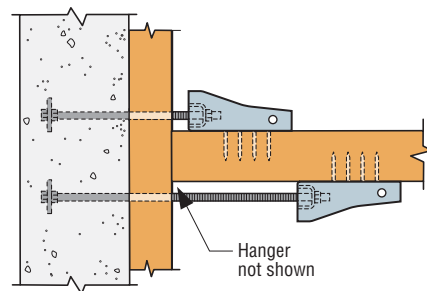
HDU
U.S. Patents
5,979,130

DTT2Z
U.S. Patent
8,555,580



Vertical HDU Installation

DTT1Z
U.S. Patent
Pending



Horizontal HDU Offset Installation
(Plan view)

See Holddown and Tension Tie General Notes on p. 76.

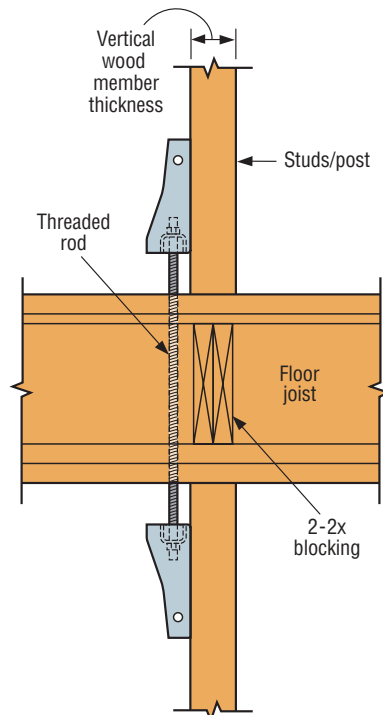
HDU/DTT

Holdowns (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Ga.	Dimensions (in.)					Fasteners		Minimum Wood Member Thickness (in.)	Allowable Tension Loads (160) ¹			Code Ref.
		W	H	B	ϕ	SO	Anchor Bolt Dia. (in.)	Post Fasteners		DF/SP	SPF/HF	Deflection at Allowable Load (in.)	
DTT1Z	14	1½	7½	1⅞	¾	⅝	⅝	(6) SD #9 x 1½"	1½	840	840	0.170	IP2, L19, FL
								(6) 10d x 1½"		910	640	0.167	
								(8) 10d x 1½"		910	850	0.167	
SS DTT2Z	14	3¼	6⅞	1⅝	1⅞	⅝	½	(8) ¼" x 1½" SDS	1½	1,825	1,800	0.105	I6, L8, FL
								(8) ¼" x 1½" SDS	3	2,145	1,835	0.128	
SS DTT2Z-SDS2.5								(8) ¼" x 2½" SDS	3	2,145	2,105	0.128	
HDU2-SDS2.5	14	3	8⅞	3¼	1⅞	1⅝	⅝	(6) ¼" x 2½" SDS	3	3,075	2,215	0.088	
HDU4-SDS2.5	14	3	10⅞	3¼	1⅞	1⅝	⅝	(10) ¼" x 2½" SDS	3	4,565	3,285	0.114	
HDU5-SDS2.5	14	3	13⅞	3¼	1⅞	1⅝	⅝	(14) ¼" x 2½" SDS	3	5,645	4,065	0.115	
HDU8-SDS2.5	10	3	16⅞	3½	1⅝	1½	⅞	(20) ¼" x 2½" SDS	3	6,765	4,870	0.110	
									3½	6,970	5,020	0.116	
									4½	7,870	5,665	0.113	
HDU11-SDS2.5	10	3	22¼	3½	1⅝	1½	1	(30) ¼" x 2½" SDS	5½	9,335	6,865	0.137	
									7¼	11,175	8,045	0.137	
HDU14-SDS2.5	7	3	25⅞	3½	1⅞	1⅞	1	(36) ¼" x 2½" SDS	4x6 ^{3,4}	10,770	7,755	0.122	170
									7¼ ³	14,390	10,435	0.177	I6, L8, FL
									5½ ^{2,3}	14,445	10,350	0.172	

- See pp. 75–76 for Holddown and Tension Tie General Notes.
- Noted HDU14 allowable loads are based on a 5½" wide post (6x6 min.).
- HDU14 requires heavy-hex anchor nut to achieve tabulated loads (supplied with holddown).
- Loads are applicable to installation on either narrow or wide face of post.



Typical HDU Tie Between Floors

LTT/HTT

Tension Ties

Tension ties offer a solution for resisting tension loads that are fastened with nails. The HTT4 and HTT5 are the latest generation of tension ties. They feature an optimized nailing pattern which results in better performance with less deflection. Designed to meet rigorous code standards, the HTT4 and HTT5 offer higher loads than their predecessors.

HTT5KT is sold as a kit with the holdown, bearing plate washer and Strong-Drive® SD Connector screws. The HTT5-3/4 is designed to use a 3/4"-diameter anchor bolt. 3/4" post-installed anchor bolts are commonly used when retrofitting tension ties to horizontal wood members.

The LTT19 Light Tension Tie is designed for 2x joists or purlins and the LTT20B is for nail- or bolt-on applications. The 3" nail spacing makes the LTT20B suitable for wood I-joists with 10d x 1 1/2". The LTTI31 is designed for wood chord open-web truss attachments to concrete or masonry walls and may also be installed vertically on a minimum 2x6 stud.

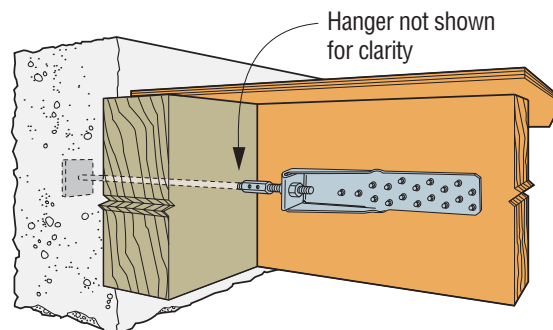
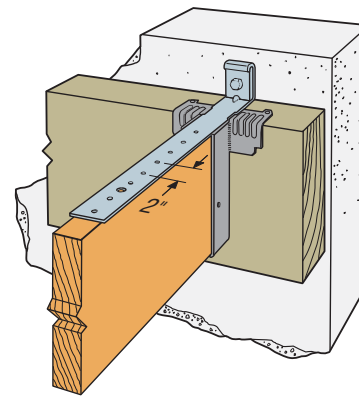
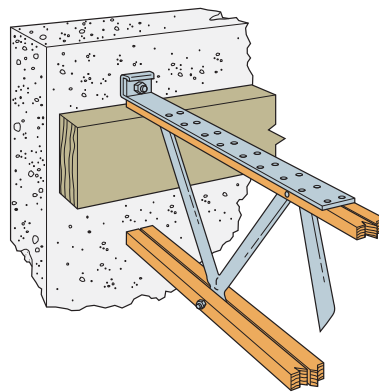
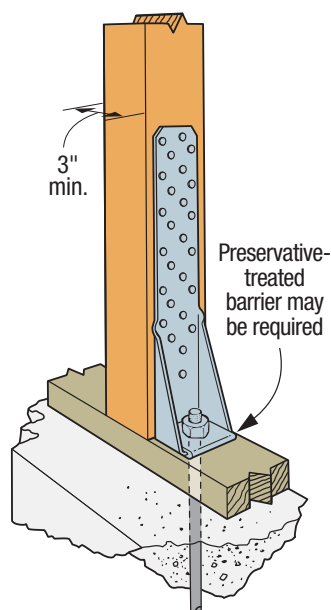
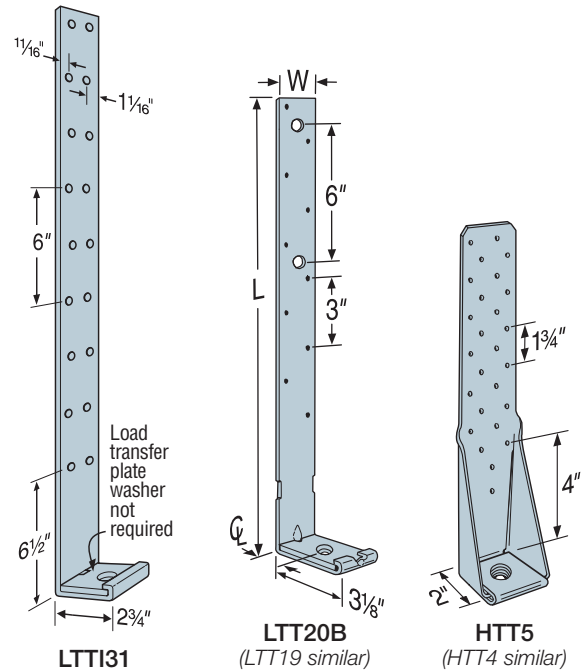
Material: See table

Finish: Galvanized. May be ordered HDG; contact Simpson Strong-Tie.

Installation:

- See General Notes on p. 75-76.
- A standard-cut washer is required for LTT19 and LTT20B when using 1/2" or 5/8" anchor bolts. No additional washer is required when using 3/4" anchor bolt.

Codes: See p. 14 for Code Reference Key Chart



LTT/HTT

Tension Ties (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39-40 for more information.

Model No.	Strap Mat. (ga.)	Dimensions (in.)			Seat Thickness (in.)	Fasteners		Minimum Wood Member Size (in.)	Allowable Tension Loads (160)		Deflection at Highest Allowable Load	Code Report
		W	L	℄		Anchor Bolts	Fasteners		DF/SP	SPF/HF		
LTT19	16	1¾	19½	1¾	⅝	½, ⅝ or ¾	(8) 10d x 1½"	1½ x 5½	1,310	1,125	0.180	L19, IP2, FL
							(8) 10d x 1½"	3 x 3½	1,310	1,125	0.180	
							(8) 10d	3 x 3½	1,340	1,150	0.157	
LTT20B	12	2	19¾	1½	⅝	½, ⅝ or ¾	(10) 10d x 1½"	3 x 3½	1,355	1,165	0.195	
							(10) 10d	3 x 3½	1,500	1,290	0.185	
							(2) ½" Bolt	3 x 3½	1,625	1,400	0.183	
LTTI31	18	3¾	31	1¾	¼	⅝	(18) 10d x 1½"	3 x 3½	1,350	1,160	0.193	
HTT4	11	2½	12¾	1⅝	⅞	⅝	(18) 10d x 1½"	1½ x 5½	3,000	2,580	0.090	160
							(18) 10d x 1½"	3 x 3½	3,610	3,105	0.086	
							(18) 16d x 2½"	3 x 3½	4,235	3,640	0.123	L19, IP2, FL
							(18) SD #10 x 1½"	1½ x 5½	4,455	3,830	0.112	
							(18) SD #10 x 1½"	3 x 3½	4,455	3,830	0.112	
HTT5	11	2½	16	1⅝	⅞	⅝	(26) 10d x 1½"	3 x 3½	4,350	3,740	0.120	L19, IP2, FL
							(26) 10d	3 x 3½	4,670	4,015	0.116	
							(26) 16d x 2½"	3 x 3½	5,090 ³	4,375 ³	0.135	
							(26) SD #10 x 1½"	1½ x 5½	4,555	3,915	0.114	160
HTT5KT	11	2½	16	1⅝	⅞	⅝	(26) SD #10 x 2½"	3 x 3½	5,445	5,360	0.103	160
HTT5-¾	11	2½	16	1⅝	⅞	¾	(26) 10d x 1½"	1½ x 5½	4,065	3,495	0.103	IP2, FL
							(26) SD #10 x 1½"	1½ x 7¼	4,830	4,155	0.100	
							(26) 16d x 2½"	3 x 3½	5,090	4,275	0.121	

- LTTI31 installed flush with concrete or masonry has an allowable load of 2,285 lb.
- Allowable load for HTT5 with a BP¾-2 bearing plate washer installed in the seat of the holdown is 5,295 lb. for DF/SP and 4,555 lb. for SPF/HF.
- Fasteners:** 10d x 1½" = 0.148 dia. x 1½" long, 10d = 0.148" dia. x 3" long, 16d x 2½" = 0.162" dia. x 2½" long, SD #10 x 1½" = 0.161" dia. x 1½", SD #10 x 2½" = 0.161" dia. x 2½".

Table 1 — Anchorage Selection Guide for Holdowns Attached to DF/SP Lumber

Holdown on DF/SP Lumber	Stemwall Width (in.)	Stemwall				Slab on Grade			
		Wind and Seismic Design Category A&B		Seismic Design Category C-F		Wind and Seismic Design Category A&B		Seismic Design Category C-F	
		Midwall/Corner	End Wall	Midwall/Corner	End Wall	Midwall/Corner	Garage Curb	Midwall/Corner	Garage Curb
HDU2	6	SSTB16	SSTB24	SSTB16	SSTB16	SSTB16	SSTB20*	SSTB16	SSTB20*
HDU4	6	SSTB24* (4.470)	SB¾x24	SSTB16	SSTB20	SSTB16	SSTB20*	SSTB16	SSTB20*
HDU5	6	SB¾x24	SB¾x24	SSTB16	SSTB20	SSTB16	SSTB20*	SSTB16	SSTB20*
HDU8	8	SSTB28	SSTB28* (7.615)	SSTB28	SSTB28	SSTB28	SSTB28	SSTB28	SSTB28
HD08	8	SB¾x24	PAB7	PAB7	PAB7	SSTB28	SSTB28	SSTB28	PAB7

Table 2 — Anchorage Selection Guide for Holdowns Attached to SPF/HF Lumber

Holdown on SPF/HF Lumber	Stemwall Width (in.)	Stemwall				Slab on Grade			
		Wind and Seismic Design Category A&B		Seismic Design Categories C-F		Wind and Seismic Design Category A&B		Seismic Design Categories C-F	
		Midwall/Corner	End Wall	Midwall/Corner	End Wall	Midwall/Corner	Garage Curb	Midwall/Corner	Garage Curb
HDU2	6	SSTB16	SSTB16	SSTB16	SSTB16	SSTB16	SSTB16	SSTB16	SSTB16
HDU4	6	SSTB16	SSTB16	SSTB16	SSTB16	SSTB16	SSTB16	SSTB16	SSTB16
HDU5	6	SSTB20* (4.040)	SB¾x24	SSTB16	SSTB20*	SSTB16	SSTB20* (4.040)	SSTB16	SSTB20*
HDU8	8	SSTB28	SSTB28	SSTB28	SSTB28	SSTB28	SSTB28	SSTB28	SSTB28
HD08	8	SSTB28	SSTB28	SSTB28	SSTB28*	SSTB28	SSTB28	SSTB28	SSTB28
HDU11	8	SB1x30	PAB8	SB1x30	PAB8	SB1x30	SB1x30	SB1x30	SB1x30
HDQ11	8	SB1x30	PAB8	SB1x30	PAB8	SB1x30	SB1x30	SB1x30	SB1x30
HD12	—	—	—	—	—	—	—	—	—
HDQ14	—	—	PAB8	—	PAB8	—	—	—	—
LTT19	6	—	—	—	—	—	—	—	—
LTT20B	6	—	—	—	—	—	—	—	—
LTT31	6	—	—	—	—	—	—	—	—
HTT4	6	SSTB16* (3.610)	SB¾x24	SSTB16	SSTB16*	SSTB16	SSTB16*	SSTB16	SB¾x24
HTT5	6	SSTB24	SB¾x24	SSTB16	SSTB24	SSTB16	SSTB24	SSTB16	SB¾x24

We've made selecting the right anchor bolt for the holdown easier. Check out our new Holdown Anchorage Solutions table on pp. 62-63.

HDB/HD

Holdowns

Simpson Strong-Tie offers a wide variety of bolted holdowns offering low-deflection performance for a range of load requirements.

The HD3B is a light-duty holddown designed for use in shearwalls and braced-wall panels, as well as other lateral applications.

The HD5B, HD7B and HD9B bolted holdowns incorporate the proven design of our HDQ8 SDS-style holddown and feature a unique seat design which greatly minimizes deflection under load. HDB holdowns are self-jigging, ensuring that the code-required minimum of seven bolt diameters from the end of the post is met. They can be installed directly on the sill plate or raised above it and are suitable for back-to-back applications where eccentricity is a concern. HDBs are designed to provide loads for intermediate-load-range shearwalls, braced-wall panels and lateral applications.

HD holdowns offer the highest allowable loads, providing high capacity for both vertical and horizontal applications. The HD12 and HD19 are self-jigging, ensuring that the code-required minimum of seven bolt diameters from the end of the post is met. They can be installed back-to-back when eccentricity is an issue.

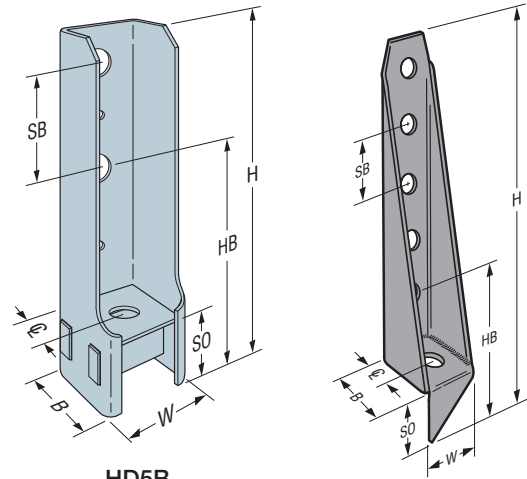
Material: See table

Finish: HD3B/HD5B/HD7B/HD9B — Galvanized;
 HD — Simpson Strong-Tie® gray paint; **HDG available.**
 For stainless steel options, see L-C-SSHD at strongtie.com.

Installation: • See General Notes on pp. 75–76

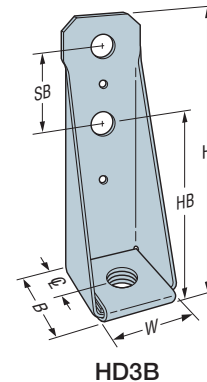
- Bolt holes shall be a minimum of $\frac{1}{32}$ " to a maximum of $\frac{1}{16}$ " larger than the bolt diameter (per 2015 NDS, section 12.1.3.2)
- Stud bolts should be snugly tightened with standard cut washers between the wood and nut (BPs are required in the City and County of Los Angeles)
- HD and HDB holdowns are self-jigging and will ensure minimum bolt end distance when installed flush with the sill plate
- Standard cut washer is required under the anchor nut for HD12 with 1" anchor and HD19 with $1\frac{1}{8}$ " anchors

Codes: See p. 14 for Code Reference Key Chart

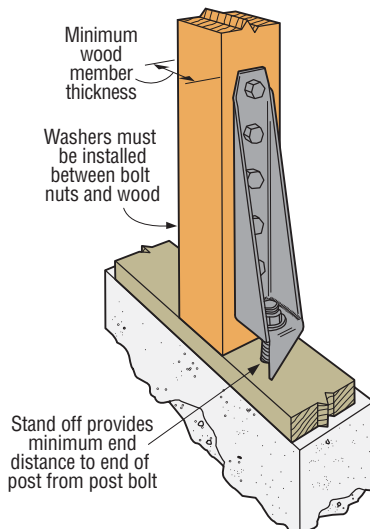


HD5B
 (HD7B and HD9B similar)
 U.S. Patents
 6,006,487 and 6,327,831

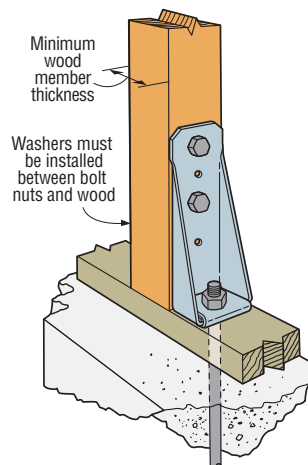
HD19
 (HD12 similar)



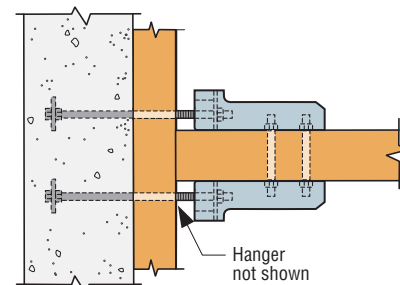
HD3B



Vertical HD19 Installation



Vertical HD3B Installation



Horizontal HDB Installation
 (Plan view)

HDB/HD

Holdowns (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Material		Dimensions (in.)							Fasteners		Minimum Wood Member Thickness (in.)	Allowable Tension Loads (160)		Deflection at Highest Allowable Load	Code Ref.	
	Base (in.)	Body (ga.)	HB	SB	W	H	B	ϕ	SO	Anchor Dia.	Stud Bolts		DF/SP	SPF/HF			
HD3B	—	12	4¾	2½	2½	8¾	2¼	1⅝	¾	¾	(2) ⅝	1½	1,895	1,610	0.156	IP3, FL, L21	
												2½	2,525	2,145	0.169		
												3	3,130	3,050	0.120		
												3½	3,130	3,050	0.120		
HD5B	¾	10	5¼	3	2½	9¾	2½	1¼	2	⅝	(2) ¾	1½	2,405	2,070	0.153		
												2½	3,750	3,190	0.129		
												3	4,505	3,785	0.156		
												3½	4,935	4,195	0.150		
HD7B	¾	10	5¼	3	2½	12¾	2½	1¼	2	⅞	(3) ¾	3	6,645	5,650	0.142		
												3½	7,310	6,215	0.154		
												4½	7,345	6,245	0.155		
HD9B	¾	7	6⅝	3½	2⅞	14	2½	1¼	2⅞	⅞	(3) ⅞	3½	7,740	6,580	0.159		
												4½	9,920	8,435	0.178		
												5½	9,920	8,430	0.178		
												7¼	10,035	8,530	0.179		
HD12	¾	3	7	4	3½	20¾	4¼	2½	3⅝	1	(4) 1	3½	11,350	9,215	0.171		
												4½	12,665	10,765	0.171		
												5½ x 5½	14,220	12,085	0.162		
												1⅝	(4) 1	3½	11,775	9,215	0.171
														4½	13,335	11,055	0.177
														7¼	15,435	13,120	0.194
HD19	¾	3	7	4	3½	24½	4¼	2½	3⅝	1⅝	(5) 1	7¼	16,735	14,225	0.191		
												5½ x 5½	16,775	12,690	0.200		
												1¼	(5) 1	7¼	19,360	15,270	0.180
														5½ x 5½	19,070	16,210	0.137

1. To achieve published loads, machine bolts shall be installed with the nut on the opposite side of the holdown. If reversed, the Designer shall reduce the allowable loads shown per NDS requirements when bolt threads are in the shear plane.

2. Lag screws will not develop the listed loads.

3. HD19 with 1¼" anchor rod requires No. 1 or better post to achieve published loads.

LSTHD/STHD

Strap-Tie Holdowns



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 STHD is an embedded strap-tie holddown offering high load capacity and a staggered nail pattern to help minimize splitting. The STHD incorporates many features that aid correct installation and improve performance. When installed on the forms with the StrapMate® strap holder the unique design of the STHD delivers enhanced stability before and during the pour to help prevent both parallel and perpendicular movement (relative to the form). This results in accurate positioning of the strap and reduced possibility of spalling.

Features

- The nailing pattern allows for nailing to the edges of double 2x's
- Strap nail slots are countersunk to provide a lower nail head profile
- The slots below the embedment line enable increased front-to-back concrete bond and help to reduce spalling
- Rim joist models accommodate up to a 17" clear span without any loss of strap nailing

Material: LSTHD8, LSTHD8RJ — 14 gauge, all others — 12 gauge

Finish: Galvanized

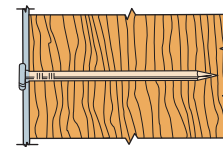
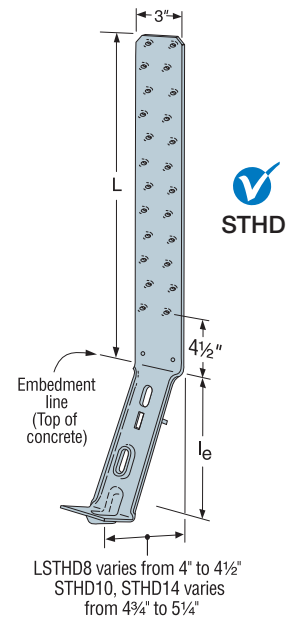
Installation:

- Use all specified fasteners; see General Notes on pp. 75–76.
- Use tables for both standard concrete and post-tension slab installations.
- Install before concrete pour with a StrapMate, or other holding device.
- Nail strap from the bottom up. Install strap plumb.
- Strap may be bent one full cycle (bent horizontal 90° then bent vertical) to aid wall placement, but may cause spalling behind the strap. If the spall is 1" or less, measured from the embedment line to the bottom of the spall, full loads apply. 1" to 4" spalls for LSTHD8 achieve 0.9 times table loads. STHD10 and STHD14 achieve full load for spalls less than 4". Any portion of the strap left exposed should be protected against corrosion.
- Other than where noted in the two-pour detail, do not install where:
 - (a) A horizontal cold joint exists within the embedment depth between the slab and foundation wall or footing beneath, unless provisions are made to transfer the load, or the slab is designed to resist the load imposed by the anchor; or
 - (b) Slabs are poured over concrete block foundation walls.
- Additional studs attached to the shearwall studs or post may be required by the Designer for wall sheathing nailing.
- Wood shrinkage after strap installation across horizontal members may cause strap to buckle outward.
- For installations in severe corrosion environments, refer to strongtie.com/cipcorrosion for additional considerations.
- See installation illustrations on p. 85 for rebar information.

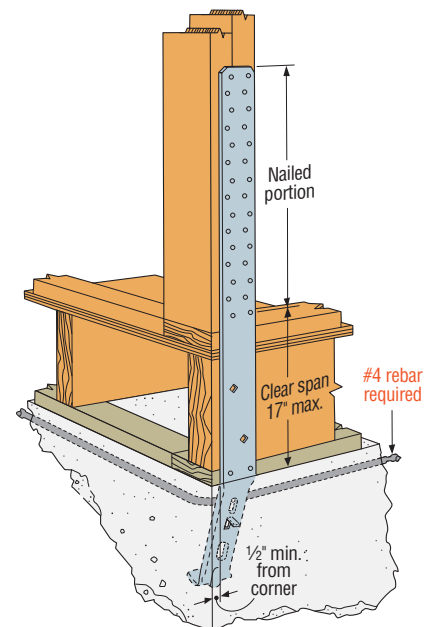
For Two-Pour Installation for Downturn Footings

- For STHD10 installed through a 4"-thick slab, use the equivalent 8"-stemwall loads of the LSTHD8.
- For STHD14 installed through a 4"-thick slab, use the equivalent 8"-stemwall loads of the STHD10.
- For STHD14 installed through a 6"-thick slab, use the equivalent 8"-stemwall loads of the LSTHD8.

Codes: See p. 14 for Code Reference Key Chart



Nails are countersunk for a low-profile strap surface.

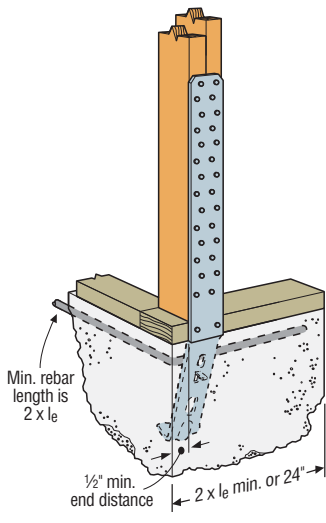


Typical STHD14RJ
Rim Joist Application

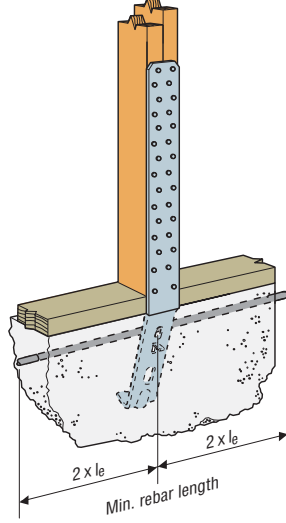
LSTHD/STHD

Strap-Tie Holdowns (cont.)

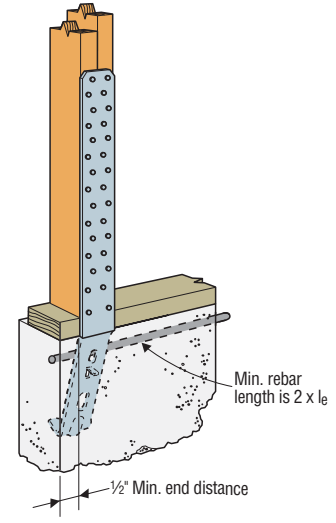
Holdowns and
Tension Ties



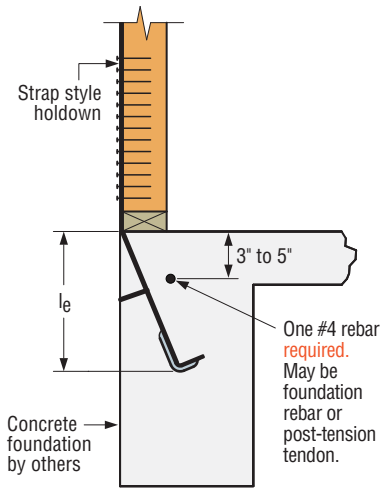
**Typical STHD14
Corner Installation**



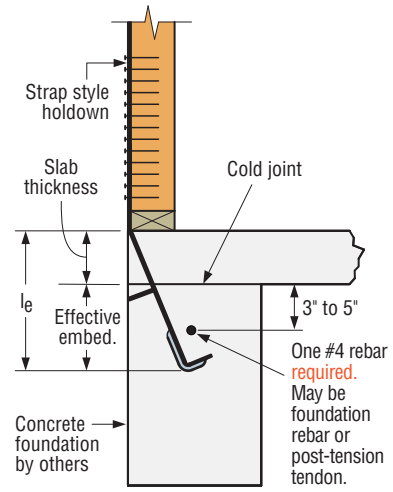
**Typical STHD14
Mid-Wall Installation**



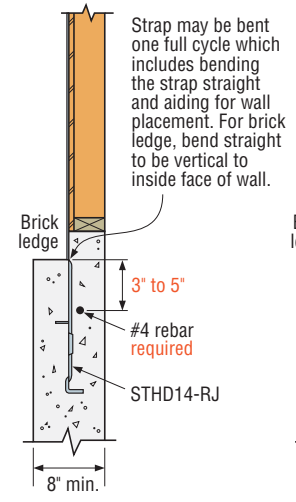
**Typical STHD14
End-Wall Installation**



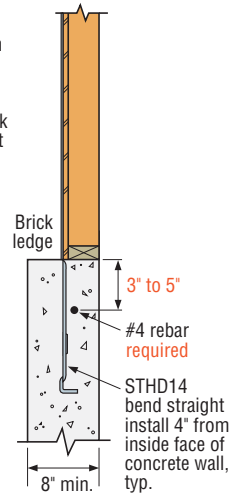
Single-Pour Rebar Installation
**Maintain minimum rebar cover, per ACI-318 concrete code requirements.*



**Two-Pour Installation
for Downturn Footings**



**Brick-Ledge Installation
with Step**



**Brick-Ledge Installation
without Step**

Spall Reduction System for STHD Holddown

Features

- Built-in tab
- StrapMate® locator line
- Additional diamond hole in RJ versions

Benefits

Built-in Tab:

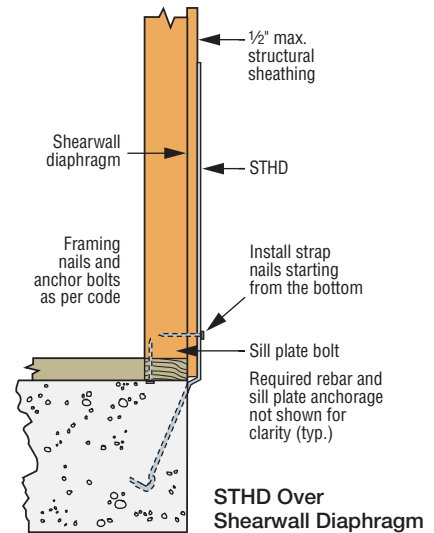
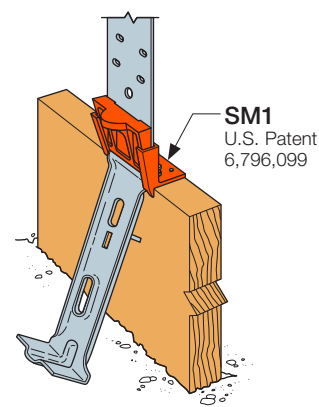
- Reduces spalling and costly retrofits
- No additional labor to install
- Holds STHD away from form board

StrapMate Locator Line:

- Easy inspection to ensure proper location
- Allows adjustment without removing STHD

Additional Diamond Hole:

- One more fastener to help prevent the STHD RJ models from bowing out at the rim joist section



**STHD Over
Shearwall Diaphragm**

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LSTHD/STHD

Strap-Tie Holdowns (cont.)

Tension Loads for STHD Installations

Wind and SDC A&B — Allowable Tension Loads for DF/SP/SPF/HF (160)													
Min. Stemwall (in.)	Model No.		Strap Length (L)		l_e (in.)	Required Nails	Non-Cracked			Cracked			Code Ref.
	Standard	Rim Joist	Standard (in.)	Rim Joist (in.)			Midwall	Corner	Endwall	Midwall	Corner	Endwall	
6	LSTHD8	LSTHD8RJ	18%	32%	8	(20) 16d sinkers	3,115	2,700	1,690	2,675	2,320	1,455	125, FL
	STHD10	STHD10RJ	24%	38%	10	(24) 16d sinkers	3,820	3,820	2,050	3,140	3,140	1,705	
	STHD14	STHD14RJ	26%	39%	14	(30) 16d sinkers	5,150	5,150	3,200	5,150	5,150	3,200	
8	LSTHD8	LSTHD8RJ	18%	32%	8	(20) 16d sinkers	3,115	2,700	2,230	2,675	2,320	1,915	
	STHD10	STHD10RJ	24%	38%	10	(28) 16d sinkers	4,755	4,120	3,145	4,195	3,500	2,585	
	STHD14	STHD14RJ	26%	39%	14	(30) 16d sinkers	5,345	5,345	4,210	5,345	5,345	4,210	
SDC C-F — Allowable Tension Loads for DF/SP/SPF/HF (160)													
Min. Stemwall (in.)	Model No.		Strap Length (L)		l_e (in.)	Required Nails	Non-Cracked			Cracked			Code Ref.
	Standard	Rim Joist	Standard (in.)	Rim Joist (in.)			Midwall	Corner	Endwall	Midwall	Corner	Endwall	
6	LSTHD8	LSTHD8RJ	18%	32%	8	(16) 16d sinkers	2,270	2,090	1,220	2,250	1,950	1,220	125, FL
	STHD10	STHD10RJ	24%	38%	10	(18) 16d sinkers	2,750	2,750	1,615	2,640	2,640	1,435	
	STHD14	STHD14RJ	26%	39%	14	(22) 16d sinkers	3,695	3,695	2,685	3,695	3,695	2,685	
8	LSTHD8	LSTHD8RJ	18%	32%	8	(16) 16d sinkers	2,615	2,125	1,635	2,250	1,950	1,610	
	STHD10	STHD10RJ	24%	38%	10	(20) 16d sinkers	3,400	2,940	2,295	3,400	2,940	2,175	
	STHD14	STHD14RJ	26%	39%	14	(24) 16d sinkers	3,815	3,815	3,500	3,815	3,815	3,500	

- Allowable loads are for wind or seismic loading. Nail quantities reflect an increase for duration of load with no further increase allowed. Reduce where other loads govern.
- Concrete shall have a minimum concrete strength, f'_c of 2,500 psi.
- 10d common (3" long x 0.148") or 10d x 2½" (2½" long x 0.148") nails may be used as a direct replacement for the required nails shown in the table with no load reduction when installed directly over framing or over ½" max. structural sheathing.
- Use the specified number of nails listed in table or as specified. In many cases, not all nail holes will be filled. Nail strap from the bottom up.
- Deflection at highest allowable loads for install over wood double studs are as follows:
Installed on framing: LSTHD8 = 0.089", STHD10 = 0.117" and STHD14 = 0.118".
Installed over ½" maximum structural sheathing: LSTHD8 = 0.114", STHD10 = 0.146" and STHD14 = 0.164".
- To obtain LRFD values for STHD holdowns, multiply ASD seismic load values by 1.4 and wind load values by 1.6 (1.67 for 2015 IBC).
- Per 2009 and 2012 IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
- Minimum center-to-center spacing is three times the required embedment ($S_{min} = 3 \times l_e$) for STHD's acting in tension simultaneously. Midwall install is based on $1.5 \times l_e$ end distance.
- See technical bulletin [T-C-SCLCLM](#) at [strongtie.com](#) for installation on structural composite lumber posts or columns.
- For brick ledge applications, use full loads shown for STHD14 installed in 8" stemwall.
- Nails:** 16d sinker = 0.148" dia. x 3¼" long. See pp. 26–27 for other nail sizes and information.

PA

Strap Tie Holddown

The PA strap tie holddown is a wood-to-concrete connector that connects studs to the foundation to satisfy engineering and code requirements.

Material: 12 gauge

Finish: Galvanized or ZMAX® coating

Installation:

- Use all specified fasteners; see General Notes
- For additional length, an MST strap can be attached using ½" bolts through existing holes
- Refer to technical bulletin T-PAUPLIFT at strongtie.com for additional information

Codes: See p. 14 for Code Reference Key Chart.

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

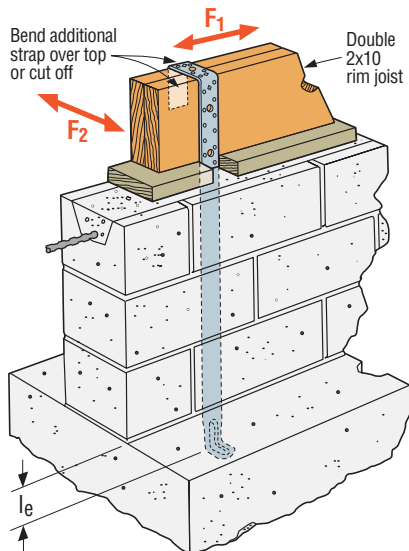
Wind and SDC A&B — Allowable Tension Loads

Model No.	Strap Length, L (in.)	l _e (in.)	Non-Cracked Concrete		Cracked Concrete		Code Ref.
			Required Nails	Tension	Required Nails	Tension	
PA51	51	4	(10) 10d common	2,025	(10) 10d common	2,025	I25
PA68	70	4	(10) 10d common	2,025	(10) 10d common	2,025	

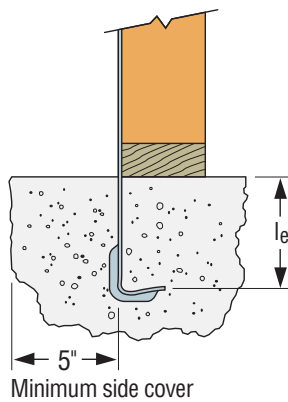
SDC C–F — Allowable Tension Loads

Model No.	Strap Length, L (in.)	l _e (in.)	Non-Cracked Concrete		Cracked Concrete		Code Ref.
			Required Nails	Tension	Required Nails	Tension	
PA51	51	4	(10) 10d common	2,025	(10) 10d common	1,980	I25
PA68	70	4	(10) 10d common	2,025	(10) 10d common	1,980	

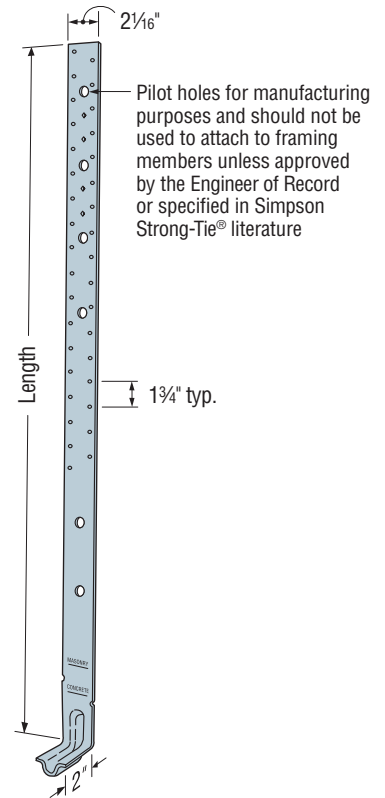
1. Allowable loads have been increased for earthquake or wind load durations with no further increases allowed.
2. Concrete shall have a minimum concrete strength, f_c of 2,500 psi.
3. Masonry applications require grout-filled CMU with minimum compressive strength f_m = 1,500 psi.
4. Deflection at highest allowable load is as follows: PA51 and PA68 = 0.10".
5. PA allowable lateral loads are F₁ = 795 lb. and F₂ = 280 lb.
6. Strong-Drive® SD9 x 1½" (0.131" x 1½") Connector screws may be substituted for nails with no reduction.
7. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.



Typical PA51 Installation
(PA68 similar)

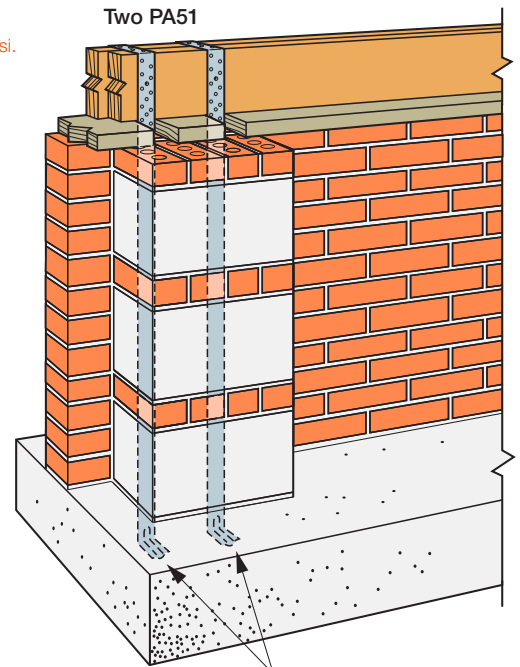


Typical PA Connecting Stud To Foundation



PA51
(PA68 similar)

Two PA51



Minimum Two Straps per Pier
Minimum 4" Embedment into Footing

Per ICC 600-2014, Section 505.2.2.2., the assembly shown above is limited to 140 mph, SDC A and B, and one- and two-story buildings.

PA/HPA/PAI/MPAI

Purlin Anchors

PA/HPA purlin anchors offer solutions for wood-to-concrete and concrete-block connections which satisfy code requirements. The PAs dual-embedment line allows installation in concrete or concrete block.

Material: PA/PAI — 12 gauge; HPA — 10 gauge; MPAI — 14 gauge

Finish: Galvanized; PA's available HDG or ZMAX® coating

Installation:

- Use all specified fasteners; some models have extra fastener holes. See General Notes.
- Purlin anchor must hook around rebar.
- Allowable loads are for a horizontal installation into the side of a concrete or masonry wall.
- Strap may be bent one full cycle.
(Bent vertical 90° then bent horizontal.)

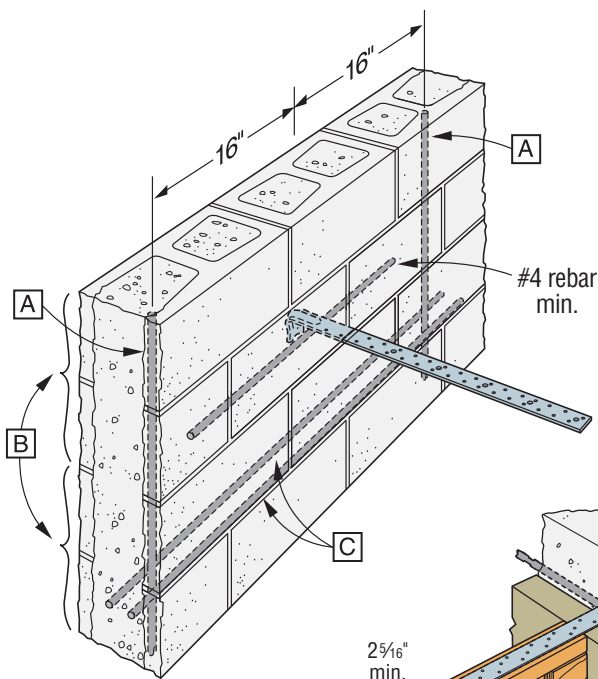
Edge Distance — Minimum concrete edge distance is 5". Minimum concrete block left-to-right edge distance is 20".

Concrete Block Wall — The minimum wall specifications are:

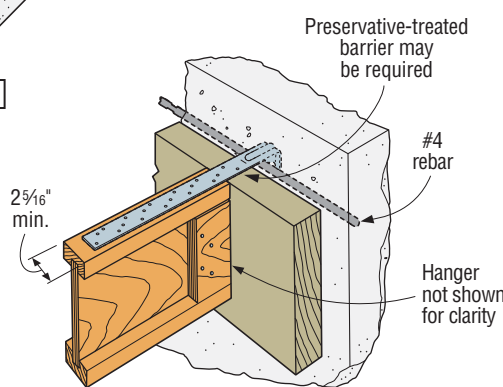
- A** One #4 vertical rebar, 32" long, 16" each side of anchor
- B** Two courses of grout filled block above and below the anchor (no cold joints allowed)
- C** A horizontal bond beam with two #4 rebars, 40" long a maximum of two courses above or below the anchor
- D** Minimum masonry compressive strength, $f'_m = 1,500$ psi

Options: See LTT and HTT Tension Ties for alternate retrofit solutions

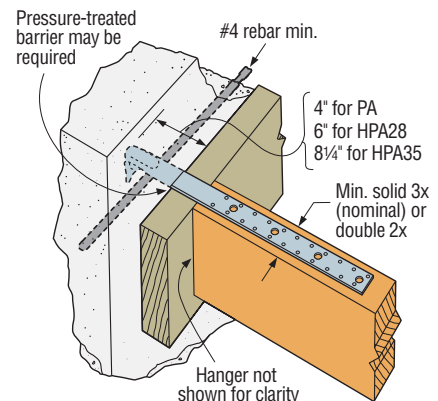
Codes: See p. 14 for Code Reference Key Chart



PA/HPA/PAI/MPAI Purlin to Concrete-Block Wall
(Refer to installation notes above)



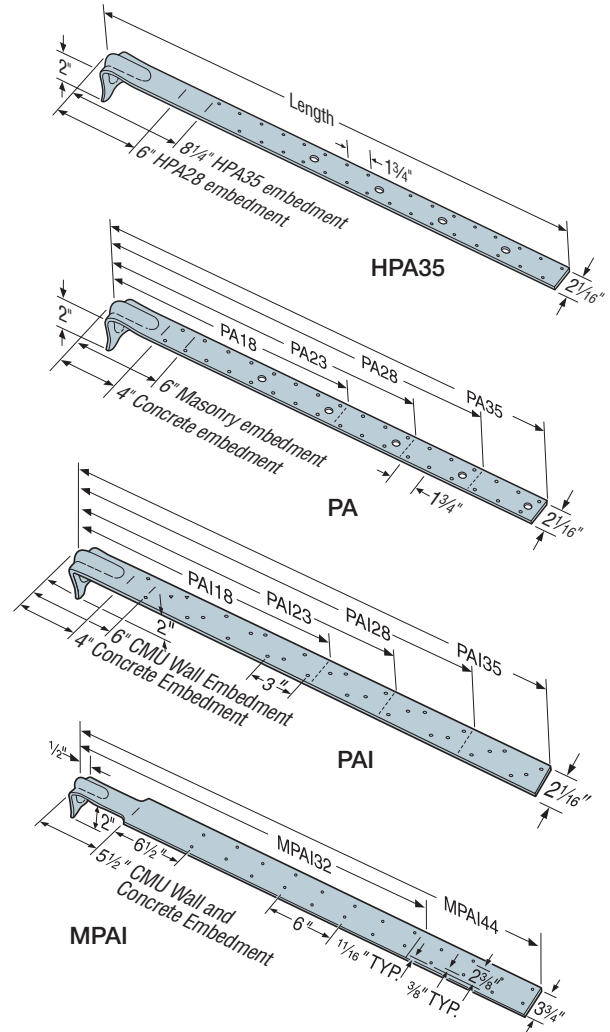
PAI Purlin to Concrete Wall
(MPAI similar)



PA/HPA Purlin to Concrete Wall PAI/MPAI for I-joist applications

ASCE7-10 12.11.2.2.5 States:

... Diaphragm to structural wall anchorage using embedded straps shall have the straps attached to or hooked around the reinforcing steel, or otherwise terminated to effectively transfer forces to the reinforcing steel.



PA/HPA/PAI/MPAI

Purlin Anchors (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Wind and SDC A&B — Allowable Tension Loads (160)													
Max Ledger Size	Model No.	Strap Length, L (in.)	Embed Length, l_e (in.)		Non-Cracked Concrete		Cracked Concrete		GFCMU Wall		Max. Allowable Strap Tensile Capacity	Deflection at Allowable Load (in.)	Code Ref.
			Concrete	GFCMU	Required Nails	Tension	Required Nails	Tension	Required Nails	Tension			
4x Ledger	PA18	18½	4	6	(12) 10d	2,430	(12) 10d	2,360	(12) 10d	1,890	NA	0.087	125, FL
	PAI18	18½	4	6	(9) 10d x 1½"	1,820	(9) 10d x 1½"	1,820	(9) 10d x 1½"	1,055	NA	0.100	
	PA23	23¾	4	6	(16) 10d	3,220	(12) 10d	2,360	(16) 10d	2,815	NA	0.118	
	PAI23	23¾	4	6	(14) 10d x 1½"	2,835	(14) 10d x 1½"	2,360	(14) 10d x 1½"	1,805	NA	0.158	
	PA28	29	4	6	(16) 10d	3,370	(12) 10d	2,360	(16) 10d	2,815	NA	0.085	
	PAI28	29	4	6	(16) 10d x 1½"	3,370	(16) 10d x 1½"	2,360	(16) 10d x 1½"	2,705	NA	0.167	
	PA35	35	4	6	(16) 10d	3,370	(12) 10d	2,360	(16) 10d	2,815	NA	0.085	
	PAI35	35	4	6	(18) 10d x 1½"	3,370	(18) 10d x 1½"	2,360	(18) 10d x 1½"	2,815	NA	0.130	
	MPAI32	32	5½		(16) 10d x 1½"	2,335	—	—	(16) 10d x 1½"	2,355	NA	0.167	170
	MPAI44	44	5½		(24) 10d x 1½"	2,865	—	—	(24) 10d x 1½"	2,865	NA	0.167	
	HPA28	32½	6	6	(22) 10d	5,145	(20) 10d	4,675	(22) 10d	—	NA	0.133	125, FL
	HPA35	38½	8¼	8¼	(22) 10d	5,145	(22) 10d	5,145	(22) 10d	—	NA	0.132	
SDC C-F — Allowable Tension Loads (160)													
Max Ledger Size	Model No.	Strap Length, L (in.)	Embed Length, l_e (in.)		Non-Cracked Concrete		Cracked Concrete		GFCMU Wall		Max. Allowable Strap Tensile Capacity	Deflection at Allowable Load (in.)	Code Ref.
			Concrete	GFCMU	Required Nails	Tension	Required Nails	Tension	Required Nails	Tension			
4x Ledger	PA18	18½	4	6	(12) 10d	2,430	(12) 10d	1,980	(12) 10d	1,890	3,220	0.087	125, FL
	PAI18	18½	4	6	(9) 10d x 1½"	1,820	(9) 10d x 1½"	1,820	(9) 10d x 1½"	1,055	4,180	0.100	
	PA23	23¾	4	6	(14) 10d	2,830	(12) 10d	1,980	(16) 10d	2,815	3,220	0.118	
	PAI23	23¾	4	6	(14) 10d x 1½"	2,830	(14) 10d x 1½"	1,980	(14) 10d x 1½"	1,805	4,180	0.158	
	PA28	29	4	6	(14) 10d	2,830	(12) 10d	1,980	(16) 10d	2,815	3,935	0.085	
	PAI28	29	4	6	(20) 10d x 1½"	2,830	(16) 10d x 1½"	1,980	(16) 10d x 1½"	2,705	5,070	0.167	
	PA35	35	4	6	(14) 10d	2,830	(12) 10d	1,980	(16) 10d	2,815	3,935	0.085	
	PAI35	35	4	6	(20) 10d x 1½"	2,830	(18) 10d x 1½"	1,980	(18) 10d x 1½"	2,815	5,070	0.130	
	MPAI32	32	5½		—	—	—	—	(16) 10d x 1½"	2,355	3,205	0.167	170
	MPAI44	44	5½		—	—	—	—	(24) 10d x 1½"	2,865	3,205	0.167	
	HPA28	32½	6	6	(22) 10d	5,145	(20) 10d	4,090	(22) 10d	—	5,145	0.133	125, FL
	HPA35	38½	8¼	8¼	(22) 10d	5,145	(22) 10d	5,145	(22) 10d	—	5,145	0.132	

- Allowable loads have been increased for earthquake or wind load durations with no further increase allowed.
- Deflection listed is at highest allowable load.
- To obtain LRFD values for PA purlin anchors, multiply ASD seismic load values by 1.4 and wind load values by 1.6 (1.67 for 2015 IBC).
- Minimum center-to-center spacing is 3x the required embedment, i.e., Standard installation is based on a minimum 5" end distance.
- For wall anchorage systems in SDC C-F, the maximum allowable strap tensile capacity shall not be less than 1.4 times the ASD anchor design load.
- Nail quantities are based on Douglas Fir (DF) or equivalent specific gravity of 0.50 or better. For use in Spruce-Pine-Fir (SPF) or Hem Fir (HF) nails quantities shall be increased by 1.15 to achieve loads listed.
- Structural composite lumber beams have sides that show either the wide face or the lumber strands/veneers. Values in the tables reflect installation into the wide face.
- Concrete shall have a minimum concrete strength, f'_c of 3,000 psi. Minimum $f'_m = 1,500$ psi for masonry.
- PA models installed vertically in top of grouted masonry wall with 6" embedment and (12) 10d nails achieve an allowable uplift load of 1,890 lb.
- For PA models, 10d x 1½" nails may be substituted for 10d nails at 100% of listed load and with a 15% increase in deflection. For installation over sheathing, use 3" long nails minimum.
- For PAI/MPAI models, 10d x 1½" nails shall be used directly onto framing member. For installation over sheathing, use 2½" long nails minimum.
- Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

Caps and Bases



RPBZ

Retrofit Post Base

The RPBZ Retrofit Post Base is designed to reinforce existing posts and columns. The single, versatile model will fit on any size post consisting of a double 2x4 or larger. RPBZ can also be used to reinforce new post-base connections, such as braced carports, patio covers, decks and other structures. The RPBZ can be installed with the CPS composite plastic standoff to meet a 1" post standoff code requirement. A single RPBZ can be installed on a post that is flush to a corner, and two RPBZs can be installed at away-from-edge conditions to fortify the post-base connection to resist both wind and seismic forces.

Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws install easily and provide excellent holding strength for post-to-flange connections. Additionally, the RPBZ can be purposed as a temporary base fixture for posts when shoring beams. RPBZ comes standard in ZMAX® finish to meet exposure conditions in many environments. See additional Corrosion information at strongtie.com/corrosion.

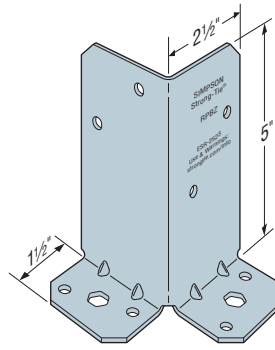
Material: 12 gauge

Finish: ZMAX coating

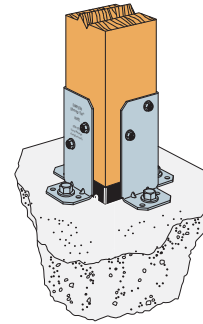
Installation:

- Use all specified fasteners; see General Notes.
- Simpson Strong-Tie ¼" x 1½" Strong-Drive SDS Heavy-Duty Connector and base connection fasteners are not provided with RPBZ. Simpson Strong-Tie CPS series Composite Post Stand-Off sold separately.
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations, such as fences or unbraced car ports.

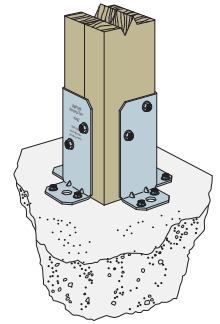
Codes: See p. 14 for Code Reference Key Chart



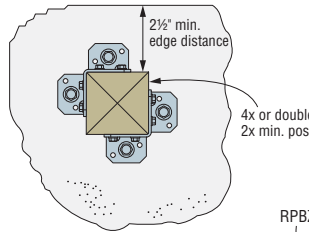
RPBZ



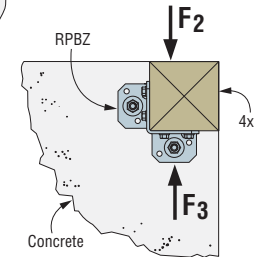
RPBZ Installation With CPS Away From Edge on Concrete



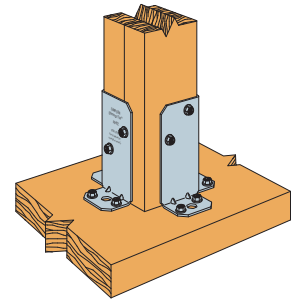
RPBZ Installation in Interior-Dry Environment with Titen® Masonry Screws



RPBZ Installation Away From Edge on Concrete



RPBZ Corner Installation Post Flush To Edge



RPBZ Installation on Wood

These products are available with additional corrosion protection. For more information, see p. 18.

RPBZ Connector-Only Values

Model No.	Part Qty.	Post Size	Fasteners				Allowable Connector Loads (DF/SP)			Code Ref.	
			Base Connection ^{4,5}		Post		Uplift (160)	F ₂ (160)	F ₃ (160)		
			Type	Qty.	Type	Qty.					
RPBZ	Connection To Concrete										
	1	4x, 6x	¾" Anchor bolt or ¼" Titen® screw	2 anchors or 4 screws	¼" x 1½"	4	1,500	860	485	I3	
	2			4 anchors or 8 screws		8	2,235	1,115	1,115		
	Connection To Wood Framing^{2,3}										
	1	4x, 6x	¼" x 3" SDS			4	1,335	860	485		
	2					8	2,235	1,115	1,115		
1	¼" x 1½" SDS					4	845	860	485		
2						8	1,825	1,115	1,115		

1. Allowable load for design shall not exceed minimum of Connector Only Value and Anchorage to Concrete Value.
2. Allowable connector loads are based on DF/SP lumber. For SPF/HF, multiply table loads by 0.72.
3. Double 2x4s may be used in lieu of 4x4 post.
4. For installation on 6x or larger members, if four RPBZs are used, allowable loads may be taken to be 1.5 x the tabulated two-part value.
5. For installations into concrete, minimum compressive strength, f_c = 2,500 psi. Designer is responsible for concrete member uplift design.
6. Away-From-Edge loads require face of wood post to be a minimum of 2½" away from near edge of concrete on all four sides of the post.
7. Allowable anchorage to concrete uplift and shear loads for the ¾" diameter anchors are calculated per ACI 318-14. Shear loads assume cracked concrete while uplift loads consider both cracked and uncracked concrete values and all are qualified for Wind and Seismic Design Categories A&B.
8. Embedment depth for these post-install anchors must be a minimum 2¾" and are for use with SET-XP® or AT-XP® structural anchoring adhesives or Titen HD® screw anchors.
9. Allowable uplift and shear loads for the Titen® masonry screws do not carry a particular "cracked" or "uncracked" designation.
10. Titen® masonry screws and Titen HD screw anchors should only be used in interior-dry and non-corrosive environments.
11. Threads on Strong-Drive® SDS Heavy-Duty Connector screws into wood framing must be fully engaged into a structural wood member.

RPBZ Anchorage-to-Concrete Values

Model No.	Part Qty.	Post Size	Fasteners		Allowable Anchorage Loads			
			Base Connection		Uplift		F ₂	F ₃
			Type	Qty.	Uncracked	Cracked		
Corner – Post Flush to Edge								
RPBZ	1	4x, 6x	¼" x 1¾" Titen screw	4	750	—	820	820
			¾"-diameter anchor	2	1,520	1,085	510	510
Away From Edge								
RPBZ	1	4x, 6x	¼" x 1¾" Titen screw	4	850	—	935	935
			¾"-diameter anchor	2	2,190	1,565	1,265	1,265
			¼" x 1¾" Titen screw	8	1,500	—	1,645	1,645
			¾"-diameter anchor	4	3,635	2,595	1,730	1,730

ABA/ABU/ABW

Adjustable and Standoff Post Bases

Additional standoff bases are on p. 379.

The AB series of retrofit adjustable post bases provide a 1" standoff for the post, are slotted for adjustability and can be installed with nails, Strong-Drive® SD Connector screws or bolts (ABU). Depending on the application needs, these adjustable standoff post bases are designed for versatility, cost-effectiveness and maximum uplift performance.

Features:

- The slot in the base enables flexible positioning around the anchor bolt, making precise post placement easier
- The 1" standoff helps prevent rot at the end of the post and meets code requirements for structural posts installed in basements or exposed to weather or water splash

Material: Varies (see table)

Finish: All galvanized, most offered in ZMAX®; see Corrosion Information, pp. 15–18

Installation:

- Use all specified fasteners; see General Notes.
- See our *Anchoring and Fastening Systems for Concrete and Masonry* catalog, or visit strongtie.com for retrofit anchor options or reference technical bulletin T-A-ANCHORSPEC.
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports).
- Place the base, load transfer plate and nut on the anchor bolt. Loosely tighten the nut.

ABW

Place the standoff base and then the post in the ABW and fasten on three vertical sides, using nails or Strong-Drive SD Connector screws

- Make any necessary adjustments to post placement and tighten the nut securely on the anchor bolt
- Bend up the fourth side of the ABW and fasten using the correct fasteners

ABU

Place the standoff base and then the post in the ABU

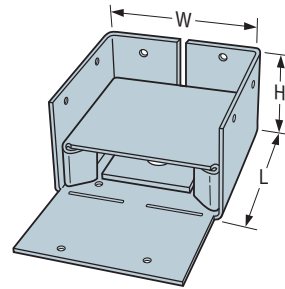
- Fasten using nails or Strong-Drive SD Connector screws or bolts (ABU88Z, ABU1010Z, **ABU1212Z** – SDS optional)

ABA

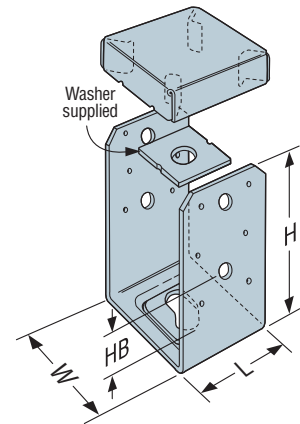
Place the post in the ABA

- Fasten using nails or Strong-Drive SD Connector screws

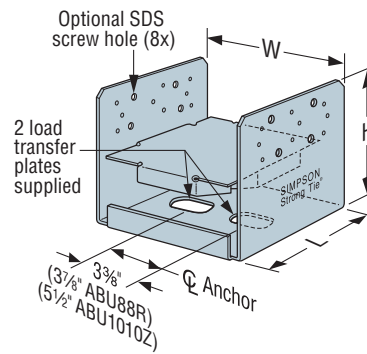
Codes: See p. 14 for Code Reference Key Chart



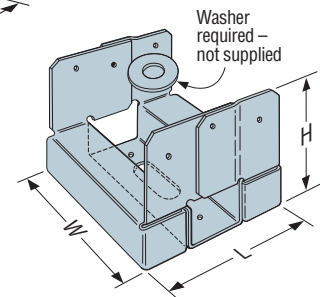
ABWZ



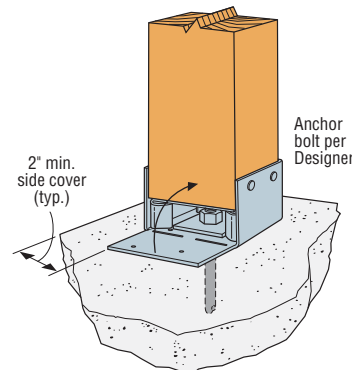
ABU44Z
(Other sizes similar)



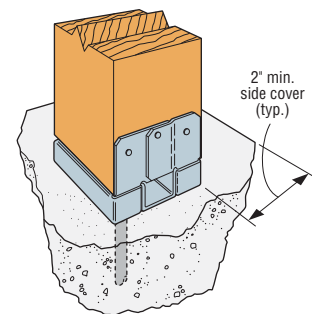
ABU88Z
(Other sizes similar)



ABA44Z
(Other sizes similar)



Typical ABWZ Installation



Typical ABA44Z Installation

ABA/ABU/ABW

Adjustable and Standoff Post Bases (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Nominal Post Size	Material (ga.)		Dimensions (in.)				Fasteners				Allowable Loads (DF/SP)			Code Ref.
		Base	Strap	W	L	H	HB ⁶	Anchor Dia. (in.)	Nails	Machine Bolts		Uplift		Down (100)	
										Qty.	Dia.	Nails	Bolts		
ABA44Z	4x4	16	16	3 ⁹ / ₁₆	3%	3 ¹ / ₁₆	—	1/2	(6) 10d	—	—	555	—	6,000	I3, FL, L5
ABW44Z	4x4	16	16	3 ⁹ / ₁₆	3 ⁹ / ₁₆	2 ¹ / ₄	—	1/2	(8) 10d	—	—	1,005	—	7,180	I3
SS ABU44Z	4x4	16	12	3 ⁹ / ₁₆	3	5 ¹ / ₂	1 ³ / ₄	5/8	(12) 16d	2	1/2	2,200	2,160	6,665	I3, FL, L2, L5
ABU44RZ	Rough 4x4	16	12	4	4	5 ¹ / ₄	1 ¹ / ₂	5/8	(12) 16d	2	1/2	2,200	2,160	6,665	170
ABA44RZ	Rough 4x4	16	16	4 ¹ / ₁₆	3 ¹ / ₈	2 ¹ / ₁₆	—	1/2	(6) 10d	—	—	555	—	8,000	I3, FL, L2, L5
ABW44RZ	Rough 4x4	16	16	4	4 ¹ / ₁₆	1 ¹⁵ / ₁₆	—	1/2	(8) 10d	—	—	835	—	7,180	I3
ABW46Z	4x6	12	16	3 ⁹ / ₁₆	5 ⁹ / ₁₆	3	—	1/2	(10) 10d	—	—	845	—	4,590	I3
ABA46Z	4x6	14	14	3 ⁹ / ₁₆	5 ⁹ / ₁₆	3 ¹ / ₈	—	5/8	(8) 16d	—	—	700	—	9,435	I3, FL, L5
SS ABU46Z	4x6	12	12	3 ⁹ / ₁₆	5	7	2 ⁵ / ₈	5/8	(12) 16d	2	1/2	2,300	2,300	10,335	I3, FL, L2
ABU46RZ	Rough 4x6	12	12	4	6	6 ³ / ₄	2 ³ / ₈	5/8	(12) 16d	2	1/2	2,300	2,300	10,335	170
ABW46RZ	Rough 4x6	12	16	4	6	2 ¹ / ₁₆	—	1/2	(10) 10d	—	—	780	—	4,590	I3
ABA46RZ	Rough 4x6	14	14	4 ¹ / ₁₆	5 ⁹ / ₁₆	2 ⁷ / ₈	—	5/8	(8) 16d	—	—	700	—	12,000	I3, FL, L5
ABU5-5Z	5 ¹ / ₈ x5 ¹ / ₈	12	10	5 ¹ / ₄	5	6 ¹ / ₁₆	1 ³ / ₄	5/8	(12) 16d	2	1/2	2,235	2,235	12,000	170
ABU5-6Z	5 ¹ / ₈ x6	12	10	6 ¹ / ₈	5	6 ¹ / ₁₆	1 ³ / ₄	5/8	(12) 16d	2	1/2	2,235	2,235	12,000	
ABA66Z	6x6	14	14	5 ¹ / ₂	5%	3 ¹ / ₈	—	5/8	(8) 16d	—	—	720	—	10,665	I3, FL, L5
ABW66Z	6x6	12	14	5 ¹ / ₂	5 ⁹ / ₁₆	3	—	1/2	(12) 10d	—	—	1,190	—	12,935	I3
SS ABU66Z	6x6	12	10	5 ¹ / ₂	5	6 ¹ / ₁₆	1 ³ / ₄	5/8	(12) 16d	2	1/2	2,300	2,300	12,000	I3, FL, L2
ABU66RZ	Rough 6x6	12	10	6	6	5 ¹ / ₁₆	1 ¹ / ₂	5/8	(12) 16d	2	1/2	2,300	2,300	12,000	170
ABA66RZ	Rough 6x6	14	14	6	5 ⁹ / ₁₆	2 ⁷ / ₈	—	5/8	(8) 16d	—	—	720	—	12,665	I3, FL, L5
ABW66RZ	Rough 6x6	12	14	6	6	2 ¹ / ₁₆	—	1/2	(12) 10d	—	—	1,065	—	12,935	170
ABW7-7Z	7 ¹ / ₈ " x 7 ¹ / ₈ "	12	14	7 ¹ / ₈	7 ⁹ / ₁₆	3	—	1/2	(12) 10d	—	—	840	—	17,270	
SS ABU88Z	8x8	14	12	7 ¹ / ₂	7	7	—	(2) 5/8	(18) 16d	—	—	2,320	—	24,335	I3, FL
ABU88RZ	Rough 8x8	14	12	8	7	7	—	(2) 5/8	(18) 16d	—	—	2,320	—	24,335	170
ABU1010Z	10x10	14	14	9 ¹ / ₂	9	7 ¹ / ₄	—	(2) 5/8	(22) 16d	—	—	2,270	—	32,020	
ABU1010RZ	Rough 10x10	14	14	10	9	7	—	(2) 5/8	(22) 16d	—	—	2,270	—	32,020	
ABU1212Z	12x12	12	12	11 ¹ / ₂	11	7 ¹ / ₄	—	(2) 5/8	(22) 16d	—	—	3,000	—	34,745	160
ABU1212RZ	Rough 12x12	12	12	12	11	7	—	(2) 5/8	(22) 16d	—	—	3,000	—	34,745	

1. Uplift loads have been increased for wind or earthquake with no further increase allowed; reduce where other loads govern.

2. Downloads may not be increased for short-term loading.

3. Specifier to design concrete for uplift capacity.

4. ABU products may be installed with either bolts or nails (not both) to achieve table loads. ABU88Z, ABU88R, ABU1010Z, ABU1010RZ and ABU1212Z/RZ may be installed with (8) 1/4" x 3" Strong-Drive® SDS Heavy-Duty Connector screws (sold separately) for the same table load.

5. For AB bases, higher download can be achieved by solidly packing grout under 1" standoff plate before installation. Base download on column, grout, or concrete according to the code.

6. HB dimension is the distance from the bottom of the post up to the first bolt hole.

7. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. For SCL columns, the fasteners for these products should always be installed in the wide face.

8. Downloads shall be reduced where limited by the capacity of the post. See pp. 383–385 for common post allowable loads.

9. Nails: 16d = 0.162" dia. x 3¹/₂" long, 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

CPTZ

Concealed Post Tie

The CPTZ concealed post base provides a clean, concealed look while providing a 1" standoff height above concrete. The 1" standoff reduces the potential for decay at the post end and satisfies code requirements for posts that are exposed to weather, water splash or in basements.

It is part of a system of concealed connectors that includes the CBTZ and CJT.

- The CPTZ is tested and load-rated for uplift, download and lateral load
- Simpson Strong-Tie saves installers time by providing all the necessary components to make the connection in one box
- The CPTZ anchorage can either be cast-in-place or retrofitted with adhesive or mechanical anchors
- Solutions have been calculated per ACI 318, Appendix D to determine their allowable load in different concrete configurations

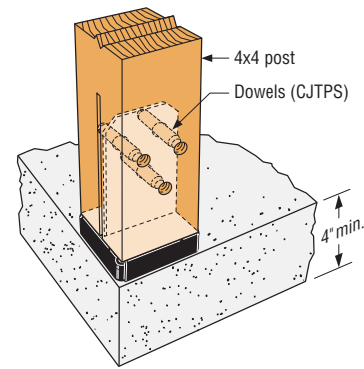
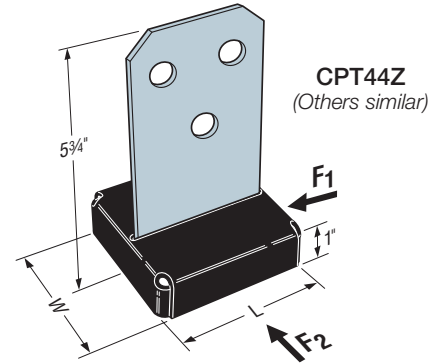
Material: See table below

Finish: Knife plate, washers and standoff base are ZMAX®-galvanized steel. The standoff base has an additional textured, flat black powder coat finish for aesthetic purposes. The ½"-diameter drift dowels are mechanically galvanized in accordance with ASTM B695, Class 55. If substituting ½"-diameter machine bolts, a hot-dip galvanized finish is recommended.

Installation:

- Use all specified fasteners; see General Notes
- More extensive installation instructions are available through our Literature Library app or by visiting strongtie.com
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-braced, or non-top-supported installations

Codes: See p. 14 for Code Reference Key Chart



Typical CPT44Z Installation

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Post Size	Base (ga.)	Knife Plate (ga.)	Dimensions (in.)		Fasteners				Allowable Loads (DF/SP)				Code Ref.
				W	L	Anchor		Post		Uplift (160)	Down (100)	F ₁ (160)	F ₂ (160)	
						Qty.	Dia.	Qty.	Type ¹					
CPT44Z	4x4, RGH 4x4	12	10	3½	3½	2	½	3	½" x 2¾" dowel	3,035	11,455	600	605	I3, FL, L2
									½" MB	3,350				
CPT66Z	6x6, RGH 6x6	12	10	5%	5%	2	½	3	½" x 4¾" dowel	4,430	21,375	655	1,025	
									½" MB	4,475				
CPT88Z	8x8, RGH 8x8	12	10	7¼	7¼	2	½	3	½" x 4¾" dowel	3,625	22,805	740	1,080	
									½" MB	4,475				

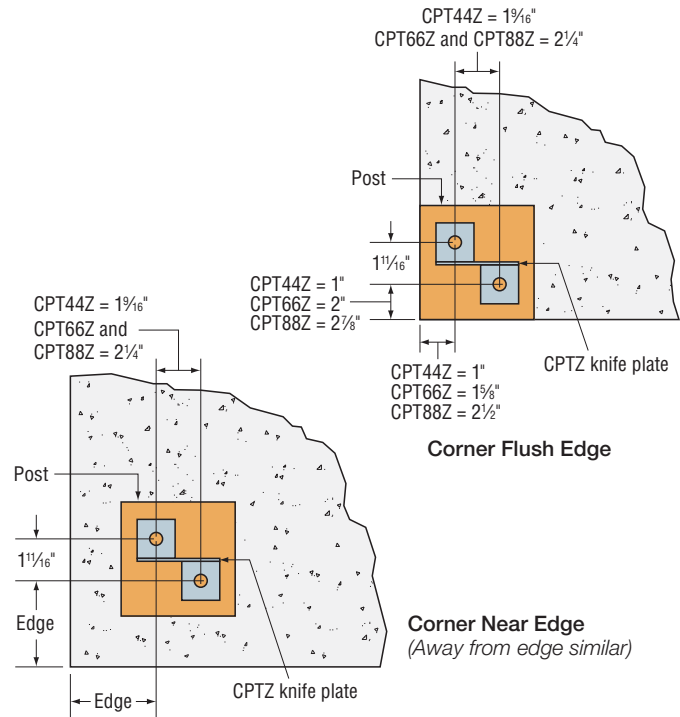
1. Uplift loads have been increased for wind or earthquake load with no further increase allowed; reduce where other loads govern.
2. Downloads may not be increased for short-term loading and shall not exceed the post capacity. See pp. 383-385 for common post capacities.
3. CPTZs are supplied with (3) ½"-diameter dowel pins. Alternate ½"-diameter hex- or square-head machine bolts may be used for loads listed.
4. Lag or carriage bolts are not permitted.
5. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect dowel or bolt installation into the wide face.

CPTZ

Concealed Post Tie (cont.)

CPTZ Anchorage Using SET-XP® Anchoring Adhesive

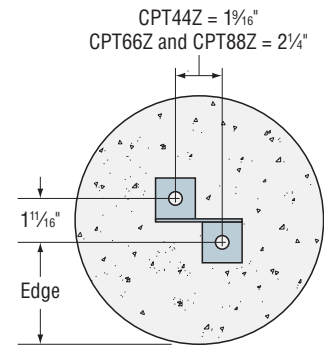
Model No.	Embed. (in.)	Edge Distance (in.)	Allowable Uplift		
			Anchorage		CPTZ
			Uncracked	Cracked	
Corner – Flush Edge					
CPT44Z	2¼	—	505	405	3,035
CPT66Z	2¼	—	580	465	4,430
CPT88Z	2¼	—	625	500	3,625
Corner – Near Edge					
CPT44Z	5	4	1,480	1,185	3,035
CPT66Z	5	5	2,025	1,620	4,430
CPT88Z	5	6	2,430	1,945	3,625
Corner – Away from Edge					
CPT44Z	6	9	4,005	3,205	3,035
CPT66Z	7½	11¼	5,440	4,350	4,430
CPT88Z	7½	11¼	5,440	4,350	3,625
10"-Diameter Circular Pedestal					
CPT44Z	5	4	1,560	1,245	3,035
CPT66Z	5	3¾	1,460	1,165	4,430
12"-Diameter Circular Pedestal					
CPT44Z	5	5	2,025	1,620	3,035
CPT66Z	5	4¾	1,935	1,550	4,430
CPT88Z	5	4¾	1,935	1,550	3,625



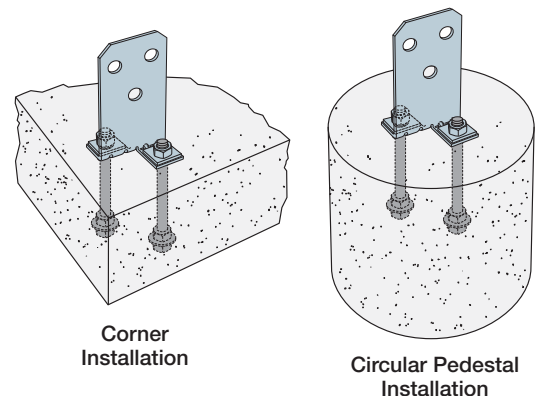
1. Allowable uplift loads are calculated per ACI 318-14 considering cracked and uncracked concrete and are qualified for Wind and Seismic Design Categories A&B. Allowable loads are also applicable to detached one- and two-family dwellings in SDC C per IBC Section 1613. No further increases allowed.
2. Edge distance is measured from the center line of the nearest anchor bolt to the edge of concrete.
3. Foundation dimensions are for anchorage only. Foundation design by others. Refer to ACI318-11.
4. Lateral loads ($F_1 = F_2$) for Corner – Flush Edge conditions are CPT44Z = 395 lb., CPT66Z = 570 lb., CPT88Z = 740 lb. For all other installations using CPTZ with SET-XP® anchoring adhesive, use the allowable loads from the CPTZ table above.
5. Concrete shall have a minimum compressive strength, $f'_c = 2,500$ psi.

CPTZ Cast-in-Place Anchorage

Model No.	Embedment (in.)	Edge Distance (in.)	Allowable Uplift		
			Anchorage		CPTZ
			Uncracked	Cracked	
Corner – Flush Edge					
CPT44Z	2¼	—	870	695	3,035
CPT66Z	2¼	—	1,590	1,270	4,430
CPT88Z	2¼	—	2,435	1,950	3,625
Corner – Away from Edge					
CPT44Z	5	4	3,760	3,010	3,035
CPT66Z	6	5	5,390	4,310	4,430
CPT88Z	6	5	5,390	4,310	3,625
10"-Diameter Circular Pedestal					
CPT44Z	5	4	3,945	3,155	3,035
CPT66Z	5	3¾	3,860	3,090	4,430
12"-Diameter Circular Pedestal					
CPT44Z	5	5	5,170	4,135	3,035
CPT66Z	5	4¾	5,140	4,110	4,430
CPT88Z	5	4¾	5,140	4,110	3,625



Circular Pedestal Edge Distance



1. Allowable uplift loads are calculated per ACI 318-14 considering cracked and uncracked concrete and are qualified for Wind and Seismic Design Categories A&B. Allowable loads are also applicable to detached one- and two-family dwellings in SDC C per IBC Section 1613. No further increases allowed.
2. Edge distance is considered to be measured from the center line of the nearest anchor bolt to the edge of concrete.
3. Tabulated anchor embedments will also achieve the maximum lateral loads from the CPTZ table on p. 94.
4. Foundation dimensions are for anchorage only. Foundation design by others. Refer to ACI318-14.

EPB

Elevated Post Base

Material: EPB44A — 14 gauge; others — 12 gauge base plate, 1/16" OD x 8" pipe

Finish: EPB44A — Galvanized; all others — Simpson Strong-Tie® gray paint (may be ordered HDG); see Corrosion Information, pp. 15–18

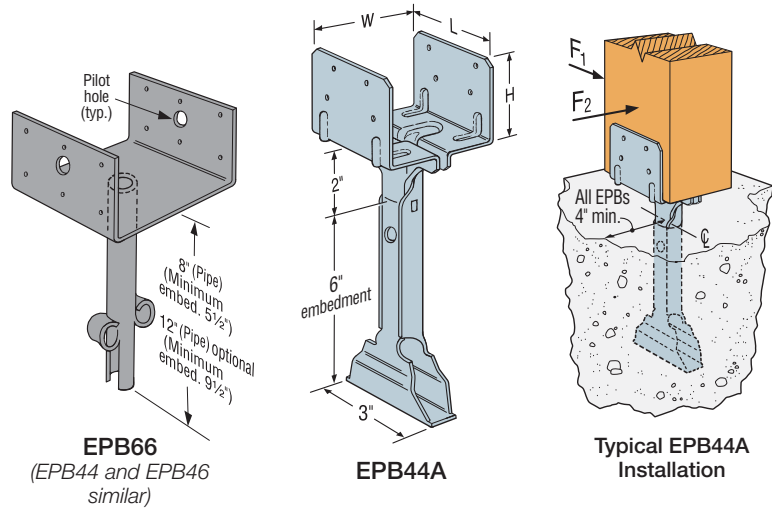
Installation:

- Use all specified fasteners; see General Notes
- Allows 1" to 2½" clearance above concrete, 2" for EPB44A
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports)

Options:

- 12" pipe available for EPB44, 46, 66; specify "-12" after model number

Codes: See p. 14 for Code Reference Key Chart



Caps and Bases

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Dimensions (in.)			Nails	Allowable Loads (160)			F ₁	F ₂	Code Ref.
	W	L	H		Non-Cracked	Cracked	Download			
					Uplift	Uplift				
Wind and Seismic Design Category A & B										
EPB44A	3 9/16	3	2 3/8	(8) 16d	1,120	785	2,670	815	935	I28, FL, L27
EPB44	3 9/16	3 1/4	2 5/16	(8) 16d	1,035	725	3,465	985	1,135	
EPB46	5 1/2	3 3/16	3	(12) 16d	1,035	725	3,465	985	1,135	
EPB66	5 1/2	5 1/2	3	(12) 16d	1,035	725	3,465	985	1,135	
Seismic Design Category C–F										
EPB44A	3 9/16	3	2 3/8	(8) 16d	940	660	2,670	815	935	I28, FL, L27
EPB44	3 9/16	3 1/4	2 5/16	(8) 16d	870	605	3,465	985	1,135	
EPB46	5 1/2	3 3/16	3	(12) 16d	870	605	3,465	985	1,135	
EPB66	5 1/2	5 1/2	3	(12) 16d	870	605	3,465	985	1,135	

1. Loads may not be increased for short-term loading.
2. Concrete shall have a minimum compressive strength, $f'_c = 2,500$ psi.
3. Multiply Seismic and Wind ASD load values by 1.4 or 1.6 respectively to obtain LRFD capacities.
4. In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
5. Download shall be reduced where limited by the design capacity of the column. See pp. 383–385 for common post allowable loads.
6. Designer is responsible for concrete design.
7. For full loads, nearest concrete edge required is 4" from EPB center line.
8. Structural composite lumber columns have sides that either show the wide face or the edges of the lumber strands/veneers known as the narrow face. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for load reductions due to narrow face installations.
9. **Nails:** 16d = 0.162" dia. x 3 1/2" long. See pp. 26–27 for other nail sizes and information.

EPB44T/EPB44PHDG

Elevated Post Bases

EPB44PHDG can be used both for pier block and cast-in-place installation for 4x4 posts.

Material: 12 gauge base EPB44T — Threaded rod support 5/8" x 6" (shipped assembled); EPB44PHDG — Threaded rod support 3/4" x 6", nut and washer are shipped assembled

Finish: EPB44T: Base — Galvanized, Threaded Rod — Zinc Plate; EPB44PHDG — HDG; see Corrosion Information, pp. 15–18

Installation:

• **Secured with Anchoring Adhesive:**

EPB44T — Drill a 3/4" hole 4" deep minimum into the concrete. Clean the hole and fill half full with anchoring adhesive (per installation instructions). Insert the EPB44T and adjust to the desired height. The threaded rod shall be embedded a minimum of 3 1/2". To adjust after the anchoring adhesive cures, drill a hole in the center of the post and rotate the post base up or down to the desired height.
 EPB44PHDG — Drill a 7/8"-diameter hole 4" deep minimum and fill the hole halfway with anchoring adhesive. Insert the EPB44PHDG and adjust to the desired height. The threaded rod shall be embedded a minimum of 3 1/2". Minimum sidecover is 3" from the center of the threaded rod for both products.

• Go to **strongtie.com** for additional information on hole cleaning procedures and cure time for SET-XP® and AT-XP® anchoring adhesives.

• **Supported by a Nut:**

EPB44T — Drill a 3/4" hole 2 1/2" deep minimum into concrete. Install a 5/8"-11 NC nut and cut washer on the threaded rod. (Nut and washer not supplied). Insert EPB44T into the hole and adjust to the desired height.
 EPB44PHDG — Drill a 1"-diameter hole 3 1/2" deep minimum. Insert the EPB44PHDG and adjust to the desired height.

• **Cast-in-Place:**

Embedded end to have a nut and bearing plate with a minimum embedment of 4" from top of concrete to the top of plate.

- Minimum sidecover is 3" from the center of the threaded rod.
- Fully engage at least three threads in the base.
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports).

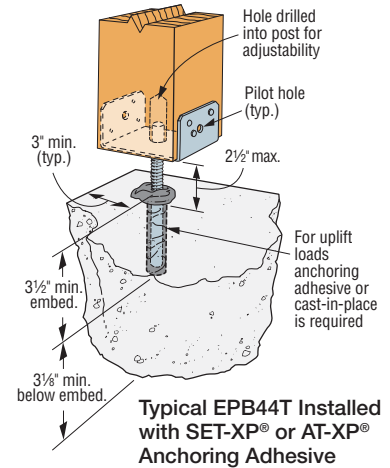
Codes: See p. 14 for Code Reference Key Chart

These products are available with additional corrosion protection. For more information, see p. 18.

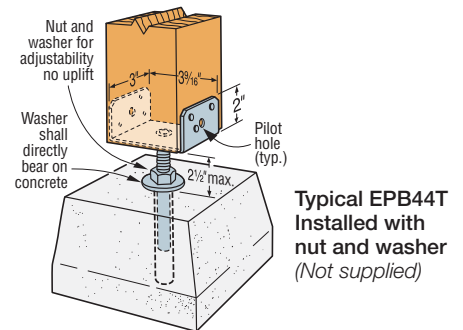
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Nails	Anchor Bolt	Allowable Loads (DF/SP)			Code Ref.
			Download (100)	Uplift (160)		
				SET-XP®	AT-XP®	
EPB44T	(6) 16d	5/8"	3,275	1,130	1,140	170
EPB44PHDG	(8) 16d	3/4"	3,670	1,265	985	

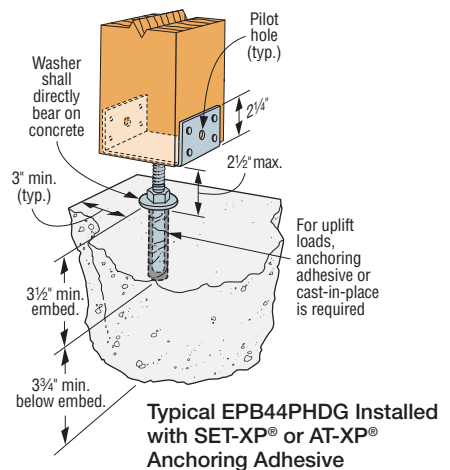
1. Loads may not be increased for short term loading.
2. Uplift loads require the threaded rod to be attached to cured concrete with SET-XP® or AT-XP® anchoring adhesive. Cast-in-place install must have a nut and bearing plate embedded in concrete. Uplift loads do not apply when installed to a pier block.
3. Designer is responsible for concrete design.
4. Downloads shall be reduced where limited by the capacity of the post. See pp. 383–385 for common post allowable loads.
5. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. For SCL columns, the fasteners for these products should always be installed in the wide face. See technical bulletin T-C-SCLCLM at **strongtie.com** for load reductions due to narrow face instructions.
6. Adhesive anchor design assumptions:
 - a) Uncracked-dry concrete
 - b) Anchors not for use in SDC C–F where load combos include earthquake
 - c) Temperature range 1 or 2 acceptable
 - d) Periodic special inspection assumed per code report
 - e) Minimum concrete strength of 2,500 psi.
7. **Nails:** 16d = 0.162" dia. x 3 1/2" long. See pp. 26–27 for other nail sizes and information.



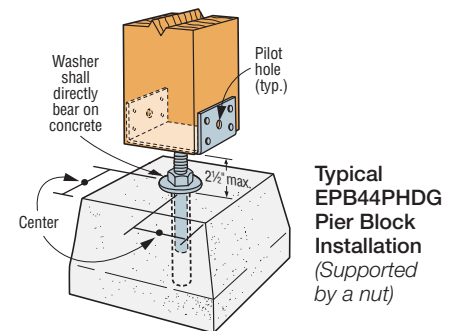
Typical EPB44T Installed with SET-XP® or AT-XP® Anchoring Adhesive



Typical EPB44T Installed with nut and washer (Not supplied)



Typical EPB44PHDG Installed with SET-XP® or AT-XP® Anchoring Adhesive



Typical EPB44PHDG Pier Block Installation (Supported by a nut)

U.S. Patent 5,666,774

PB/PBS

Regular and Standoff Post Bases

The PBS features a 1" standoff height. It reduces the potential for decay at post and column ends.

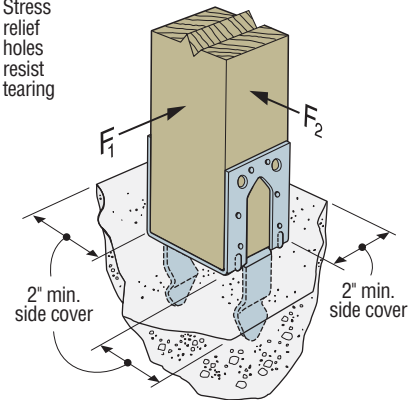
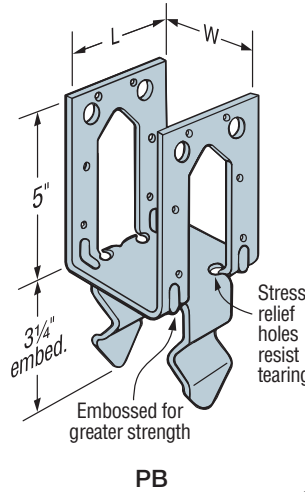
Material: PB — 12 gauge; PBS — see table

Finish: Galvanized. Some products available in ZMAX® or HDG coating; see Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes.
- Install either nails or bolts (see p. 20 note d).
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports).
- PB — Holes are provided for installation with either 16d commons or ½" bolts for PB66 and PB66R; all other models use 16d commons only. A 2" minimum sidecover is required to obtain the full load.
- PBS — Embed into wet concrete up to the bottom of the 1" standoff base plate. A 2" minimum side cover is required to obtain the full load. Holes in the bottom of the straps allow for free concrete flow.

Codes: See p. 14 for Code Reference Key Chart

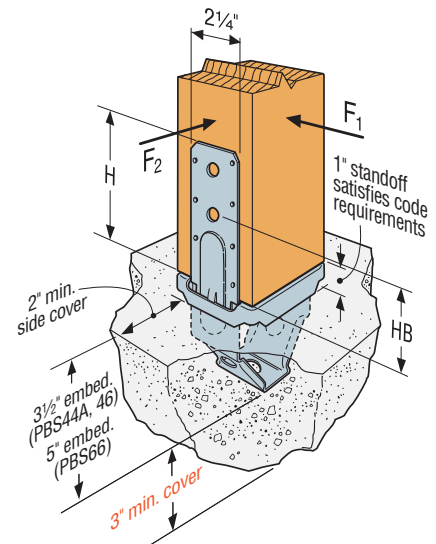


Typical PB Installation

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Dimensions (in.)		Fasteners		Allowable Loads (160)		Code Ref.
	W	L	Nails	Machine Bolts	Non-Cracked	Cracked	
					Uplift	Uplift	
Wind and Seismic Design Category A&B							
PB44	3 9/16	3 1/4	(12) 16d	N/A	1,485	1,040	I28, FL, L27
PB46	5 1/2	3 1/4	(12) 16d	N/A	1,485	1,040	
PB66	5 1/2	5 1/4	(12) 16d	(2) 1/2" dia.	1,485	1,040	
Seismic Design Category C–F							
PB44	3 9/16	3 1/4	(12) 16d	N/A	1,150	875	I28, FL, L27
PB46	5 1/2	3 1/4	(12) 16d	N/A	1,150	875	
PB66	5 1/2	5 1/4	(12) 16d	(2) 1/2" dia.	1,150	875	

1. Loads may not be increased for short-term loading.
2. Concrete shall have a minimum compressive strength, $f_c = 2,500$ psi.
3. Multiply Seismic and Wind ASD load values by 1.4 or 1.6 respectively to obtain LRFD capacities.
4. In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) may use "Wind and SDC A&B" allowable loads.
5. Download shall be limited by the design capacity of the post. See pp. 383–385 for common post allowable loads.
6. For lateral loads for all PB models: F_1 allowable = 765 lb. F_2 allowable = 1,325 lb.
7. Designer is responsible for concrete design.
8. Structural composite lumber columns have sides that either show the wide face or the edges of the lumber strands/veneers known as the narrow face. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for load reductions due to narrow face installations.
9. **Nails:** 16d = 0.162" dia. x 3 1/4" long. See pp. 26–27 for other nail sizes and information.



Typical PBS44A Installation

PB/PBS

Regular and Standoff Post Bases (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Nominal Post Size	Material (ga.)		Dimensions (in.)				Fasteners		Allowable Loads			Code Ref.
		Base	Strap	W	L	H	HB	Nails	Machine Bolts	Non-Cracked Uplift	Cracked Uplift	Download	
Wind and Seismic Design Category A&B													
PBS44A	4x4	12	14	3 ⁷ / ₁₆	3 ¹ / ₂	6 ¹ / ₄	3 ⁷ / ₁₆	(14) 16d	(2) 1/2" dia.	1,285	900	10,975	I28, FL, L27
PBS46	4x6	12	14	3 ⁷ / ₁₆	5 ⁷ / ₁₆	6 ⁹ / ₁₆	3 ³ / ₈	(14) 16d	(2) 1/2" dia.	1,285	900	14,420	
PBS66	6x6	12	12	5 ¹ / ₂	5 ³ / ₈	6 ¹ / ₂	3 ¹¹ / ₁₆	(14) 16d	(2) 1/2" dia.	2,165	2,165	14,420	
Seismic Design Category C–F													
PBS44A	4x4	12	14	3 ⁷ / ₁₆	3 ¹ / ₂	6 ¹ / ₄	3 ⁷ / ₁₆	(14) 16d	(2) 1/2" dia.	1,080	755	10,975	I28, FL, L27
PBS46	4x6	12	14	3 ⁷ / ₁₆	5 ⁷ / ₁₆	6 ⁹ / ₁₆	3 ³ / ₈	(14) 16d	(2) 1/2" dia.	1,080	755	14,420	
PBS66	6x6	12	12	5 ¹ / ₂	5 ³ / ₈	6 ¹ / ₂	3 ¹¹ / ₁₆	(14) 16d	(2) 1/2" dia.	2,165	2,165	14,420	

- For higher downloads, solid pack grout under 1" standoff plate before installing PBS into concrete. Base download on column or concrete, according to the code.
- Concrete shall have a minimum compressive strength, $f'_c = 2,500$ psi.
- Multiply Seismic and Wind ASD load values by 1.4 or 1.6 respectively to obtain LRFD capacities.
- In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports).
- Download shall be reduced where limited by the design capacity of the post. See pp. 383–385 for common post allowable loads.
- Designer is responsible for concrete design.
- For lateral loads for all PBS models: F_1 allowable = 1,165 lb. when using nails and 230 lb. when using bolts. F_2 allowable = 835 lb. when using either nails or bolts.
- Structural composite lumber columns have sides that either show the wide face or the edges of the lumber strands/veneers known as the narrow face. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for load reductions due to narrow face installations.
- Nails:** 16d = 0.162" dia. x 3 1/2" long. See pp. 26–27 for other nail sizes and information.

EPS4Z

Post Bases

The EPS4Z provides a light-duty connector for attachment of posts to concrete.

Material: 14 gauge

Finish: ZMAX® coating; see Corrosion Information, pp. 15–18

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

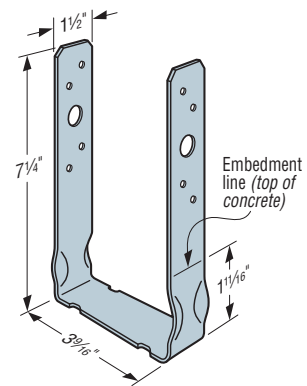
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports).
- Embed into wet concrete up to the embedment line. A 2" minimum side cover is required to obtain the full load.
- Posts shall be preservative-treated wood to meet building code requirements.

Codes: See p. 14 for Code Reference Key Chart

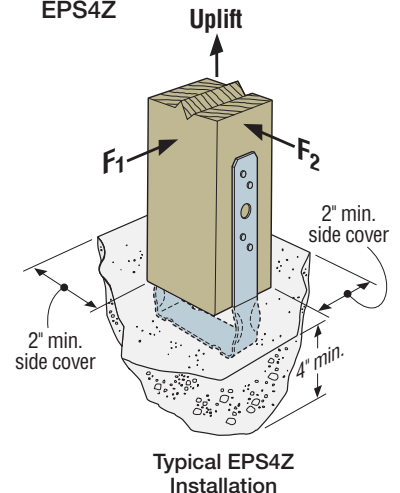
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Nails	Allowable Loads (DF/SP)		Code Ref.
		Non-Cracked Uplift	Cracked Uplift	
Wind and Seismic Design Category A&B				
EPS4Z	(8) 10d x 1 1/2"	980	685	I28, FL, L27
Seismic Design Category C–F				
EPS4Z	(8) 10d x 1 1/2"	825	575	I28, FL, L27

- Loads may not be increased for short-term loading.
- Concrete shall have a minimum compressive strength, $f'_c = 2,500$ psi.
- Multiply Seismic and Wind ASD load values by 1.4 or 1.6 respectively to obtain LRFD capacities.
- In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
- Download shall be reduced where limited by the design capacity of the post. See pp. 383–385 for common post allowable loads.
- For lateral loads: F_1 allowable = 575 lb. and F_2 allowable = 680 lb.
- Designer is responsible for concrete design.
- Structural composite lumber columns have sides that either show the wide face or the edges of the lumber strands/veneers known as the narrow face. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for load reductions due to narrow face installations.
- Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.



EPS4Z



CBS/CBSQ

Column Bases



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 CBS column base installs with machine bolts and provides tested capacity. The 1" standoff (included) meets code requirements for structural posts installed in basements or exposed to weather or water splash. The CBSQ uses Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws, which allow for fast installation, reduced reveal and high capacity, provides a greater net section area of the column compared to bolts.

Material: See table

Finish: Galvanized; available in HDG

Installation:

- Use all specified fasteners; see General Notes.
- For CBS, install with two machine bolts.
- For CBSQ, install ¼" x 2" Strong-Drive SDS Heavy-Duty Connector screws, which are provided with the column base. (Lag screws will not achieve the same load.)
- For full loads, a minimum of 3" side cover shall be provided.
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-top-supported installations (such as fences or unbraced carports).

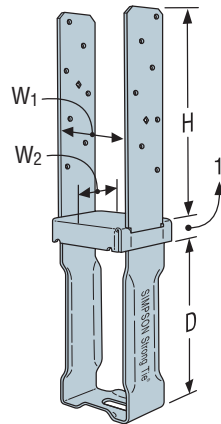
Ordering:

To order the CBSQ with screws, specify CBSQ-SDS2

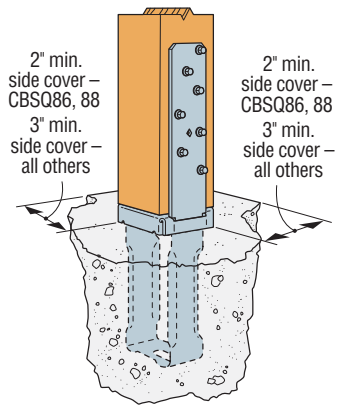
To order without screws, specify CBSQ

Codes: See p. 14 for Code Reference Key Chart

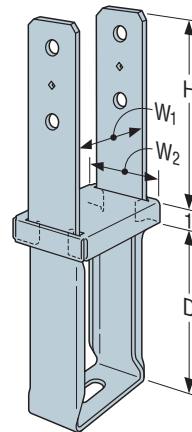
These products are available with additional corrosion protection. For more information, see p. 18.



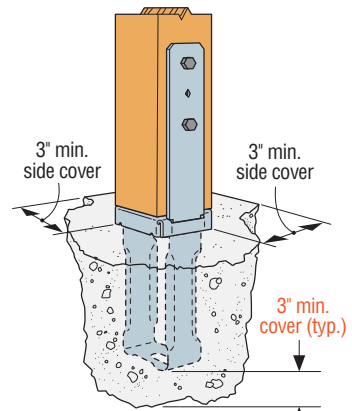
CBSQ-SDS2



Typical CBSQ-SDS2 Installation



CBS



Typical CBS Installation

Model No.	Nominal Column Size	Material		Dimensions (in.)				Machine Bolts		Allowable Loads (DF/SP)			Code Ref.
		Base (ga.)	Strap (ga. x Width)	W ₁	W ₂	D	H	Qty.	Dia. (in.)	Non-Cracked Uplift	Cracked Uplift	Download	
Wind and Seismic Design Category A&B													
CBS44	4x4	12	10 ga. x 2¼	3⅞	3½	7⅞	8¾	2	⅝	5,390	4,845	10,975	170
CBS46	4x6	12	10 ga. x 3	3⅞	5⅞	7⅞	8⅞	2	⅝	5,390	4,845	14,420	
CBS66	6x6	12	10 ga. x 3	5½	5½	6⅞	8¾	2	⅝	4,555	3,190	14,420	
Seismic Design Category C-F													
CBS44	4x4	12	10 ga. x 2¼	3⅞	3½	7⅞	8¾	2	⅝	5,390	4,070	10,975	170
CBS46	4x6	12	10 ga. x 3	3⅞	5⅞	7⅞	8⅞	2	⅝	5,390	4,070	14,420	
CBS66	6x6	12	10 ga. x 3	5½	5½	6⅞	8¾	2	⅝	3,830	2,680	14,420	

See footnotes on p. 101.

CBSQ

Column Bases (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Nominal Column Size	Material		Dimensions (in.)				Simpson Strong-Tie SDS Screws	Allowable Loads DF/SP			Code Ref.	
		Base (ga.)	Strap (ga. x Width)	W ₁	W ₂	D	H		Non-Cracked	Cracked	Download		
									Uplift	Uplift			
Wind and Seismic Design Category A&B													
SS	CBSQ44-SDS2	4x4	12	10 ga. x 2¼	3⅞	3½	7⅞	8⅞	(14) ¼" x 2" SDS	5,390	4,845	10,975	I28, FL, L27
SS	CBSQ46-SDS2	4x6	12	10 ga. x 3	3⅞	5⅞	7⅞	8⅞	(14) ¼" x 2" SDS	5,390	4,845	14,420	
SS	CBSQ66-SDS2	6x6	12	10 ga. x 3	5½	5½	6⅞	8⅞	(14) ¼" x 2" SDS	4,555	3,190	14,420	
	CBSQ86-SDS2	6x8	12	7 ga. x 3	7½	5⅞	6⅞	8⅞	(12) ¼" x 2" SDS	3,975	2,780	20,915	
	CBSQ88-SDS2	8x8	12	7 ga. x 3	7½	7⅞	6⅞	8⅞	(12) ¼" x 2" SDS	3,975	2,780	22,225	
Seismic Design Category C-F													
SS	CBSQ44-SDS2	4x4	12	10 ga. x 2¼	3⅞	3½	7⅞	8⅞	(14) ¼" x 2" SDS	5,390	4,070	10,975	I28, FL, L27
SS	CBSQ46-SDS2	4x6	12	10 ga. x 3	3⅞	5⅞	7⅞	8⅞	(14) ¼" x 2" SDS	5,390	4,070	14,420	
SS	CBSQ66-SDS2	6x6	12	10 ga. x 3	5½	5½	6⅞	8⅞	(14) ¼" x 2" SDS	3,830	2,680	14,420	
	CBSQ86-SDS2	6x8	12	7 ga. x 3	7½	5⅞	6⅞	8⅞	(12) ¼" x 2" SDS	3,340	2,335	20,915	
	CBSQ88-SDS2	8x8	12	7 ga. x 3	7½	7⅞	6⅞	8⅞	(12) ¼" x 2" SDS	3,340	2,335	22,225	

1. Loads may not be increased by short-term loading.
2. For higher downloads, solid pack grout under 1"-standoff plate before installing CBS or CBSQ into concrete.
Base download on column or concrete, according to the code.
3. Concrete shall have a minimum compressive strength, $f_c = 2,500$ psi.
4. Multiply Seismic and Wind ASD load values by 1.4 or 1.6 respectively to obtain LRFD capacities.
5. In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
6. Download shall be reduced where limited by the design capacity of the column. See pp. 383–385 for common post allowable loads.
7. Designer is responsible for concrete design.
8. Structural composite lumber columns have sides that either show the wide face or the edges of the lumber strands/veneers known as the narrow face. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for load reductions due to narrow face installations.

LCB/CB

Column Bases

Material: Strap: LCB — 12 gauge; CB4x, CB5x, CB6x — 7 gauge; CB7x and larger — 3 gauge
 Base: LCB — 16 gauge; CB4x through CB9x — 7 gauge; CB10x — 3 gauge

Finish: LCB, CB44, CB46, CB48, CB66, CB68, CB610 — galvanized; all other CB — Simpson Strong-Tie® gray paint or HDG. Some models available in HDG or stainless steel.

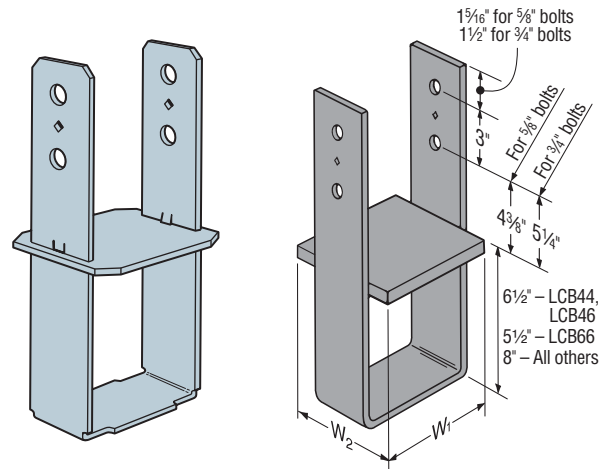
Installation:

- Use all specified fasteners; see General Notes
- For full loads, minimum side cover required is 3" for CB, 2" for LCB
- Install all models with bottom of base plate flush with concrete
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-top-supported installations (such as fences or unbraced carports)

Options:

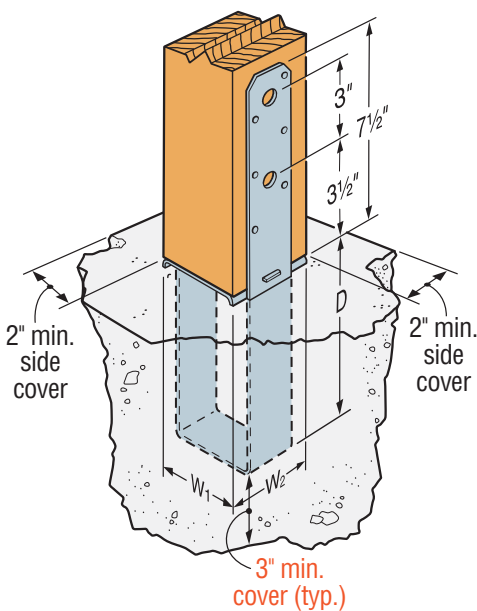
- LCB and CB are available in rough size. Other sizes available for CB specify W₁ and W₂ dimensions. Consult Simpson Strong-Tie for bolt sizes and allowable loads.

Codes: See p. 14 for Code Reference Key Chart

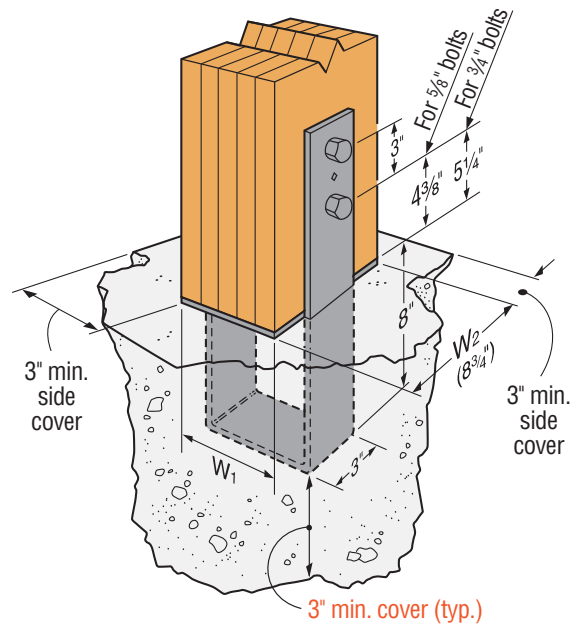


CB44
(CB46, CB48, CB64, CB66, CB68, CB86, CB88, CB610 similar)

Configuration of all other CB sizes



LCB



CB9
(CB5, CB7 similar)
for Glulam Column

LCB/CB

Column Bases (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Nominal Column Size	Dimensions (in.)		Column Fasteners			Allowable Loads DF/SP/SPF/HF (160)				Code Ref.
		W ₁	W ₂	Nails	Machine Bolts		Wind and SDC A&B		SDC C-F		
					Qty.	Dia. (in.)	Non-Cracked	Cracked	Non-Cracked	Cracked	
						Uplift	Uplift	Uplift	Uplift		
LCB44	4x4	3 ³ / ₁₆	3 ¹ / ₂	(12) 16d	2	1/2	1,170	820	985	690	I28, FL, L27
SS CB44	4x4	3 ³ / ₁₆	3 ³ / ₁₆	NA	2	5/8	6,710	4,700	5,640	3,945	
LCB46	4x6	3 ³ / ₁₆	5 ¹ / ₂	(12) 16d	2	1/2	1,170	820	985	690	
SS CB46	4x6	3 ³ / ₁₆	5 ¹ / ₂	NA	2	5/8	6,710	4,700	5,640	3,945	
CB48	4x8	3 ³ / ₁₆	7 ¹ / ₂	NA	2	5/8	6,710	4,700	5,640	3,945	170
CB5-4.5	Glulam	4 ¹ / ₂	5 ¹ / ₈	NA	2	5/8	6,710	4,700	5,640	3,945	
CB5-6	Glulam	6	5 ¹ / ₈	NA	2	5/8	6,710	4,700	5,640	3,945	
CB64	6x4	5 ¹ / ₂	3 ³ / ₁₆	NA	2	5/8	6,710	4,700	5,640	3,945	I28, FL, L27
LCB66	6x6	5 ¹ / ₂	5 ¹ / ₂	(12) 16d	2	1/2	1,170	820	985	690	
SS CB66	6x6	5 ¹ / ₂	5 ¹ / ₂	NA	2	5/8	6,710	4,700	5,640	3,945	
CB6-7	6x	5 ¹ / ₂	7	NA	2	5/8	6,710	4,700	5,640	3,945	170
CB68	6x8	5 ¹ / ₂	7 ¹ / ₂	NA	2	5/8	6,710	4,700	5,640	3,945	I28, FL, L27
CB610	6x10	5 ¹ / ₂	9 ¹ / ₂	NA	2	5/8	6,710	4,700	5,640	3,945	170
CB612	6x12	5 ¹ / ₂	11 ¹ / ₂	NA	2	5/8	6,710	4,700	5,640	3,945	
CB7 ¹ / ₈ -4	PSL	7 ¹ / ₈	3 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	
CB7 ¹ / ₈ -6	PSL	7 ¹ / ₈	5 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	
CB7 ¹ / ₈ -7	PSL	7 ¹ / ₈	7	NA	2	3/4	6,710	4,700	5,640	3,945	
CB7-6	Glulam	6	6 ³ / ₄	NA	2	3/4	6,710	4,700	5,640	3,945	
CB7-7.5	Glulam	7 ¹ / ₂	6 ³ / ₄	NA	2	3/4	6,710	4,700	5,640	3,945	
CB7-9	Glulam	9	6 ³ / ₄	NA	2	3/4	6,710	4,700	5,640	3,945	
CB7-10.5	Glulam	10 ¹ / ₂	6 ³ / ₄	NA	2	3/4	6,710	4,700	5,640	3,945	
CB86	8x6	7 ¹ / ₂	5 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	
CB88	8x8	7 ¹ / ₂	7 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	
CB810	8x10	7 ¹ / ₂	9 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	
CB812	8x12	7 ¹ / ₂	11 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	
CB9-6	Glulam	6	8 ³ / ₄	NA	2	3/4	6,710	4,700	5,640	3,945	
CB9-7.5	Glulam	7 ¹ / ₂	8 ³ / ₄	NA	2	3/4	6,710	4,700	5,640	3,945	
CB9-9	Glulam	9	8 ³ / ₄	NA	2	3/4	6,710	4,700	5,640	3,945	
CB9-10.5	Glulam	10 ¹ / ₂	8 ³ / ₄	NA	2	3/4	6,710	4,700	5,640	3,945	
CB1010	10x10	9 ¹ / ₂	9 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	
CB1012	10x12	9 ¹ / ₂	11 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	
CB1212	12x12	11 ¹ / ₂	11 ¹ / ₂	NA	2	3/4	6,710	4,700	5,640	3,945	

1. Loads may not be increased for short-term loading.
2. Concrete shall have a minimum compressive strength, $f'_c = 2,500$ psi.
3. LCB products may be installed with either bolts or nails (not both) to achieve table loads.
4. Multiply Seismic and Wind ASD load values by 1.4 or 1.6 respectively to obtain LRFD capacities.
5. In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
6. Downloads shall be based on either the wood post design or concrete design calculated per code. See pp. 383-385 for common post allowable loads.
7. Designer is responsible for concrete design. Minimum foundation dimensions are for anchorage only.
8. Loads must not be increased by short-term loading.
9. **Nails:** 16d = 0.162" dia. x 3¹/₂" long. See pp. 26-27 for other nail sizes and information.

PPBZ

Porch Post Base

The PPBZ porch base offers a simplified, one-time installation designed to support permanent porch framing throughout all stages of construction. This design eliminates the need for temporary vertical support and streamlines the subcontractor scheduling process while still providing adequate safety to enable full access for installers/inspectors.

The porch post base is fastened to the footing with two Simpson Strong-Tie® Titen® masonry screws when framing the porch roof. Then, when the time is right, the concrete contractor is able to complete the last phase of the porch slab without the interference of temporary vertical support and without the framer having to return to the jobsite after the slab has hardened. Designed to withstand vertical construction loads prior to embedment in concrete, the PPBZ will support the weight of most framed porches and overhangs.

Features:

- Stiffened embedded side stirrups provide temporary vertical download support without being embedded into concrete
- 1" standoff reduces the potential for decay at post or column ends
- Two available sizes provide both 4"- and 6"-slab thicknesses
- Pre-pour installation eliminates temporary support
- No disruption in scheduling
- Eliminates additional move-ins by trades and certain inspection call backs

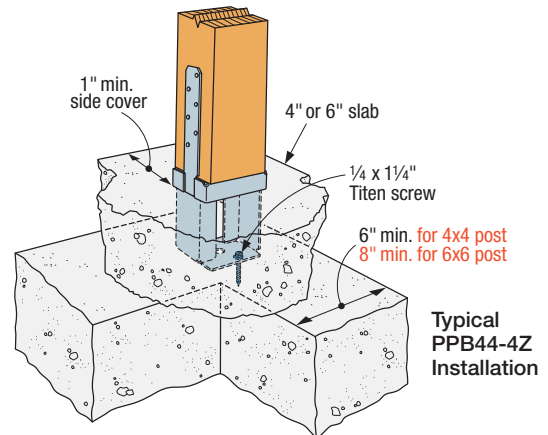
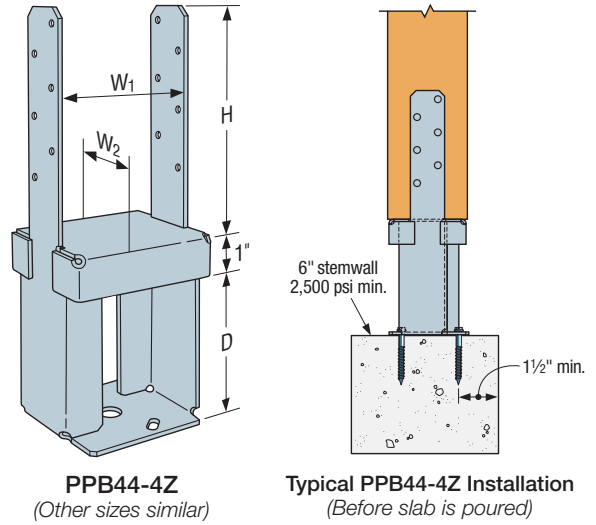
Material: See table

Finish: ZMAX® coating

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

- Locate and place PPBZ on footing according to framing plans.
- Secure PPBZ to footing with (2) 1/4" dia. x 1 1/4" long hex-head) Titen® concrete screws located a minimum of 1 1/2" from the edge of concrete.
- Attach 4x4 post to PPBZ using (12) 10d common (0.148" dia. x 3" long) nails. After bracing the top and bottom of the post from lateral movement, the post may then be loaded in download or uplift.
- When ready, pour concrete porch slab (4" or 6") up to the bottom of the standoff base while maintaining minimum 1" concrete side coverage.

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Nominal Post Size	Material		Dimensions (in.)				Fasteners		Allowable Loads (DF/SP/SPF/HF)					Code Ref.
		Base (ga.)	Strap (ga. x Width)	W ₁	W ₂	D	H	Foundation	Post	Prior to Pour		Embedded into Concrete			
										Uplift (160)	Down (100)	Uplift (160)		Down (100)	
Wind and Seismic Design Category A&B															
PPB44-4Z	4x4	12	12 ga. x 1 1/2"	3%	3%	4	5 3/4"	(2) 1/4" x 1 1/4" Titen	(12) 10d	220	4,720	1,480	1,035	7,830	I28, L27, FL
PPB44-6Z	4x4	12	12 ga. x 1 1/2"	3%	3%	6	5 3/4"	(2) 1/4" x 1 1/4" Titen	(12) 10d	220	4,295	2,105	2,105	10,505	
PPB66-4Z	6x6	12	12 ga. x 1 1/2"	5%	5 1/6%	4	5 3/4"	(2) 1/4" x 1 1/4" Titen	(12) 10d	220	6,545	1,480	1,035	7,830	170
PPB66-6Z	6x6	12	12 ga. x 1 1/2"	5%	5 1/6%	6	5 3/4"	(2) 1/4" x 1 1/4" Titen	(12) 10d	220	6,110	2,105	2,105	10,505	
Seismic Design Category C-F															
PPB44-4Z	4x4	12	12 ga. x 1 1/2"	3%	3%	4	5 3/4"	(2) 1/4" x 1 1/4" Titen	(12) 10d	220	4,720	1,245	870	7,830	I28, L27, FL
PPB44-6Z	4x4	12	12 ga. x 1 1/2"	3%	3%	6	5 3/4"	(2) 1/4" x 1 1/4" Titen	(12) 10d	220	4,295	2,105	1,895	10,505	
PPB66-4Z	6x6	12	12 ga. x 1 1/2"	5%	5 1/6%	4	5 3/4"	(2) 1/4" x 1 1/4" Titen	(12) 10d	220	6,545	1,480	1,035	7,830	170
PPB66-6Z	6x6	12	12 ga. x 1 1/2"	5%	5 1/6%	6	5 3/4"	(2) 1/4" x 1 1/4" Titen	(12) 10d	220	6,110	2,105	2,105	10,505	

1. Loads may not be increased for short-term loading.
2. Concrete shall have a minimum compressive strength, $f'_c = 2,500$ psi.
3. Multiply Seismic and Wind ASD load values by 1.4 or 1.6 respectively to obtain LRFD capacities.
4. In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
5. Downloads shall be reduced where limited by the capacity of the post. See pp. 383-385 for common post allowable loads.

6. Designer is responsible for concrete strength.
7. For full loads, 1" concrete side cover is required on all sides.
8. Structural composite lumber columns have sides that either show the wide face or the edges of the lumber strands/veneers known as the narrow face. Values in the tables reflect straps nailed to the wide face. Do not nail PPBZ straps to the narrow face of SCL columns.
9. Nails: 10d = 0.148" dia. x 3" long. See pp. 26-27 for other nail sizes and information.

MPBZ

Moment Post Base

The new patent-pending Simpson Strong-Tie® MPBZ is the first post base specifically designed to provide moment resistance for columns or posts. An innovative overlapping sleeve design encapsulates the post, helping to resist rotation around its base. It is available for 4x4 and 6x6 posts. The MPBZ is ideal for outdoor structures, such as carports, fences and decks. Built-in stand-off tabs provide the required 1" stand-off to resist decay of the post while eliminating multiple parts and assembly. Additionally, the MPBZ is available in ZMAX® as the standard finish to meet exposure conditions in many environments.

Features:

- Internal top-of-concrete tabs
- 1" standoff tabs
- Additional holes provided to attach trim material
- Weep hole provided for water drainage

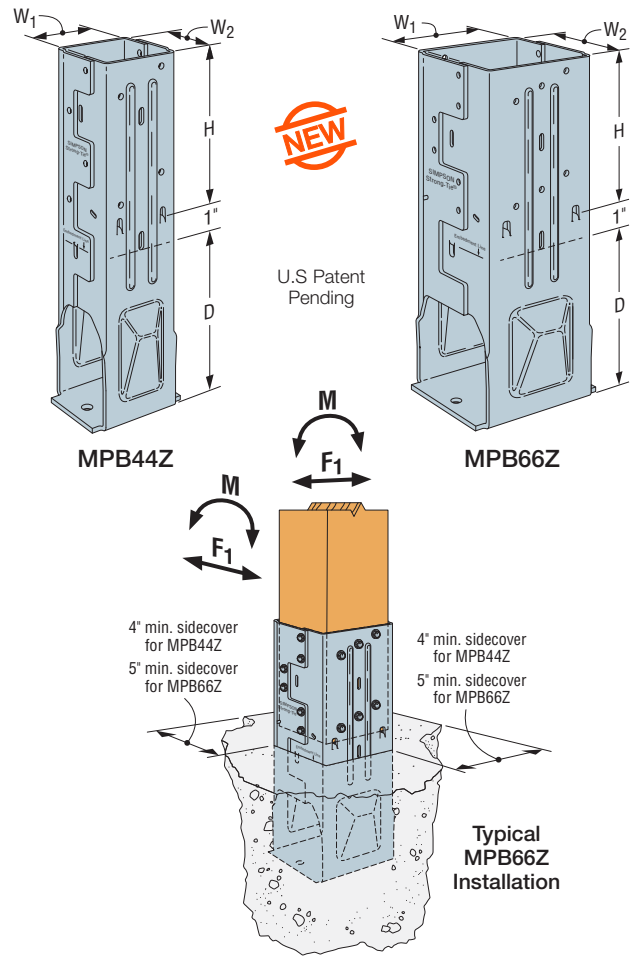
Material: 12 gauge

Finish: ZMAX coating

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

- Install MPBZ before concrete is placed using embedment level indicators and form board attachment holes.
- Place post on tabs 1" above top of concrete.
- Install Simpson Strong-Tie Strong-Drive ¼" x 2½" SDS Heavy-Duty Connector screws, which are supplied with the MPBZ. (Lag screws will not achieve the same load.)
- Concrete level inside the part must remain ¼" or less above embedment line for water drainage.
- Annual inspection of connectors used in outdoor application is advised. If significant corrosion is apparent or suspected, then the wood, fasteners and connectors should be evaluated by a qualified engineer or inspector.
- For seismic design in accordance with ASCE7, the following seismic design coefficients are recommended unless justified otherwise by analysis: $R = 1\frac{1}{2}$, $\Omega = 1\frac{1}{2}$, $C_d = 1\frac{1}{2}$.

Codes: See p. 14 for Code Reference Key Chart



Caps and Bases

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Nominal Column Size	Dimensions (in.)			Simpson Strong-Tie SDS Screws	Concrete Allowable Loads						Wood Assembly Allowable Loads (DF/SP)			Rotational Stiffness (in.-lb./rad.)	Code Ref.
		W1/W2	D	H		Uplift		Lateral F ₁		Moment M (ft.-lb.)		Download (100)	Download (160)	Moment M (ft.-lb.) (160)		
						Non-Cracked	Cracked	Non-Cracked	Cracked	Non-Cracked	Cracked					
Wind and Seismic Design Category A&B																
MPB44Z	4x4	3¾	7¼	7¼	(16) ¼" x 2½"	4,900	3,990	1,825	1,280	1,410	985	6,240	6,410	1,540	2,510,000	160
MPB66Z	6x6	5¾	7¼	7¼	(24) ¼" x 2½"	5,815	5,815	3,545	2,480	2,800	1,960	9,360	10,855	3,730	3,950,000	
Seismic Design Category C-F																
MPB44Z	4x4	3¾	7¼	7¼	(16) ¼" x 2½"	4,785	3,350	1,535	1,075	1,180	830	6,240	6,410	1,540	2,510,000	160
MPB66Z	6x6	5¾	7¼	7¼	(24) ¼" x 2½"	5,815	5,815	2,980	2,085	2,055	1,645	9,360	10,855	3,730	3,950,000	

1. Loads may not be increased for short term loading.
2. Higher download can be achieved by solidly packing grout in the 1"-standoff area before installation of the post. Allowable download shall be based on either the wood post design or concrete design calculated per code.
3. Concrete shall have a minimum compressive strength, $f'_c = 2,500$ psi.
4. Tabulated rotational stiffness accounts for the rotation of the base assembly due to deflection of the connector, fastener slip and post deformation. Designer must account for additional deflection due to bending of the post.
5. Multiply tabulated Seismic and Wind loads by 1.4 or 1.6 (1.67 for 2015 IBC) respectively to obtain LRFD capacities.
6. In accordance with IBC Section 1613.1, detached one- and two-family dwellings in Seismic Design Category (SDC) C may use "Wind and SDC A&B" allowable loads.
7. Download shall be limited by the design capacity of the post.
8. Foundation dimensions are for MPB anchorage only. Foundation design (size and reinforcement) by Designer.
9. Allowable load shall be the lesser of the wood assembly or concrete allowable load. To achieve full wood assembly allowable moment loads, additional concrete design and reinforcement by Designer is required.
10. For loading simultaneously in more than one direction, the allowable load must be evaluated using the following equation:
(Design Uplift/Allowable Uplift or Design Download/Allowable Download) + Design Moment/Allowable Moment + Design Lateral/Allowable Lateral ≤ 1.0 .

BC/BCS

Post Caps

The BCS allows for the connection of (2) 2x's to a 4x post or (3) 2x's to a 6x post. Double-shear nailing between beam and post gives added strength. The BC series offers dual purpose post cap/base for light cap or base connections.

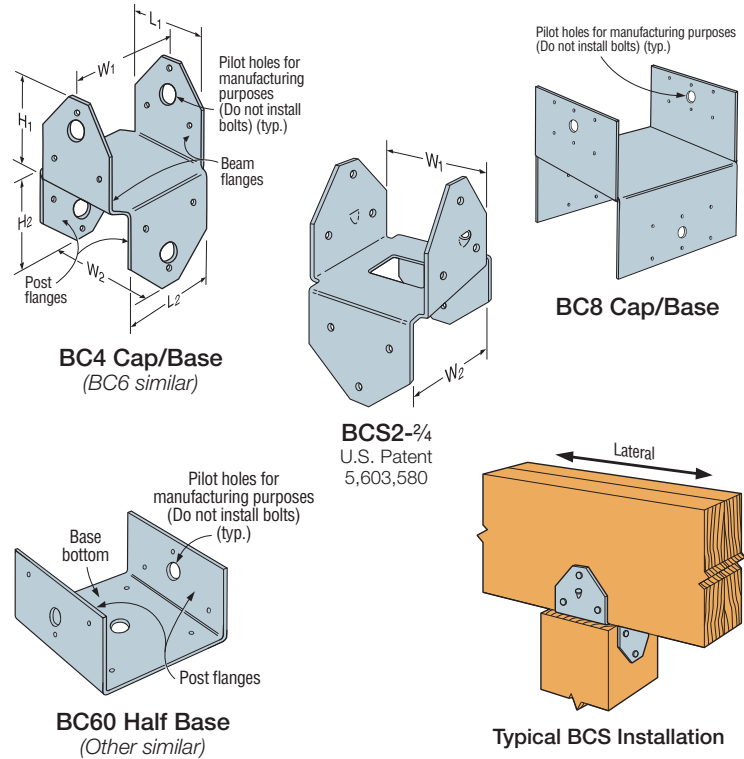
Material: 18 gauge

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes
- Do not install bolts into pilot holes
- BCS — Install dome nails on beam; drive nails at an angle through the beam into the post below to achieve the table loads
- BC — Install with 16d commons or 16d x 2½" joist hanger nails
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports)
- To tie multiple 2x members together, the Designer must determine the fasteners required to join members to act as one unit without splitting the wood

Codes: See p. 14 for Code Reference Key Chart



Caps and Bases

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Dimensions (in.)						Fasteners			Allowable Loads (DF/SP) (160) ¹		Code Ref.
	W ₁	W ₂	L ₁	L ₂	H ₁	H ₂	Beam Flange	Post Flange	Base Bottom	Uplift	Lateral	
Caps												
SS BC4	3¾	3¾	2½	2½	3	3	(6) 16d	(6) 16d	—	980	1,000	I12, I27, L4, L5, FL
BC46	3¾	5½	4¾	2¾	3½	2½	(12) 16d	(6) 16d	—	980	1,000	
BC4R	4	4	4	4	3	3	(12) 16d	(12) 16d	—	980	1,000	
SS BC6	5½	5½	4¾	4¾	3¾	3¾	(12) 16d	(12) 16d	—	1,050	2,000	I12, L4, FL
BC6R	6	6	6	6	3	3	(12) 16d	(12) 16d	—	1,050	2,000	
BC8	7½	7½	7½	7½	4	4	(12) 16d	(12) 16d	—	1,800	2,000	
SS BCS2-2/4	3¾	3¾	2¾	2¾	2¼	2¼	(8) 10d	(6) 10d	—	780	1,025	I12, I27, L4, L5, FL
SS BCS2-3/6	4¾	5¾	4¾	2¾	3¾	2¼	(12) 16d	(6) 16d	—	800	1,495	I12, L4, FL
Bases												
SS BC40	3¾	—	3¼	—	2¼	—	—	(6) 16d	(4) 16d	510	735	I27, L5
BC40R	4	—	4	—	3	—	—	(6) 16d	(4) 16d	510	735	170
BC460	5½	—	3¾	—	3	—	—	(6) 16d	(4) 16d	450	735	
BC60	5½	—	5½	—	3	—	—	(6) 16d	(4) 16d	450	735	I27, L5
BC60R	6	—	6	—	3	—	—	(6) 16d	(4) 16d	450	735	170
BC80	7½	—	7½	—	4	—	—	(6) 16d	(4) 16d	450	735	
BC80R	8	—	8	—	4	—	—	(6) 16d	(4) 16d	450	735	

1. Allowable loads have been increased for wind or earthquake with no further increase allowed; reduce where other loads govern.
2. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for values on the narrow face (edge).
3. Base allowable loads assumes nails have full penetration into supporting member. Loads do not apply to end grain post installations.
4. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

LCC/CCOS

Lally Column Caps / Steel Column Caps

Lally column caps and steel column caps provide adequate bearing length for larger girder reactions.

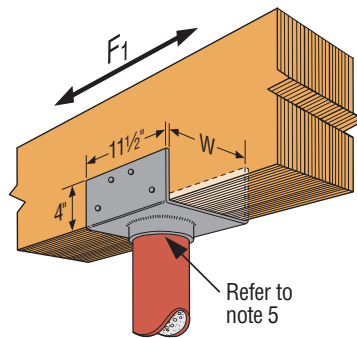
Material: LCC — 12 gauge; CCOS — 7 gauge

Finish: LCC — Simpson Strong-Tie® gray paint; CCOS — G90 Galvanized

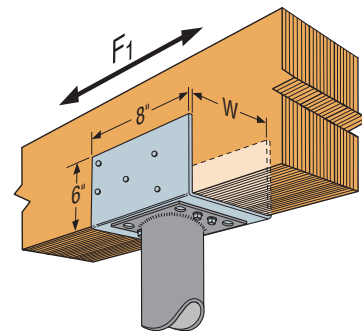
Installation:

- Use all specified fasteners; see General Notes.
- LCC — Fit the lally column cap over the lally column and attach to the girder.
- CCOS — Attach steel column cap to column end plate with (4) Simpson Strong-Tie Quik Drive® XQ112S1224 self-tapping screws (provided) and attach to girder. Install with 5/16"-hex driver.

Codes: See p. 14 for Code Reference Key Chart



Typical LCC5.25-3.5 Installation
Connecting a 3-ply LVL and a
3 1/2"-diameter (O.D.) Steel Column



Typical CCOS5.50 Installation
Connecting a 3-ply LVL
and a Steel Column

Model No.	W (in.)	Girder	Nails ⁷	Lally Column Outside Diameter (in.)	Allowable Loads				Code Ref.
					Download ^{1,2,3,4}		Uplift	F ₁ ⁵	
					DF/SP/SPF	LVL/PSL/LSL	(160)	(160)	
LCC4.5-3.5	4%	Triple 2x10/12	(8) 16d	3 1/2	15,820	—	—	1,615	170
CCOS3.12	3%	Double 2x10/12	(10) 10d	—	10,200	—	1,020	2,200	
LCC3.5-3.5	3%	3.5 LVL/PSL/LSL	(8) 16d	3 1/2	—	15,820	—	1,615	
LCC3.5-4	3%	3.5 LVL/PSL/LSL	(8) 16d	4	—	20,670	—	1,615	
CCOS3.62	3%	3.5 LVL/PSL/LSL	(10) 10d	—	—	16,665	1,020	2,200	
LCC4.5-4	4%	Triple 2x10/12	(8) 16d	4	20,670	—	—	1,615	
CCOS4.62	4%	Triple 2x10/12	(10) 10d	—	15,300	—	1,020	2,200	
LCC5.25-3.5	5%	5.25 LVL/PSL/LSL	(8) 16d	3 1/2	—	15,820	—	1,615	
LCC5.25-4	5%	5.25 LVL/PSL/LSL	(8) 16d	4	—	20,670	—	1,615	
CCOS5.50	5 1/2	5.25 LVL/PSL/LSL	(10) 10d	—	—	22,100	1,020	2,200	
LCC6-3.5	6 1/8	Quad 2x10/12	(8) 16d	3 1/2	15,820	—	—	1,615	
LCC6-4	6 1/8	Quad 2x10/12	(8) 16d	4	20,670	—	—	1,615	
LCC7-3.5	7 1/8	7 LVL/PSL/LSL	(8) 16d	3 1/2	—	15,820	—	1,615	
LCC7-4	7 1/8	7 LVL/PSL/LSL	(8) 16d	4	—	20,670	—	1,615	
CCOS7.25	7 1/4	7 LVL/PSL/LSL	(10) 10d	—	—	27,525	1,020	2,200	

1. Loads may not be increased for short-term loading.

2. Allowable loads are determined using the lowest of the bearing loads using F_c-perp equal to 425 psi for SPF, 625 psi for DF and 700 psi for LVL/PSL/LSL.

3. Loads are for a continuous beam.

4. Spliced conditions for the LCC must be detailed by the Designer to transfer tension loads between spliced members by means other than the lally column. The splice condition load is 6,750 lb. per beam side for LCC must be evenly loaded.

5. To achieve lateral loads, the LCC pipe must be welded to the column with an 1/8"-fillet weld around the entire pipe.

6. The CCOS must be attached to the column cap plate with (4) Quik Drive XQ112S1224 self-tapping screws through the end plate and into the bottom of the CCOS. Max column cap plate thickness = 1/2".

7. All pipe columns need to be designed by a qualified Designer. CCOS minimum column diameter is 3".

8. CCOS caps can resist out-of-plane (F₂) forces up to 2,200 lb. provided the beam is braced to resist torsional rotation.

9. **Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d = 0.148" dia. x 3" long.

See pp. 26–27 for other nail sizes and information.

AC/ACE/LPCZ/LCE/RTC

Post Caps

The LCE4's universal design provides high capacity while eliminating the need for rights and lefts. For use with 4x or 6x lumber. LPCZ — Adjustable design allows greater connection versatility.

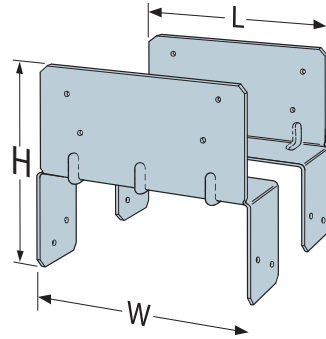
Material: LCE4 — 20 gauge; AC, ACE, LPC4Z — 18 gauge; LPC6Z — 16 gauge; RTC — 14 gauge

Finish: Galvanized. Some products available in ZMAX® coating and stainless steel; see Corrosion Information, pp. 15–18.

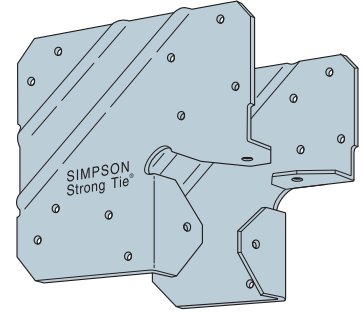
Installation:

- Use all specified fasteners; see General Notes
- Install all models in pairs. LPCZ — 2½" beams may be used if 10d x 1½" nails are substituted for 10d commons

Codes: See p. 14 for Code Reference Key Chart

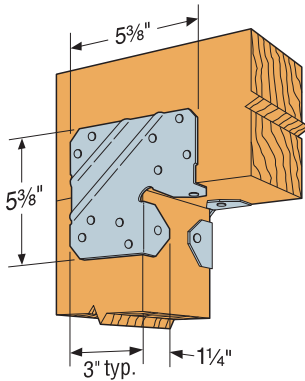


LPCZ

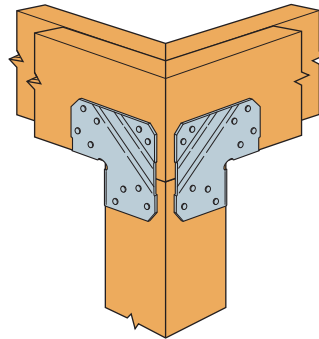


LCE4

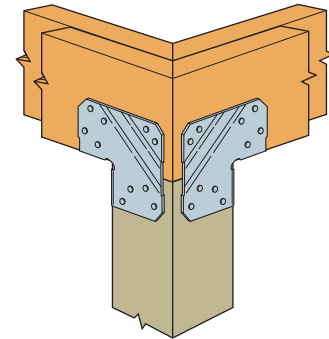
Caps and Bases



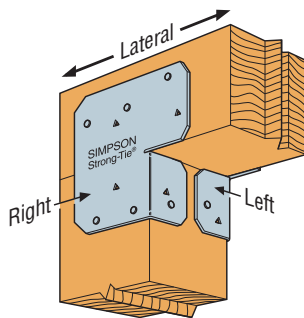
Typical LCE4 Installation
(For 4x or 6x lumber)



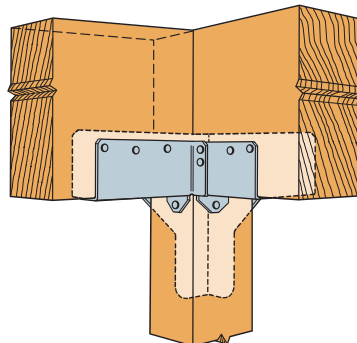
Typical LCE4 Corner Installation
(See note 7)



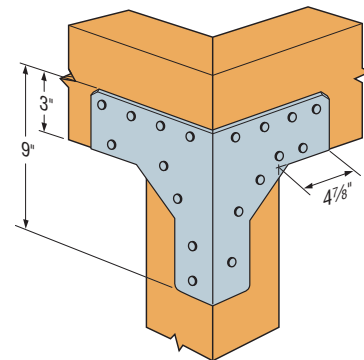
Typical LCE4Z Installation
(Mitered corner)



Typical ACE Installation
(AC similar)



RTC44 Installation
(Square cut)



RTC44 Installation
(Mitered corner)

AC/ACE/LPCZ/LCE/RTC

Post Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Dimensions (in.)		Total No. Fasteners		Allowable Loads (DF/SP) (160) ¹		Code Ref.
	W	L	Beam	Post	Uplift	Lateral	
SS AC4 (Min.)	3 ³ / ₁₆	6 ¹ / ₂	(8) 16d	(8) 16d	1,430	715	I12, I27, L4, L5, FL
SS AC4 (Max.)	3 ³ / ₁₆	6 ¹ / ₂	(14) 16d	(14) 16d	2,500	1,070	
AC4RZ (Min.)	4	7	(8) 16d	(8) 16d	1,430	715	I12, L5, FL
AC4RZ (Max.)	4	7	(14) 16d	(14) 16d	2,500	1,070	
ACE4 (Min.)	—	4 ¹ / ₂	(6) 16d	(6) 16d	1,070	715	I12, L4, FL
ACE4 (Max.)	—	4 ¹ / ₂	(10) 16d	(10) 16d	1,785	1,070	
SS LCE4	—	5 ³ / ₈	(14) 16d	(10) 16d	1,905 ⁷	1,425	IP1, L18, FL
SS AC6 (Min.)	5 ¹ / ₂	8 ¹ / ₂	(8) 16d	(8) 16d	1,430	715	I12, I27, L4, L5, FL
SS AC6 (Max.)	5 ¹ / ₂	8 ¹ / ₂	(14) 16d	(14) 16d	2,500	1,070	
AC6RZ (Min.)	6	9	(8) 16d	(8) 16d	1,430	715	I12, I27, L5, FL
AC6RZ (Max.)	6	9	(14) 16d	(14) 16d	2,500	1,070	
SS ACE6 (Min.)	—	6 ¹ / ₂	(6) 16d	(6) 16d	1,070	715	I12, L4, FL
SS ACE6 (Max.)	—	6 ¹ / ₂	(10) 16d	(10) 16d	1,785	1,070	
LPC4Z	3 ³ / ₁₆	3 ¹ / ₂	(8) 10d	(8) 10d	760	325	I12, I27, L4, L5, FL
LPC6Z	5 ³ / ₁₆	5 ¹ / ₂	(8) 10d	(8) 10d	915	490	I12, FL

- Allowable loads have been increased for wind or earthquake with no further increase allowed; reduce where other loads govern.
- Loads apply only when used in pairs.
- LPCZ lateral load is in the direction parallel to the beam.
- Min. nailing quantity and load values — fill all round holes;
Max. nailing quantities and load values — fill round and triangle holes.
- Uplift loads do not apply to splice conditions.
- Spliced conditions must be detailed by the Designer to transfer tension loads between spliced members by means other than the post cap.
- LCE4 uplift load for mitered-corner conditions is 985 lb. (DF/SP) or 845 lb. (SPF). Lateral loads do not apply.
- Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face. See technical bulletin [T-C-SCLCLM](#) at [strongtie.com](#) for values on the narrow face (edge).
- Nails:** 16d = 0.162" dia. x 3¹/₂" long, 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

Model No.	Dimensions (in.)		Total No. of Fasteners		DF/SP Uplift Loads	SPF Uplift Loads
	W	L	Beam	Post	Total Uplift	Total Uplift
					(160)	(160)
SS LCE4Z (Mitered corner)	5 ³ / ₈	5 ³ / ₈	(14) 16d	(10) 16d	985	845

- The allowable download for the mitered LCE4 connection is limited to bearing of the mitered section on the post and shall be determined by the Designer.
- Connectors must be installed in pairs to achieve listed loads.

Model No.	Dimensions (in.)		Total No. of Fasteners		DF/SP Uplift Loads			SPF Uplift Loads		
	W	L	Beam	Post	Side Beam	Main Beam	Total	Side Beam	Main Beam	Total
RTC44 ¹ (Mitered corner)	3 ³ / ₁₆	4 ³ / ₄	(16) 16d	(10) 16d	900	900	1,800	775	775	1,550
RTC44 ² (Square cut)	3 ³ / ₁₆	4 ³ / ₄	(16) 16d	(10) 16d	925	1,230	1,760	795	1,060	1,515

- The allowable download for the mitered RTC44 connection is limited to bearing of the mitered beams on the post and shall be determined by the Designer.
- The allowable download for the main beam in the square-cut RTC44 connection is limited to bearing of the beam on the post and shall be determined by the Designer. The side beam allowable download is 1,170 lb..
- The combined uplift loads applied to all beams in the connector must not exceed the total allowable uplift load listed in the table.

CBTZ

Concealed Beam Tie

CBTZ, the newest addition to the concealed structural connector line, combines structural strength with invisibility. Designed to connect horizontal beams atop a vertical post, the CBTZ continues the structural load path into the foundation through the CPTZ. The simplistic cylindrical design allows installations with a common drill bit, eliminating challenging kerf cuts. The CBTZ is available in two models designed to connect beams and posts of a variety of sizes. It is part of a concealed connector system that includes the CPTZ and CJT.

Features:

- Flattened sides assist installer while using the CBTZ as a template
- Locator tabs provide proper dimensional layout
- Required dowel pins included
- Orientation markings distinguish which end installs into the post and which end goes into the beam

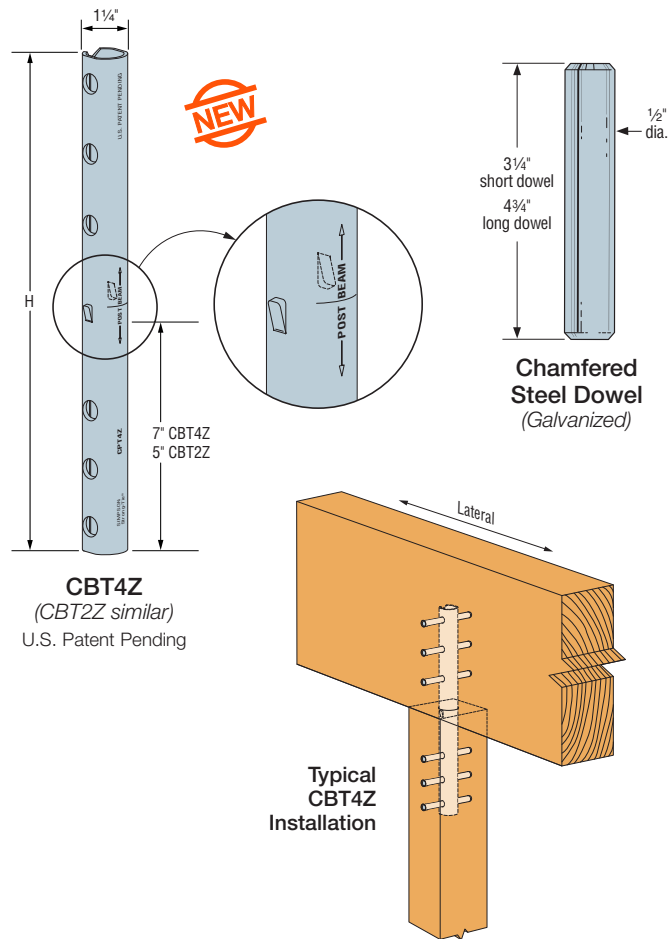
Material: 12 gauge

Finish: CBT — ZMAX® coating; the 1/2"-diameter drift dowels are mechanically galvanized in accordance with ASTM B695, Class 55

Installation:

- Use all specified fasteners; see General Notes
- 1/2" dowels included
- CBT2Z requires a minimum 6"-deep nominal beam
- For step-by-step installation instructions, see technical bulletin T-C-CBTZINS or view our video on strongtie.com

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Post (Min.)	Beam (Min.)	Dimensions (in.)		Fasteners			Allowable Loads (DF/SP)						Code Ref.
			D	H	Qty.		Type	Continuous Beam			End of Beam			
					Post	Beam		Uplift (160)	Lateral (160)	Down	Uplift (160)	Lateral (160)	Down	
CBT2Z	4x4	4x6	1 1/4	10	2	2	1/2" x 3 1/4" dowel	2,020	750	6,890	1,585	550	6,890	IP6
							1/2" MB							
CBT4Z	6x6	6x8	1 1/4	14	3	3	1/2" x 4 3/4" dowel	4,215	1,655	18,140	3,695	1,055	18,140	
							1/2" MB							



1. Uplift and lateral loads have been increased for wind or earthquake with no further increase allowed; reduce where other loads govern.
2. Lateral load is in the direction parallel to the beam.
3. Alternate 1/2"-diameter hex or square head machine bolts may be used for loads listed
4. Lag or carriage bolts are not permitted
5. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. values in the tables reflect dowel or bolt installation into the wide face.
6. Spliced condition must be detailed by Designer.

PCZ/EPCZ

Post Caps

PCZ/EPCZ post caps are designed with their post and beam flanges in-line so that one PCZ/EPCZ model can accommodate several post sizes. The PCZ/EPCZ now uses easier-to-install 10d common nails. An alternate choice of fasteners is Strong-Drive® #9 x 1½" SD Connector screws. ZMAX® finish is standard to meet exposure conditions in many environments. See additional corrosion information at strongtie.com/info.

Material: 16 gauge

Finish: ZMAX coating

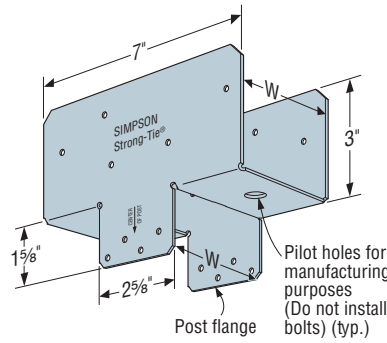
Installation:

- Use all specified fasteners; see General Notes
- Do not install bolts into pilot holes

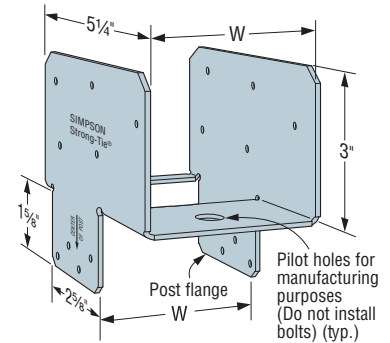
Options:

- For end conditions, specify EPCZ post caps
- For heavy-duty applications, see CCQ and CC Series
- For retrofit applications, see AC and LCE Series

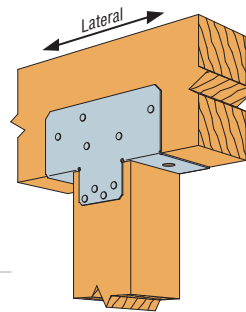
Codes: See p. 14 for Code Reference Key Chart



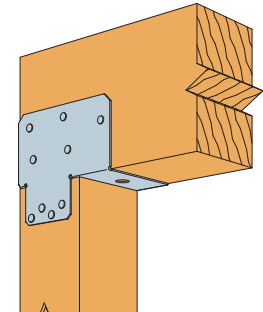
PCZ



EPCZ



Typical PCZ Post Cap Installation



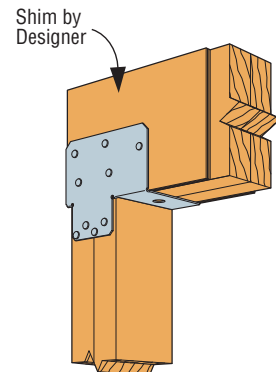
Typical EPCZ End Post Cap Installation

These products are available with additional corrosion protection. For more information, see p. 18.

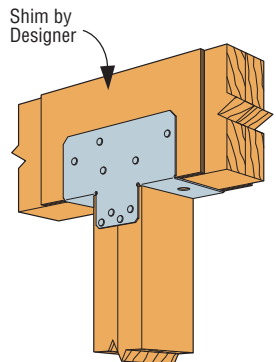
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.7	W (in.)	Fasteners ^{5,6}		Post Size	Allowable Loads (DF/SP)				Code Ref.
		Beam	Post		PCZ		EPCZ		
					Uplift (160)	Lateral (160)	Uplift (160)	Lateral (160)	
PC4Z	3¾	(10) 10d	(8) 10d	(2) 2x4 ⁴	1,480	1,120	1,130	895	I12, L4, FL
				4x4	1,480	1,260	1,130	1,075	
				4x6	1,480	1,260	1,130	1,230	
				4x8	1,480	1,380	1,130	1,230	
PC6Z	5½	(10) 10d	(8) 10d	4x6	1,480	1,260	1,435	1,075	
				6x6	1,480	1,295	1,435	1,230	
				6x8	1,480	1,380	1,435	1,230	
PC8Z	7½	(10) 10d	(8) 10d	4x8	1,480	1,260	1,435	1,075	
				6x8	1,480	1,295	1,435	1,230	
				8x8	1,480	1,380	1,435	1,230	

1. Allowable loads have increased for wind or earthquake with no further increase allowed; reduce where other loads govern.
2. Uplift loads do not apply to spliced conditions. Spliced conditions must be detailed by the Designer to transfer tension loads between spliced members by means other than the post cap.
3. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face and do not allow for installation into the narrow face.
4. Post and beam may consist of multiple members provided they are connected independently of the post cap fasteners.
5. 10d x 2½" (0.148" dia. x 2½" long) nails may be used with no load reduction for uplift and 0.85 of the table loads for lateral.
6. Strong-Drive® SD9 x 1½" Connector screws may be substituted for table fasteners with no load reduction.
7. Models available for rough size lumber, specify RZ suffix. Ex. PC4RZ.
8. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.
Screws: SD9112 = 0.131" dia. x 1½" long.



EPCZ Post Cap Installed on Double 2x Members



PCZ Post Cap Installed on Double 2x Members

CCQ/ECCQ

Column Caps



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.

Column caps provide a high-capacity connection for column-beam combinations. This design uses Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws to provide faster installation and provides a greater net section area of the column compared to bolts. The SDS screws provide for a lower profile compared to standard through bolts.

Material: CCQ3, ECCQ3, CCQ4, CCQ4.62, ECCQ4, ECCQ4.62, CCQ6, ECCQ6 — 7 gauge; all others — 3 gauge

Finish: Simpson Strong-Tie® gray paint, available in HDG and stainless steel; CCOQ and ECCOQ — no coating

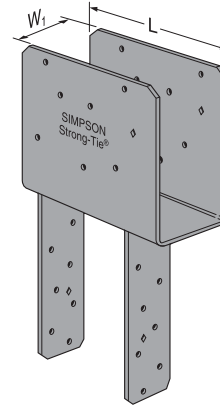
Installation:

- Install 1/4" x 2 1/2" Strong-Drive SDS Heavy-Duty Connector screws, which are provided with the column cap. (Lag screws will not achieve the same load.) **Install stainless-steel Strong-Drive screws with stainless-steel connectors.**
- CCOQ and ECCOQ column cap only (no straps) may be ordered for field-welding to pipe or other columns. Dimensions are same as CCQ and ECCQ.
- For rough cut lumber sizes, provide dimensions. An optional W_2 dimension may be specified with any column size given. (Note that the W_2 dimension on straps rotated 90° is limited by the W_1 dimension.)

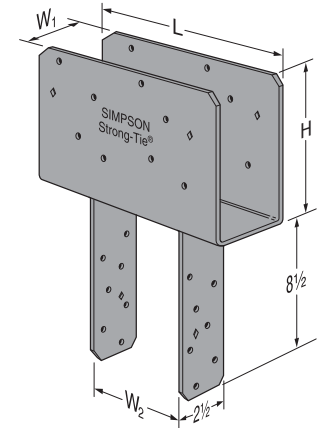
Options:

- For end conditions, specify ECCQ.
- Straps may be rotated 90° where $W_1 \geq W_2$ and for CCQ5-6.

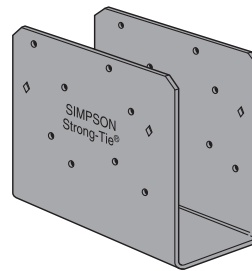
Codes: See p. 14 for Code Reference Key Chart



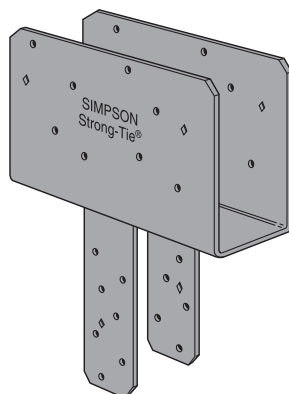
ECCQ46SDS2.5



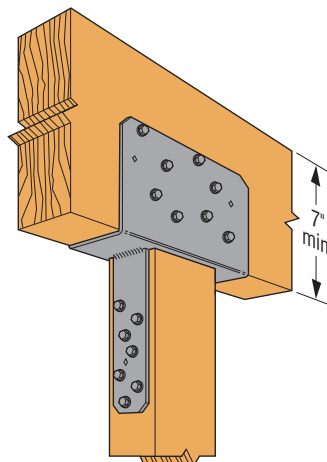
CCQ46SDS2.5



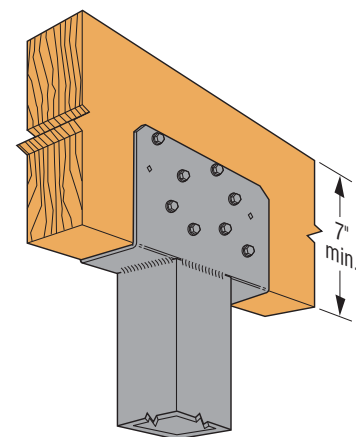
CCOQ4-SDS2.5



Optional CCQ with Straps Rotated 90°



Typical CCQ46SDS2.5 Installation



CCOQ Installation on Steel Column

CCQ/ECCQ

Column Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

	Model No.	Beam Width	Dimensions (in.)					No. of 1/4" x 2 1/2" SDS Screws ^a		Allowable Loads (DF/SP)				Code Ref.	CCOQ/ECCOQ Model No. (No Legs)
			W ₁	W ₂	L		H	Beam	Post	CCQ		ECCQ			
					CCQ	ECCQ				Uplift (160)	Down (100)	Uplift (160)	Down (100)		
SS	CCQ3-4SDS2.5	3 1/8"	3 1/4"	3 5/8"	11"	8 1/2"	7"	16"	14"	5,680	16,980	3,695	6,125	I12, L4, FL	CCOQ3-SDS2.5 ECCOQ3-SDS2.5
SS	CCQ3-6SDS2.5	3 1/8"	3 1/4"	5 1/2"	11"	8 1/2"	7"	16"	14"	5,680	19,250	3,695	9,625		CCOQ4-SDS2.5 ECCOQ4-SDS2.5
SS	CCQ44SDS2.5	4x	3 5/8"	3 5/8"	11"	8 1/2"	7"	16"	14"	5,680	19,020	4,040	7,655		
SS	CCQ46SDS2.5	4x	3 5/8"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,145	24,065	4,040	12,030	170	
SS	CCQ48SDS2.5	4x	3 5/8"	7 1/2"	11"	8 1/2"	7"	16"	14"	7,145	24,065	4,040	16,405		I12, L4, FL
SS	CCQ4.62-3.62SDS	4 1/2"	4 5/8"	3 5/8"	11"	8 1/2"	7"	16"	14"	5,680	19,020	4,040	7,655		
SS	CCQ4.62-4.62SDS	4 1/2"	4 5/8"	4 5/8"	11"	8 1/2"	7"	16"	14"	5,680	24,450	4,040	9,845	I12, L4, FL	
SS	CCQ4.62-5.50SDS	4 1/2"	4 5/8"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,145	28,585	4,040	12,030		CCOQ5-SDS2.5 ECCOQ5-SDS2.5
SS	CCQ5-4SDS2.5	5 1/8"	5 1/4"	3 5/8"	11"	8 1/2"	7"	16"	14"	5,680	26,635	4,040	10,045		
SS	CCQ5-6SDS2.5	5 1/8"	5 1/4"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,245	28,190	5,535	15,785	I12, L4, FL	
SS	CCQ5-8SDS2.5	5 1/8"	5 1/4"	7 1/2"	11"	8 1/2"	7"	16"	14"	7,245	31,570	5,535	21,525		CCOQ6-SDS2.5 ECCOQ6-SDS2.5
SS	CCQ64SDS2.5	6x	5 1/2"	3 5/8"	11"	8 1/2"	7"	16"	14"	5,680	28,585	4,040	12,030		
SS	CCQ66SDS2.5	6x	5 1/2"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,145	30,250	4,040	18,905	160	
SS	CCQ68SDS2.5	6x	5 1/2"	7 1/2"	11"	8 1/2"	7"	16"	14"	7,145	37,815	4,040	25,780		I12, L4, FL
SS	CCQ6-7.13SDS2.5	6x	5 1/2"	7 1/8"	11"	8 1/2"	7"	16"	14"	7,145	37,815	4,040	24,490		
SS	CCQ74SDS2.5	6 3/4"	6 7/8"	3 5/8"	11"	8 1/2"	7"	16"	14"	5,680	33,490	4,040	13,230	I12, L4, FL	
SS	CCQ76SDS2.5	6 3/4"	6 7/8"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,245	37,125	5,535	20,790		
SS	CCQ77SDS2.5	6 3/4"	6 7/8"	6 7/8"	11"	8 1/2"	7"	16"	14"	7,245	41,580	5,535	25,515		
SS	CCQ78SDS2.5	6 3/4"	6 7/8"	7 1/2"	11"	8 1/2"	7"	16"	14"	7,245	41,580	5,535	28,350	160	CCOQ7.12-SDS2.5 ECCOQ7.12-SDS2.5
SS	CCQ7.1-4SDS2.5	7"	7 1/8"	3 5/8"	11"	8 1/2"	7"	16"	14"	5,680	34,730	4,040	18,375		
SS	CCQ7.1-6SDS2.5	7"	7 1/8"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,245	38,500	5,535	28,875		
SS	CCQ7.1-7.1SDS2.5	7"	7 1/8"	7 1/8"	11"	8 1/2"	7"	16"	14"	7,245	57,750	5,535	36,750	I12, L4, FL	CCOQ8-SDS2.5 ECCOQ8-SDS2.5
SS	CCQ7.1-8SDS2.5	7"	7 1/8"	7 1/2"	11"	8 1/2"	7"	16"	14"	7,245	52,500	5,535	39,375		
SS	CCQ84SDS2.5	8x	7 1/2"	3 5/8"	11"	8 1/2"	7"	16"	14"	7,245	35,969	5,535	17,604		
SS	CCQ86SDS2.5	8x	7 1/2"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,245	41,250	5,535	25,780	160	CCOQ9-SDS2.5 ECCOQ9-SDS2.5
SS	CCQ88SDS2.5	8x	7 1/2"	7 1/2"	11"	8 1/2"	7"	16"	14"	7,245	51,565	5,535	35,155		
SS	CCQ94SDS2.5	8 3/4"	8 7/8"	3 5/8"	11"	8 1/2"	7"	16"	14"	7,245	35,969	5,535	18,309		
SS	CCQ96SDS2.5	8 3/4"	8 7/8"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,245	48,125	5,535	26,950	I12, L4, FL	CCOQ10-SDS2.5 ECCOQ10-SDS2.5
SS	CCQ98SDS2.5	8 3/4"	8 7/8"	7 1/2"	11"	8 1/2"	7"	16"	14"	7,245	53,900	5,535	36,750		
SS	CCQ106SDS2.5	10x	9 1/2"	5 1/2"	11"	8 1/2"	7"	16"	14"	7,245	52,250	5,535	32,655		

1. Uplift loads have been increased for wind or earthquake with no further increase allowed; reduce where other loads govern.
2. Down loads may not be increased for short-term loading and shall not exceed the post capacity. See pp. 383–385 for common post allowable loads.
3. Uplift loads do not apply to splice conditions.
4. Spliced conditions must be detailed by the Designer to transfer tension loads between spliced members by means other than the column cap.
5. Column sides are assumed to be aligned in the same vertical plane as the beam sides. CCQ4.62 models assume a minimum 3 1/2"-wide post.
6. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for values on the narrow face (edge).
7. ECCQ uses 14 Strong-Drive® SDS Heavy-Duty Connector screws into the beam and 14 Strong-Drive SDS Heavy-Duty Connector screws into the post.
8. Beam depth must be a minimum 7".
9. For 5/4"-engineered lumber, use 5 1/2" models.
10. CCOQ and ECCOQ welded to steel column will achieve maximum load listed as CCQ and ECCQ. Steel column width shall match beam width. Weld by Designer.

CC/ECC/ECCU

Column Caps

Column caps provide a high-capacity connection for column-beam combinations.

Material: CC3¼, CC44, CC46, CC48, CC4.62, CC64, CC66, CC68, CC6-7½, ECC3¼, ECC44, ECC46, ECC48, ECC4.62, ECC64, ECC66, ECC68, ECC6-7½ — 7 gauge; all others — 3 gauge

Finish: Simpson Strong-Tie® gray paint; may be ordered HDG or some in stainless steel; CCO, ECCO — no coating

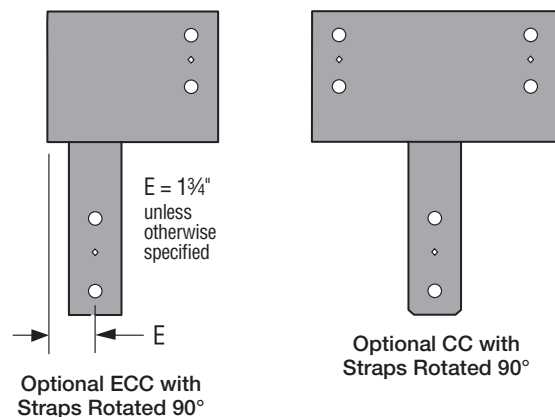
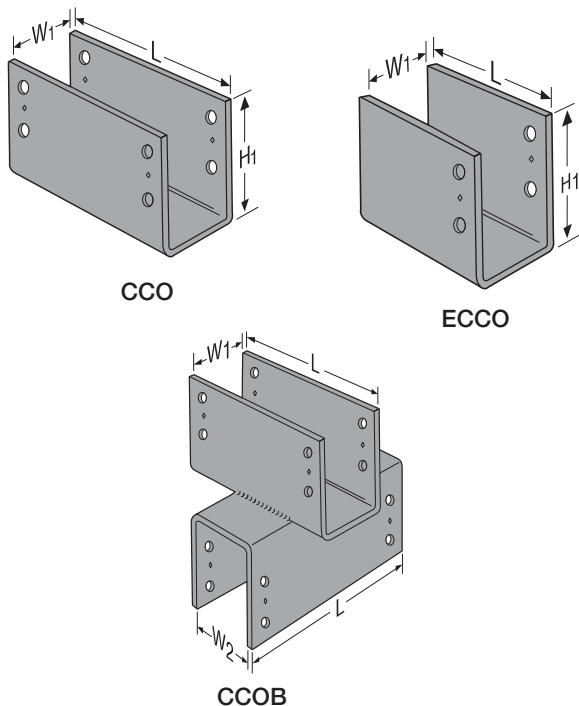
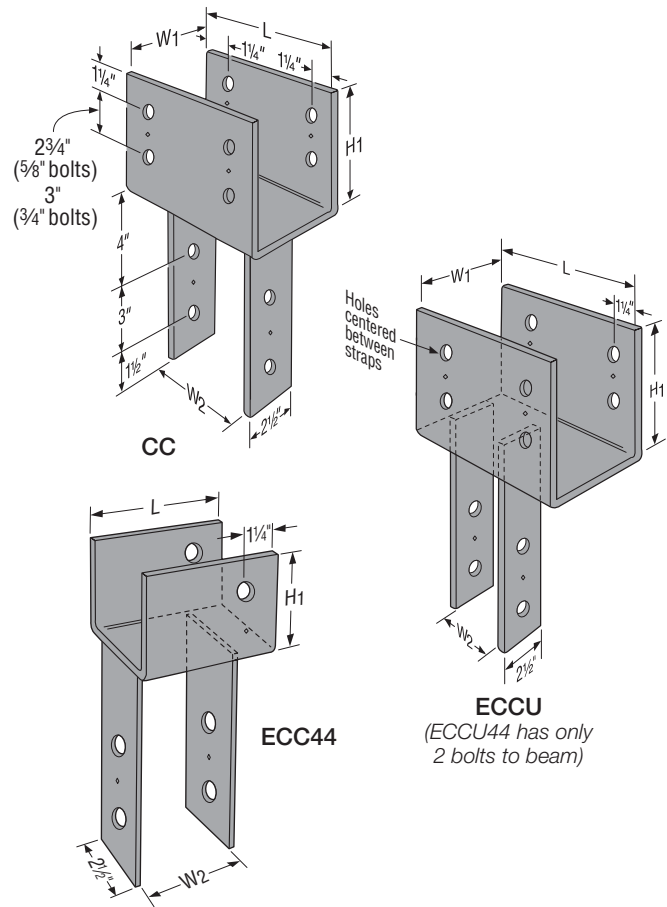
Installation:

- Use all specified fasteners; see General Notes
- Bolt holes shall be a minimum of ½" to a maximum of ¼" larger than the bolt diameter (per 2015 NDS, section 12.1.3.2)
- Contact engineered wood manufacturers for connections that are not through the wide face

Options:

- Straps may be rotated 90° where $W_1 \geq W_2$ (see illustration) and for CC5¼-6.
- For special, custom, or rough cut lumber sizes, provide dimensions. An optional W_2 dimension may be specified. (The W_2 dimension on straps rotated 90° is limited by the W_1 dimension.)
- CC/ECCO — Column cap only (no straps) may be ordered for field-welding to pipe or other columns. CCO/ECCO dimensions are the same as CC/ECC.
- CCOB — Any two CCOs may be specified for back-to-back welding to create a cross beam connector. Use the table loads; the load is no greater than the lesser element employed.

Codes: See p. 14 for Code Reference Key Chart



CC/ECC/ECCU

Column Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

	Model No.	Beam Width	Dimensions (in.)							Machine Bolts				Allowable Loads (DF/SP)					Code Ref.	CCO/ECCO Model No. (No Legs)
			W ₁	W ₂	L			H ₁	Size	Beam			Post	CC		ECC	ECCU			
					CC	ECC	ECCU			CC	ECC	ECCU		Uplift	Down	Down	Uplift	Down		
			(160)	(100)	(100)	(160)	(100)													
SS	CC3¼-4	3½"	3¼	3¾	11	7½	9½	6½	5/8	4	2	4	2	3,640	16,980	6,125	1,010	6,125	I12, L4, FL	CC03¼ ECC03¼
	CC3¼-6	3½"	3¼	5½	11	7½	9½	6½	5/8	4	2	4	2	3,640	19,250	9,625	1,010	9,625		CC04 ECC04
SS	CC44	4x	3%	3%	7	5½	6½	4	5/8	2	1	2	2	1,465	15,310	7,655	205	7,655		CC04/6 ECC04/6
	CC46	4x	3%	5½	11	8½	9½	6½	5/8	4	2	4	2	2,800	24,060	12,030	740	12,030	160	CC04.62 ECC04.62
	CC48	4x	3%	7½	11	8½	9½	6½	5/8	4	2	4	2	2,800	24,060	16,405	740	16,405		CC04.62 ECC04.62
	CC4.62-3.62	4½"	4%	3¾	11	8½	9½	6½	5/8	4	2	4	2	2,800	19,020	7,655	740	7,655	170	CC04.62 ECC04.62
	CC4.62-4.62	4½"	4%	4%	11	8½	9½	6½	5/8	4	2	4	2	2,800	24,450	9,845	740	9,845		CC04.62 ECC04.62
	CC4.62-5.50	4½"	4%	5½	11	8½	9½	6½	5/8	4	2	4	2	2,800	28,585	12,030	740	12,030		CC05¼-4 ECC05¼
	CC5¼-4	5½"	5¼	3¾	13	9½	10½	8	¾	4	2	4	2	7,530	26,635	10,045	2,735	10,045	I12, L4, FL	CC05¼ ECC05¼
	CC5¼-6	5½"	5¼	5½	13	9½	10½	8	¾	4	2	4	2	7,530	28,190	15,785	2,735	15,785		CC06 ECC06
	CC5¼-8	5½"	5¼	7½	13	9½	10½	8	¾	4	2	4	2	7,530	37,310	21,525	2,735	21,525		ECC068
	CC64	6x	5½	3¾	11	7½	9½	6½	5/8	4	2	4	2	4,040	28,586	12,030	1,165	12,030	160	CC07 ECC07
SS	CC66	6x	5½	5½	11	7½	9½	6½	5/8	4	2	4	2	4,040	30,250	18,905	1,165	18,905		CC07½ ECC07½
	CC68	6x	5½	7½	11	9½	9½	6½	5/8	4	2	4	2	4,040	37,810	25,780	1,165	25,780	170	CC07 ECC07
	CC6-7½	6x	5½	7½	11	9½	9½	6½	5/8	4	2	4	2	4,040	37,810	24,060	1,165	24,060		CC07½ ECC07½
	CC74	6¾"	6%	3¾	13	10½	10½	8	¾	4	2	4	2	7,525	33,490	13,230	3,605	13,230		CC08 ECC08
	CC76	6¾"	6%	5½	13	10½	10½	8	¾	4	2	4	2	7,525	37,125	20,790	3,605	20,790	I12, L4, FL	CC08 ECC08
	CC77	6¾"	6%	6%	13	10½	10½	8	¾	4	2	4	2	7,525	49,140	25,515	3,605	25,515		CC09 ECC09
	CC78	6¾"	6%	7½	13	10½	10½	8	¾	4	2	4	2	7,525	49,140	28,350	3,605	28,350		CC09 ECC09
	CC7½-4	7"	7%	3¾	13	10½	10½	8	¾	4	2	4	2	7,510	34,736	18,375	4,855	18,375	160	CC09 ECC09
	CC7½-6	7"	7%	5½	13	10½	10½	8	¾	4	2	4	2	7,585	58,500	28,875	4,855	28,875		CC10 ECC10
	CC7½-7½	7"	7%	7½	13	10½	10½	8	¾	4	2	4	2	7,585	57,750	36,750	4,855	36,750		CC10 ECC10
	CC7½-8	7"	7%	7½	13	10½	10½	8	¾	4	2	4	2	7,585	52,500	36,750	4,855	36,750	170	CC09 ECC09
	CC84	8x	7½	3¾	13	10½	10½	8	¾	4	2	4	2	7,440	37,210	16,405	2,625	16,405		CC10 ECC10
	CC86	8x	7½	5½	13	10½	10½	8	¾	4	2	4	2	7,440	41,250	23,100	2,625	23,100		CC09 ECC09
	CC88	8x	7½	7½	13	10½	10½	8	¾	4	2	4	2	7,440	54,600	31,500	2,625	31,500	I12, L4, FL	CC09 ECC09
	CC94	8¾"	8%	3¾	13	10½	10½	8	¾	4	4	4	2	7,515	43,410	19,905	3,990	19,905		CC10 ECC10
	CC96	8¾"	8%	5½	13	10½	10½	8	¾	4	4	4	2	7,515	48,125	26,950	4,670	26,950		CC10 ECC10
	CC98	8¾"	8%	7½	13	10½	10½	8	¾	4	4	4	2	7,515	63,700	36,750	4,670	36,750	I12, L4, FL	CC10 ECC10
	CC106	10x	9½	5½	13	10½	10½	8	¾	4	4	4	2	7,515	52,250	29,260	3,325	29,260		CC10 ECC10

- Uplift loads have been increased for wind or earthquake with no further increase allowed; reduce where other loads govern.
- Down loads may not be increased for short-term loading and shall not exceed the post capacity. See pp. 383-385 for common post allowable loads.
- CC uplift loads do not apply to splice conditions.
- Splice conditions with CCs must be detailed by the Designer to transfer tension loads between spliced members by means other than the column cap.
- Column sides are assumed to be aligned in the same vertical plane as the beam sides. CC4.62 models assume a minimum 3½"-wide post.
- Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for values on the narrow face (edge).
- Beam depth must be at least as tall as H₁. Uplift loads assume a minimum beam height of 11".
- For 5¼"-engineered lumber, use 5½" models.
- CCO and ECCO welded to steel column will achieve maximum load listed as CC and ECC. Steel column width shall match beam width. Weld by Designer.

ECCLQ/CCCQ/CCTQ

Column Caps

The ECCLQ, CCCQ and CCTQ column caps provide high-capacity, multiple beam-to-column connector options. The design uses Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws to provide faster installation and a lower profile compared to standard through bolts. Screws are configured to provide high uplift design values.

Material: 7 gauge

Finish: Simpson Strong-Tie gray paint; also available in HDG

Installation:

- Install ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws, which are provided, in all round holes. (Lag screws will not achieve the same load.)
- No additional welding is allowed.

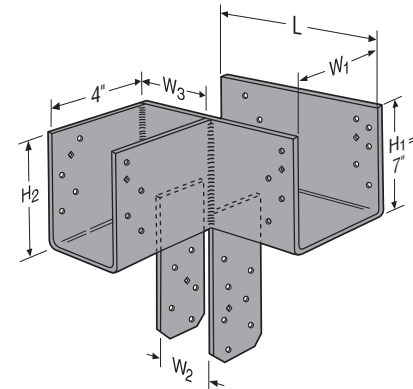
Options:

- Many combinations of beam and post sizes can be manufactured (refer to worksheet T-CCQLTC-WS at strongtie.com).
- Available in widths up to 8" wide.
- ECCLQ is available in left or right side beam orientations. Specify ECCLLQ or ECCLRQ.
- Straps may be rotated where $W_1 \geq W_2$.
- Column caps may be ordered without the column straps for field welding to a steel column. Specify CCCOQ/CCTOQ/ECCLOQ. **Weld by Designer.**

Ordering:

- The L dimension varies depending on the width of the side stirrup (W_3 or W_4). Contact Simpson Strong-Tie for exact dimensions.
- Main beam stirrup height (H_1) is 7". Side beam stirrups (H_2 or H_3) can vary in height with the minimum height of 7". Specify the side stirrup height from the top of the cap.
- Example Order: 4x main beam, 6x post, 4x side beam (oriented to the left) is ordered as an ECCLLQ464SDS.

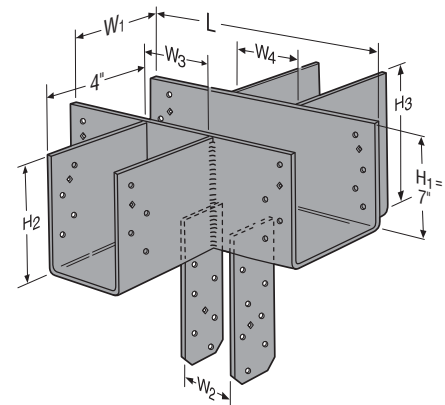
Codes: See p. 14 for Code Reference Key Chart



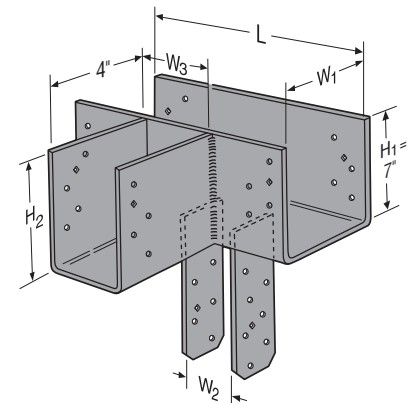
ECCLQ-SDS2.5

(Left direction shown)

Order ECCLRQ-SDS2.5 for right direction



CCCQ-SDS2.5



CCTQ-SDS2.5

Series	Allowable Loads (DF/SP)					Code Ref.
	Uplift (160)			Download (100)		
	Main Beam	Side Beam	Total ³	Side Beam	Total	
ECCLQ-SDS2.5	2,835	1,840	3,795	6,780	Refer to note #5	FL
CCCQ-SDS2.5	4,780	2,390 ²	4,780	7,000		
CCTQ-SDS2.5	4,910	2,350	5,315	7,000		

1. Uplift loads have been increased for wind or seismic; reduce where other loads govern. Downloads may not be increased.
2. Allowable load is per seat. Side beams must be loaded symmetrically for the CCCQ.
3. The combined uplift loads applied to all beams in the connector must not exceed the total allowable uplift load listed in the table.
4. The ECCLQ side beam may use a side beam uplift load up to 2,350 lb.. The deflection of this load may exceed the standard ¼" deflection by an additional ⅛".
5. The combined download for all of the carried beams shall not exceed the allowable download for the unmodified product on p. 113 (CCQ load for CCCQ and CCTQ, or ECCQ load for ECCLQ). The download for each side beam shall not exceed the **allowable load shown**.
6. Column width in the direction of the beam width must be the same as the main beam width (W_1).

ECCL/CCC/CCT

Column Caps

Column-to-beam connections often have multiple beams framing on top of a column. L, T, and cross-column caps provide design solutions for this application. Many combinations of beam and post sizes can be manufactured (refer to worksheet T-CCLTC-WS at strongtie.com for details) with the following criteria applied:

Material: 7 gauge

Finish: Simpson Strong-Tie® gray paint, also available in HDG

Installation:

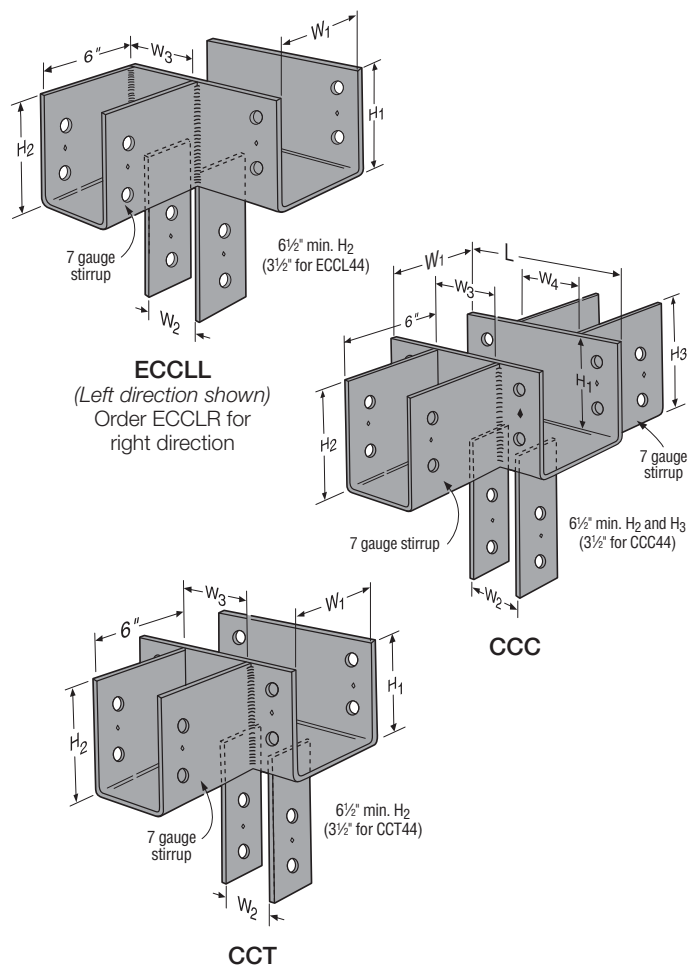
- Use all specified fasteners; see General Notes
- Bolt holes shall be a minimum of $\frac{1}{32}$ " to a maximum of $\frac{1}{16}$ " larger than bolt diameter (per NDS 2015 12.1.3.2)

Options:

- Many combinations of beam and post sizes can be manufactured. Refer to worksheet T-C-CCQLTC at strongtie.com.
- The download capacity shall be determined from the capacity for the unmodified product (see p. 115). The side beam can take a maximum of 40% of the download and shall not exceed 10,665 lb. The sum of the loads for the side beam(s) and main beam can not exceed the table load.
- Uplift loads do not apply for ECCL caps. For CCC and CCT, uplift loads from table apply for main beam only.
- The column width in the direction of the main beam width must be the same as the main beam width (W_1).
- Specify the stirrup height from the top of the cap. The minimum side stirrup heights (H_2 or H_3) is $6\frac{1}{2}$ " ($3\frac{1}{2}$ " for 44s).
- The L dimension may vary depending on the width of the side stirrup (W_3 or W_4).
- Column caps may be ordered without the column straps for field welding to a steel column. No loads apply. Specify CCOC/CCOT/ECCOL. **Weld by Designer.**

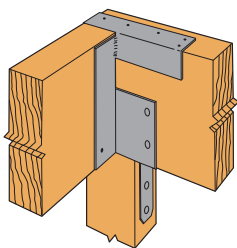
Ordering Examples:

- A CCC66 with $W_3 = 5\frac{1}{2}$ ", H_2 and $H_3 = 6\frac{1}{2}$ " is a CC66 column cap with $5\frac{1}{2}$ " beams on each side with all beam seats flush.
- An ECCLR66 with $W_3 = 3\frac{5}{8}$ ", $H_2 = 7\frac{1}{2}$ " is an ECC66 end column cap with a 4x beam on the right side (specify direction left (which is shown) or right for stirrup) and stirrup seat 1" below the cap seat.

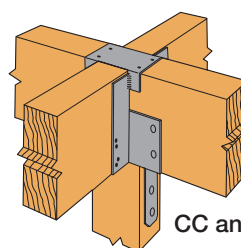


There are cost-effective alternatives for replacing column caps by using a combination of connectors. Designer must specify the options required.

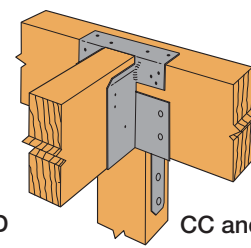
For column cap clearance, allow 3" for the hanger flange depth.



ECC and HW
(Top flange offset right)



CC and HWD



CC and GLT

Ordering Multiple-Beam Column Caps

Ordering bolted column caps incorporate several key steps that are important to ensure the highest-capacity capacity solution for your project. Here are some common steps to begin that process. For more information, refer to worksheet T-CCLTC-WS for bolted connections and worksheet T-CCQLTC for Quick Install connections. See p. 2 of these worksheets for model numbers for common post and beam width combinations. These worksheets are available at strongtie.com.

1. **Choose Column Cap Style.** Look at the configuration of the column caps to determine which style column cap you require. If you don't know which style column cap is required, refer to your plans to determine the correct configuration.
2. **Determine Column Cap Dimensions.** Fill in the dimensions of the column cap on the worksheet. If you don't know the dimensions of the column cap, go directly to the "Post and Beam Dimensions" section.
3. **Provide Beam and Post Dimensions.** The "Post and Beam Dimensions" section of this worksheet is required. Fill in all applicable dimensions in actual inches, not as nominal dimensions.
4. **Determine Beam Orientation.** Refer to your plans or check the configuration of the column cap you selected in order to determine the orientation of the beam. Check the box for the beam orientation that best describes your beam configuration: Beam B flush at bottom of Beam A; Beam B flush at both the top and bottom of Beam A; or Beam B flush at top of Beam A.
5. Check the box for the required style and strap orientation.
6. **Select Finish.** Standard finish is Simpson Strong-Tie® gray paint, available in HDG (specify HDG).
7. **Place Order.** Contact Simpson Strong-Tie for ordering information.

Hangers





Solid Sawn Joist Hangers 124–165

- Face Mount 126–145

- Top Flange 147–165

Glulam Beam Connectors 166–179

- Face Mount 168–173

- Top Flange 174–178

Engineered Wood and Structural
Composite Lumber Connectors 180–227

- Face Mount 184–202

- Top Flange 205–227

Plated Truss Connectors 228–273

Hanger Load Table Explanation

This icon identifies products approved for installation with the Simpson Strong-Tie® Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Min./Max.: Refers to min. or max. nailing for products with round and triangle holes. Min. nailing uses round holes, and max. nailing uses round and triangle holes to achieve maximum load.

Load Duration: Assumed duration factor used to determine the allowable load.

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.

Installed Cost Index: This indicates the products relative installed cost (combined cost and installation cost).

Joist Size: This shows the size of joist member.

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

Gauge: Product material

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

Uplift **Floor, Snow, Roof, Download**

Joist Size	Model No.	Ga.	Dimensions (in.)				Min./Max.	Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.
			W	H	B			Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)		
Sawn Lumber Sizes															
DBL 2X6	LUS26-2	18	3 3/8	4 7/8	2	—	(4) 16d	(4) 16d	1,165	1,030	1,180	1,280	Lowest	17, I27, FL, L5, L17	
	U26-2	16	3 3/8	5	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	+65%	17, FL, L17	
	HUS26-2/HUSC26-2	14	3 3/8	5 3/8	2	—	(4) 16d	(4) 16d	1,235	1,065	1,210	1,305	+172%		
	HU26-2/HUC26-2	14	3 3/8	5 3/8	2 1/2	Min.	(8) 16d	(4) 10d	760	1,190	1,345	1,445	+233%	17, I27, FL, L5, L17	
		14	3 3/8	5 3/8	2 1/2	Max.	(12) 16d	(6) 10d	1,135	1,785	2,015	2,165	+254%	17, FL, L17	

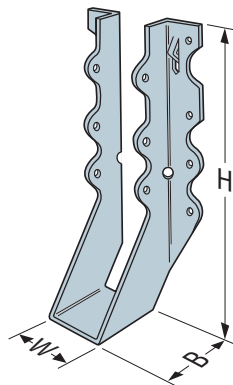
This icon identifies products that are available with additional corrosion protection. See pp. 15–18 for additional information.

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

Nails: 16d = 0.162" dia. x 3 1/2" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

Throughout this catalog a footnote will typically be provided indicating the required nail diameter and length. All installations should be designed only in accordance with the allowable load values set forth in this catalog.

Code Ref.: See p. 14 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).

Hanger Options General Notes

Hanger Modification Options and Applications

The Hanger Options Matrix for Face Mount and Top Flange Hangers in each of the respective hanger sections shows hanger modifications and special applications (uplift, nailers and weldability) that are available for each model series. Modifications may not be available for all models in the series, and some combinations of hanger options are not available. Many hanger modifications result in load reductions. For all modifications, refer to the listed hanger option pages

for additional information regarding the availability of each modification, associated load reductions, and installation requirements. For sloped joists up to ¼:12, there is no load reduction. For slopes greater than ¼:12, see individual product pages or refer to technical bulletin T-C-SLOPEJST at strongtie.com. For more information regarding the applications, refer to the individual product pages throughout the catalog.

Hanger Option General Notes

This information applies only to the hangers manufactured by Simpson Strong-Tie and installed per our instructions. Some combinations of these options on a single hanger have not been evaluated. In some cases, combinations of these options cannot be manufactured. A qualified Designer must always evaluate each connection, including header and joist limitations, before specifying the product.

Testing is performed using a standardized hanger test method. The joist in the test setup may include the minimum amount of structural stability where appropriate. For example, the sloped down hanger tests are assembled with a joist cut on the lower end to lie flush with a wood member attached with three 8d common toenails. Header and other attached structural members are assumed fixed in actual installations. Horizontal loads induced by sloped joists must be resisted by other members in the structural system.

Material: Gauge may vary from that specified depending on the manufacturing process used. U, HU, HUTF, W and B hangers normally have single-piece stirrups; occasionally, the seat may be welded. Hanger configurations, height and fastener schedules may vary from the tables depending on the joist size, skew and slope.

Finish: See specific hanger tables. Welded specials: Simpson Strong-Tie® gray paint. Specials that are not galvanized before fabrication can be hot-dip galvanized after fabrication; specify HDG.

Codes: Modified hangers, due to their numerous variations, are not on code reports.

Loads: For multiple modifications on the same connector, use the single multiplier factor that yields the lowest design loads.

To Order: Use the abbreviations below to order specials. The example shows a W410 hanger and illustrates most available options; most special hangers have only a few of these features. For assistance, contact Simpson Strong-Tie.

Installation:

- Fastener quantities may be increased beyond the amount specified in the standard hanger table.
- Fill all holes with the table-specified fastener types.
- Some skewed hangers require bevel cut joists; refer to the specific notes provided for each product.

W410	X	SLD30	SKL20	TFDL20	TFO20	OSR
Base Model		Seat Sloped Down (30°) (<i>SLU = Seat Up</i>)	Skewed Left (20°) (<i>SKR = Skewed Right</i>)	Top Flange Down Left (20°) (<i>TFDR = Top Flange Down Right</i>)	Top Flange Open (20°) (<i>TFC = Top Flange Closed</i>)	Offset Top Flange Right (<i>OSL = Offset Top Flange Left</i>)
X = Modification						

The Joist Hanger Selector software enables you the most optimum product for your project. The software takes into consideration all the characteristics seen in this catalog. Visit strongtie.com/jhs.

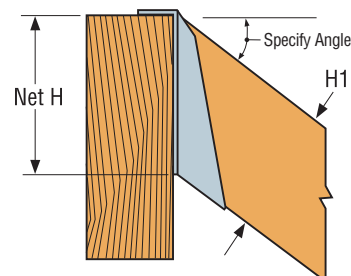
Height for Sloped Hangers

Height 1 (H1) is the joist height before the slope cut has been made.








Net Height (Net H) is the joist height after the slope cut has been made.

Provide **H1** when ordering a connector. Connectors are made assuming dry lumber is being used in continuously dry conditions.

Simpson Strong-Tie will calculate the **Net H** dimension based on the mathematical formula of $H1/\cos$ angle.



Face-Mount Hanger Option Matrix

Base Model Series	Hanger Modification Options						Applications	Hanger Option Page(s)
	Skewed Seat		Sloped Seat	Skewed and Sloped Seat	Concealed Flange(s)	Alternate Widths		
	Allowable Skew	Square Cut Joist Allowed						
							 	
Face-Mount Hangers								
DHU	≤ 45°	●			○		U	196
HGU	≤ 45°	See Note 4			○	●	U	172, 194
HGUM	≤ 45°	See Note 4			●	●	U	284
HGUQ							U	—
HGUS	≤ 45°	○					U	129, 186, 236
HHGU					●	●	U	172, 194
HHUS	≤ 45°		≤ 45°	●			U	129, 186, 236
HSUL / HSUR	45° Std.	●			○		U	—
HSULC / HSURC	45° Std.	●			Std.		U	—
HTU	≤ 67½°	●					U	239
HU	≤ 67½° ○	●	≤ 45°	●	○	○	U, W	127, 185
HUC	See Note 3	●	≤ 45°		Std.		U, W	127, 185
HUCQ					Std.		U	—
IUS							U	—
LGU	≤ 45°	●			○	●	U	172, 194
LGUM	≤ 45°	See Note 4					U	284
LSU / LSSU	Field skewable and slopeable to 45° available for some models						U	—
LTHJA							U	—
LTHMA							U	—
LU							U	—
LUC					Std.		U	—
LUS							U	—
MGU	≤ 45°	See Note 4			○	●	U	172, 194
MIU							U	—
MUS							U	—
SUL / SUR	45° Std.	●					U	—
SULC / SURC	45° Std.	●			Std.		U	—
THGB / THGBH / THGBV / THGBHV	≤ 45°	See Note 4					U	254, 256
THGQH	45°	●					U	253
THJA							U	—
THJU						●	U	243
U	≤ 67½°	●	≤ 45°	●			U	127, 185

1. Refer to the specific product pages for uplift, nailer, and weld information.
2. Refer to the listed pages for each model series for restrictions, required load reductions, and additional information regarding the hanger modifications.
3. HUC less than 3¼" wide cannot be skewed 45°. See pp. 127 and 185 for allowable skews for narrower widths.
4. Square cut allowed for beams up to 5½" and 4-ply trusses.

● = Available for all models ○ = Available for some models Std. = Available with standard model (no modification required)

Top-Flange Hanger Option Matrix

Base Model Series	Hanger Modification Options											Applications		Hanger Option Page(s)
	Skewed Seat		Sloped Seat	Skewed and Sloped Seat	Concealed Flange(s)	Alternate Widths	Sloped Top Flange	Open Top Flange	Closed Top Flange	Offset Top Flange	Saddle Hanger	Ridge Hanger	Uplift Nailers Weldability	
	Allowable Skew	Square Cut Joist Allowed												
B	≤ 45°		≤ 45°	●		●	●	●	●		●		U, N, W	149, 210
BA													U, N, W	—
DHUTF	≤ 45°	●			●								U	196
EG	≤ 45°		≤ 45°										—	170
EGQ	≤ 45°		≤ 45°										U	216
GB			≤ 45°								●		U, W	171, 149
GH	≤ 45°										●		—	278
GLS	≤ 50°		≤ 45°	●		●				●	●		U, W	176, 214–215
GLT	≤ 50°		≤ 45°	●		●				●			U, W	176
GLTV	≤ 50°		≤ 45°	●		●				●			U, N, W	214–215
HB	≤ 45°		≤ 45°	●		●	●	●			●		U, N, W	149, 210
HGB			≤ 45°								●		U	149, 171
HGLS	≤ 50°		≤ 45°			●				●	●		U, W	176
HGLT	≤ 50°		≤ 45°			●				●			U, W	176
HGLTV	≤ 50°		≤ 45°			●				●			U, W	214–215
HHB			≤ 45°			●					●		U, W	149, 171
HIT													U, N	—
HUCTF / HUCITF			≤ 45°		Std.								U	150
HUTF / HUITF	≤ 45°	●	≤ 45°	●	●								U	150
HW / HWI	≤ 84°	●	≤ 45°	●		●	●			●	●	●	N, W	151–153, 211–213
HWU	≤ 45°	●	≤ 45°	●									U, N, W	151–153, 211–213
ITS													U, N	—
LB													U, N, W	—
LBAZ													U, N, W	—
LBV	≤ 45°		≤ 45°	●		●	●	●			●		U, N, W	149, 210
LEG	≤ 45°	●	≤ 45°							●			—	170
MBHA	45°	●											—	285
MEG	≤ 45°	●	≤ 45°							●			—	170
MIT													U, N	—
MSC	20°–45°	●	≤ 45°	●		●							—	—
PF													U	—
THA					●								U, N	—
THAC					Std.								U, N	—
THAI													N	—
THAR/L	45° Std.	●											U, N	—
THASR/L	22°–75° Field Skewable	●											U	—
W/WI	≤ 84°	●	≤ 45°	●		●	●	●	●	●	●	●	N, W	151–153, 211–213
WMU	≤ 84°	●	≤ 45°							●			—	151–153, 211–213
WNP / WP / WPI	≤ 84°	●	≤ 45°	●		●	●	●	●	●	●	●	N, W	151–153, 211–213
WPU / WNPU	≤ 45°	●	≤ 45°	●									U, N, W	151–153, 211–213

See footnotes on p. 122.

● = Available for all models ● = Available for some models Std. = Available with standard model (no modification required)

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Solid Sawn Joist Hangers



HUCQ

Heavy-Duty Joist Hanger

The HUCQ series are heavy-duty joist hangers that incorporate Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws. Designed and tested for installation at the end of a beam or on a post, they provide a strong connection with fewer fasteners than nailed hangers. See p. 184 for structural composite lumber hangers.

Material: 14 gauge

Finish: Galvanized. Most models available in stainless steel or ZMAX® coating.

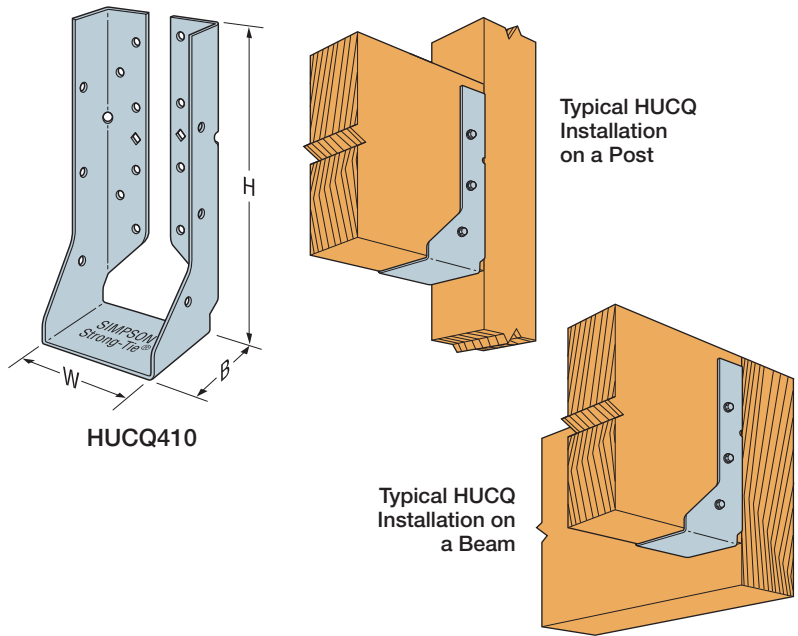
Installation:

- Use all specified fasteners; see General Notes.
- Install ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws, which are provided, in all round holes. (Lag screws will not achieve the same load.)
- For use on solid sawn wood members.

Options:

- These hangers cannot be modified

Codes: See p. 14 for Code Reference Key Chart



Solid Sawn Joist Hangers

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Dimensions (in.)			Fasteners		Allowable Loads								Code Ref.
	W	H	B	Face	Joist	DF/SP				SPF/HF				
						Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
SS HUCQ310-SDS	2¾	9	3	(8) ¼" x 2½" SDS	(4) ¼" x 2½" SDS	1,370	3,120	3,590	3,900	985	2,245	2,585	2,810	FL
SS HUCQ210-2-SDS	3¼	9	3	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	4,680	4,955	4,955	1,805	3,370	3,570	3,570	
SS HUCQ410-SDS	3¾	9	3	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	4,680	4,955	4,955	1,805	3,370	3,570	3,570	I9, L12, FL
SS HUCQ412-SDS	3¾	11	3	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	5,460	5,560	5,560	1,805	3,930	4,005	4,005	
SS HUCQ210-3-SDS	4¾	9	3	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	4,680	4,955	4,955	1,805	3,370	3,570	3,570	FL
SS HUCQ610-SDS	5½	9	3	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,520	4,680	5,380	5,715	1,815	3,370	3,875	4,115	I9, L12, FL
SS HUCQ612-SDS	5½	11	3	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,520	5,315	5,315	5,315	1,815	3,825	3,825	3,825	

1. Uplift loads have been increased for wind or earthquake loading; reduce where other loads govern.
 2. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for values on the narrow face (edge).

Face-Mount Hangers LUC/LU/U/HU/HUC

Standard Joist Hangers

LUCZ concealed flange hanger available for 2x6, 2x8, 2x10 and 2x12 lumber. Ideal for end of ledger/header or post conditions, the LUCZ also provides cleaner lines for exposed conditions such as overhead decks.

See Hanger tables on pp. 130–139. See Hanger Options on pp. 121–123 for hanger modifications, which may result in reduced loads.

LU — Value engineered for strength and economy. Precision-formed — engineered for installation ease and design value.

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. These heavy-duty connectors are designed for schools and other structures requiring additional strength, longevity and safety factors.

Material: See tables on pp. 130–139

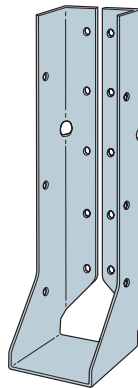
Finish: Galvanized. Some products available in ZMAX® coating.

Installation:

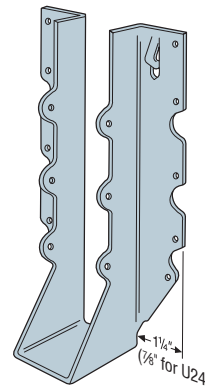
- Use all specified fasteners; see General Notes.
- HU/HUC — Can be installed filling round holes only, or filling round and triangle holes for maximum values.
- Joists sloped up to ¼:12 achieve table loads.
- For installations to masonry or concrete see pp. 279–281.
- HU/HUC hangers can be welded to a steel member. Allowable loads are the lesser of the values in the Hanger tables on pp. 130–139 or the weld capacity — refer to technical bulletin T-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:

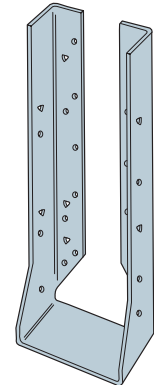
- For both flanges concealed, order HUC.
- The HU is available with the A flanges straight. Standard reductions apply for alternate fasteners.
- For low-cost, code approved 45° skewed hangers, see SUR/SUL.
- For field-adjustable hangers, see LSSJ, LSU, LRUZ and LSSU on pp. 140–143.
- See table modifications table for available options and associated load capacities for U and HU hangers.
- For ease of ordering, refer to technical bulletin T-U-HU-WS at strongtie.com.



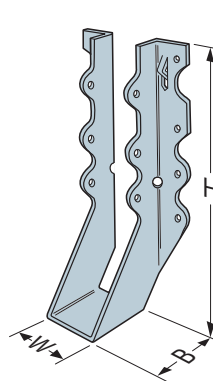
LUC210Z
(LUC26Z similar)



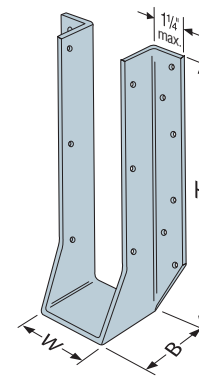
U210



HUC412
Concealed flanges

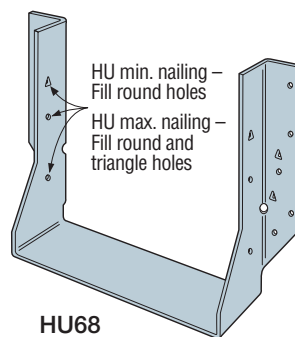


LU28
(Except LU roughs)

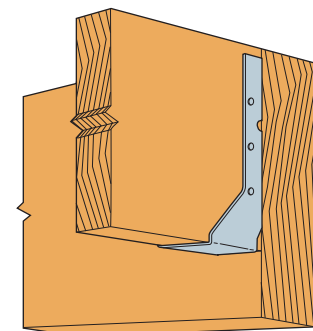


HU214
Projection seat on most models for maximum bearing and section economy.

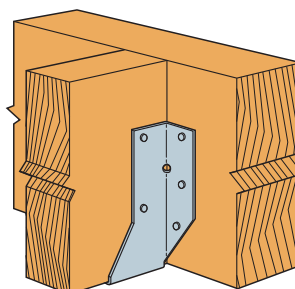
Model configurations may differ from those shown. Some HU models do not have triangle holes. Contact Simpson Strong-Tie.



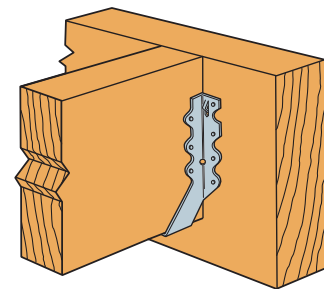
HU68



Typical LUCZ Installation



Typical HU Installation



Typical LU28 Installation

Face-Mount Hangers LUC/LU/U/HU/HUC

Standard Joist Hangers (cont.)

U/HU/HUC Series Modifications and Associated Load Reduction Factors

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	16d Stainless-Steel Nails		Other Fastener Substitutions
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 (all conditions) 1.00 Smooth shank (normal seat) 1.00 Smooth shank (modified seat!) 0.50		16d → 16d x 2½" 1.00 16d → 10d 0.84 16d → 10d x 1½" 0.64

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 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

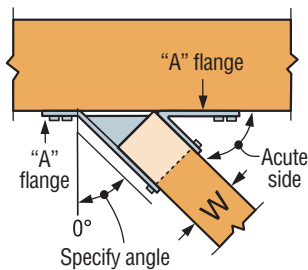
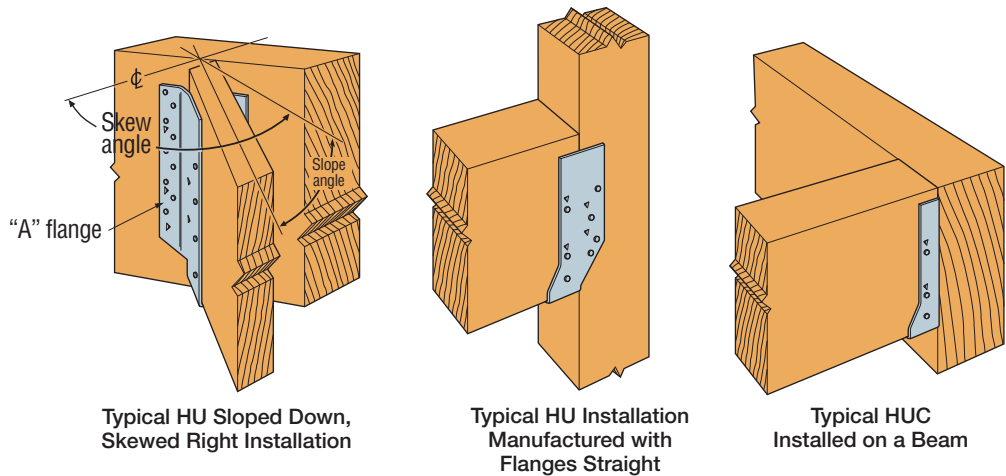
Allowable Download = Seat x Flange x Stainless Steel Nails x Other Fastener Substitutions x (Table Load)

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 sloped

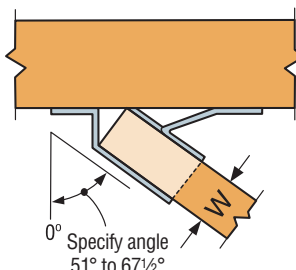
Maximum Skew Degree for Skewed HUC Hangers

Hanger Width (in.)	Maximum Skew (degree)
2⅝	31
2¾	31
2⅞	34
2¾	37
3⅝	41
3¾	42

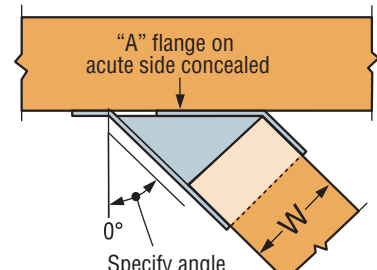
1. Widths greater than 3¾" maximum skew is 45°.



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)

LUS/HUS/HHUS/HGUS

Double-Shear Joist 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. 130–139. See Hanger Options on pp. 121–123 for hanger modifications, which may result in reduced loads.

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 standard nails for all connections. (Do not bend or remove tabs.)

Material: See tables, pp. 130–139

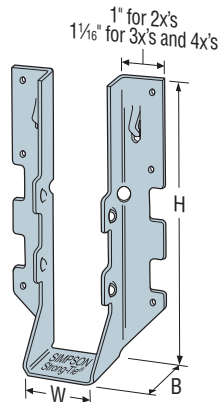
Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

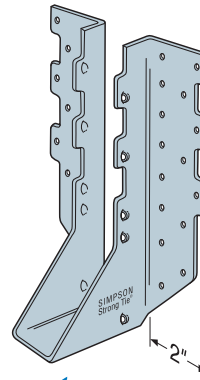
- Use all specified fasteners; see General Notes.
- Nails must be driven at an angle through the joist or truss into the header to achieve the table loads.
- Not designed for welded or nailer applications.
- 16d sinkers (0.148" dia. x 3¼" long) may be used where 10d commons are specified with no reduction in load. Where 16d commons are specified, 10d commons or 16d sinkers (0.148" dia. x 3¼" long) may be used at 0.85 of the table load.
- With 3x carrying members, use 16d x 2½" nails into the header and 16d commons into the joist with no load reduction.
- With 2x carrying members, use 10d x 1½" nails into the header and 10d commons into the joist, reduce the load to 0.64 of the table value.
- Use stainless-steel (SS) nails with stainless-steel (SS) hangers.

Options:

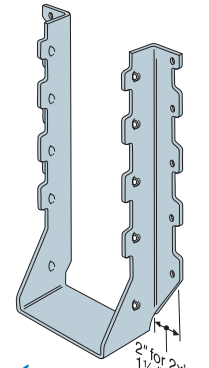
- LUS hangers cannot be modified.



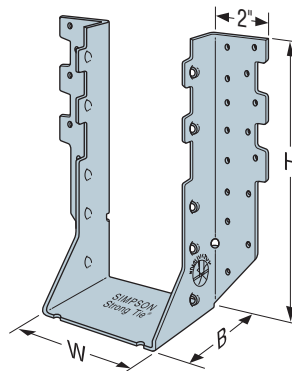
LUS28



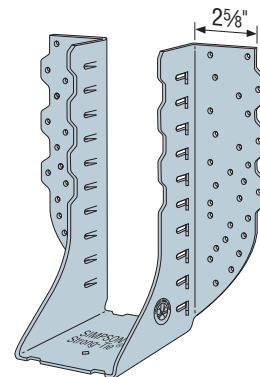
HUS210
(HUS26 and HUS28 similar)



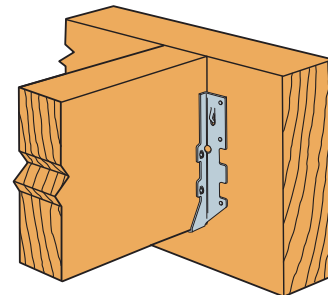
HUS412



HHUS410



HGUS3.25/12



Typical LUS28 Installation
use 0.148 x 3" (10d common)
or 0.148 x 3¼" (16d sinker) nail

<p>Double-Shear Nailing Top View</p>	<p>Double-Shear Nailing Side View Do not bend tab</p>	<p>Dome Double-Shear Nailing Side View (Available on some models) U.S. Patent 5,603,580</p>
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LUS/HUS/HHUS/HGUS

Double-Shear Joist Hangers (cont.)

HGUS/HHUS

See Hanger Options information on pp. 121–123.

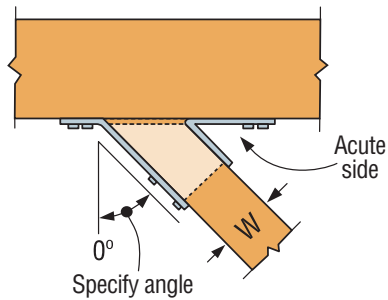
HHUS – Sloped and/or Skewed Seat

- 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	Download	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
$2" < W < 6"$	Square cut	0.46 of table load	0.41 of table load
$W > 6"$	Bevel cut	0.85 of table load	0.41 of table load



**Top View HHUS Hanger
Skewed Right**
(Joist must be bevel cut)
 All joist nails installed on the
 outside angle (*non-acute side*).

Face-Mount Hangers – Solid Sawn Lumber (DF/SP)

The Joist Hanger Selector software enables you the most optimum product for your project. The software takes into consideration all the characteristics seen in this catalog. Visit strongtie.com/jhs.

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

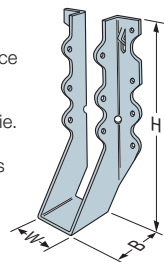
Solid Sawn Joist Hangers

Joist Size	Model No.	Ga.	Dimensions (in.)				Min./Max.	Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.
			W	H	B			Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)		
Sawn Lumber Sizes															
2X4	LU24	20	1 1/16	3 1/8	1 1/2	—	(4) 16d	(2) 10d x 1 1/2"	265	555	635	685	Lowest	I7, I27, FL, L5, L17	
	LUS24	18	1 1/16	3 1/8	1 3/4	—	(4) 10d	(2) 10d	490	670	765	825	+3%		
	U24	16	1 1/16	3 1/8	1 1/2	—	(4) 16d	(2) 10d x 1 1/2"	265	575	655	705	+67%		
	HU26	14	1 1/16	3 1/8	2 1/4	—	(4) 16d	(2) 10d x 1 1/2"	335	595	670	720	+295%		
DBL 2X4	LUS24-2	18	3 1/8	3 1/8	2	—	(4) 16d	(2) 16d	440	800	910	985	Lowest	I7, I27, FL, L5, L17	
	U24-2	16	3 1/8	3	2	—	(4) 16d	(2) 10d	370	575	655	705	+33%		
	HU24-2 / HUC24-2	14	3 1/8	3 1/8	2 1/2	—	(4) 16d	(2) 10d	380	380	595	720	+240%		
2x6	LUS26	18	1 1/16	4 3/4	1 3/4	—	(4) 10d	(4) 10d	1,165	865	990	1,070	Lowest	I7, I27, FL, L5, L17	
	LU26	20	1 1/16	4 3/4	1 1/2	—	(6) 16d	(4) 10d x 1 1/2"	565	835	950	1,030	+6%		
	U26	16	1 1/16	4 3/4	2	—	(6) 16d	(4) 10d x 1 1/2"	585	865	980	1,055	+43%		
	LUC26Z	18	1 1/16	4 3/4	1 3/4	—	(6) 16d	(4) 10d x 1 1/2"	730	845	965	1,040	+160%		
	HU26	14	1 1/16	3 1/8	2 1/4	—	(4) 16d	(2) 10d x 1 1/2"	335	595	670	720	+179%		
	HUS26	16	1 1/8	5 3/8	3	—	(14) 16d	(6) 16d	1,550	2,720	3,095	3,335	+276%		
DBL 2X6	LUS26-2	18	3 1/8	4 7/8	2	—	(4) 16d	(4) 16d	1,165	1,030	1,180	1,275	Lowest	I7, I27, FL, L5, L17	
	U26-2	16	3 1/8	5	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	+65%		
	HUS26-2 / HUC26-2	14	3 1/8	5 3/8	2	—	(4) 16d	(4) 16d	1,235	1,065	1,210	1,305	+172%		
	HU26-2 / HUC26-2	14	3 1/8	5 3/8	2 1/2	Min.	(8) 16d	(4) 10d	760	1,190	1,345	1,445	+233%		
		14	3 1/8	5 3/8	2 1/2	Max.	(12) 16d	(6) 10d	1,135	1,785	2,015	2,165	+254%		
TPL 2x6	LUS26-3	18	4 5/8	4 1/8	2	—	(4) 16d	(4) 16d	1,165	1,030	1,180	1,280	*	I7, FL	
	U26-3	16	4 5/8	4 1/4	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	*		
	HU26-3 / HUC26-3	14	4 1/16	4 5/8	2 1/2	Min.	(8) 16d	(4) 10d	760	1,190	1,345	1,445	*		
		14	4 1/16	4 5/8	2 1/2	Max.	(12) 16d	(6) 10d	1,135	1,785	2,015	2,165	*		
	2x8	LUS26	18	1 1/16	4 3/4	1 3/4	—	(4) 10d	(4) 10d	1,165	865	990	1,070		Lowest
LU26		20	1 1/16	4 3/4	1 1/2	—	(6) 16d	(4) 10d x 1 1/2"	565	835	950	1,030	+6%		
LUS28		18	1 1/16	6 5/8	1 3/4	—	(6) 10d	(4) 10d	1,165	1,105	1,260	1,365	+23%		
LU28		20	1 1/16	6 5/8	1 1/2	—	(8) 16d	(6) 10d x 1 1/2"	850	1,110	1,270	1,335	+39%		
U26		16	1 1/16	4 3/4	2	—	(6) 16d	(4) 10d x 1 1/2"	585	865	980	1,055	+43%		
LUC26Z		18	1 1/16	4 3/4	1 3/4	—	(6) 16d	(4) 10d x 1 1/2"	730	845	965	1,040	+160%		
HU28		14	1 1/16	5 1/4	2 1/4	—	(6) 16d	(4) 10d x 1 1/2"	610	895	1,005	1,085	+251%		
HUS26		16	1 1/8	5 3/8	3	—	(14) 16d	(6) 16d	1,550	2,720	3,095	3,335	+276%		
HUS28		16	1 1/8	7	3	—	(22) 16d	(8) 16d	2,000	3,965	4,120	4,220	+409%		
DBL 2x8		LUS26-2	18	3 1/8	4 7/8	2	—	(4) 16d	(4) 16d	1,165	1,030	1,180	1,280	Lowest	I7, I27, FL, L5, L17
	LUS28-2	18	3 1/8	7	2	—	(6) 16d	(4) 16d	1,165	1,315	1,500	1,625	+8%		
	U26-2	16	3 1/8	5	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	+65%		
	HUS28-2	14	3 1/8	7 3/8	2	—	(6) 16d	(6) 16d	1,550	1,595	1,815	1,960	+188%		
	HU28-2 / HUC28-2	14	3 1/8	7	2 1/2	Min.	(10) 16d	(4) 10d	760	1,490	1,680	1,805	+397%		
		14	3 1/8	7	2 1/2	Max.	(14) 16d	(6) 10d	1,135	2,085	2,350	2,530	+418%		

- Uplift loads apply to 10d and 16d header fasteners. Uplift loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
- 10d commons or 16d sinkers may be used instead of the specified 16d at 0.84 of the table load value.
- 16d sinkers may be used instead of the specified 10d commons with no load reduction. (16d sinkers are not acceptable for HDG applications.)
- Min. nailing quantity and load values — fill all round holes; Max. nailing quantity and load values — fill all round and triangle holes.

- DF/SP loads can be used for SCL that has fastener holding capacity of Doug Fir.
- Truss chord cross-grain tension may limit allowable loads in accordance with ANSI/TPI 1-2014. Simpson Strong-Tie® Connector Selector™ software includes the evaluation of cross-grain tension in its hanger allowable loads. For additional information, contact Simpson Strong-Tie.
- Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

*Hangers do not have an Installed Cost Index.



Codes: See p. 14 for Code Reference Key Chart

Face-Mount Hangers – Solid Sawn Lumber (DF/SP)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.)				Min./Max.	Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.	
			W	H	B			Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)			
Sawn Lumber Sizes																
TPL 2x8	LUS28-3	18	4%	6¼	2	—	(6) 16d	(4) 16d	1,165	1,315	1,500	1,625	*	I7, FL		
	U26-3	16	4%	4¼	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	*			
	HU26-3 / HUC26-3	14	4¼%	4%	2½	Min.	(8) 16d	(4) 10d	760	1,190	1,345	1,445	*			
14		4¼%	4%	2½	Max.	(12) 16d	(6) 10d	1,135	1,785	2,015	2,165	*				
QUAD 2x8	HU28-4 / HUC28-4	14	6%	7	2½	Min.	(10) 16d	(4) 16d	900	1,490	1,680	1,805	*	160		
		14	6%	7	2½	Max.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	*			
SS 2x10	LUS28	18	1%	6%	1¼	—	(6) 10d	(4) 10d	1,165	1,100	1,255	1,360	Lowest	I7, I27, FL, L5, L17		
	LU28	20	1%	6%	1½	—	(8) 16d	(6) 10d x 1½"	850	1,110	1,270	1,335	+13%			
	LUS210	18	1%	7¼%	1¼	—	(8) 10d	(4) 10d	1,165	1,340	1,525	1,650	+15%			
	LU210	20	1%	7¼%	1½	—	(10) 16d	(6) 10d x 1½"	850	1,390	1,585	1,715	+28%			
	U210	16	1%	7¼%	2	—	(10) 16d	(6) 10d x 1½"	1,110	1,440	1,635	1,685	+76%			
	LUC210Z	18	1%	7¾	1¼	—	(10) 16d	(6) 10d x 1½"	1,100	1,410	1,605	1,735	+180%			
	HU210	14	1%	7½	2¼	—	(8) 16d	(4) 10d x 1½"	610	1,190	1,345	1,445	+225%			
	HUS210	16	1%	9	3	—	(30) 16d	(10) 16d	3,000	4,255	4,445	4,575	+450%			
DBL 2x10	LUS28-2	18	3%	7	2	—	(6) 16d	(4) 16d	1,165	1,315	1,500	1,625	Lowest	I7, I27, FL, L5, L17		
	LUS210-2	18	3%	9	2	—	(8) 16d	(6) 16d	1,745	1,830	2,090	2,265	+34%			
	U210-2	16	3%	8½	2	—	(14) 16d	(6) 10d	1,110	2,015	2,285	2,465	+88%			
	HUS210-2	14	3%	9¾	2	—	(8) 16d	(8) 16d	3,295	2,125	2,420	2,615	+217%			
		14	3%	8¾%	2½	Min.	(14) 16d	(6) 10d	1,135	2,085	2,350	2,530	+441%			
	HU210-2 / HUC210-2	14	3%	8¾%	2½	Max.	(18) 16d	(10) 10d	1,895	2,680	3,020	3,250	+467%			
		14	3¼	9	3	—	(12) ¼"x2½" SDS	(6) ¼"x2½" SDS	2,510	4,680	4,955	4,955	*			
	SS	HUCQ210-2-SDS	14	3%	9	3	—	(12) ¼"x2½" SDS	(6) ¼"x2½" SDS	2,510	4,680	4,955	4,955		*	FL
SS	HHUS210-2	14	3½%	9½	3	—	(30) 16d	(10) 16d	3,735	5,640	6,385	6,890	*	I7, FL, L17		
TPL 2x10	LUS28-3	18	4%	6¼	2	—	(6) 16d	(4) 16d	1,165	1,315	1,500	1,625	*	I7, FL		
	LUS210-3	18	4%	8¾	2	—	(8) 16d	(6) 16d	1,745	1,830	2,090	2,265	*			
	U210-3	16	4%	7¾	2	—	(14) 16d	(6) 10d	1,110	2,015	2,285	2,465	*			
	HU210-3 / HUC210-3	14	4¼%	8¼	2½	Min.	(14) 16d	(6) 10d	1,135	2,085	2,350	2,530	*			
		14	4¼%	8¼	2½	Max.	(18) 16d	(10) 10d	1,895	2,680	3,020	3,250	*			
	SS	HHUS210-3	14	4¼%	8¾	3	—	(30) 16d	(10) 16d	3,735	5,640	6,385	6,890		*	FL
	SS	HGUS210-3	12	4¼%	9½	4	—	(46) 16d	(16) 16d	4,095	9,100	9,100	9,100		*	I7, FL
	SS	HUCQ210-3-SDS	14	4%	9	3	—	(12) ¼"x2½" SDS	(6) ¼"x2½" SDS	2,510	4,680	4,955	4,955		*	FL
QUAD 2x10	HU210-4 / HUC210-4	14	6%	8¾	2½	Min.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	*	I7, FL		
		14	6%	8¾	2½	Max.	(18) 16d	(8) 16d	1,795	2,680	3,020	3,250	*			
	SS	HHUS210-4	14	6%	8¾	3	—	(30) 16d	(10) 16d	3,735	5,635	6,380	6,880		*	FL
	SS	HGUS210-4	12	6%	9½	4	—	(46) 16d	(16) 16d	4,095	9,100	9,100	9,100		*	I7, FL
SS 2x12	LUS210	18	1%	7¼%	1¼	—	(8) 10d	(4) 10d	1,165	1,340	1,525	1,650	Lowest	I7, I27, FL, L5, L17		
	LU210	20	1%	7¼%	1½	—	(10) 16d	(6) 10d x 1½"	850	1,390	1,585	1,715	+11%			
	U210	16	1%	7¼%	2	—	(10) 16d	(6) 10d x 1½"	1,110	1,440	1,635	1,685	+53%			
	LUC210Z	18	1%	7¾	1¼	—	(10) 16d	(6) 10d x 1½"	1,100	1,410	1,605	1,735	+180%			
	HU212	14	1%	9	2¼	—	(10) 16d	(6) 10d x 1½"	1,135	1,490	1,680	1,805	+347%			
	HUS210	16	1%	9	3	—	(30) 16d	(10) 16d	3,000	4,255	4,445	4,575	+378%			
DBL 2x12	LUS210-2	18	3%	9	2	—	(8) 16d	(6) 16d	1,745	1,830	2,090	2,265	Lowest	I7, I27, FL, L5, L17		
	U210-2	16	3%	8½	2	—	(14) 16d	(6) 10d	1,110	2,015	2,285	2,465	+40%			
	LUS214-2	18	3%	10¼%	2	—	(10) 16d	(6) 16d	1,745	2,110	2,410	2,610	+56%			
	HUS210-2	14	3%	9¾	2	—	(8) 16d	(8) 16d	3,295	2,125	2,420	2,615	*			
		14	3%	10¾	2	—	(10) 16d	(10) 16d	3,635	2,660	3,025	3,265	*			
	HU212-2 / HUC212-2	14	3%	10¾	2½	Min.	(16) 16d	(6) 10d	1,135	2,380	2,685	2,890	*			
		14	3%	10¾	2½	Max.	(22) 16d	(10) 10d	1,895	3,275	3,695	3,970	+411%			
	SS	HUCQ210-2-SDS	14	3¼	9	3	—	(12) ¼"x2½" SDS	(6) ¼"x2½" SDS	2,510	4,680	4,955	4,955		*	FL

Solid Sawn Joist Hangers

See footnotes on p. 130.

Codes: See p. 14 for Code Reference Key Chart

Face-Mount Hangers – Solid Sawn Lumber (DF/SP)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.)				Min./Max.	Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.
			W	H	B			Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)		
Sawn Lumber Sizes															
3x14	U314	16	2 ⁹ / ₁₆	10 ¹ / ₂	2	—	(16) 16d	(6) 10d x 1 ¹ / ₂ "	1,110	2,305	2,615	2,820	*	FL	
	HU314 / HUC314	14	2 ⁹ / ₁₆	12 ³ / ₈	2 ¹ / ₂	—	(18) 16d	(8) 10d x 1 ¹ / ₂ "	1,515	2,680	3,020	3,250	*	I7, FL, L17	
	HUCQ310-SDS	14	2 ⁹ / ₁₆	9	3	—	(8) 1/4" x 2 1/2" SDS	(4) 1/4" x 2 1/2" SDS	1,370	3,120	3,590	3,900	*	FL	
3x16	U314	16	2 ⁹ / ₁₆	10 ¹ / ₂	2	—	(16) 16d	(6) 10d x 1 ¹ / ₂ "	1,110	2,305	2,615	2,820	*		
	HU316 / HUC316	14	2 ⁹ / ₁₆	14 ¹ / ₈	2 ¹ / ₂	—	(20) 16d	(8) 10d x 1 ¹ / ₂ "	1,515	2,975	3,360	3,610	*		
4x4	LUS44	18	3 ⁹ / ₁₆	3	2	—	(4) 16d	(2) 16d	440	800	910	985	Lowest	I7, FL, L17	
	U44	16	3 ⁹ / ₁₆	2 ⁷ / ₈	2	—	(4) 16d	(2) 10d	370	575	655	705	+20%		
	HU44 / HUC44	14	3 ⁹ / ₁₆	2 ⁷ / ₈	2 ¹ / ₂	—	(4) 16d	(2) 10d	380	595	670	720	+161%		
4x6	LUS46	18	3 ⁹ / ₁₆	4 ³ / ₄	2	—	(4) 16d	(4) 16d	1,165	1,030	1,180	1,280	Lowest	I7, FL, L17	
	U46	16	3 ⁹ / ₁₆	4 ⁷ / ₈	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	+37%		
	HUS46	14	3 ⁹ / ₁₆	5	2	—	(4) 16d	(4) 16d	1,235	1,065	1,210	1,305	+152%		
	HU46 / HUC46	14	3 ⁹ / ₁₆	5 ³ / ₁₆	2 ¹ / ₂	Min.	(8) 16d	(4) 10d	760	1,190	1,345	1,445	+163%		
		14	3 ⁹ / ₁₆	5 ³ / ₁₆	2 ¹ / ₂	Max.	(12) 16d	(6) 10d	1,135	1,785	2,015	2,165	+185%		
4x8	LUS46	18	3 ⁹ / ₁₆	4 ³ / ₄	2	—	(4) 16d	(4) 16d	1,165	1,030	1,180	1,280	Lowest	I7, FL, L17	
	U46	16	3 ⁹ / ₁₆	4 ⁷ / ₈	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	+37%		
	LUS48	18	3 ⁹ / ₁₆	6 ³ / ₄	2	—	(6) 16d	(4) 16d	1,165	1,315	1,500	1,625	+40%		
	HUS48	14	3 ⁹ / ₁₆	6 ¹ / ₈	2	—	(6) 16d	(6) 16d	1,550	1,595	1,815	1,960	+203%		
	HU48 / HUC48	14	3 ⁹ / ₁₆	6 ¹ / ₈	2 ¹ / ₂	Min.	(10) 16d	(4) 10d	760	1,490	1,680	1,805	+213%		
		14	3 ⁹ / ₁₆	6 ¹ / ₈	2 ¹ / ₂	Max.	(14) 16d	(6) 10d	1,135	2,085	2,350	2,530	+235%		
4x10	LUS48	18	3 ⁹ / ₁₆	6 ³ / ₄	2	—	(6) 16d	(4) 16d	1,165	1,315	1,500	1,625	Lowest	I7, FL, L17	
	LUS410	18	3 ⁹ / ₁₆	8 ³ / ₄	2	—	(8) 16d	(6) 16d	1,745	1,830	2,090	2,265	+19%		
	U410	16	3 ⁹ / ₁₆	8 ³ / ₈	2	—	(14) 16d	(6) 10d	1,110	2,015	2,285	2,465	+74%		
	HUS410	14	3 ⁹ / ₁₆	8 ¹ / ₈	2	—	(8) 16d	(8) 16d	3,295	2,125	2,420	2,615	+154%		
	HU410 / HUC410	14	3 ⁹ / ₁₆	8 ⁵ / ₈	2 ¹ / ₂	Min.	(14) 16d	(6) 10d	1,135	2,085	2,350	2,530	+232%		
		14	3 ⁹ / ₁₆	8 ⁵ / ₈	2 ¹ / ₂	Max.	(18) 16d	(10) 10d	1,895	2,680	3,020	3,250	+253%		
HUCQ410-SDS	14	3 ⁹ / ₁₆	9	3	—	(12) 1/4"x2 1/2" SDS	(6) 1/4"x2 1/2" SDS	2,510	4,680	4,955	4,955	*	I9, L12, FL		
4x12	LUS410	18	3 ⁹ / ₁₆	8 ³ / ₄	2	—	(8) 16d	(6) 16d	1,745	1,830	2,090	2,265	Lowest	I7, FL, L17	
	LUS414	18	3 ⁹ / ₁₆	10 ³ / ₄	2	—	(10) 16d	(6) 16d	1,745	2,110	2,410	2,610	+33%		
	U410	16	3 ⁹ / ₁₆	8 ³ / ₈	2	—	(14) 16d	(6) 10d	1,110	2,015	2,285	2,465	+46%		
	HUS410	14	3 ⁹ / ₁₆	8 ⁵ / ₈	2	—	(8) 16d	(8) 16d	3,295	2,125	2,420	2,615	+114%		
	HUS412	14	3 ⁹ / ₁₆	10 ¹ / ₂	2	—	(10) 16d	(10) 16d	3,635	2,660	3,025	3,265	+129%		
	HU412 / HUC412	14	3 ⁹ / ₁₆	10 ⁹ / ₁₆	2 ¹ / ₂	Min.	(16) 16d	(6) 10d	1,135	2,380	2,685	2,890	+268%		
		14	3 ⁹ / ₁₆	10 ⁹ / ₁₆	2 ¹ / ₂	Max.	(22) 16d	(10) 10d	1,895	3,275	3,695	3,970	+290%		
	HUCQ410-SDS	14	3 ⁹ / ₁₆	9	3	—	(12) 1/4"x2 1/2" SDS	(6) 1/4"x2 1/2" SDS	2,510	4,680	4,955	4,955	*		I9, L12, FL
HUCQ412-SDS	14	3 ⁹ / ₁₆	11	3	—	(14) 1/4"x2 1/2" SDS	(6) 1/4"x2 1/2" SDS	2,510	5,460	5,560	5,560	*	FL		
4x14	LUS410	18	3 ⁹ / ₁₆	8 ³ / ₄	2	—	(8) 16d	(6) 16d	1,745	1,830	2,090	2,265	Lowest	I7, FL, L17	
	LUS414	18	3 ⁹ / ₁₆	10 ³ / ₄	2	—	(10) 16d	(6) 16d	1,745	2,110	2,410	2,610	+33%		
	U414	16	3 ⁹ / ₁₆	10	2	—	(16) 16d	(6) 10d	1,110	2,305	2,615	2,820	+93%		
	HUS412	14	3 ⁹ / ₁₆	10 ¹ / ₂	2	—	(10) 16d	(10) 16d	3,635	2,660	3,025	3,265	+129%		
	HU414 / HUC414	14	3 ⁹ / ₁₆	12 ⁵ / ₈	2 ¹ / ₂	Min.	(18) 16d	(8) 10d	1,515	2,680	3,020	3,250	+333%		
		14	3 ⁹ / ₁₆	12 ⁵ / ₈	2 ¹ / ₂	Max.	(24) 16d	(12) 10d	2,015	3,570	4,030	4,335	+355%		
HUCQ412-SDS	14	3 ⁹ / ₁₆	11	3	—	(14) 1/4"x2 1/2" SDS	(6) 1/4"x2 1/2" SDS	2,510	5,460	5,560	5,560	*	I9, L12, FL		

See footnotes on p. 130.

Codes: See p. 14 for Code Reference Key Chart

Face-Mount Hangers – Solid Sawn Lumber (DF/SP)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Solid Sawn Joist Hangers

Joist Size	Model No.	Ga.	Dimensions (in.)			Min./Max.	Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.	
			W	H	B		Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)			
Sawn Lumber Sizes															
4x16	U414	16	3 ¹ / ₁₆	10	2	—	(16) 16d	(6) 10d	1,110	2,305	2,615	2,820	Lowest	17, FL, L17	
	HUS412	14	3 ¹ / ₁₆	10 ¹ / ₂	2	—	(10) 16d	(10) 16d	3,635	2,660	3,025	3,265	+19%		
	HU416 / HUC416	14	3 ¹ / ₁₆	13 ³ / ₁₆	2 ¹ / ₂	Min.	(20) 16d	(8) 10d	1,515	2,975	3,360	3,610	+167%		
14		3 ¹ / ₁₆	13 ³ / ₁₆	2 ¹ / ₂	Max.	(26) 16d	(12) 10d	2,015	3,870	4,365	4,695	+178%			
6x6	U66	16	5 ¹ / ₂	5	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	*		
	HU66 / HUC66	14	5 ¹ / ₂	4 ³ / ₁₆	2 ¹ / ₂	Min.	(8) 16d	(4) 16d	900	1,190	1,345	1,445	*		
		14	5 ¹ / ₂	4 ³ / ₁₆	2 ¹ / ₂	Max.	(12) 16d	(6) 16d	1,345	1,785	2,015	2,165	*		
6x8	U66	16	5 ¹ / ₂	5	2	—	(8) 16d	(4) 10d	740	1,150	1,305	1,410	*		
	HU68 / HUC68	14	5 ¹ / ₂	5 ¹ / ₁₆	2 ¹ / ₂	Min.	(10) 16d	(4) 16d	900	1,490	1,680	1,805	*		
		14	5 ¹ / ₂	5 ¹ / ₁₆	2 ¹ / ₂	Max.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	*		
6x10	U610	16	5 ¹ / ₂	8.5	2	—	(14) 16d	(6) 10d	1,110	2,015	2,285	2,465	*		
	HU610 / HUC610	14	5 ¹ / ₂	7 ⁵ / ₁₆	2 ¹ / ₂	Min.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	*		
		14	5 ¹ / ₂	7 ⁵ / ₁₆	2 ¹ / ₂	Max.	(18) 16d	(8) 16d	1,795	2,680	3,020	3,250	*		
6x12	HUCQ610-SDS	14	5 ¹ / ₂	9	3	—	(12) 1/4" x 2 1/2" SDS	(6) 1/4" x 2 1/2" SDS	2,520	4,680	5,380	5,715	*		19, L12, FL
	HU612 / HUC612	14	5 ¹ / ₂	9 ⁹ / ₁₆	2 ¹ / ₂	Min.	(16) 16d	(6) 16d	1,345	2,380	2,685	2,890	*		
		14	5 ¹ / ₂	9 ⁹ / ₁₆	2 ¹ / ₂	Max.	(22) 16d	(8) 16d	1,795	3,275	3,695	3,970	*		
	HUCQ612-SDS	14	5 ¹ / ₂	11	3	—	(14) 1/4" x 2 1/2" SDS	(6) 1/4" x 2 1/2" SDS	2,520	5,315	5,315	5,315	*	19, L12, FL	
6x14	HU614 / HUC614	14	5 ¹ / ₂	11 ⁵ / ₁₆	2 ¹ / ₂	Min.	(18) 16d	(8) 16d	1,795	2,680	3,020	3,250	*	17, FL, L17	
		14	5 ¹ / ₂	11 ⁵ / ₁₆	2 ¹ / ₂	Max.	(24) 16d	(12) 16d	2,695	3,570	4,030	4,335	*		
	HUCQ610-SDS	14	5 ¹ / ₂	9	3	—	(12) 1/4" x 2 1/2" SDS	(6) 1/4" x 2 1/2" SDS	2,520	4,680	5,380	5,715	*	19, L12, FL	
	HUCQ612-SDS	14	5 ¹ / ₂	11	3	—	(14) 1/4" x 2 1/2" SDS	(6) 1/4" x 2 1/2" SDS	2,520	5,315	5,315	5,315	*		
6x16	HU616 / HUC616	14	5 ¹ / ₂	12 ¹ / ₁₆	2 ¹ / ₂	Min.	(20) 16d	(8) 16d	1,795	2,975	3,360	3,610	*	17, FL, L17	
		14	5 ¹ / ₂	12 ¹ / ₁₆	2 ¹ / ₂	Max.	(26) 16d	(12) 16d	2,695	3,870	4,365	4,695	*		
	HUCQ612-SDS	14	5 ¹ / ₂	11	3	—	(14) 1/4" x 2 1/2" SDS	(6) 1/4" x 2 1/2" SDS	2,520	5,315	5,315	5,315	*	19, L12, FL	
8x8	HU88 / HUC88	14	7 ¹ / ₂	6 ⁵ / ₁₆	2 ¹ / ₂	Min.	(10) 16d	(4) 16d	900	1,490	1,680	1,805	*	17, FL	
		14	7 ¹ / ₂	6 ⁵ / ₁₆	2 ¹ / ₂	Max.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	*		
8x10	HU810 / HUC810	14	7 ¹ / ₂	8 ⁵ / ₁₆	2 ¹ / ₂	Min.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	*		
		14	7 ¹ / ₂	8 ⁵ / ₁₆	2 ¹ / ₂	Max.	(18) 16d	(8) 16d	1,795	2,680	3,020	3,250	*		
8x12	HU812 / HUC812	14	7 ¹ / ₂	10 ⁵ / ₁₆	2 ¹ / ₂	Min.	(16) 16d	(6) 16d	1,345	2,380	2,685	2,890	*		
		14	7 ¹ / ₂	10 ⁵ / ₁₆	2 ¹ / ₂	Max.	(22) 16d	(8) 16d	1,795	3,275	3,695	3,970	*		
8x14	HU814 / HUC814	14	7 ¹ / ₂	11 ⁵ / ₁₆	2 ¹ / ₂	Min.	(18) 16d	(8) 16d	1,795	2,680	3,020	3,250	*		
		14	7 ¹ / ₂	11 ⁵ / ₁₆	2 ¹ / ₂	Max.	(24) 16d	(12) 16d	2,695	3,570	4,030	4,335	*		
8x16	HU816 / HUC816	14	7 ¹ / ₂	13 ⁵ / ₁₆	2 ¹ / ₂	Min.	(20) 16d	(8) 16d	1,795	2,975	3,360	3,610	*		
		14	7 ¹ / ₂	13 ⁵ / ₁₆	2 ¹ / ₂	Max.	(26) 16d	(12) 16d	2,695	3,870	4,365	4,695	*		

See footnotes on p. 130.

Codes: See p. 14 for Code Reference Key Chart

Face-Mount Hangers – Rough Lumber (DF and SP)

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.)			Fasteners		DF/SP Allowable Loads				Code Ref.
			W	H	B	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
Sawn Lumber Sizes												
2x4(R)	LU24R-18	18	2	3 ¹ / ₁₆	1 1/2	(4) 16d	(2) 10d x 1 1/2"	265	565	640	695	IL8
	U24R	16	2	3 ⁵ / ₈	2	(4) 16d	(2) 10d x 1 1/2"	265	575	655	705	I7, FL, L17
2x6(R)	LU26R-18	18	2	4 ¹ / ₁₆	1 1/2	(6) 16d	(4) 10d x 1 1/2"	565	845	965	1,040	IL8
	U26R	16	2	5 ⁵ / ₈	2	(8) 16d	(4) 10d x 1 1/2"	585	1,150	1,305	1,410	I7, FL, L17
2x8(R)	LU28R-18	18	2	6 ¹ / ₁₆	1 1/2	(8) 16d	(6) 10d x 1 1/2"	865	1,125	1,285	1,335	IL8
	U26R	16	2	5 ⁵ / ₈	2	(8) 16d	(4) 10d x 1 1/2"	585	1,150	1,305	1,410	I7, FL, L17
2x10(R)	LU210R-18	18	2	7 ¹ / ₁₆	2	(10) 16d	(6) 10d x 1 1/2"	850	1,410	1,605	1,735	IL8
	U210R	16	2	9 ¹ / ₈	2	(14) 16d	(6) 10d x 1 1/2"	1,110	2,015	2,285	2,465	I7, FL, L17
2x12(R)	U210R	16	2	9 ¹ / ₈	2	(14) 16d	(6) 10d x 1 1/2"	1,110	2,015	2,285	2,465	
2x14(R)	U210R	16	2	9 ¹ / ₈	2	(14) 16d	(6) 10d x 1 1/2"	1,110	2,015	2,285	2,465	
4x4(R)	U44R	16	4	2 ⁵ / ₈	2	(4) 16d	(2) 16d	440	575	655	705	
4x6(R)	U46R	16	4	4 ⁵ / ₈	2	(8) 16d	(4) 16d	885	1,150	1,305	1,410	
4x8(R)	U46R	16	4	4 ⁵ / ₈	2	(8) 16d	(4) 16d	885	1,150	1,305	1,410	
4x10(R)	U410R	16	4	8 ¹ / ₈	2	(14) 16d	(6) 16d	1,115	2,015	2,285	2,465	
4x12(R)	U410R	16	4	8 ¹ / ₈	2	(14) 16d	(6) 16d	1,115	2,015	2,285	2,465	
4x14(R)	U410R	16	4	8 ¹ / ₈	2	(14) 16d	(6) 16d	1,115	2,015	2,285	2,465	
6x6(R)	U66R	16	6	5	2	(8) 16d	(4) 16d	885	1,150	1,305	1,410	
6x8(R)	U66R	16	6	5	2	(8) 16d	(4) 16d	885	1,150	1,305	1,410	
6x10(R)	U610R	16	6	8 ¹ / ₂	2	(14) 16d	(6) 16d	1,115	2,015	2,285	2,465	
6x12(R)	U610R	16	6	8 ¹ / ₂	2	(14) 16d	(6) 16d	1,115	2,015	2,285	2,465	
6x14(R)	U610R	16	6	8 ¹ / ₂	2	(14) 16d	(6) 16d	1,115	2,015	2,285	2,465	

See footnotes below.

Codes: See p. 14 for Code Reference Key Chart

Face-Mount Hangers – Rough Lumber (SPF/HF)

Joist Size	Model No.	Ga.	Dimensions (in.)			Fasteners		SPF/HF Allowable Loads			
			W	H	B	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)
Sawn Lumber Sizes											
2x4(R)	LU24R-18	18	2	3 ¹ / ₁₆	1 1/2	(4) 16d	(2) 10d x 1 1/2"	230	485	550	595
	U24R	16	2	3 ⁵ / ₈	2	(4) 16d	(2) 10d x 1 1/2"	230	495	560	605
2x6(R)	LU26R-18	18	2	4 ¹ / ₁₆	1 1/2	(6) 16d	(4) 10d x 1 1/2"	490	725	825	895
	U26R	16	2	5 ⁵ / ₈	2	(8) 16d	(4) 10d x 1 1/2"	500	990	1,125	1,210
2x8(R)	LU28R-18	18	2	6 ¹ / ₁₆	1 1/2	(8) 16d	(6) 10d x 1 1/2"	745	970	1,100	1,145
	U26R	16	2	5 ⁵ / ₈	2	(8) 16d	(4) 10d x 1 1/2"	500	990	1,125	1,210
2x10(R)	LU210R-18	18	2	7 ¹ / ₁₆	2	(10) 16d	(6) 10d x 1 1/2"	730	1,210	1,380	1,490
	U210R	16	2	9 ¹ / ₈	2	(14) 16d	(6) 10d x 1 1/2"	960	1,735	1,965	2,120
2x12(R)	U210R	16	2	9 ¹ / ₈	2	(14) 16d	(6) 10d x 1 1/2"	960	1,735	1,965	2,120
2x14(R)	U210R	16	2	9 ¹ / ₈	2	(14) 16d	(6) 10d x 1 1/2"	960	1,735	1,965	2,120
4x4(R)	U44R	16	4	2 ⁵ / ₈	2	(4) 16d	(2) 16d	380	495	560	605
4x6(R)	U46R	16	4	4 ⁵ / ₈	2	(8) 16d	(4) 16d	760	990	1,125	1,210
4x8(R)	U46R	16	4	4 ⁵ / ₈	2	(8) 16d	(4) 16d	760	990	1,125	1,210
4x10(R)	U410R	16	4	8 ¹ / ₈	2	(14) 16d	(6) 16d	960	1,735	1,965	2,120
4x12(R)	U410R	16	4	8 ¹ / ₈	2	(14) 16d	(6) 16d	960	1,735	1,965	2,120
4x14(R)	U410R	16	4	8 ¹ / ₈	2	(14) 16d	(6) 16d	960	1,735	1,965	2,120
6x6(R)	U66R	16	6	5	2	(8) 16d	(4) 16d	760	990	1,125	1,210
6x8(R)	U66R	16	6	5	2	(8) 16d	(4) 16d	760	990	1,125	1,210
6x10(R)	U610R	16	6	8 ¹ / ₂	2	(14) 16d	(6) 16d	960	1,735	1,965	2,120
6x12(R)	U610R	16	6	8 ¹ / ₂	2	(14) 16d	(6) 16d	960	1,735	1,965	2,120
6x14(R)	U610R	16	6	8 ¹ / ₂	2	(14) 16d	(6) 16d	960	1,735	1,965	2,120

- Uplift loads apply to 10d and 16d header fasteners. Uplift loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
- 10d commons or 16d sinkers may be used instead of the specified 16d at 0.84 of the table load value.
- 16d sinkers may be used instead of the specified 10d commons with no load reduction.

- DF/SP loads can be used for SCL that has fastener holding capacity of Doug Fir.
- HUs can be ordered in rough sizes at full table loads. Add "X" to the model designation, ex: HU28X and specify rough width or height. Maximum width 8".
- Nails:** 16d = 0.162" dia. x 3¹/₂" long, 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

LRUZ

Rafter Hanger

The LRUZ offers an economic alternative for those applications requiring a sloped hanger for rafter-to-ridge connections. Used with solid sawn rafters, the LRUZ's unique design enables the hanger to be installed either before or after the rafter is in place. The field-adjustable seat helps improve job efficiency by eliminating mismatched angles in the field and lead times associated with special orders. The LRUZ offers comparable or better load capacity to other rafter hangers at a reduced cost while using fewer fasteners.

Features:

- The open design and ability to field-adjust the slope makes the LRUZ ideal for both retrofit or new applications.
- Accommodates roof pitches from 0:12 to 14:12.
- Slopes up or down to 45° (12:12). For slopes greater than 45° up to 49° (14:12), allowable loads are 0.85 of table loads.
- For added versatility, the fasteners on the face of the hanger are placed high enabling the bottom of the rafter to hang below the ridge beam (see "Max. C1" dimension).
- Can be installed using nails or Simpson Strong-Tie® Strong-Drive® SD Connector screws.

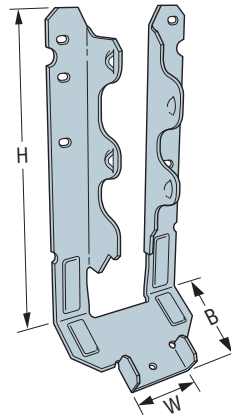
Material: 18 gauge

Finish: ZMAX® coating (G-185)

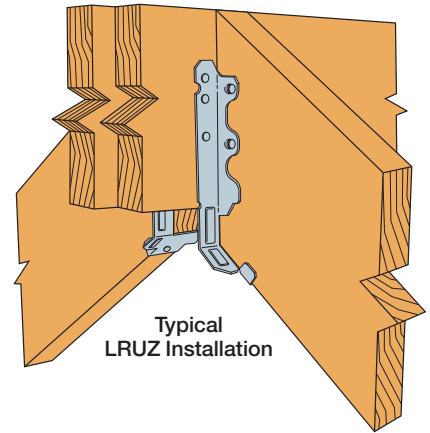
Installation:

- Use all specified fasteners; see General Notes
- Joist fasteners must be installed at an angle through the rafter or joist into the header to achieve the table loads
- See alternate installation on p. 141 for retrofit applications

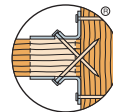
Codes: See p. 14 for Code Reference Key Chart



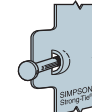
LRU28Z
(Other models similar)



Typical LRUZ Installation



Double-Shear Nailing Top View



Dome Double-Shear Nailing Side View
U.S. Patent 5,603,580

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Standard Installation

Model No.	Dimensions (in.)				Fasteners		DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
	W	H	B	Max. C ₁	Face	Joist	Uplift ² (160)	Floor (100)	Snow (115)	Roof (125)	Uplift ² (160)	Floor (100)	Snow (115)	Roof (125)	
LRU26Z	1 ⁹ / ₁₆	5 ¹ / ₄	1 ¹⁵ / ₁₆	1 ³ / ₄	(4) 16d	(5) 16d	880	1,020	1,170	1,270	760	875	1,000	1,085	
					(4) 10d	(5) 10d	645	855	980	990	555	730	835	850	
					(4) SD #10 x 2 ¹ / ₂ "	(5) SD #10 x 2 ¹ / ₂ "	770	1,215	1,395	1,425	660	935	1,075	1,170	
					(4) SD #10 x 1 ¹ / ₂ "	(5) SD #10 x 2 ¹ / ₂ "	770	1,045	1,200	1,305	660	830	950	1,035	
LRU28Z	1 ⁹ / ₁₆	6 ¹⁵ / ₁₆	1 ¹⁵ / ₁₆	2 ⁵ / ₈	(6) 16d	(5) 16d	880	1,300	1,355	1,355	760	1,110	1,165	1,165	
					(6) 10d	(5) 10d	805	1,050	1,050	1,050	695	900	900	900	
					(6) SD #10 x 2 ¹ / ₂ "	(5) SD #10 x 2 ¹ / ₂ "	1,025	1,480	1,480	1,480	880	1,265	1,270	1,270	
					(6) SD #10 x 1 ¹ / ₂ "	(5) SD #10 x 2 ¹ / ₂ "	1,025	1,390	1,480	1,480	880	1,105	1,270	1,270	
LRU210Z	1 ⁹ / ₁₆	8 ³ / ₁₆	1 ¹⁵ / ₁₆	1 ³ / ₄	(6) 16d	(7) 16d	1,100	1,535	1,620	1,620	945	1,310	1,395	1,395	
					(6) 10d	(7) 10d	1,100	1,285	1,430	1,430	945	1,095	1,230	1,230	
					(6) SD #10 x 2 ¹ / ₂ "	(7) SD #10 x 2 ¹ / ₂ "	1,510	1,805	1,805	1,805	1,300	1,405	1,550	1,550	
					(6) SD #10 x 1 ¹ / ₂ "	(7) SD #10 x 2 ¹ / ₂ "	1,510	1,570	1,805	1,805	1,300	1,240	1,430	1,550	
LRU212Z	1 ⁹ / ₁₆	10 ¹ / ₁₆	1 ¹⁵ / ₁₆	3 ¹ / ₂	(6) 16d	(7) 16d	1,305	1,535	1,755	1,905	1,120	1,310	1,500	1,625	
					(6) 10d	(7) 10d	1,305	1,285	1,430	1,430	1,120	1,095	1,230	1,230	
					(6) SD #10 x 2 ¹ / ₂ "	(7) SD #10 x 2 ¹ / ₂ "	1,850	1,820	1,915	1,915	1,590	1,405	1,615	1,645	
					(6) SD #10 x 1 ¹ / ₂ "	(7) SD #10 x 2 ¹ / ₂ "	1,850	1,570	1,805	1,915	1,590	1,240	1,430	1,555	

1. Allowable loads are based on a minimum 3" carrying member. For single 2x carrying members, use 10d x 1¹/₂" nails into the face and 10d commons into the joist, and reduce the allowable load to 0.81 of the tabulated value for 10d nails. Alternatively, use #10 x 1¹/₂" Strong-Drive® SD Connector screws into the face and #10 x 2¹/₂" Strong-Drive SD Connector screws into the joist as shown in the table.
 2. Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
 3. **Nails:** 16d = 0.162" dia. x 3¹/₂" long, 10d = 0.148" dia. x 3" long, 10d x 1¹/₂" = 0.148" dia. x 1¹/₂" long. See pp. 26–27 for other nail sizes and information.
 4. **Screws:** SD #10 x 2¹/₂" (model SD10212) = 0.161" dia. x 2¹/₂" long, SD #10 x 1¹/₂" (model SD10112) = 0.161" dia. x 1¹/₂" long.

LRUZ

Rafter Hanger (cont.)

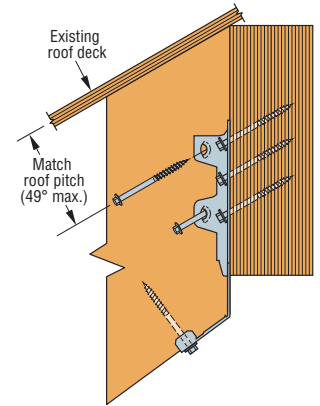
Alternate Installation for Retrofit Applications

When an existing roof deck prevents the horizontal installation of fasteners, #10 x 2½" Strong-Drive® SD Connector screws may be installed sloped upward to match the roof pitch (49° max.). Use table values for an installation with 10d nails when Strong-Drive SD Connector screws are sloped. Nails may not be installed sloped upward.

Alternate Installation for Retrofit

Model No.	Angled Fasteners ^{3,4}		DF/SP Allowable Loads ¹				SPF/HF Allowable Loads ¹				Code Ref.
	Face	Joist	Uplift ² (160)	Floor (100)	Snow (115)	Roof (125)	Uplift ² (160)	Floor (100)	Snow (115)	Roof (125)	
LRU26Z	(4) SD #10 x 2½"	(5) SD #10 x 2½"	645	855	980	990	555	730	835	850	I8, FL
LRU28Z	(6) SD #10 x 2½"	(5) SD #10 x 2½"	805	1,050	1,050	1,050	695	900	900	900	
LRU210Z	(6) SD #10 x 2½"	(7) SD #10 x 2½"	1,100	1,285	1,430	1,430	945	1,095	1,230	1,230	
LRU212Z	(6) SD #10 x 2½"	(7) SD #10 x 2½"	1,305	1,285	1,430	1,430	1,120	1,095	1,230	1,230	

1. Allowable loads are based on a minimum 3"-thick carrying member.
2. Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
3. Fasteners may be angled upward a maximum of 49°.
4. **Screws:** SD #10 x 2½" (model SD10212) = 0.161" dia. x 2½" long.



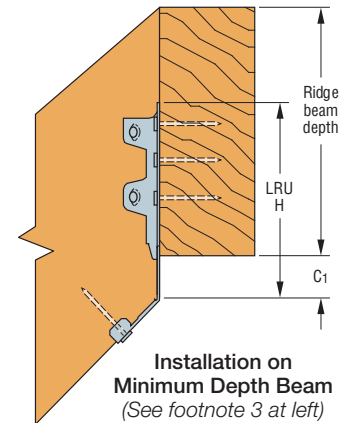
Alternate Installation for Retrofit Applications

Solid Sawn Joist Hangers

Minimum Ridge Beam Depth (in.)

Roof Pitch	LRU26Z		LRU28Z			LRU210Z			LRU212Z	
	Rafter Size		Rafter Size			Rafter Size			Rafter Size	
	2x6	2x8	2x6	2x8	2x10	2x8	2x10	2x12	2x10	2x12
2:12	3¾	5%	—	5½	7¼	—	7%	9%	—	9¼
3:12	3¾	5¼	—	5½	7¼	—	7¾	9%	—	9¼
4:12	4	5%	—	5½	7¼	—	8	10½	—	9¼
5:12	4¼	6%	—	5½	7%	—	8¼	10½	—	9¼
6:12	4%	6%	—	5½	7¾	—	8%	10%	—	9¼
7:12	4½	6%	—	5¾	8%	6%	9	11¼	—	9½
8:12	4¾	7	—	6%	8½	7	9%	11¼	7%	10
9:12	5%	7%	—	6½	9	7%	9%	12%	8%	10%
10:12	5%	7¾	4½	6%	9%	7¾	10¼	12%	8½	11½
11:12	5¾	8%	4¾	7¼	9%	8%	10¾	13½	9	11¾
12:12	6	8½	5%	7%	10½	8½	11%	14%	9%	12%
13:12 ¹	6%	9	5½	8%	11%	9	12	14%	10¼	13%
14:12 ¹	6¾	9½	5%	8%	11%	9½	12½	15%	10¾	13%

1. Minimum ridge-beam depths shown assume rafter and ridge beam are flush at the top.
2. Minimum ridge-beam depths have been determined to ensure the Max. C₁ dimension for the LRU is not exceeded. Deeper ridge beams may be required to support the rafter loads as determined by the Designer.
3. The International Residential Code requires the ridge to be not less in depth than the cut end of the rafter unless the ridge is designed as a beam.
4. Slopes greater than 12:12 are download only.



Installation on Minimum Depth Beam (See footnote 3 at left)

LSSJ

Adjustable Light Slopeable/Skewable Jack 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 new and innovative LSSJ is ideal for connecting jack rafters to hip members. Featuring a one-sided connection point for ease of installation and a versatile, hinged seat, the LSSJ is easily field adjustable to all typical rafter slopes ranging from 0:12 to 12:12. The LSSJ's header flange allows for easy skew adjustment, from 0° to 45°. It ships pre-bent at 45° so is ready to place for most typical applications. Specify left (L) or right (R) model when ordering.

Features:

- Hanger installs from one side with all fastener holes easily accessible
- Can be installed as a retrofit
- Seat grip makes setting the hanger quick and easy
- Accommodates roof pitches from 0:12 to 12:12
- Swivel seat adjusts easily and provides more support to joist, allowing for a higher load than fasteners alone

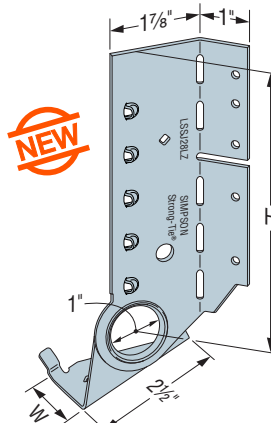
Material: 18 gauge

Finish: ZMAX® coating (G-185)

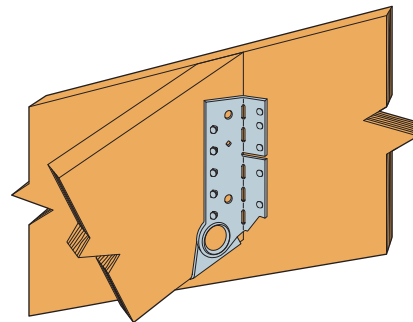
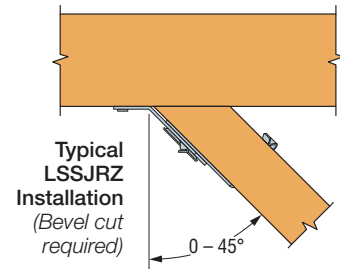
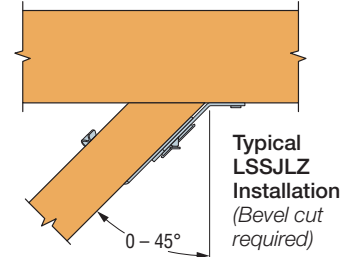
Installation:

- Use all specified fasteners; see General Notes
- For LSSJ26 an extra nail in the seat at load durations (115) and (125) adds 75 lb. to the 10d x 1½" table downloads
- Joist end needs to be bevel cut
- Table and illustration shows left and right skews LSSJR/L (LSSJR = skewed right; LSSJL = skewed left)

Codes: See p. 14 for Code Reference Key Chart



LSSJ28LZ
(Others similar)
U.S. Patent Pending



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Dimensions (in.)		Fasteners		DF/SP Allowable Loads				HF/SPF Allowable Loads				Code Ref.
	W	H	Face	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
0° – 20° Skew													
LSSJ26LZ LSSJ26RZ	1 9/16	4 3/8	(4) 10d	(4) 10d	295	365	365	365	255	315	315	315	IP6
			(4) 10d x 1 1/2"	(4) 10d x 1 1/2"									
LSSJ28LZ LSSJ28RZ	1 9/16	6	(5) 10d	(5) 10d	450	590	605	605	385	510	520	520	
			(5) 10d x 1 1/2"	(5) 10d x 1 1/2"									
LSSJ210LZ LSSJ210RZ	1 9/16	8	(6) 10d	(6) 10d	795	710	810	815	685	610	695	700	
			(6) 10d x 1 1/2"	(6) 10d x 1 1/2"									
21° – 45° Skew													
LSSJ26LZ LSSJ26RZ	1 9/16	4 3/8	(4) 10d	(4) 10d	750	750	750	750	645	645	645	645	IP6
			(4) 10d x 1 1/2"	(4) 10d x 1 1/2"	295	420	420	420	255	360	360	360	
LSSJ28LZ LSSJ28RZ	1 9/16	6	(5) 10d	(5) 10d	1,165	1,080	1,165	1,165	1,000	925	1,000	1,000	
			(5) 10d x 1 1/2"	(5) 10d x 1 1/2"	450	590	675	725	385	510	580	625	
LSSJ210LZ LSSJ210RZ	1 9/16	8	(6) 10d	(6) 10d	1,420	1,295	1,445	1,445	1,220	1,110	1,245	1,245	
			(6) 10d x 1 1/2"	(6) 10d x 1 1/2"	795	710	810	815	685	610	695	700	

1. Uplift loads have been increased for wind or earthquake loading with no further increases allowed; reduce where other loads govern.
2. Nails: 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

LSU/LSSU

Adjustable Light Slopeable/Skewable U Hangers

The LSU and LSSU series of hangers may be sloped and skewed in the field, offering a versatile solution for attaching joists and rafters. These hangers may be sloped up or down and skewed left or right, up to 45°.

Material: See table

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

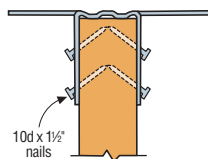
Installation:

- Use all specified fasteners; see General Notes.
- Attach the sloped joist at both ends so that the horizontal force developed by the slope is fully supported by the supporting members.
- **LSU and LSSU may be installed at an interior corner intersection with reduced loads. Refer to engineering letter L-C-LSUCORNER at strongtie.com for installation and allowable loads.**
- To see an installation video on this product, visit strongtie.com.

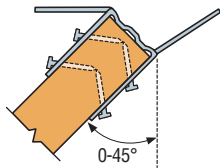
Codes: See p. 14 for Code Reference Key Chart

LSU and LSSU Installation Sequence

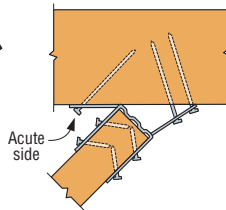
(For skewed or sloped/skewed applications)



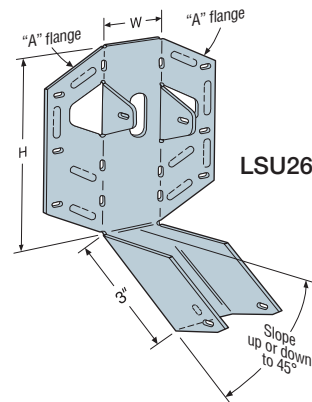
Step 1
Nail hanger to slope-cut carried member, installing seat nail first. No bevel necessary for skewed installation. Install joist nails at 45° angle.



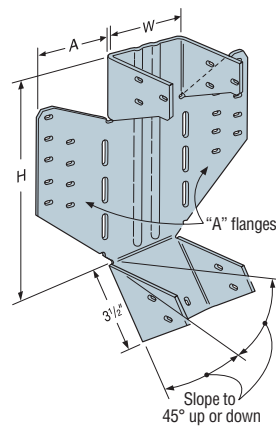
Step 2
Skew flange from 0–45°. Bend other flange back along centerline of slots until it meets the header. Bend one time only.



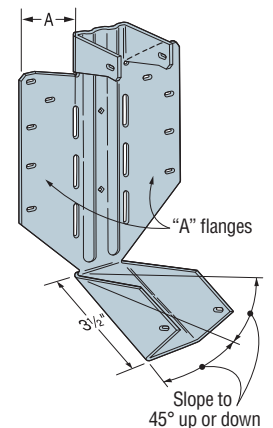
Step 3
Attach hanger to the carrying member, acute angle side first (see footnote 4). Install nails at an angle.



LSU26



LSSU410
(LSSU210-2 similar)



LSSU28

Solid Sawn Joist Hangers

These products are available with additional corrosion protection. For more information, see p. 18.

Joist Width	Model No.	Ga.	Dimensions (in.)			Fasteners		DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
			W	H	A	Face	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
Sloped Only Hangers																
1½	LSU26	18	1⅞	4⅞	1½	(6) 10d	(5) 10d x 1½"	535	695	810	865	415	600	695	745	18, FL, L15
1½	LSSU28	18	1⅞	7⅞	1½	(10) 10d	(5) 10d x 1½"	535	1,110	1,275	1,390	415	960	1,105	1,200	
1½	LSSU210	18	1⅞	8½	1⅞	(10) 10d	(7) 10d x 1½"	875	1,110	1,275	1,390	625	960	1,105	1,200	
2½	LSSUH310	16	2⅞	8½	3⅞	(18) 16d	(12) 10d x 1½"	1,150	2,295	2,295	2,295	990	1,930	1,930	1,930	170
3	LSSU210-2	16	3⅞	8½	2⅞	(18) 16d	(12) 10d x 1½"	1,150	2,430	2,795	3,035	990	2,160	2,485	2,700	18, FL, L15
3½	LSSU410	16	3⅞	8½	2⅞	(18) 16d	(12) 10d x 1½"	1,150	2,430	2,795	3,035	990	2,160	2,485	2,700	
Skewed Hangers or Sloped and Skewed																
1½	LSU26	18	1⅞	4⅞	1½	(6) 10d	(5) 10d x 1½"	535	695	810	865	415	600	695	745	18, FL, L15
1½	LSSU28	18	1⅞	7⅞	1½	(9) 10d	(5) 10d x 1½"	450	885	885	885	415	765	765	765	
1½	LSSU210	18	1⅞	8½	1⅞	(9) 10d	(7) 10d x 1½"	785	995	1,145	1,205	625	860	995	1,050	
2½	LSSUH310	16	2⅞	8½	3⅞	(14) 16d	(12) 10d x 1½"	1,150	1,600	1,600	1,600	990	1,385	1,385	1,385	170
3	LSSU210-2	16	3⅞	8½	2⅞	(14) 16d	(12) 10d x 1½"	1,150	1,625	1,625	1,625	990	1,365	1,365	1,365	18, FL, L15
3½	LSSU410	16	3⅞	8½	2⅞	(14) 16d	(12) 10d x 1½"	1,150	1,625	1,625	1,625	990	1,365	1,365	1,365	

1. Roof loads are 125% of floor loads unless limited by other criteria.
2. Uplift loads include an increase for wind or earthquake loading with no further increase allowed; reduce when other loads govern.
3. Truss chord cross-grain tension may limit allowable loads in accordance with ANSI/TPI 1-2014. Simpson Strong-Tie® Connector Selector™ software includes the evaluation of cross-grain tension in its hanger allowable loads. For additional information, contact Simpson Strong-Tie.
4. For skewed LSSU hangers, the inner most face fasteners on the acute angle side are not installed.
5. Do not substitute 10d x 1½" nails for face nails on slope and skew combinations or skewed only LSU and LSSU.
6. For LSSU installations using the Strong-Drive® SD Connector screw, reference engineering letter L-C-SLSKHGRSD at strongtie.com.
7. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

SUR/SUL/HSUR/HSUL

Skewed 45° 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.

The SU and HSU series of hangers are skewed 45° left or right. Angled nail slots direct nails for proper installation.

Material: SUR and SUL—16 gauge; HSUR and HSUL—14 gauge

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

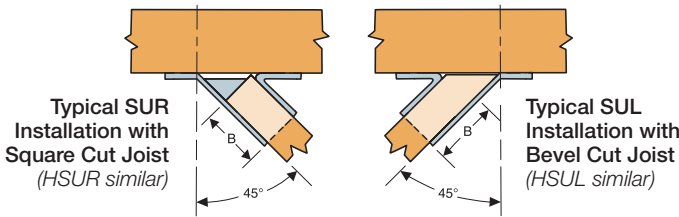
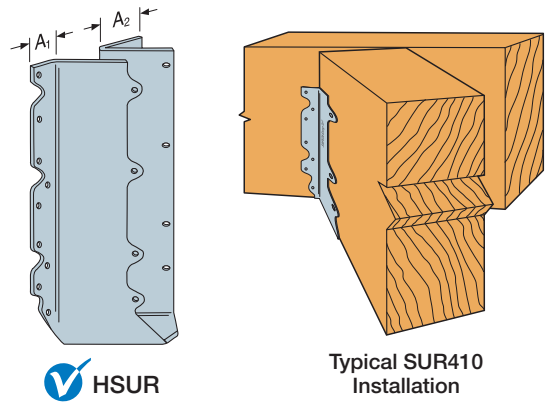
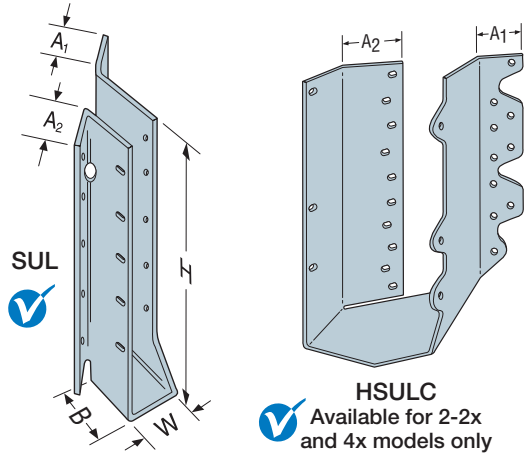
Installation:

- Use all specified fasteners; see General Notes
- These hangers will normally accommodate a 40° to 50° skew
- Illustration shows left and right skews SUR/L (SUR = skewed right; SUL = skewed left)
- The joist end may be square cut or bevel cut

Options:

- Available with the A2 flange turned in on the 2-2x and 4x models only (see illustration)
- To order, add “C” (for concealed) to the product name
- For example, specify HSURC46, HSULC46, SURC46, or SULC46

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Joist Size	Model No.	Dimensions (in.)					Fasteners		DF/SP Species Header Allowable Loads				SPF/HF Species Header Allowable Loads				Code Ref.
		W	H	B	A ₁	A ₂	Face	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
2x4	SUR/L24	1 ⁹ / ₁₆	3 ¹ / ₂	2	1 ¹ / ₈	1 ¹ / ₄	(4) 16d	(4) 10d x 1 ¹ / ₂ "	450	575	655	705	385	495	560	605	I7, FL, L17
SS 2x6, x8	SUR/L26	1 ⁹ / ₁₆	5	2	1 ¹ / ₈	1 ⁵ / ₁₆	(6) 16d	(6) 10d x 1 ¹ / ₂ "	765	865	980	1,055	660	745	845	910	
SS 2x10, x12	SUR/L210	1 ⁹ / ₁₆	8 ¹ / ₈	2	1 ¹ / ₈	1 ⁵ / ₁₆	(10) 16d	(10) 10d x 1 ¹ / ₂ "	1,250	1,440	1,635	1,760	1,075	1,240	1,405	1,515	
2x14	SUR/L214	1 ⁹ / ₁₆	10	2	1 ¹ / ₈	1 ⁵ / ₁₆	(12) 16d	(12) 10d x 1 ¹ / ₂ "	2,165	1,730	1,960	2,115	1,860	1,485	1,685	1,820	
3x10, x12	SUR/L2.56/9	2 ⁹ / ₁₆	8 ¹³ / ₁₆	3 ³ / ₁₆	1 ¹ / ₈	2 ¹ / ₈	(14) 16d	(2) 10d x 1 ¹ / ₂ "	225	2,015	2,285	2,465	195	1,735	1,965	2,120	I9, FL, L17
3x14	SUR/L2.56/11	2 ⁹ / ₁₆	11 ³ / ₁₆	3 ³ / ₁₆	1 ¹ / ₈	2 ¹ / ₈	(16) 16d	(2) 10d x 1 ¹ / ₂ "	225	2,305	2,615	2,665	195	1,980	2,245	2,290	
(2) 2x6, x8	SUR/L26-2	3 ¹ / ₈	4 ¹⁵ / ₁₆	2 ⁵ / ₈	1 ⁷ / ₁₆	2 ³ / ₈	(8) 16d	(4) 16d x 2 ¹ / ₂ "	815	1,150	1,305	1,400	700	990	1,005	1,005	I7, FL, L17
(2) 2x6, x8	HSUR/L26-2	3 ¹ / ₈	4 ¹⁵ / ₁₆	2 ⁷ / ₁₆	1 ¹ / ₄	2 ³ / ₈	(12) 16d	(4) 16d x 2 ¹ / ₂ "	815	1,785	2,000	2,000	700	1,540	1,720	1,720	
(2) 2x10, x12	SUR/L210-2	3 ¹ / ₈	8 ¹¹ / ₁₆	2 ⁵ / ₈	1 ⁷ / ₁₆	2 ³ / ₈	(14) 16d	(6) 16d x 2 ¹ / ₂ "	1,300	2,015	2,285	2,465	1,120	1,735	1,780	1,780	
(2) 2x10, x12	HSUR/L210-2	3 ¹ / ₈	8 ¹¹ / ₁₆	2 ⁷ / ₁₆	1 ¹ / ₄	2 ³ / ₈	(20) 16d	(6) 16d x 2 ¹ / ₂ "	1,300	2,975	3,360	3,610	1,120	2,565	2,895	3,110	
(2) 2x14	HSUR/L214-2	3 ¹ / ₈	12 ¹¹ / ₁₆	2 ⁷ / ₁₆	1 ¹ / ₄	2 ³ / ₈	(26) 16d	(8) 16d x 2 ¹ / ₂ "	1,795	3,870	4,365	4,695	1,550	3,330	3,760	4,045	I9, FL, L17
4x6, x8	SUR/L46	3 ³ / ₁₆	4 ³ / ₄	2 ⁵ / ₈	1	2 ³ / ₈	(8) 16d	(4) 16d	815	1,150	1,305	1,400	700	990	1,005	1,005	
4x6, x8	HSUR/L46	3 ³ / ₁₆	4 ³ / ₄	2 ⁷ / ₁₆	1	2 ³ / ₈	(12) 16d	(4) 16d	815	1,785	2,000	2,000	700	1,540	1,720	1,720	I7, FL, L12, L17
4x10, x12	SUR/L410	3 ³ / ₁₆	8 ¹ / ₂	2 ⁵ / ₈	1	2 ³ / ₈	(14) 16d	(6) 16d	1,300	2,015	2,285	2,465	1,120	1,735	1,780	1,780	I9, FL, L12
4x10, x12	HSUR/L410	3 ³ / ₁₆	8 ¹ / ₂	2 ⁷ / ₁₆	1	2 ³ / ₈	(20) 16d	(6) 16d	1,300	2,975	3,360	3,610	1,120	2,565	2,895	3,110	I7, FL, L17
4x14	SUR/L414	3 ³ / ₁₆	12 ¹ / ₂	2 ⁵ / ₈	1	2 ³ / ₈	(18) 16d	(8) 16d	1,765	2,500	2,500	2,500	1,520	1,795	1,795	1,795	I7, FL, L12, L17
4x14	HSUR/L414	3 ³ / ₁₆	12 ¹ / ₂	2 ⁷ / ₁₆	1	2 ³ / ₈	(26) 16d	(8) 16d	1,795	3,870	4,365	4,695	1,550	3,330	3,760	4,045	

1. Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
 2. Roof loads are 125% of floor loads unless limited by other criteria.
 3. Truss chord cross-grain tension may limit allowable loads in accordance with ANSI/TPI 1-2014. Simpson Strong-Tie® Connector Selector™ software

includes the evaluation of cross-grain tension in its hanger allowable loads. For additional information, contact Simpson Strong-Tie.
 4. **Nails:** 16d = 0.162" dia. x 3¹/₂" long, 16d x 2¹/₂" = 0.162" dia. x 2¹/₂" long, 10d x 1¹/₂" = 0.148" dia. x 1¹/₂" long. See pp. 26–27 for other nail sizes and information.

HRC/HHRC

Hip Ridge Connectors

HRC is a field slopeable connector that attaches hip roof beams to the end of a ridge beam. The HRC may be sloped downward a maximum of 45°.

HHRC accommodates higher loads and uses Simpson Strong-Tie® Strong-Drive® SD Connector screws.

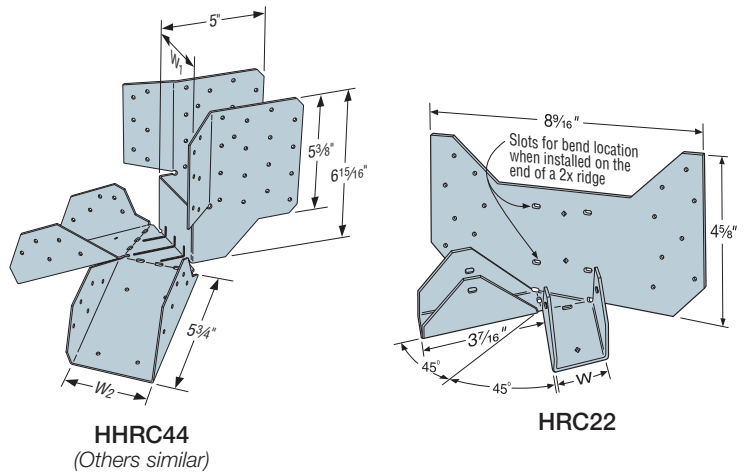
Material: HRC22 — 16 gauge; HHRC — 12 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners (included with HHRC); see General Notes.
- On end of ridge — use optional diamond holes on HRC22 to secure the HRC. Bend face flanges on HRC22 back flush with ridge, and complete nailing.
- HRC22 on face of ridge — adjust to correct height and install nails.
- Double bevel-cut hip members to achieve full bearing capacity with HRC.

Codes: See p. 14 for Code Reference Key Chart



HRC Allowable Loads

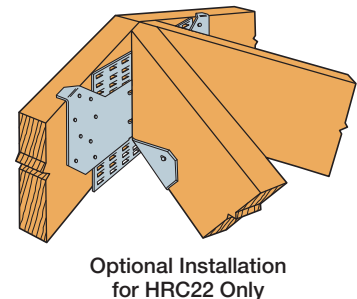
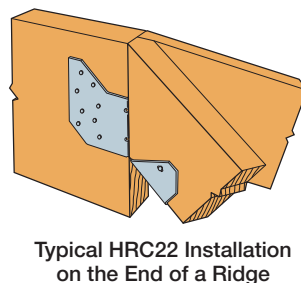
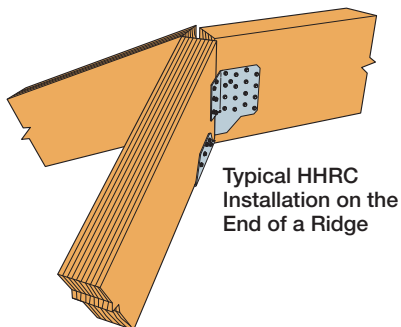
Model No.	Member Size		Fasteners		DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
	W (in.)	Ridge	Carrying Member	Each Hip	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
HRC22	1 1/8	2x or 1 3/4" wide	(16) 10d x 1 1/2"	(2) 10d x 1 1/2"	290	720	830	900	250	625	720	780	I8, FL, L15

1. Allowable loads shown are for each hip. Total load carried by the connector is double this number.
2. Uplift loads include an increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
3. Roof loads are 125% of floor loads unless limited by other criteria.
4. **Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

HHRC Allowable Loads

Model No.	Member Type	Connection Members		Connector Width (in.)		Fasteners ³		Allowable Loads Per Hip			
		Ridge	Hip	Ridge (W ₁)	Hip (W ₂)	Ridge	Each Hip	DF/SP		SPF	
								Download (100/115/125)	Uplift (160)	Download (100/115/125)	Uplift (160)
HHRC2-2	Sawn Lumber	(2) 2x	(2) 2x	3 1/8	3 1/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
HHRC42	Sawn Lumber	4x	2x	3 3/8	1 1/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 1 1/2"	2,580	1,490	2,220	1,285
HHRC42-2	Sawn Lumber	4x	(2) 2x	3 3/8	3 1/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
HHRC4/1.81	SCL/Sawn Lumber	4x	1 3/4	3 3/8	1 1/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 1 1/2"	2,580	1,490	2,220	1,285
HHRC44	Sawn Lumber	4x	4x	3 3/8	3 3/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
	SCL	3 1/2	3 1/2	3 3/8	3 3/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
HHRC5.25/3.25	Glulam	5 1/2	3 1/8	5 1/4	3 1/4	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
HHRC5.37/3.12	SCL/Sawn Lumber	5 1/4	(2) 2x	5 1/4	3 1/4	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
HHRC5.37/3.56	SCL/Sawn Lumber	5 1/4	3 1/2	5 3/8	3 3/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
HHRC5.25/3.62	SCL/Sawn Lumber	5 1/2	4x/(2) 1 3/4	5 3/8	3 3/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
HHRC64	Sawn Lumber	6x	4x	5 3/8	3 3/8	(40) SD #10 x 2 1/2"	(22) SD #10 x 2 1/2"	2,800	1,970	2,410	1,695
HHRC66	Sawn Lumber	6x	6x	5 3/8	5 3/8	(40) SD #10 x 2 1/2"	(27) SD #10 x 2 1/2"	2,970	1,970	2,555	1,695

1. Allowable loads shown are for each hip. Total load carried at the ridge is 2x the load listed.
2. Uplift loads include an increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
3. **Fasteners:** SD #10 x 2 1/2" = 0.162" dia. x 2 1/2" long Strong-Drive® SD Connector screws (provided); SD #10 x 1 1/2" = 0.162" dia. x 1 1/2" long Strong-Drive® SD Connector screws (provided).



VPA

Variable Pitch Connector

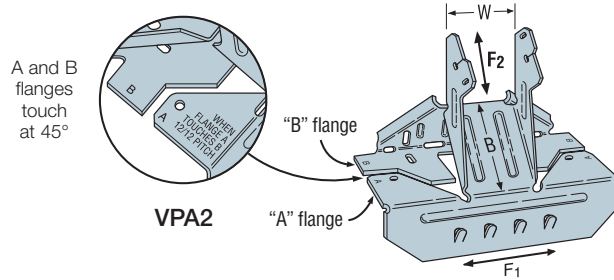
The VPA may be sloped in the field, offering a versatile solution for attaching rafters to the top plate. It will adjust to accommodate slopes between 3:12 and 12:12, making it a complement to the versatile LSSU. This connector eliminates the need for notched rafters, beveled top plates and toe nailing.

Material: 18 gauge

Finish: Galvanized

Installation: • Use all specified fasteners; see General Notes

Codes: See p. 14 for Code Reference Key Chart

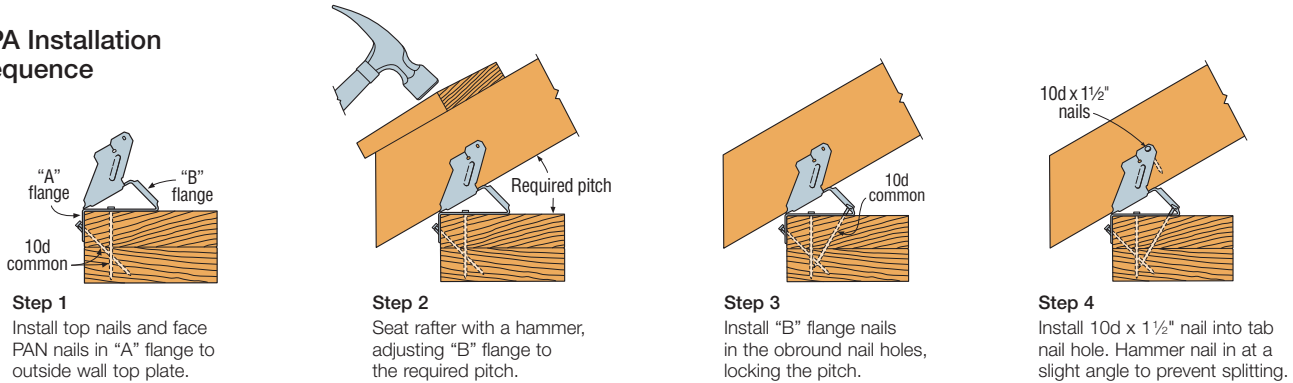


Solid Sawn Joist Hangers

Joist Width	Model No.	W (in.)	Fasteners		DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
			Carrying Member	Carried Member	Uplift (160)	Download (100/115/125)	Lateral (160)		Uplift (160)	Download (100/115/125)	Lateral (160)		
							F ₁	F ₂			F ₁	F ₂	
1½	VPA2	1¾	(8) 10d	(2) 10d x 1½"	295	1,050	375	250	250	870	325	250	18, FL, L15
2½	VPA3	2¾	(9) 10d	(2) 10d x 1½"	295	1,230	375	250	250	1,020	325	250	
3½	VPA4	3¾	(11) 10d	(2) 10d x 1½"	295	1,230	375	250	250	1,020	325	250	

1. Loads include an increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

VPA Installation Sequence



HCP

Hip Corner Plate

The HCP connects a rafter or joist to double top plates at a 45° angle.

Material: 18 gauge

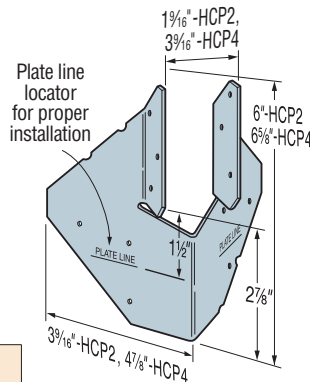
Finish: HCP2 — galvanized or ZMAX® coating; HCP4Z — ZMAX coating

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

- Attach HCP to double top plates; birdsmouth not required for table uplift loads but may be required for download.
- Install rafter and complete nailing. Rafter may be sloped to 45°.

Codes: See p. 14 for Code Reference Key Chart

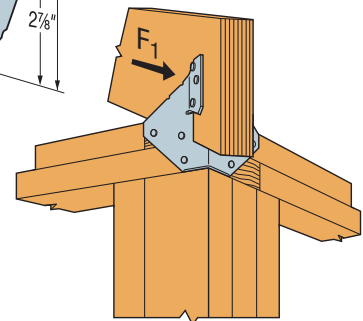
These products are available with additional corrosion protection. For more information, see p. 18.



HCP2
(HCP4Z similar)
U.S. Patent 5,380,115

Member Size	Model No.	Fasteners		DF/SP Allowable Loads (160)		SPF/HF Allowable Loads (160)		Code Ref.
		To Rafters	To Plates	Uplift	F ₁	Uplift	F ₁	
		2x	HCP2	(6) 10d x 1½"	(6) 10d x 1½"	645	300	
4x	HCP4Z	(8) 10d	(8) 10d	1,000	265	860	230	

1. Loads include an increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. The HCP can be installed on the inside and the outside of the wall with a flat bottom chord truss and achieve twice the load capacity.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10dx1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.



Typical HCP Installation

Top-Flange Hangers JB/JBA/LB/LBAZ/BA/B/HHB

Joist, Beam and Purlin 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.

The LBAZ and JBA hangers provide higher loads for 2x10, 2x12 and 2x14 members in 14 gauge and 18 gauge steel, respectively. The nail locations on the JBA enable effective use with nailers.

The B and BA hangers are cost effective hangers featuring min./max. joist nailing option. Min. Nailing featuring Positive Angle Nailing targets moderate load conditions whereas the Max. Nailing generates capacities for higher loads. The unique two level embossment provides added stiffness to the top flange. See tables on pp. 154–159. See Hanger Options on pp. 121–123 for hanger modifications, which may result in reduced loads.

Material: See tables, pp. 154–159.

For modified hangers, gauge may increase from that specified for non-modified hangers. Hanger configurations, height and fastener quantity may increase from the tables depending on joist size, skew and slope.

Finish: BA, JB, JBA, LB, LBAZ and B — Galvanized; HHB — all saddle hangers and all welded sloped and special hangers — Simpson Strong-Tie® gray paint. BA, LB, B and HHB may be ordered hot-dip galvanized; specify HDG.

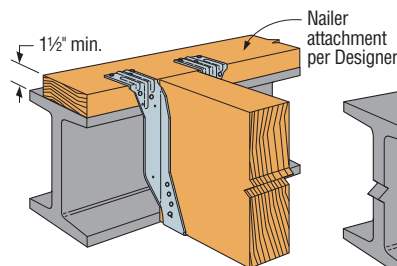
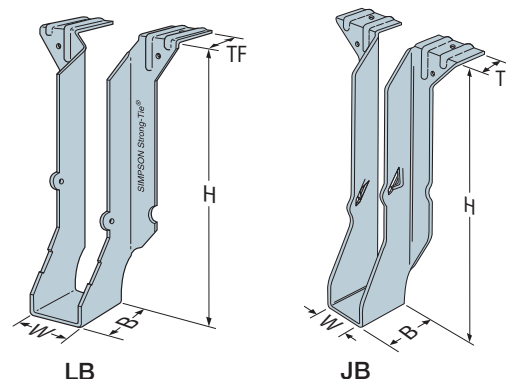
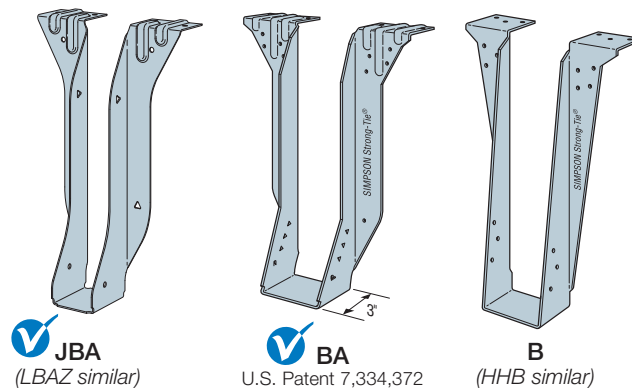
Installation:

- Use specified fasteners; see General Notes and nailer table notes.
- LBAZ, BA, B and HHB may also be welded to steel headers with weld size to match material thickness (approximate thickness shown). The minimum required weld to the top flanges is $\frac{1}{8}$ " x 2" ($\frac{1}{8}$ " x $1\frac{1}{16}$ " for LBAZ) fillet weld to each side of each top flange tab for 14 and 12 gauge and $\frac{3}{16}$ " x 2" fillet weld to each side of each top flange tab for 7 gauge. Distribute the weld equally on both top flanges. Welding cancels the top and face nailing requirements. Consult the code for special considerations when welding galvanized steel. The area should be well-ventilated (see p. 21, note m for welding information). Weld on applications produce the maximum allowable down load listed. For uplift loads refer to technical bulletin T-C-WELDUPLFT at strongtie.com.
- Ledgers must be evaluated for each application separately. Check TF dimension, nail length and nail location on ledger.
- Refer to technical bulletin T-C-SLOPEJST at strongtie.com for information regarding load reductions on selected hangers which can be used without modification to support joists which have shallow slopes ($\leq \frac{3}{4}:12$).
- For attaching to headers made up of multiple 2xs, refer to technical bulletin T-C-MPLYHEADR at strongtie.com.
- For modified hangers, fastener quantity may increase from the tables depending on joist size, skew and slope.
- Bevel cut the carried member for skewed applications.

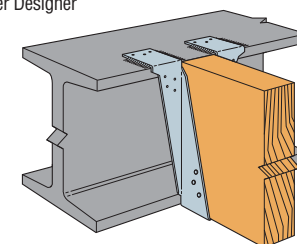
Options:

- See modification tables for allowed options and associated load reductions on p. 149

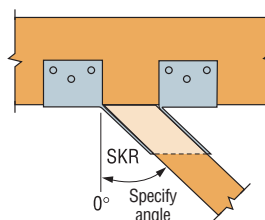
Codes: See p. 14 for Code Reference Key Chart



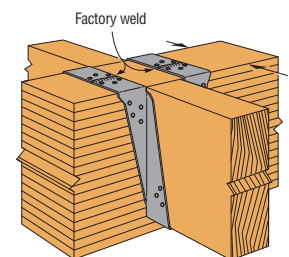
Typical BA Installation
on Wood Nailer
(LB, B similar)



LB, BA, B and HHB are acceptable for weld-on applications. See Installation Information.



Top View B Hanger
Skewed Right



Typical BD
Saddle Installation

Saddle Hanger

Saddle hangers are made to order; add "D" to model (e.g. BD412); specify S (for saddle) dimension. They may be used for most conditions except at end wall locations and are preferred for nailer applications. Minimum S dimension (saddle width) is $3\frac{3}{16}$ ". Minimum supporting member width is $3\frac{1}{2}$ ". Minimum nailer thickness apply (see pp. 148 and 209). Saddle hangers achieve catalog load listed. Saddle hangers on stud walls do not achieve catalog loads.

Top-Flange Hangers JB/JBA/LB/LBAZ/BA/B/HHB

Joist, Beam and Purlin Hangers (cont.)

B Series with Various Header Applications

Joist or Purlin Size	Model No.	Ga.	Dimensions (in.)				Fasteners		Allowable Loads by Header Type and Fastener					Code Ref.	
			W	H	B	TF	Header	Joist	Uplift (160)	LVL	PSL	DF/SP	SPF/HF		
2x	JB26	18	1 $\frac{1}{4}$	See p. 154	1 $\frac{1}{2}$	1 $\frac{1}{4}$	(4) 10d	(2) prong	—	—	—	1,040	815	110, L11, FL	
	JB28				1 $\frac{1}{2}$	1 $\frac{1}{4}$	(4) 10d	(2) prong	—	—	—	1,050	820		
	JB210A JB212A JB214A				2	1 $\frac{1}{4}$	(6) 16d	(2) 10d x 1 $\frac{1}{2}$ "	315	—	—	1,685	1,190		
					(6) 10d	(2) 10d x 1 $\frac{1}{2}$ "	315	—	—	1,445	1,015				
2x	LB26	14	1 $\frac{1}{4}$	See p. 154	1 $\frac{1}{2}$	1 $\frac{1}{4}$	(4) 16d	(2) 10d x 1 $\frac{1}{2}$ "	290	—	—	1,380	860		119, L14, FL
	LB28				1 $\frac{1}{2}$	1 $\frac{1}{4}$	(4) 16d	(2) 10d x 1 $\frac{1}{2}$ "	290	—	—	1,270	790		
	LB210AZ LB212AZ LB214AZ				2	1 $\frac{1}{4}$	(6) 16d	(2) 10d x 1 $\frac{1}{2}$ "	380	—	—	1,865	1,330		
					(6) 10d	(2) 10d x 1 $\frac{1}{2}$ "	380	—	—	1,705	1,220				
4x	BA min.	14	3 $\frac{3}{4}$	See pp. 154–159	3	2 $\frac{1}{4}$	(16) 10d	(2) 10d x 1 $\frac{1}{2}$ "	265	3,230	3,630	3,080	2,425	119, L14, FL	
							(16) 16d	(2) 10d x 1 $\frac{1}{2}$ "	265	4,015	3,705	3,435	2,665		
	(16) 16d						(8) 10d x 1 $\frac{1}{2}$ "	1,170	3,555	3,630	3,625	2,465			
								1,170	4,715	4,320	3,800	2,665			
3x, 4x	B	12	See pp. 154–159	See pp. 154–159	2 $\frac{1}{2}$	2 $\frac{1}{2}$	(14) 10d	(6) 10d x 1 $\frac{1}{2}$ "	990	3,575	3,195	3,625	2,190		119, L14, FL
							(14) 16d	(6) 10d x 1 $\frac{1}{2}$ "	990	4,135	3,355	3,800	2,650		

- Uplift loads are based on DF/SP lumber and have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
- For SPF use 0.86 x DF/SP uplift load.
- Where noted for single-ply joist hangers use (6) 10d x 1 $\frac{1}{2}$ " nails.
- Nails:** 16d = 0.162" dia. x 3 $\frac{1}{2}$ " long, 10d = 0.148" dia. x 3" long, 10d x 1 $\frac{1}{2}$ " = 0.148" dia. x 1 $\frac{1}{2}$ " long. See pp. 26–27 for other nail sizes and information.

Nailer Table

Model No.	Nailer	Top Flange Nailing	Joist Nailing	Allowable Loads		
				Uplift ¹ (160)	DF/SP	SPF/HF
JB210A JB212A JB214A	2x	(6) 10d x 1 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	315	1,265	965
	3x	(6) 16d x 2 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	315	1,290	—
				—	—	—
LB26	2x	(4) 10d x 1 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	—	850	—
LB28	2x	(4) 10d x 1 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	—	915	—
LB210AZ LB212AZ LB214AZ	2x	(6) 10d x 1 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	375	1,265	1,065
	3x	(6) 16d x 2 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	375	1,290	—
LB216	2x	(4) 10d x 1 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	—	1,150	—
BA	2x	(10) 10d x 1 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	265 ³	2,220	1,755
	(2) 2x	(14) 10d	(2) 10d x 1 $\frac{1}{2}$ "	265 ³	2,695	2,235
	3x	(14) 16d x 2 $\frac{1}{2}$ "	(2) 10d x 1 $\frac{1}{2}$ "	265 ³	3,230	—
	4x	(14) 16d	(2) 10d x 1 $\frac{1}{2}$ "	265 ³	3,230	—
	Steel	(6) PDPAT-62KP	(2) 10d x 1 $\frac{1}{2}$ "	—	3,695	3,695
B	(2) 2x	(14) 10d	(6) 10d x 1 $\frac{1}{2}$ "	710 ⁴	3,615	2,770
	3x	(14) 16d x 2 $\frac{1}{2}$ "	(6) 10d x 1 $\frac{1}{2}$ "	830 ⁴	3,725	—
	4x	(14) 16d	(6) 10d x 1 $\frac{1}{2}$ "	830 ⁴	3,800	—

- Uplift values are for DF/SP nailers only. Refer to technical bulletin T-C-NAILERUPLFT at strongtie.com for SPF values.
- For joist members 2 $\frac{1}{2}$ " or wider, 16d x 2 $\frac{1}{2}$ " joist nails should be installed for additional uplift loads on the 3x and 4x nailer applications of 970 lb. and 1,010 lb. respectively.
- If joist nailing is increased to (8) 10d x 1 $\frac{1}{2}$ ", higher uplift loads are allowed. See technical bulletin T-C-NAILERUPLFT at strongtie.com.
- If joist nailing is increased to (6) 16d x 2 $\frac{1}{2}$ ", higher uplift loads are allowed for joist members at least 2 $\frac{1}{2}$ " wide. See technical bulletin T-C-NAILERUPLFT at strongtie.com.
- Attachment of nailer to supporting member is by the Designer.

Top-Flange Hangers JB/JBA/LB/LBAZ/BA/B/HHB

Joist, Beam and Purlin Hangers (cont.)

B Series Modifications and Associated Load Reductions

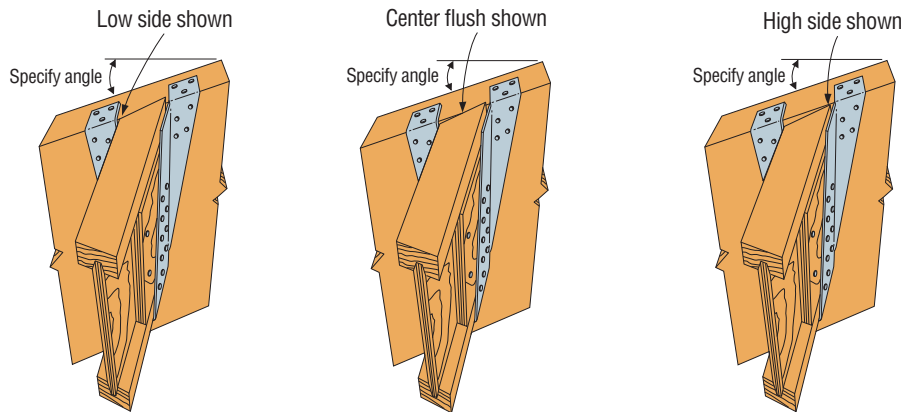
Hanger	Condition	Seat						Top Flange		
		Sloped Down 45° Max.	Sloped Up 45° Max.	Skewed 45° Max.	Sloped Down and Skewed		Sloped Up and Skewed		Top Flange Sloped 35° Max.	Top Flange Bent Open or Closed 30° Max.
B	Min. height →	6	6	6	9¼	14	9¼	14	14	9¼
	W < 2½"	0.82	0.66	0.95	0.54	0.82	0.64	0.64	(90-x) / 90	(90-x) / 90
	W ≥ 2½"	0.80	0.95	1.00	0.70	1.00	0.80	0.80	(90-x) / 90	(90-x) / 90
HB	Min. height →	8	8	8	11¼	14	11¼	14	14	11¼
	W < 2½"	0.84	0.70	1.00	0.47	0.84	0.62	0.69	(90-x) / 90	(90-x) / 90
	W ≥ 2½"	0.87	0.70	0.96	0.59	0.87	0.70	0.70	(90-x) / 90	(90-x) / 90
HHB, GB HGB	Min. height →	9¼	—	—	—	—	—	—	—	—
	All widths	0.70	—	—	—	—	—	—	—	—

1. Reduction factors are not cumulative. Use the lowest factor that applies.

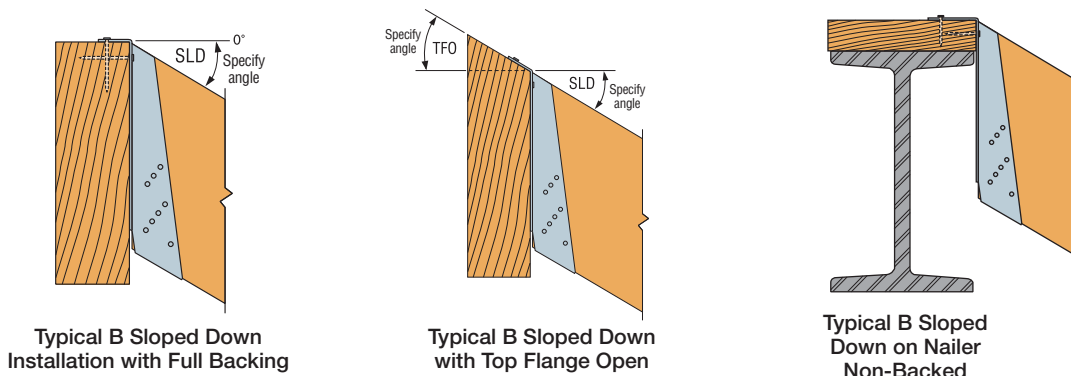
Reduction Factor Instructions

Allowable Download = Lower of (Seat or Top Flange) × (Table Load)

Allowable Uplift = 0.90 × (Table Load) for B with W < 2½"
 = 0.71 × (Table Load) for HB with W < 2½"
 = 1.00 × (Table Load) for all others



B hanger sloped down and skewed left with sloped top flange installation. When ordering, specify low side flush, center flush or high side flush.



HUTF/HUSTF

Heavy-Duty and Double-Shear Joist Hangers

See dimensions, material, loads on table pages.

HUSTF has the double shear nailing advantage — distributing the joist load through two points on each nail for greater strength.

Finish: Galvanized. See Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes
- Not acceptable for nailer or welded applications; see W and B hangers
- HUTF — The minimum header or ledger size that can be used with this hanger is 3½"
- HUSTF — With 3x carrying members, use 16d x 2½" nails into the header and 16d commons into the joist
- For attaching to headers made up of multiple 2xs, refer to T-C-MPLYHEADR at strongtie.com.

Options:

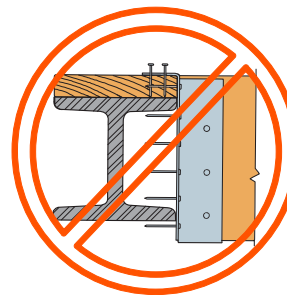
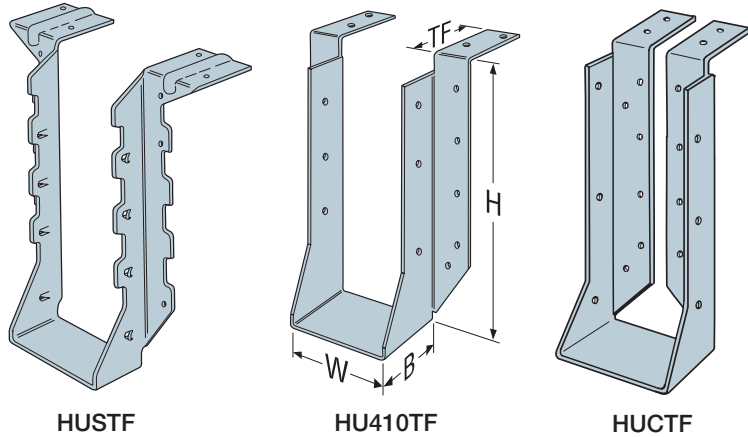
- See Hanger Options General Notes on p. 121.
- HUTF rough beam sizes are available by special order.

Sloped and/or Skewed Seat

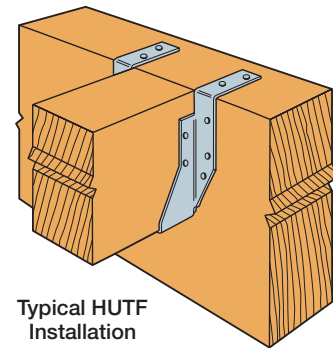
- HUTF can be skewed to a maximum of 45° or sloped to a maximum of 45°. HUTF can be skewed and sloped down only, provided $W \geq 2\frac{3}{8}"$. No skew with slope up options available.
- For skews greater than 15°, uplift loads are 0.75 of the table loads. Hangers with a skew greater than 15° may have all the joist nailing on the outside angle.
- For sloped and skewed combinations, the allowable loads are 0.70 of the table loads.
- HU43TF may be skewed only 45° at 0.45 of table loads. No options for HU24-2TF and HU44TF.
- For sloped down only hangers, allowable load is 0.78 of the table load.

Concealed Flange

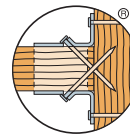
- HUTF is available with one A flange concealed at 0.85 of the catalog table load. HUTF is also available with both flanges concealed provided the W dimension is 2⅞" or greater, at 0.85 of the table load. Specify HUCTF for both flanges concealed. No skew options available.
- Available with flanges turned in for HUCTF 2⅞" or wider.



Nailer application is not acceptable. Fasteners cannot be installed.

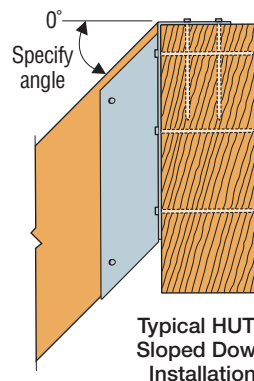


Typical HUTF Installation

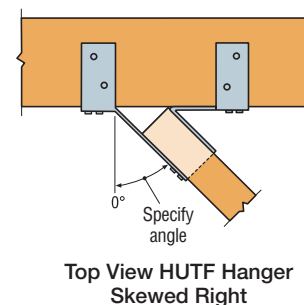


Double-Shear Nailing Top View

Some model configurations may differ from those shown. Production models have projected seats. Square cut seats may be ordered. Contact Simpson Strong-Tie for details.



Typical HUTF Sloped Down Installation



Top View HUTF Hanger Skewed Right

Top-Flange Hangers W/WPU/WNP/WMU/HW/HWU/HWP/HWPH

The W, WPU, HWU and HW series purlin hangers offer the greatest design flexibility and versatility. **WMUs** are designed for use on standard 8"-grouted masonry block wall construction. See pp. 276-277 for more information. Models that have an "I" in the model number (e.g., HWI) have the same properties and modifications as the standard models without the "I" in the name (e.g., HW).

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

Material: See tables on pp. 154-159

Finish: Simpson Strong-Tie® gray paint; hot-dip galvanized available; specify HDG, contact Simpson Strong-Tie

Installation:

- Use all specified fasteners.
- H dimensions are sized to account for normal joist shrinkage. W dimensions are for dressed timber widths.
- Hangers may be welded to steel headers with weld size to match material thickness (approximate thickness shown) $\frac{1}{8}$ " for W, $\frac{3}{16}$ " for WNP/WPU and $\frac{1}{4}$ " for HW/HWU, by $1\frac{1}{2}$ "-fillet welds located at each end of the top flange (see p. 21, note m for welding information). Weld-on applications produce maximum allowable load listed. For uplift loads refer to technical bulletin T-C-WELDUPLFT at strongtie.com (HWU and WPU hangers only).
- Hangers can support multi-ply carried members; the individual members must be secured together to work as a single unit before installation into the hanger.
- For attaching to headers made up of multiple 2xs, refer to technical bulletin T-C-MPLYHEADR at strongtie.com

Options:

- See Hanger Options General Notes on pp. 121-123.
- Refer to technical bulletin T-C-SLOPEJST at strongtie.com for information regarding load reductions on selected hangers which can be used without modification to support joists which have shallow slopes ($\leq 3/4:12$).
- Some model configurations may differ from those shown. Contact Simpson Strong-Tie for details.
- Some models are available in Type A (Bevel Cut). All models are available in Type B style (square cut). Contact Simpson Strong-Tie when ordering.
- Hangers with a skew greater than 15° may have all the joist nails on the outside angle.
- Skewed HWs have face nails and require a minimum header depth of $3\frac{1}{2}$ ".
- 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. Specify whether low side, high side or center of joist will be flush with the top of the header (see illustration).
- Uplift loads are not available for open/closed TF, TF sloped and offset options.

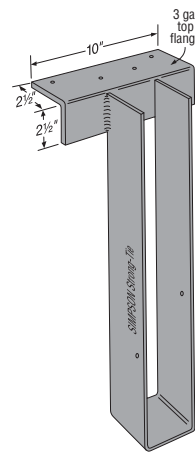
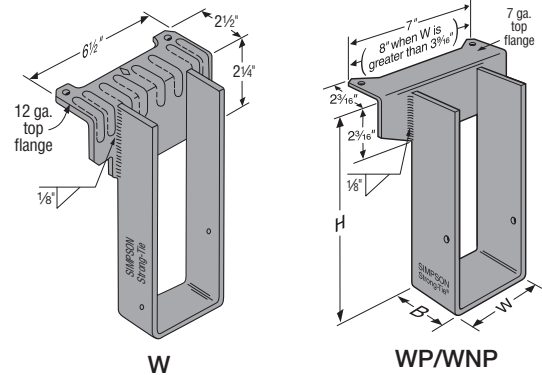
Saddle Hanger

- To order, add D to model and specify S dimension (see illustration).
- Saddle hangers achieve catalog load listed. Saddle hangers on stud walls do not achieve catalog loads.
- Recommended S dimension is $\frac{1}{16}$ " oversized for carrying members $2\frac{1}{2}$ " wide and less or $\frac{1}{8}$ " oversized for greater than $2\frac{1}{2}$ " wide.
- Saddle versions are available on some W, WNP and HW models.

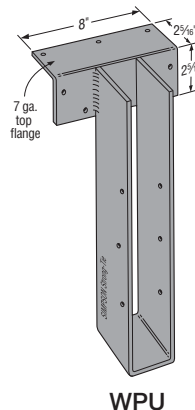
Ridge Hanger (not available for uplift models)

- 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.

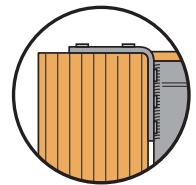
Codes: See p. 14 for Code Reference Key Chart



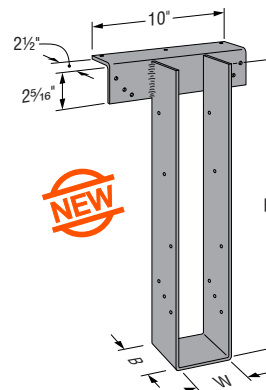
HW
(HWU similar)



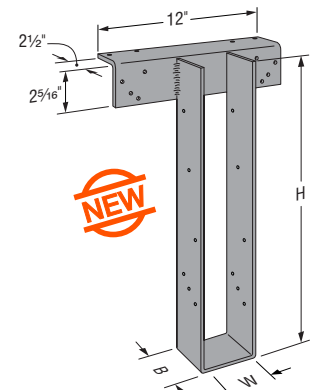
WPU



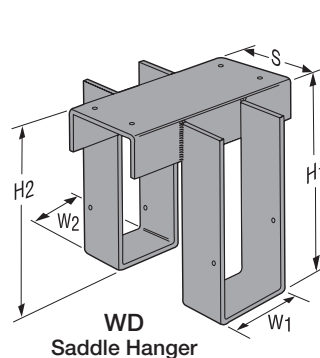
Eased Edge
Flatten edge of header to match top flange radius.



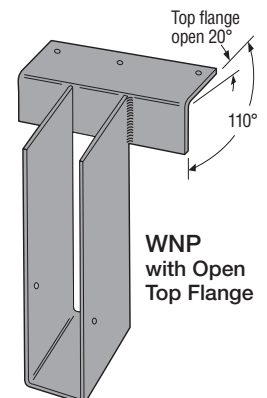
HWP



HWPH



WD
Saddle Hanger



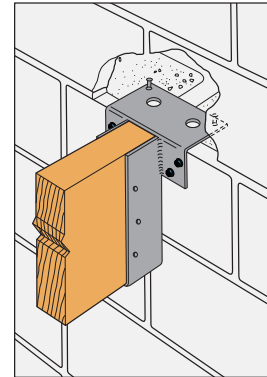
WNP
with Open
Top Flange

Top-Flange Hangers W/WPU/WNP/WMU/HW/HWU/HWP/HWPH

Nailer Table

Model	Nailer	Top Flange Nailing	Uplift ¹ (160)	Allowable Down Loads		
				DF/SP	SPF/HF	LSL
W	2x	(2) 10d x 1½"	—	1,600	1,600	—
	(2) 2x	(2) 10d	—	1,665	1,665	—
	3x	(2) 16d x 2½"	—	1,765	—	—
	4x	(2) 10d	—	2,200	—	—
WP and WNP	2x	(2) 10d x 1½"	—	2,525	2,500	3,375
	(2) 2x	(2) 10d	—	3,255	3,255	—
	3x	(2) 16d x 2½"	—	3,000	2,510	3,375
	4x	(2) 10d	—	3,255	3,255	—
HWP	(2) 2x	(3) 10d	710	4,615	—	—
	3x	(3) 16d x 2½"	970	4,615	—	—
	4x	(3) 16d x 2½"	1,535	5,145	—	—
WPU	(2) 2x	(7) 10d	700	3,255	—	—
	3x	(7) 16d x 2½"	970	3,000	—	—
	4x	(7) 16d	1,095	3,255	—	—
HW	(2) 2x	(4) 10d	—	4,860	—	—
	3x	(4) 16d x 2½"	—	4,845	—	—
	4x	(4) 16d	—	5,285	—	—
HWPH	(2) 2x	(4) 16d x 2½"	710	6,400	—	—
	3x	(4) 16d x 2½"	970	6,470	—	—
	4x	(4) 16d	1,550	6,470	—	—
HWU	(2) 2x	(8) 16d x 2½"	710	5,430	—	—
	3x	(8) 16d x 2½"	970	5,430	—	—
	4x	(8) 16d	1,160	5,430	—	—

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



WMU Mid-Wall Installation

See pp. 276–277 for models and information

1. Uplift value for the HWU hanger is for depths ≤ 18" and are for DF/SP values only. Refer to uplift values in table below for taller depths.
2. Attachment of nailer to supporting member is the responsibility of the Designer.

Solid Sawn Joist Hangers

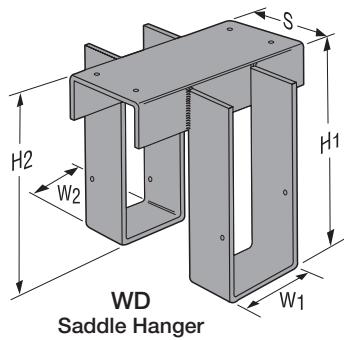
W Series with Various Header Applications

Model	Joist (in.)		Fasteners			Allowable Loads Header Type								Code Ref.
	Width	Depth	Top	Face	Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	I-Joist	Masonry	
W	1½ to 4	3½ to 30	(2) 10d x 1½"	—	(2) 10d x 1½"	—	1,635	1,740	—	1,600	1,415	—	—	170
	1½ to 4	3½ to 30	(2) 10d	—	(2) 10d x 1½"	—	2,150	2,020	—	2,200	1,435	—	—	I10, FL, L14
	1½ to 4	3½ to 30	(2) 16d	—	(2) 10d x 1½"	—	2,335	1,950	2,335	1,765	1,435	—	—	
HWP	1½ to 7	6 to 15%	(3) 16d	(6) 16d	(10) 10d x 1½"	1,535	3,995	4,500	4,350	3,955	3,955	—	—	
	1½ to 7	15¼ to 28	(3) 16d	(6) 16d	(12) 10d x 1½"	1,570	3,995	4,500	4,350	3,955	3,955	—	—	
WMU	1½ to 1¾	9 to 28	(2) 16d DPLX	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	625	Mid-Wall Installation⁴						3,380	170
	2½ to 7½	9 to 28	(2) 16d DPLX	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	625							4,175	
	1½ to 7½	9 to 28	(2) ¼" x 1¾" Titens	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	545	Top-of-Wall Installation						3,380	
WP/WNP	1½ to 7½	3½ to 30	(2) 10d x 1½"	—	(2) 10d x 1½"	—	2,865	3,250	—	2,500	2,000	2,030	—	
	1½ to 7½	3½ to 30	(2) 10d	—	(2) 10d x 1½"	—	2,525	3,250	3,650	3,255	2,525	—	—	
	1½ to 7½	3½ to 30	(2) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	—	—	
WPU/WNPU	1½ to 5½	7¼ to 18	(3) 16d	(4) 16d	(6) 10d x 1½"	1,095	4,700	4,880	3,650	4,165	4,165	—	—	
	1½ to 5½	18½ to 28	(3) 16d	(4) 16d	(6) 10d x 1½"	390	4,700	4,880	3,650	4,165	4,165	—	—	
HW	1½ to 7½	3½ to 32	(4) 10d	—	(2) 10d x 1½"	—	3,100	4,000	—	5,285	3,100	—	—	
	1½ to 7½	3½ to 32	(4) 16d	—	(2) 10d x 1½"	—	5,100	4,000	4,500	5,285	3,665	—	—	
HWPH	2½ to 7	6 to 15%	(4) 16d	(8) 16d	(10) 10d x 1½"	1,685	6,595	7,025	5,450	5,920	4,740	—	—	I10, I19, FL, L11, L14
	2½ to 7	15¼ to 32	(4) 16d	(8) 16d	(12) 10d x 1½"	2,075	6,595	7,025	5,450	5,920	4,740	—	—	
HWU	1½ to 3½	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1,160	6,335	5,500	5,535	6,335	5,415	—	—	
	1½ to 3½	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	965	6,335	5,500	5,535	6,335	5,415	—	—	
	1½ to 3½	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	985	6,335	5,500	5,535	6,335	5,415	—	—	
	4½ to 7	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1,160	6,000	5,500	5,535	6,000	5,415	—	—	
	4½ to 7	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	965	6,000	5,500	5,535	6,000	5,415	—	—	
4½ to 7	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	985	6,000	5,500	5,535	6,000	5,415	—	—		

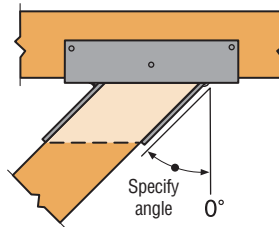
1. Code values are based on DF/SP header species.
2. WMU, WPU and HWU uplift loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
3. For hanger heights exceeding the joist height, the allowable load is 0.50 of the table load.
4. Mid-wall Installation requires minimum of one grouted course above and below the hanger.
5. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

Top-Flange Hangers W/WPU/WNP/WMU/HW/HWU/HWP/HWPH

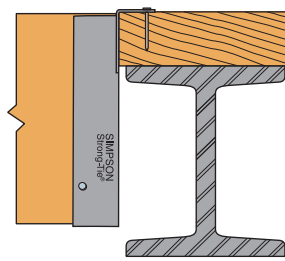
Solid Sawn Joist Hangers



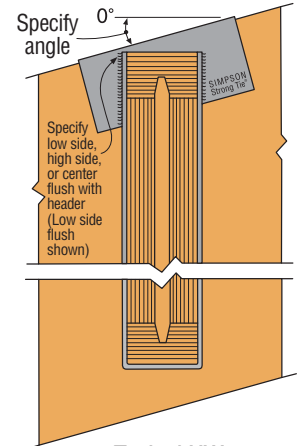
WD Saddle Hanger



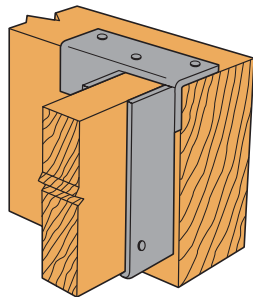
Typical W Top View Skewed Left Type A Hanger
(Bevel cut joist shown)



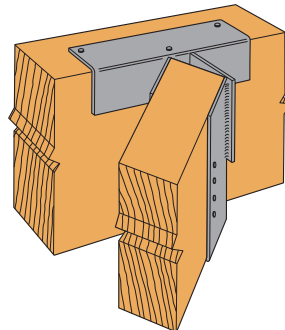
Installation on Wood Nail



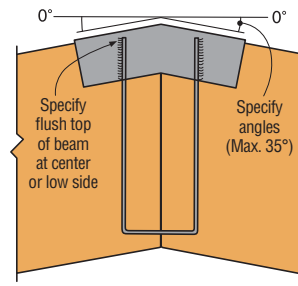
Typical HW Top Flange Sloped Down Left with Low Side Flush



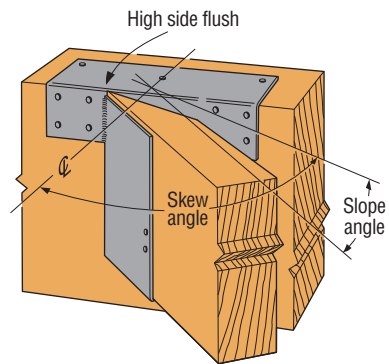
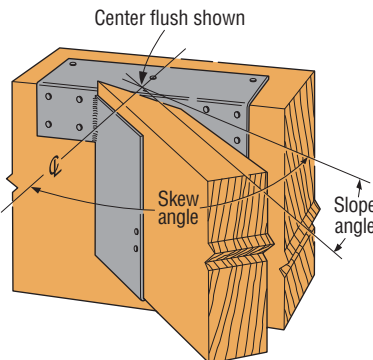
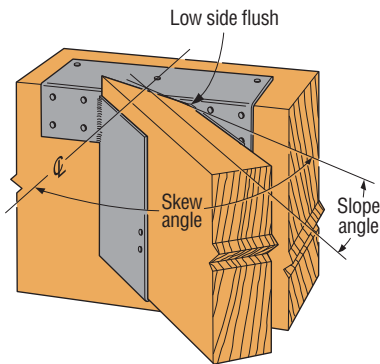
Typical W Top Flange Offset Left



Typical W Skewed Left Type B Hanger
(Square cut joist shown)



Typical W Ridge Installation



Typical HW 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.

Modifications and Associated Load Reductions for W/WPU/WNP/WMU/HW/HWU

Seat			Top Flange				Joist Height
Seat Sloped Up or Down 45° Max.	Seat Skewed Left or Right 84° Max. ¹	Seat Sloped and Skewed	Top Flange ² Sloped 35° Max.	Top Flange Bent ² Open or Closed 30° Max.	Top Flange Offset	Top Flange Offset and Skewed Seat	Joist Shorter Than Hanger
1.00	1.00	1.00	(90-a) / 90	(90-a) / 90 HW cannot be bent closed	0.50	Use the lower of the factor or max. load W ≤ 3½" use 0.25 / 1,335 lb. max. W > 3½" use 0.30 / 1,620 lb. max.	By more than ½" 0.50 By ½" or less 1.00

1. WPU, WNPU, HWU have a maximum skew of 45° and can only be skewed when $W \leq 3\frac{1}{2}"$
2. For straight-line interpolation, "a" is the specified angle.
3. For skewed and offset top flange hangers, the maximum allowable load is 0.50 of the table load or 2,000 lb., whichever is lower.
4. For type B hangers skewed and top flange offset in the opposite direction, hangers 3½", the allowable load is 30% of the table load or 1,620 lb., whichever is lower.
5. Reduction factors are not cumulative. Use the lowest factors that apply.

Reduction Factor Instructions

Allowable Download = (lowest of Seat, Top Flange, or Joist Height) × (Table Load). See pp. 154–159 for table loads.

Allowable Uplift = as noted in table per height on p. 152. (WPU, WNPU, HWU only)

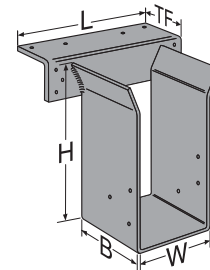
Top-Flange Hangers – Solid Sawn Lumber (DF/SP)

Visit strongtie.com/software to learn more about our Joist Hanger Selector software.

These products are available with additional corrosion protection. For more information, see p. 18.

Joist or Purlin Size	Model No.	Ga.	Dimensions				Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.
			W	H	B	TF	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)		
Sawn Lumber Sizes														
2x4	HU24TF	12	1⅞	3⅞	2¼	2⅞	(6) 16d	(2) 10d x 1½"	295	2,090	2,100	2,100	Lowest	I10, FL, L11
DBL 2x4	HU24-2TF	12	3⅞	3⅞	2½	2½	(8) 16d	(2) 10d	375	2,600	2,600	2,600	Lowest	
2x6	JB26	18	1⅞	5⅞	1½	1⅞	(4) 10d	(2) PRONG	—	1,040	1,040	1,040	Lowest	
	LB26	14	1⅞	5⅞	1½	1½	(4) 16d	(2) 10d x 1½"	290	1,380	1,380	1,380	+117%	
	HU26TF	12	1⅞	5⅞	2¼	2⅞	(10) 16d	(4) 10d x 1½"	590	2,275	2,330	2,335	+568%	
	W26	12	1⅞	5⅞	2½	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	+890%	
DBL 2x6	HUS26-2TF	14	3⅞	5⅞	2	1¼	(6) 16d	(4) 16d	1,235	2,820	3,000	3,000	Lowest	
	WNP26-2	12	3⅞	5⅞	2½	2⅞	(2) 10d	(2) 10d	—	3,255	3,255	3,255	+33%	
	HU26-2TF	12	3⅞	5⅞	2½	2½	(10) 16d	(4) 10d	750	3,725	3,900	3,900	+87%	
2x8	JB28	18	1⅞	7¼	1½	1⅞	(4) 10d	(2) PRONG	—	1,050	1,050	1,050	Lowest	
	LB28	14	1⅞	7¼	1½	1½	(4) 16d	(2) 10d x 1½"	290	1,270	1,270	1,270	+98%	
	HU28TF	12	1⅞	7⅞	2¼	2⅞	(10) 16d	(4) 10d x 1½"	590	2,335	2,335	2,335	+563%	
	W28	12	1⅞	7⅞	2½	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	+570%	
DBL 2x8	HUS28-2TF	14	3⅞	7¼	2	1⅞	(8) 16d	(6) 16d	1,550	3,455	3,720	3,895	Lowest	
	WNP28-2	12	3⅞	7⅞	2½	2⅞	(2) 10d	(2) 10d	—	3,255	3,255	3,255	+16%	
	HU28-2TF	12	3⅞	7⅞	2½	2½	(12) 16d	(4) 10d	750	3,900	3,900	3,900	+75%	
2x10	JB210A	18	1⅞	9⅞	2	1⅞	(6) 16d	(2) 10d x 1½"	315	1,685	1,685	1,685	—	I10, FL
	LB210AZ	14	1⅞	9⅞	2	1⅞	(6) 16d	(2) 10d x 1½"	380	1,865	1,865	1,865	—	
	HU210TF	12	1⅞	9⅞	2¼	2⅞	(12) 16d	(4) 10d x 1½"	590	2,335	2,335	2,335	+359%	
	W210	12	1⅞	9⅞	2½	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	+360%	
DBL 2x10	HUS210-2TF	14	3⅞	9¼	2	1½	(10) 16d	(8) 16d	2,590	3,585	3,925	4,155	Lowest	I10, FL, L11
	WNP210-2	12	3⅞	9⅞	2½	2⅞	(2) 10d	(2) 10d	—	3,255	3,255	3,255	+9%	
	HU210-2TF	12	3⅞	9⅞	2½	2½	(14) 16d	(6) 10d	1,125	4,170	4,170	4,170	+67%	
TPL 2x10	HU210-3TF	12	4⅞	9⅞	2½	2½	(14) 16d	(6) 16d	1,325	4,150	4,150	4,150	Lowest	
2x12	JB212A	18	1⅞	11⅞	2	1⅞	(6) 16d	(2) 10d x 1½"	315	1,685	1,685	1,685	—	I10, FL
	LB212AZ	14	1⅞	11⅞	2	1⅞	(6) 16d	(2) 10d x 1½"	380	1,865	1,865	1,865	—	
	W212	12	1⅞	11	2½	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	+317%	I10, FL, L11
	HU212TF	12	1⅞	11	2¼	2⅞	(14) 16d	(6) 10d x 1½"	885	2,335	2,335	2,335	+339%	
DBL 2x12	HUS212-2TF	14	3⅞	11⅞	2	2¼	(10) 16d	(8) 16d	2,000	4,435	4,535	4,605	Lowest	I10, FL
	WNP212-2	12	3⅞	11	2½	2⅞	(2) 10d	(2) 10d	—	3,255	3,255	3,255	+12%	
	HU212-2TF	12	3⅞	11	2½	2½	(16) 16d	(6) 10d	1,125	4,325	4,660	4,880	+48%	I10, FL, L11
TPL 2x12	HU212-3TF	12	4⅞	11	2½	2½	(16) 16d	(6) 16d	1,325	4,550	4,885	5,105	Lowest	
2x14	JB214A	18	1⅞	13⅞	2	1⅞	(6) 16d	(2) 10d x 1½"	315	1,685	1,685	1,685	—	I10, FL
	LB214AZ	14	1⅞	13⅞	2	1⅞	(6) 16d	(2) 10d x 1½"	380	1,865	1,865	1,865	—	
	W214	12	1⅞	13	2½	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	+188%	
	HU214TF	12	1⅞	13	2¼	2½	(16) 16d	(6) 10d x 1½"	885	2,660	2,745	2,800	+189%	I10, FL, L11

1. N54A fasteners are supplied with hangers.
2. 16d sinkers may be used where 10d commons are called out with no load reduction.
3. Uplift loads are based on DF/SP lumber and have been increased for wind or earthquake loading with no further increase allowed. For normal loading applications such as cantilever construction refer to Simpson Strong-Tie® Connector Selector™ software or conservatively divide the uplift load by 1.6. For SPF use 0.86 x DF/SP uplift load.
4. GLT and HGLT information can be found on pp.176–177.
5. Nails: 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.



Codes: See p. 14 for Code Reference Key Chart

*Installed Cost Index not available on these models.

Top-Flange Hangers – Solid Sawn Lumber (DF/SP)

These products are available with additional corrosion protection. For more information, see p. 18.

Joist or Purlin Size	Model No.	Ga.	Dimensions (in.)				Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.	
			W	H	B	TF	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)			
Sawn Lumber Sizes															
DBL 2x14	HUS214-2TF	14	3½	13½	2	2¼	(12) 16d	(8) 16d	2,590	4,435	4,535	4,605	Lowest	110, FL, L11	
	WNP214-2	12	3½	13	2½	2¾	(2) 10d	(2) 10d	—	3,255	3,255	3,255	+2%		
	HU214-2TF	12	3½	13	2½	2½	(18) 16d	(8) 10d	1,500	4,335	4,335	4,335	+33%		
TPL 2x14	HU214-3TF	12	4¼	13	2½	2½	(18) 16d	(8) 16d	1,765	4,835	5,050	5,050	Lowest		
2x16	LB216	14	1⅞	15½	2	1½	(4) 16d	(2) 10d x 1½"	290	1,425	1,425	1,425	Lowest		
	W216	12	1⅞	15	2½	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	+122%		
	HU216TF	12	1⅞	15	2¼	2½	(18) 16d	(8) 10d x 1½"	1,180	2,845	2,955	3,030	+199%		
DBL 2x16	WNP216-2	12	3½	15	2½	2¾	(2) 10d	(2) 10d	—	3,255	3,255	3,255	Lowest		110, FL, L11
HU216-2TF	12	3½	15	2½	2½	(20) 16d	(8) 10d	1,500	4,335	4,335	4,335	+34%			
TPL 2x16	HU216-3TF	12	4¼	15	2½	2½	(20) 16d	(8) 16d	1,765	5,050	5,050	5,050	Lowest		
3x4	HU34TF	12	2⅞	3⅞	2½	2½	(8) 16d	(2) 10d x 1½"	295	2,600	2,600	2,600	*		
3x6	W36	12	2⅞	5⅞	2	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	*		
	HU36TF	12	2⅞	5⅞	2½	2½	(10) 16d	(4) 10d x 1½"	590	3,725	3,900	3,900	*		
3x8	W38	12	2⅞	7⅞	2	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	*		
	HU38TF	12	2⅞	7⅞	2½	2½	(12) 16d	(4) 10d x 1½"	590	3,900	3,900	3,900	*		
3x10	B38	12	2⅞	7⅞	2½	2½	(14) 16d	(6) 16d x 2½"	1,010	3,800	3,800	3,800	*	119, FL, L14	
	W310	12	2⅞	9⅞	2	2½	(2) 10d	(2) 10d x 1½"	—	2,200	2,200	2,200	*		
	HU310TF	12	2⅞	9⅞	2½	2½	(14) 16d	(6) 10d x 1½"	885	4,170	4,170	4,170	*		
3x12	B310	12	2⅞	9⅞	2½	2½	(14) 16d	(6) 16d x 2½"	1,010	3,800	3,800	3,800	*	119, FL, L14	
	WNP312	12	2⅞	11	2½	2¾	(2) 10d	(2) 10d x 1½"	—	3,255	3,255	3,255	*		
	HU312TF	12	2⅞	11	2½	2½	(16) 16d	(6) 10d x 1½"	885	4,335	4,335	4,335	*		
3x14	B312	12	2⅞	11	2½	2½	(14) 16d	(6) 16d x 2½"	1,010	3,800	3,800	3,800	*	119, FL, L14	
	WNP314	12	2⅞	13	2½	2¾	(2) 10d	(2) 10d x 1½"	—	3,255	3,255	3,255	*		
	HU314TF	12	2⅞	13	2½	2½	(18) 16d	(8) 10d x 1½"	1,180	4,335	4,335	4,335	*		
3x16	B314	12	2⅞	13	2½	2½	(14) 16d	(6) 16d x 2½"	1,010	3,800	3,800	3,800	*	119, FL, L14	
	WNP316	12	2⅞	15	2½	2¾	(2) 10d	(2) 10d x 1½"	—	3,255	3,255	3,255	*		
	HU316TF	12	2⅞	15	2½	2½	(20) 16d	(8) 10d x 1½"	1,180	4,335	4,335	4,335	*		
4x3	B316	12	2⅞	15	2½	2½	(14) 16d	(6) 16d x 2½"	1,010	3,800	3,800	3,800	*	119, FL, L14	
	HU43TF	12	3⅞	3	2½	2½	(8) 16d	(2) 10d	330	2,600	2,600	2,600	*		
	HU44TF	12	3⅞	3⅞	2½	2½	(8) 16d	(2) 10d	375	2,600	2,600	2,600	Lowest		
4x6	HUS46TF	14	3⅞	5⅞	2	1½	(6) 16d	(4) 16d	1,235	2,700	2,890	3,000	Lowest	110, FL, L11	
	W46	12	3⅞	5⅞	2½	2½	(2) 10d	(2) 10d	—	2,200	2,200	2,200	+12%		
	HU46TF	12	3⅞	5⅞	2½	2½	(10) 16d	(4) 10d	750	3,165	3,165	3,165	+28%		
	HW46	11	3⅞	5⅞	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	+83%		
4x8	BA48 (Min.)	14	3⅞	7⅞	3	2½	(16) 16d	(2) 10d x 1½"	265	3,435	3,435	3,435	Lowest	119, FL, L14	
	BA48 (Max.)	14	3⅞	7⅞	3	2½	(16) 16d	(8) 10d x 1½"	1,170	3,800	3,800	3,800	+7%		
	HUS48TF	14	3⅞	7¼	2	1⅞	(8) 16d	(6) 16d	1,550	3,225	3,495	3,670	+33%	110, IL12, FL, L11	
	B48	12	3⅞	7⅞	2½	2½	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	+35%	119, FL, L14	
	W48	12	3⅞	7⅞	2½	2½	(2) 10d	(2) 10d	—	2,200	2,200	2,200	+54%		
	HU48TF	12	3⅞	7⅞	2½	2½	(12) 16d	(4) 10d	750	3,500	3,500	3,500	+95%	110, FL, L11	
HW48	11	3⅞	7⅞	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	+130%			

See footnotes on p. 154.

Codes: See p. 14 for Code Reference Key Chart

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Top-Flange Hangers – Solid Sawn Lumber (DF/SP)

These products are available with additional corrosion protection. For more information, see p. 18.

Solid Sawn Joist Hangers

Joist or Purlin Size	Model No.	Ga.	Dimensions (in.)				Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.
			W	H	B	TF	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)		
Sawn Lumber Sizes														
4x10	BA410 (Min.)	14	3 ³ / ₁₆	9 ¹ / ₈	3	2 ¹ / ₂	(16) 16d	(2) 10d x 1 1/2"	265	3,435	3,435	3,435	Lowest	I19, FL
	BA410 (Max.)	14	3 ³ / ₁₆	9 ¹ / ₈	3	2 ¹ / ₂	(16) 16d	(8) 10d x 1 1/2"	1,170	3,800	3,800	3,800	+7%	
	HUS410TF	14	3 ³ / ₁₆	9 ¹ / ₄	2	1 1/2	(10) 16d	(8) 16d	2,590	3,365	3,710	3,935	+21%	I10, FL, L11
	B410	12	3 ³ / ₁₆	9 ¹ / ₈	2 1/2	2 1/2	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	+35%	I19, FL, L14
	W410	12	3 ³ / ₁₆	9 ¹ / ₈	2 1/2	2 1/2	(2) 10d	(2) 10d	—	2,200	2,200	2,200	+49%	I10, FL, L11
	HU410TF	12	3 ³ / ₁₆	9 ¹ / ₈	2 1/2	2 1/2	(14) 16d	(6) 10d	1,125	4,150	4,150	4,150	+86%	
	HW410	11	3 ³ / ₁₆	9 ¹ / ₈	2 1/2	2 1/2	(4) 10d	(2) 10d	—	5,285	5,285	5,285	+130%	
	GLT4	7	3 ³ / ₁₆	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	7,000	7,000	7,000	*	I19, FL, L14
HGLT4	7	3 ³ / ₁₆	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	*		
4x12	BA412 (Min.)	14	3 ³ / ₁₆	11	3	2 1/2	(16) 16d	(2) 10d x 1 1/2"	265	3,435	3,435	3,435	Lowest	I19, FL, L14
	BA412 (Max.)	14	3 ³ / ₁₆	11	3	2 1/2	(16) 16d	(8) 10d x 1 1/2"	1,170	3,800	3,800	3,800	+6%	
	HUS412TF	14	3 ³ / ₁₆	11 1/8	2	2	(10) 16d	(8) 16d	2,000	4,420	4,760	4,990	+14%	I10, FL
	B412	12	3 ³ / ₁₆	11	2 1/2	2 1/2	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	+27%	I19, FL, L14
	WNP412	12	3 ³ / ₁₆	11	2 1/2	2 3/16	(2) 10d	(2) 10d	—	3,255	3,255	3,255	+32%	I10, FL, L11
	HU412TF	12	3 ³ / ₁₆	11	2 1/2	2 1/2	(16) 16d	(6) 10d	1,125	4,550	4,885	5,105	+84%	
	HW412	11	3 ³ / ₁₆	11	2 1/2	2 1/2	(4) 10d	(2) 10d	—	5,285	5,285	5,285	+115%	
	HHB412	7	3 ³ / ₁₆	11	3	2 1/2	(4) N54A	(2) N54A	650	4,185	4,185	4,185	+174%	I19, FL, L14
GLT4	7	3 ³ / ₁₆	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	7,000	7,000	7,000	*		
HGLT4	7	3 ³ / ₁₆	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	*		
4x14	HUS414TF	14	3 ³ / ₁₆	13 1/8	2	2	(12) 16d	(8) 16d	2,160	4,765	5,100	5,100	Lowest	I10, FL, L11
	B414	12	3 ³ / ₁₆	13	2 1/2	2 1/2	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	+8%	I19, FL, L14
	WNP414	12	3 ³ / ₁₆	13	2 1/2	2 3/16	(2) 10d	(2) 10d	—	3,255	3,255	3,255	+13%	I10, FL, L11
	HU414TF	12	3 ³ / ₁₆	13	2 1/2	2 1/2	(18) 16d	(8) 10d	1,500	4,830	5,050	5,050	+89%	
	HW414	11	3 ³ / ₁₆	13	2 1/2	2 1/2	(4) 10d	(2) 10d	—	5,285	5,285	5,285	+108%	
	HHB414	7	3 ³ / ₁₆	13	3	2 1/2	(6) N54A	(4) N54A	1,300	5,135	5,135	5,135	+150%	I19, FL, L14
	GLT4	7	3 ³ / ₁₆	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	7,000	7,000	7,000	*	
	HGLT4	7	3 ³ / ₁₆	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	*	
4x16	WNP416	12	3 ³ / ₁₆	15	2 1/2	2 3/16	(2) 10d	(2) 10d	—	3,255	3,255	3,255	Lowest	I10, FL, L11
	B416	12	3 ³ / ₁₆	15	2 1/2	2 1/2	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	+23%	I19, FL, L14
	HU416TF	12	3 ³ / ₁₆	15	2 1/2	2 1/2	(20) 16d	(8) 10d	1,500	5,050	5,050	5,050	+81%	I10, FL, L11
	HW416	11	3 ³ / ₁₆	15	2 1/2	2 1/2	(4) 10d	(2) 10d	—	5,285	5,285	5,285	+108%	
	HHB416	7	3 ³ / ₁₆	15	3	2 1/2	(6) N54A	(4) N54A	1,300	5,135	5,135	5,135	+109%	I19, FL, L14
	GLT4	7	3 ³ / ₁₆	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	7,000	7,000	7,000	*	
	HGLT4	7	3 ³ / ₁₆	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	*	
6x6	WNP66	12	5 1/2	5 3/8	2 1/2	2 3/16	(3) 10d	(2) 10d	—	3,255	3,255	3,255	*	I10, FL, L11
	HU66TF	12	5 1/2	5 3/8	2 1/2	2 1/2	(10) 16d	(4) 16d	885	3,165	3,165	3,165	*	
	HW66	11	5 1/2	5 3/8	2 1/2	2 1/2	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*	

See footnotes on p. 154.

Codes: See p. 14 for Code Reference Key Chart

Top-Flange Hangers – Solid Sawn Lumber (DF/SP)

These products are available with additional corrosion protection. For more information, see p. 18.

Joist or Purlin Size	Model No.	Ga.	Dimensions (in.)				Fasteners		DF/SP Allowable Loads				Installed Cost Index (ICI)	Code Ref.	
			W	H	B	TF	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)			
Sawn Lumber Sizes															
6x8	WNP68	12	5½	7⅞	2½	2⅝	(3) 10d	(2) 10d	—	3,255	3,255	3,255	*	I10, FL, L11	
	HU68TF	12	5½	7⅞	2½	2½	(12) 16d	(4) 16d	885	3,500	3,500	3,500	*		
	HHB68	7	5½	7⅞	3	2½	(4) N54A	(2) N54A	650	4,185	4,185	4,185	*		I19, FL
	HW68	11	5½	7⅞	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*		
6x10	WNP610	12	5½	9⅞	2½	2⅝	(3) 10d	(2) 10d	—	3,255	3,255	3,255	*	I10, FL, L11	
	B610	12	5½	9⅞	2½	2½	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	*	I19, FL, L14	
	HHB610	7	5½	9⅞	3	2½	(4) N54A	(2) N54A	650	4,185	4,185	4,185	*	I19, FL	
	HU610TF	12	5½	9⅞	2½	2½	(14) 16d	(6) 16d	1,325	4,150	4,150	4,150	*	I10, FL, L11	
	HW610	11	5½	9⅞	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*		
	GLT6	7	5⅞	7½ min.	5	2½	(10) N54A	(6) N54A	1,865	7,000	7,000	7,000	*	I19, FL, L14	
HGLT6	7	5⅞	7½ min.	6	2½	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	*			
6x12	HW612	11	5½	11	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*	I10, FL, L11	
	B612	12	5½	11	2½	2½	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	*	I19, FL, L14	
	HHB612	7	5½	11	3	2½	(10) N54A	(6) N54A	1,950	6,235	6,235	6,235	*		
	HU612TF	12	5½	11	2½	2½	(16) 16d	(6) 16d	1,325	4,550	4,885	5,105	*	I10, FL, L11	
	GLT6	7	5⅞	7½ min.	5	2½	(10) N54A	(6) N54A	1,865	7,000	7,000	7,000	*	I19, FL, L14	
	HGLT6	7	5⅞	7½ min.	6	2½	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	*		
6x14	HW614	11	5½	13	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*	I10, FL, L11	
	B614	12	5½	13	2½	2½	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	*	I19, FL, L14	
	HHB614	7	5½	13	3	2½	(10) N54A	(6) N54A	1,950	6,235	6,235	6,235	*		
	HU614TF	12	5½	13	2½	2½	(18) 16d	(8) 16d	1,765	4,830	5,200	5,450	*	I10, FL, L11	
	GLT6	7	5⅞	7½ min.	5	2½	(10) N54A	(6) N54A	1,865	7,000	7,000	7,000	*	I19, FL, L14	
	HGLT6	7	5⅞	7½ min.	6	2½	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	*		
6x16	HW616	11	5½	15	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*	I10, FL, L11	
	B616	12	5½	15	2½	2½	(14) 16d	(6) 16d	1,010	3,800	3,800	3,800	*	I19, FL, L14	
	HHB616	7	5½	15	3	2½	(10) N54A	(6) N54A	1,950	6,235	6,235	6,235	*		
	HU616TF	12	5½	15	2½	2½	(20) 16d	(8) 16d	1,765	5,105	5,520	5,795	*	I10, FL, L11	
	GLT6	7	5⅞	7½ min.	5	2½	(10) N54A	(6) N54A	1,865	7,000	7,000	7,000	*	I19, FL, L14	
	HGLT6	7	5⅞	7½ min.	6	2½	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	*		
8x6	HW86	7	7½	5⅞	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*	I10, FL, L11	
8x8	HW88	7	7½	7⅞	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*		
8x10	HW810	7	7½	9⅞	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*		
8x12	HW812	7	7½	11	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*		
	HHB812	7	7½	11	3	2½	(10) N54A	(6) N54A	1,950	6,235	6,235	6,235	*		
8x14	HW814	7	7½	13	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*		I10, FL, L11
	HHB814	7	7½	13	3	2½	(10) N54A	(6) N54A	1,950	6,235	6,235	6,235	*	I19, FL, L14	
8x16	HW816	7	7½	15	2½	2½	(4) 10d	(2) 10d	—	5,285	5,285	5,285	*	I10, FL, L11	
	HHB816	7	7½	15	3	2½	(10) N54A	(6) N54A	1,950	6,235	6,235	6,235	*	I19, FL, L14	

Solid Sawn Joist Hangers

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See footnotes on p. 154.

Codes: See p. 14 for Code Reference Key Chart

Top-Flange Hangers – Solid Sawn Lumber (SPF/HF)

These products are available with additional corrosion protection. For more information, see p. 18.

Solid Sawn Joist Hangers

Joist or Purlin Size	Model No.	Ga.	Dimensions (in.)				Fasteners		SPF/HF Allowable Loads			
			W	H	B	TF	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)
Sawn Lumber Sizes												
2x4	HU24TF	12	1 ⁹ / ₁₆	3 ⁷ / ₁₆	2 ¹ / ₄	2 ¹ / ₂	(6) 16d	(2) 10d x 1 ¹ / ₂ "	350	930	930	930
2x6	JB26	18	1 ⁹ / ₁₆	5 ³ / ₈	1 ¹ / ₂	1 ⁵ / ₁₆	(4) 10d	2 PRONG	—	815	815	815
	LB26	14	1 ⁹ / ₁₆	5 ³ / ₈	1 ¹ / ₂	1 ¹ / ₂	(4) 16d	(2) 10d x 1 ¹ / ₂ "	325	860	860	860
	HU26TF	12	1 ⁹ / ₁₆	5 ³ / ₈	2 ¹ / ₄	2 ¹ / ₂	(10) 16d	(4) 10d x 1 ¹ / ₂ "	695	1,000	1,000	1,000
	W26	12	1 ⁹ / ₁₆	5 ³ / ₈	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
DBL 2x6	WNP26-2	12	3 ¹ / ₈	5 ³ / ₈	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d	—	2,525	2,525	2,525
2x8	JB28	18	1 ⁹ / ₁₆	7 ¹ / ₄	1 ¹ / ₂	1 ⁵ / ₁₆	(4) 10d	2 PRONG	—	820	820	820
	LB28	14	1 ⁹ / ₁₆	7 ¹ / ₄	1 ¹ / ₂	1 ¹ / ₂	(4) 16d	(2) 10d x 1 ¹ / ₂ "	325	790	790	790
	W28	12	1 ⁹ / ₁₆	7 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
DBL 2x8	WNP28-2	12	3 ¹ / ₈	7 ¹ / ₈	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d	—	2,525	2,525	2,525
2x10	JB210A	18	1 ⁹ / ₁₆	9 ⁹ / ₁₆	2	1 ⁷ / ₁₆	(6) 16d	(2) 10d x 1 ¹ / ₂ "	270	1,190	1,190	1,190
	LB210AZ	14	1 ⁹ / ₁₆	9 ⁹ / ₁₆	2	1 ⁷ / ₁₆	(6) 16d	(2) 10d x 1 ¹ / ₂ "	325	1,330	1,330	1,330
	W210	12	1 ⁹ / ₁₆	9 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
DBL 2x10	WNP210-2	12	3 ¹ / ₈	9 ¹ / ₈	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d	—	2,525	2,525	2,525
2x12	JB212A	18	1 ⁹ / ₁₆	11 ¹ / ₈	2	1 ⁷ / ₁₆	(6) 16d	(2) 10d x 1 ¹ / ₂ "	270	1,190	1,190	1,190
	LB212AZ	14	1 ⁹ / ₁₆	11 ¹ / ₈	2	1 ⁷ / ₁₆	(6) 16d	(2) 10d x 1 ¹ / ₂ "	325	1,330	1,330	1,330
	W212	12	1 ⁹ / ₁₆	11	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
DBL 2x12	WNP212-2	12	3 ¹ / ₈	11	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d	—	2,525	2,525	2,525
2x14	JB214A	18	1 ⁹ / ₁₆	13 ¹ / ₈	2	1 ⁷ / ₁₆	(6) 16d	(2) 10d x 1 ¹ / ₂ "	270	1,190	1,190	1,190
	LB214AZ	14	1 ⁹ / ₁₆	13 ¹ / ₈	2	1 ⁷ / ₁₆	(6) 16d	(2) 10d x 1 ¹ / ₂ "	325	1,330	1,330	1,330
	W214	12	1 ⁹ / ₁₆	13	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
DBL 2x14	WNP214-2	12	3 ¹ / ₈	13	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d	—	2,525	2,525	2,525
2x16	LB216	14	1 ⁹ / ₁₆	15 ¹ / ₈	2	1 ¹ / ₂	(4) 16d	(2) 10d x 1 ¹ / ₂ "	325	945	945	945
	W216	12	1 ⁹ / ₁₆	15	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
DBL 2x16	WNP216-2	12	3 ¹ / ₈	15	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d	—	2,525	2,525	2,525
TPL 2x16	HU216-3TF	12	4 ¹ / ₁₆	15	2 ¹ / ₂	2 ¹ / ₂	(20) 16d	(8) 16d	—	—	—	—
3x6	W36	12	2 ⁹ / ₁₆	5 ³ / ₈	2	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
	W38	12	2 ⁹ / ₁₆	7 ¹ / ₈	2	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
3x8	B38	12	2 ⁹ / ₁₆	7 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 10d x 1 ¹ / ₂ "	865	2,650	2,650	2,650
	W310	12	2 ⁹ / ₁₆	9 ¹ / ₈	2	2 ¹ / ₂	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	1,435	1,435	1,435
3x10	B310	12	2 ⁹ / ₁₆	9 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 10d x 1 ¹ / ₂ "	865	2,650	2,650	2,650
	WNP312	12	2 ⁹ / ₁₆	11	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	2,525	2,525	2,525
3x12	B312	12	2 ⁹ / ₁₆	11	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 10d x 1 ¹ / ₂ "	865	2,650	2,650	2,650
	WNP314	12	2 ⁹ / ₁₆	13	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	2,525	2,525	2,525
3x14	B314	12	2 ⁹ / ₁₆	13	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 10d x 1 ¹ / ₂ "	865	2,650	2,650	2,650
	WNP316	12	2 ⁹ / ₁₆	15	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d x 1 ¹ / ₂ "	—	2,525	2,525	2,525
3x16	B316	12	2 ⁹ / ₁₆	15	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 10d x 1 ¹ / ₂ "	865	2,650	2,650	2,650

- Uplift loads have been increased for wind or earthquake loading with no further increase allowed. For normal loading applications such as cantilever construction, refer to Simpson Strong-Tie® Connector Selector™ software or conservatively divide the uplift load by 1.6.
- 16d sinkers may be used where 10d commons are called out with no load reduction.
- Nails:** 16d = 0.162" dia. x 3¹/₂" long, 10d = 0.148" dia. x 3" long, 10d x 1¹/₂" = 0.148" dia. x 1¹/₂" long. See pp. 26–27 for other nail sizes and information.

Top-Flange Hangers – Solid Sawn Lumber (SPF/HF)

These products are available with additional corrosion protection. For more information, see p. 18.

Joist or Purlin Size	Model No.	Ga.	Dimensions (in.)				Fasteners		SPF/HF Allowable Loads			
			W	H	B	TF	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)
Sawn Lumber Sizes												
4x6	W46	12	3 ⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d	—	1,435	1,435	1,435
	HW46	11	3 ⁵ / ₁₆	5 ⁵ / ₁₆	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
4x8	BA48 (Min.)	14	3 ⁵ / ₁₆	7 ¹ / ₈	3	2 ¹ / ₂	(16) 16d	(2) 10d x 1 ¹ / ₂ "	225	2,665	2,665	2,665
	BA48 (Max.)	14	3 ⁵ / ₁₆	7 ¹ / ₈	3	2 ¹ / ₂	(16) 16d	(8) 10d x 1 ¹ / ₂ "	1,005	2,665	2,665	2,665
	B48	12	3 ⁵ / ₁₆	7 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
	W48	12	3 ⁵ / ₁₆	7 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d	—	1,435	1,435	1,435
	HW48	11	3 ⁵ / ₁₆	7 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
4x10	BA410 (Min.)	14	3 ⁵ / ₁₆	9 ¹ / ₈	3	2 ¹ / ₂	(16) 16d	(2) 10d x 1 ¹ / ₂ "	225	2,665	2,665	2,665
	BA410 (Max.)	14	3 ⁵ / ₁₆	9 ¹ / ₈	3	2 ¹ / ₂	(16) 16d	(8) 10d x 1 ¹ / ₂ "	1,005	2,665	2,665	2,665
	B410	12	3 ⁵ / ₁₆	9 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
	W410	12	3 ⁵ / ₁₆	9 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(2) 10d	(2) 10d	—	1,435	1,435	1,435
	HW410	11	3 ⁵ / ₁₆	9 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
4x12	BA412 (Min.)	14	3 ⁵ / ₁₆	11	3	2 ¹ / ₂	(16) 16d	(2) 10d x 1 ¹ / ₂ "	225	2,665	2,665	2,665
	BA412 (Max.)	14	3 ⁵ / ₁₆	11	3	2 ¹ / ₂	(16) 16d	(8) 10d x 1 ¹ / ₂ "	1,005	2,665	2,665	2,665
	B412	12	3 ⁵ / ₁₆	11	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
	HW412	11	3 ⁵ / ₁₆	11	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
4x14	B414	12	3 ⁵ / ₁₆	13	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
	WNP414	12	3 ⁵ / ₁₆	13	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d	—	2,525	2,525	2,525
	HW414	11	3 ⁵ / ₁₆	13	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
4x16	WNP416	12	3 ⁵ / ₁₆	15	2 ¹ / ₂	2 ³ / ₁₆	(2) 10d	(2) 10d	—	2,525	2,525	2,525
	B416	12	3 ⁵ / ₁₆	15	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
	HW416	11	3 ⁵ / ₁₆	15	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
6x6	WNP66	12	5 ¹ / ₂	5 ⁵ / ₁₆	2 ¹ / ₂	2 ⁵ / ₁₆	(3) 10d	(2) 10d	—	2,525	2,525	2,525
	HW66	11	5 ¹ / ₂	5 ⁵ / ₁₆	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
6x8	WNP68	12	5 ¹ / ₂	7 ¹ / ₈	2 ¹ / ₂	2 ⁵ / ₁₆	(3) 10d	(2) 10d	—	2,525	2,525	2,525
	HW68	11	5 ¹ / ₂	7 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
6x10	WNP610	12	5 ¹ / ₂	9 ¹ / ₈	2 ¹ / ₂	2 ⁵ / ₁₆	(3) 10d	(2) 10d	—	2,525	2,525	2,525
	B610	12	5 ¹ / ₂	9 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
	HW610	11	5 ¹ / ₂	9 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
6x12	HW612	11	5 ¹ / ₂	11	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
	B612	12	5 ¹ / ₂	11	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
6x14	HW614	11	5 ¹ / ₂	13	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
	B614	12	5 ¹ / ₂	13	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
6x16	HW616	11	5 ¹ / ₂	15	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
	B616	12	5 ¹ / ₂	15	2 ¹ / ₂	2 ¹ / ₂	(14) 16d	(6) 16d	865	2,650	2,650	2,650
8x8	HW88	7	7 ¹ / ₂	7 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
8x10	HW810	7	7 ¹ / ₂	9 ¹ / ₈	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
8x12	HW812	7	7 ¹ / ₂	11	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
8x14	HW814	7	7 ¹ / ₂	13	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235
8x16	HW816	7	7 ¹ / ₂	15	2 ¹ / ₂	2 ¹ / ₂	(4) 10d	(2) 10d	—	3,235	3,235	3,235

See footnotes on p. 158.

PF/PFB/PFDB

Post Frame Hangers

The PF series hangers have been redesigned to accommodate collated nails (0.148x1½) as well as the 10d common nail (0.148x3). The PFB and PFDB have dome-shaped joist nail holes that guide nails into the proper installation angle. The redesign also features a folded seat that raises the 2x joist very slightly above the seat radius to enable a tighter connection to the back of the hanger. For saddle hangers, PFB and PFDB are for solid sawn lumber carrying members, and PFDL is for LVL carrying members.

Features:

- Installation prongs make setting the hanger quick and easy
- Sizes are available for 2x8 joists

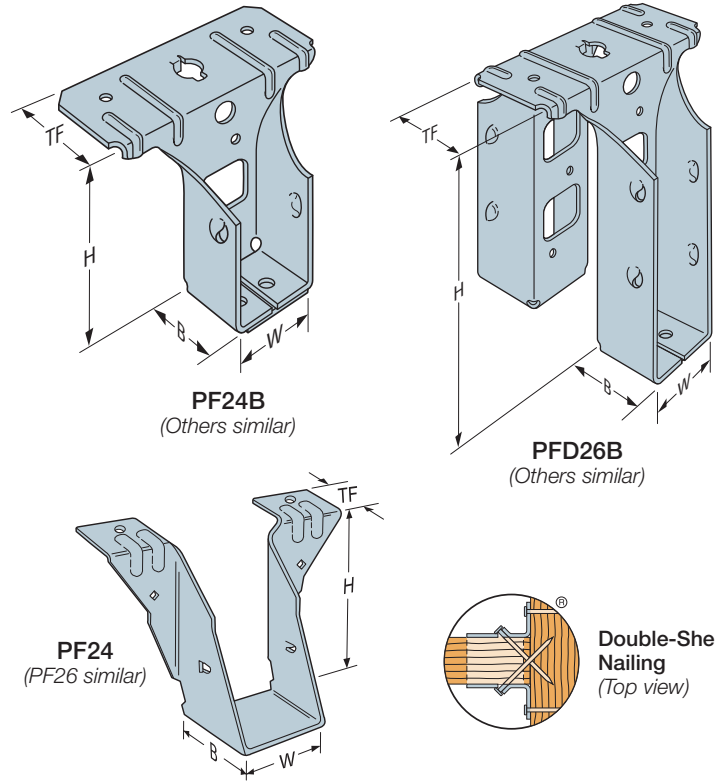
Material: 20 gauge

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes.
- 10d common purlin nails must be driven at an angle through the purlin into the header. Combine with top nails to achieve table loads.
- 10d x 1½" purlin nails must be driven at an angle into the purlin but do not penetrate into the header. Combine with back face fasteners and top nails to achieve table loads.

Codes: See p. 14 for Code Reference Key Chart



Solid Sawn Joist Hangers

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Dimensions (in.)				Fasteners			DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.	
	W	H	B	TF	Top	Face	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)		
PF24	1⅞	3⅝	1½	1⅞	(2) 10d	—	(2) 10d	310	955	955	955	955	230	650	660	660	660	I10, FL, L11	
PF24B	1⅞	3⅝	1¼	1½	(2) 10d x 1½"	(2) 10d x 1½"	(2) 10d x 1½"	345	965	965	965	965	295	785	785	785	785		
					(2) 10d	—	(2) 10d	375	1,005	1,005	1,005	1,005	290	680	680	680	680		
PFD24B	1⅞	3⅝	1¼	1⅞	(2) 10d x 1½"	(2) 10d x 1½"	(2) 10d x 1½"	290	985	985	985	985	230	830	830	830	830		
					(2) 10d	—	(2) 10d	300	1,090	1,090	1,090	1,090	210	830	860	880	945		
PFDS24B	1⅞	3⅝	1¼	3⅞	(4) 10d x 1½"	(2) 10d x 1½"	(2) 10d x 1½"	290	985	985	985	985	230	830	830	830	830		
					(4) 10d	—	(2) 10d	300	1,090	1,090	1,090	1,090	210	830	860	880	945		
PF26	1⅞	5⅜	1½	1⅞	(2) 10d	—	(2) 10d	310	955	955	955	955	455	805	850	880	905		160
PF26B	1⅞	5⅜	1¼	1½	(2) 10d x 1½"	(3) 10d x 1½"	(4) 10d x 1½"	545	1,235	1,235	1,235	1,235	470	1,005	1,005	1,005	1,005		
					(2) 10d	—	(4) 10d	625	1,200	1,200	1,200	1,200	480	810	810	810	810		
PFD26B	1⅞	5⅜	1¼	1⅞	(2) 10d x 1½"	(3) 10d x 1½"	(4) 10d x 1½"	525	1,235	1,235	1,235	1,235	420	1,030	1,040	1,040	1,040		
					(2) 10d	—	(4) 10d	650	1,290	1,290	1,290	1,290	465	1,030	1,090	1,125	1,255		
PFDS26B	1⅞	5⅜	1¼	3⅞	(4) 10d x 1½"	(3) 10d x 1½"	(4) 10d x 1½"	525	1,235	1,235	1,235	1,235	420	1,030	1,040	1,040	1,040		
					(4) 10d	—	(4) 10d	650	1,290	1,290	1,290	1,290	465	1,030	1,090	1,125	1,255		
PFDL26B	1⅞	5¼	1¼	1⅞	(2) 10d x 1½"	(3) 10d x 1½"	(4) 10d x 1½"	525	1,235	1,235	1,235	1,235	420	1,030	1,040	1,040	1,040		
					(2) 10d	—	(4) 10d	670	1,345	1,350	1,350	1,350	465	1,030	1,090	1,125	1,255		
PF28B	1⅞	7⅝	1¼	1½	(2) 10d x 1½"	(4) 10d x 1½"	(6) 10d x 1½"	675	1,335	1,335	1,335	1,335	580	1,085	1,085	1,085	1,085		
					(2) 10d	—	(6) 10d	850	1,580	1,650	1,650	1,650	655	1,115	1,115	1,115	1,115		
PFD28B	1⅞	7⅝	1¼	1⅞	(2) 10d x 1½"	(4) 10d x 1½"	(6) 10d x 1½"	810	1,370	1,370	1,370	1,370	680	1,160	1,160	1,160	1,160		
					(2) 10d	—	(6) 10d	1,050	1,580	1,680	1,745	1,975	730	1,230	1,315	1,370	1,570		
PFDS28B	1⅞	7⅝	1¼	3⅞	(4) 10d x 1½"	(4) 10d x 1½"	(6) 10d x 1½"	895	1,370	1,370	1,370	1,370	730	1,160	1,160	1,160	1,160		
					(4) 10d	—	(6) 10d	1,050	1,580	1,680	1,745	1,975	730	1,230	1,315	1,370	1,570		
PFDL28B	1⅞	7	1¼	1⅞	(2) 10d x 1½"	(4) 10d x 1½"	(6) 10d x 1½"	810	1,370	1,370	1,370	1,370	680	1,160	1,160	1,160	1,160		
					(2) 10d	—	(6) 10d	1,050	1,580	1,680	1,745	1,970	730	1,230	1,315	1,370	1,570		

1. Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Nails: 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

HH

Header Hanger

For fast, accurate installation of door and window headers and other cross members. HH header hangers can speed up the job, strengthen the frame, and eliminate the need for trimmers.

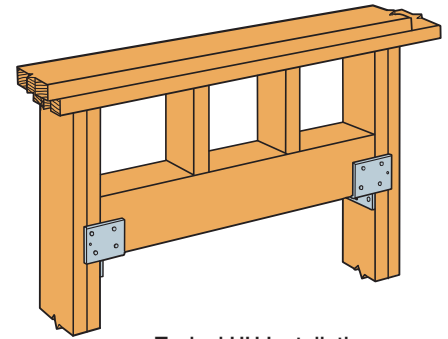
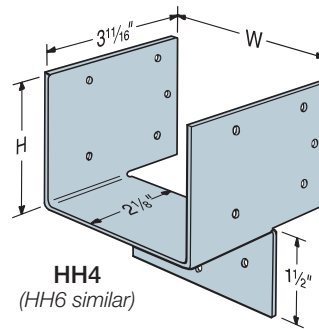
Material: 16 gauge

Finish: Galvanized

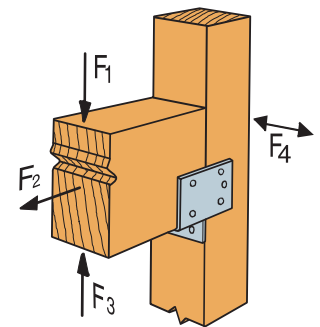
Installation:

- Use all specified fasteners; see General Notes
- Attachment to 2x studs will result in two round holes not being filled in the studs and load reductions as noted in table

Codes: See p. 14 for Code Reference Key Chart



Model No.	Dimensions (in.) W H		Min. Post Size	Fasteners		DF/SP Allowable Loads					Code Ref.	
				Stud	Header	F ₁		F ₂	F ₃	F ₄		
						(100)	(115)					(125)
HH4	3 1/2	2 3/8	2x	(7) 10d x 1 1/2"	(4) 10d x 1 1/2"	855	965	1,035	—	575	725	IP1, L18, FL
			Double 2x	(7) 16d x 2 1/2"	(4) 16d x 2 1/2"	1,010	1,140	1,195	—	710	750	
			3x	(9) 16d	(4) 16d	1,295	1,470	1,585	780	795	1,085	
HH6	5 1/2	5 1/8	2x	(10) 10d x 1 1/2"	(6) 10d x 1 1/2"	1,220	1,380	1,480	—	1,065	1,025	IP1, L18, FL
			Double 2x	(10) 16d x 2 1/2"	(6) 16d x 2 1/2"	1,440	1,595	1,595	—	1,065	1,085	
			3x	(12) 16d	(6) 16d	1,730	1,960	2,115	1,025	1,105	1,700	



1. Loads have been increased with no further increase allowed; reduce where other loads govern.
2. For 3x posts, 16d x 2 1/2" nails may be substituted with no reduction in load.
3. For SPF/HF lumber use 0.86 x DF/SP allowable loads.
4. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long, 16d x 2 1/2" = 0.162" dia. x 2 1/2" long, 16d = 0.162" dia. x 3 3/8" long. See pp. 26–27 for other nail sizes and information.

RR

Ridge Rafter Connector

An interlock provides alignment control and correct nailing locations. For a rafter-to-face connector, flatten the top flange into the face plane. The RR may be used with rafters sloped up to 30°.

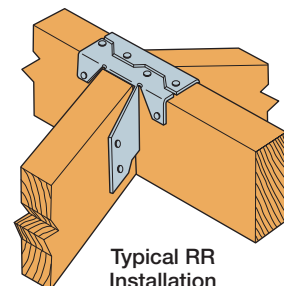
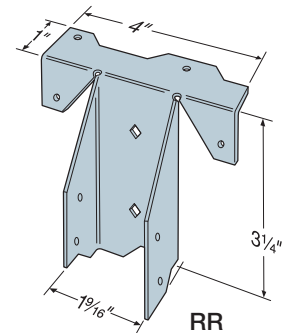
Material: 18 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes

Codes: See p. 14 for Code Reference Key Chart



These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Min. Rafter Size	Fasteners		Uplift (160)	Allowable Loads ¹		Code Ref.
		Header	Rafter		DF/SP		
					Floor (100)	Roof (125)	
RR	2x6	(4) 10d x 1 1/2"	(4) 10d x 1 1/2"	130	365	415	I10, L5, L11, FL

1. Floor loads may be adjusted for other load durations according to the code, provided they do not exceed the table roof loads.
2. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

THA/THAC/THAR/L

Adjustable Truss 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.

The THA series' extra long straps allow full code nailing and can be field-formed to give top flange hanger convenience. Designed for 4x2 floor trusses and 4x beams, the THAR/L422 has a standard skew of 45°. Straps must be bent for top flange hanger installation. PAN nailing helps eliminate splitting of 4x2 truss bottom chords.

Material: See table

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners. See General Notes.

The following installation methods may be used:

• **Top Flange Installation:**

The straps must be field formed over the header — see table for minimum top flange requirements. Install top and face nails according to the table. Top nails shall not be within ¼" from the edge of the top flange members. For the THA29, nails used for joist attachment must be driven at an angle so that they penetrate through the corner of the joist and into the header. For all other top flange installations, straighten the double shear nailing tabs and install the nails straight into the joist.

• **Face Mount Installation**

Install all face nails according to the table. Not all nail holes will be filled on all models. On models where there are more nail holes than required, the lowest four face holes must be filled. Nails used for the joist attachment must be driven at an angle so that they penetrate through the corner of the joist into the header.

• **Alternate Installation:**

The THA 4x hangers may be installed in a top flange configuration using the tabulated fasteners for face mount installation and achieve the face mount installation loads. Install the tabulated face nails into the face and top of the carrying member. Nails used for the joist attachment must be driven at an angle so that they penetrate through the corner of the joist into the header.

• **Suspended Beam:**

Refer to engineering letter L-C-THAALT at strongtie.com.

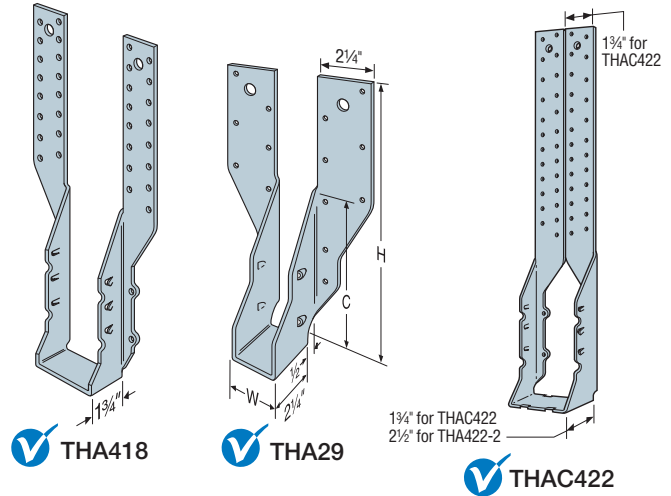
• **Uplift:**

Lowest face nails must be filled to achieve uplift loads.

Options:

- THA hangers available with the header flanges turned in for 3/8" (except THA413) and larger, with no load reduction — order THAC hanger

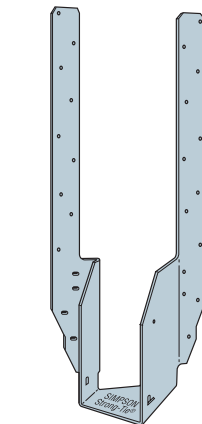
Codes: See p. 14 for Code Reference Key Chart



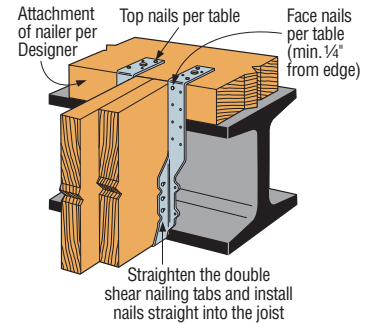
✓ THA418

✓ THA29

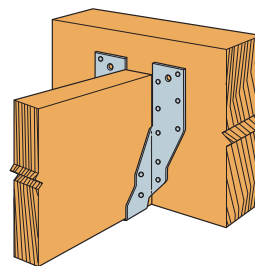
✓ THAC422



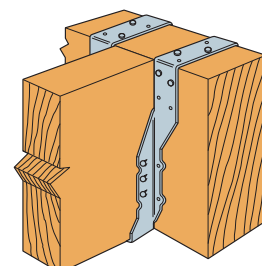
✓ THAR/L422



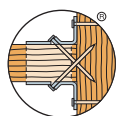
Typical THA Top Flange Installation on a Nailer (except THA29)



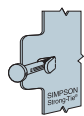
Typical THA29 Face-Mount Installation



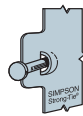
Typical THA Top-Flange Installation



Double-Shear Nailing Top View



Double-Shear Nailing Side View Do not bend tab



Dome Double-Shear Nailing Side View (Available on some models) U.S. Patent 5,603,580

THA/THAC/THAR/L

Adjustable Truss Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Minimum Carried Member	Model No.	Ga.	Dimensions (in.)					Min. ⁷ Top Flange	Min. Header Depth	Fasteners ¹				DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
			W	H	C	Carrying Member				Carried Member		Uplift ² (160)	Floor (100)	Snow (115)	Roof (125)	Uplift ² (160)	Floor (100)	Snow (115)	Roof (125)			
						Top	Face			Straight	Slant											
Top-Flange Installation																						
2x4	THA29	18	1 5/8	9 1/16	5 1/8	2 7/16	—	(4) 10d	(4) 10d	—	(4) 10d	560	2,260	2,310	2,350	480	1,740	1,785	1,815	18, FL, L15		
2x6	THA213	18	1 5/8	13 3/16	5 1/2	1 1/2	—	(4) 10d	(2) 10d	(4) 10d x 1 1/2"	—	—	1,615	1,615	1,615	—	1,280	1,280	1,280			
2x6	THA218	18	1 5/8	17 3/16	5 1/2	2	—	(4) 10d	(2) 10d	(4) 10d x 1 1/2"	—	—	1,615	1,615	1,615	—	1,280	1,280	1,280			
(2) 2x10	THA218-2	16	3 1/8	17 11/16	8	2	—	(4) 16d	(2) 16d	(6) 10d	—	—	2,245	2,245	2,245	—	1,935	1,935	1,935			
(2) 2x10	THA222-2	16	3 1/8	22 3/16	8	2	—	(4) 16d	(2) 16d	(6) 10d	—	—	2,245	2,245	2,245	—	1,935	1,935	1,935			
4x6	THA413	18	3 3/8	13 3/16	4 1/2	1 1/2	—	(4) 10d	(2) 10d	(4) 10d	—	—	1,615	1,615	1,615	—	1,280	1,280	1,280			
4x10	THA418	16	3 3/8	17 1/2	7 7/8	2	—	(4) 16d	(2) 16d	(6) 10d	—	—	2,245	2,245	2,245	—	1,935	1,935	1,935			
4x10	THA422	16	3 3/8	22	7 7/8	2	—	(4) 16d	(2) 16d	(6) 10d	—	—	2,245	2,245	2,245	—	1,935	1,935	1,935			
4x10	THA426	14	3 3/8	26	7 7/8	2	—	(4) 16d	(4) 16d	(6) 16d	—	—	2,435	2,435	2,435	—	2,095	2,095	2,095	FL		
4x10	THAR/L422	16	3 3/8	22 3/8	8	2 1/2	—	(4) 10d	(2) 10d	(1) 10d	(2) 10d x 1 1/2"	—	1,090 ⁴	1,090 ⁴	1,090 ⁴	—	915 ⁴	915 ⁴	915 ⁴	18, FL, L15		
4x10	THAR/L422	16	3 3/8	22 3/8	8	2 1/2	—	(4) 10d	(8) 10d	(1) 10d	(2) 10d x 1 1/2"	310	1,675	1,675	1,675	260	1,405	1,405	1,405			
(2) 4x10	THA422-2	14	7 1/4	22 11/16	9 3/4	2	—	(4) 16d	(4) 16d	(6) 16d	—	—	3,330	3,330	3,330	—	2,865	2,865	2,865	FL		
(2) 4x10	THA426-2	14	7 1/4	26 1/16	9 3/4	2	—	(4) 16d	(4) 16d	(6) 16d	—	—	3,330	3,330	3,330	—	2,865	2,865	2,865			
Face-Mount Installation																						
2x4	THA29	18	1 5/8	9 1/16	5 1/8	—	9 1/16	—	(16) 10d	—	(4) 10d	560	2,125	2,310	2,350	480	1,740	1,785	1,815	18, FL, L15		
2x6	THA213	18	1 5/8	13 3/16	5 1/2	—	13 3/16	—	(14) 10d	—	(4) 10d	1,170	1,955	2,020	2,065	780	1,680	1,735	1,775			
2x6	THA218	18	1 5/8	17 3/16	5 1/2	—	17 3/16	—	(18) 10d	—	(4) 10d	1,170	1,955	2,020	2,065	780	1,680	1,735	1,775			
(2) 2x10	THA218-2	16	3 1/8	17 11/16	8	—	14 1/16	—	(22) 16d	—	(6) 16d	1,855	3,695	3,695	3,695	1,595	3,185	3,185	3,185			
(2) 2x10	THA222-2	16	3 1/8	22 3/16	8	—	14 1/16	—	(22) 16d	—	(6) 16d	1,855	3,695	3,695	3,695	1,595	3,185	3,185	3,185			
4x6	THA413	18	3 3/8	13 3/16	4 1/2	—	13 3/8	—	(14) 10d	—	(4) 10d	1,170	1,940	2,235	2,400	780	1,660	1,910	2,075			
4x10	THA418	16	3 3/8	17 1/2	7 7/8	—	14 1/16	—	(22) 16d	—	(6) 16d	1,855	3,695	3,695	3,695	1,595	3,185	3,185	3,185			
4x10	THA422	16	3 3/8	22	7 7/8	—	14 1/16	—	(22) 16d	—	(6) 16d	1,855	3,695	3,695	3,695	1,595	3,185	3,185	3,185			
4x10	THA426	14	3 3/8	26	7 7/8	—	16 1/16	—	(30) 16d	—	(6) 16d	1,855	4,480	4,480	4,480	1,595	3,855	3,855	3,855	FL		
(2) 4x10	THA422-2	14	7 1/4	22 11/16	9 3/4	—	16 3/16	—	(30) 16d	—	(6) 16d	1,855	5,160	5,520	5,520	1,595	4,440	4,745	4,745			
(2) 4x10	THA426-2	14	7 1/4	26 1/16	9 3/4	—	18	—	(38) 16d	—	(6) 16d	1,855	5,520	5,520	5,520	1,595	4,440	4,745	4,745			

- 16d sinkers may be used to replace 16d commons at 0.85 of table load.
- Uplift has been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- Roof loads are 125% of floor loads unless limited by other criteria.
- THAR/L422 with (4) 10d top nails and (2) 10d face nails: when the hanger height is between 9" to 12", the allowable download is 1,440 lb. for DFL and 1,210 lb. for SPF. No further increase allowed.
- For top flange installation on a nailer (see detail on pp. 162–163), install joist nails straight by bending the double shear tabs.
- For single 2x and 3x nailers, the following THA hangers can be installed using 10d x 1 1/2" top nails and (2) 16d face nails with reduced allowable loads as noted: THA418/THA422: 1,415 lb. for DFL, 1,215 lb. for SPF; THA426: 2,245 lb. for DFL, 1,930 lb. for SPF.
- Min. Top Flange refers to the minimum length of strap that must be field-formed over the header.
- Nails:** 16d = 0.162" dia. x 3 1/2" long, 16d x 2 1/2" = 0.162" dia. x 2 1/2" long, 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

HFN/F

Panelized Construction Hangers

The HF24N, HF26N, HF34N and HF36N hangers are designed for panels or components using jigs or similar devices for precision fabrication. Grip-groove feature provides positive lock into the 2x or 3x member without nailing. F series panel hangers are engineered components for panelized construction only.

Material: 18 gauge

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

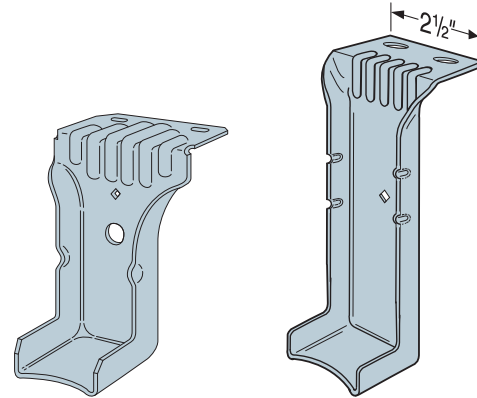
Standard Installation:

- Use all specified fasteners in pre-manufactured holes; see General Notes
- On the F-series hanger, the diamond hole nail is non-structural and does not contribute to the load
- For additional information on retrofit options see flier F-C-RUZNRUZ at strongtie.com

Panelized Installation:

- Installing two nails through sheathing in middle of hanger achieves full load. See illustrations for fastener location requirements. See technical bulletin T-C-HFHANGER at strongtie.com for alternate nailing and allowable load adjustments.

Codes: See p. 14 for Code Reference Key Chart



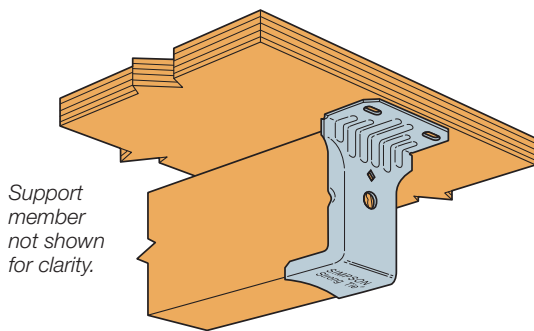
HF24N
(HF34N similar)
U.S. Patent 6,260,402

HF26N
(HF36N similar)
Dimples hold joist securely in place.
U.S. Patent 6,260,402

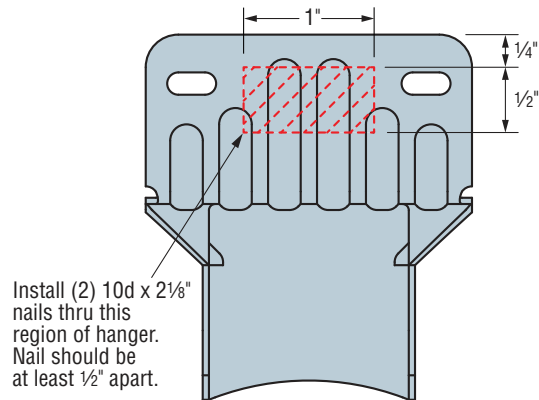
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Joist Size	Dimensions (in.)			Header Fasteners	Allowable Roof Loads (115/125)	Code Ref.
		W	H	TF			
HF24N	2x4	1 9/16	3 3/8	1 1/4	(2) 10d x 2 1/8"	580	115, L7
HF26N	2x6	1 9/16	5 3/8	1 1/4	(2) 10d x 2 1/8"	635	
HF34N	3x4	2 9/16	3 3/8	1 1/4	(2) 10d x 2 1/8"	690	
HF36N	3x6	2 9/16	5 3/8	1 1/4	(2) 10d x 2 1/8"	725	
F26-2	(2) 2x6	3 1/4	5 3/8	1 3/8	(2) 10d	800	
F44	4x4	3 3/8	3 7/8	1 1/2	(2) 10d	880	
F46	4x6	3 3/8	5 3/8	1 7/8	(2) 10d	785	

1. 10d common nails can be used for specified 10d x 2 1/8" nails.
2. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 2 1/8" = 0.148" dia. x 2 1/8" long. See pp. 26–27 for other nail sizes and information.



Typical HF24N Installation
(HF34N similar)

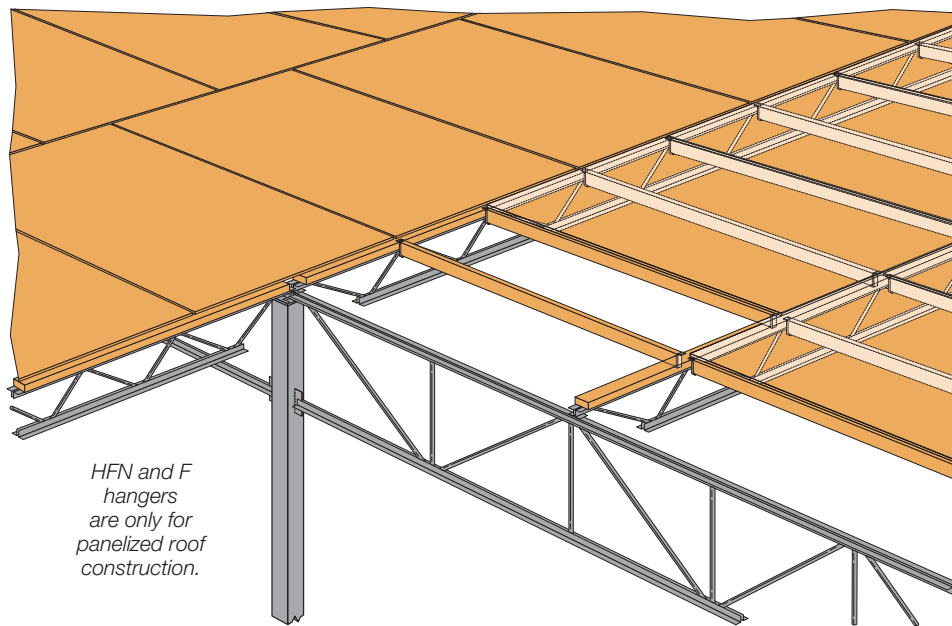
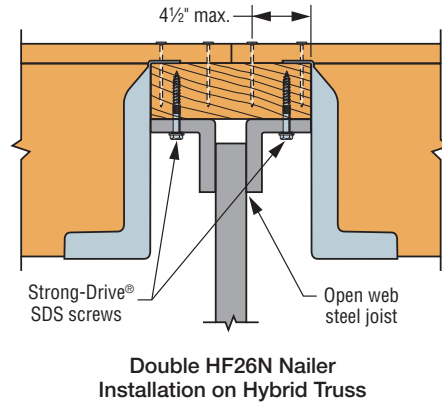
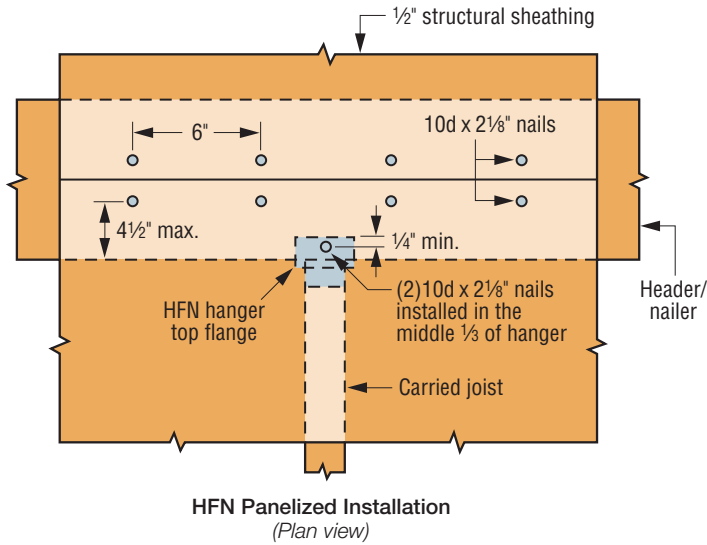


Install (2) 10d x 2 1/8" nails thru this region of hanger. Nail should be at least 1/2" apart.

Panelized Installation Nailing Zone

HFN/F

Panelized Construction Hangers (cont.)



Typical Hybrid Panelized Roof System

Glulam Beam Connectors



GLB/HGLB/GLBT

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.

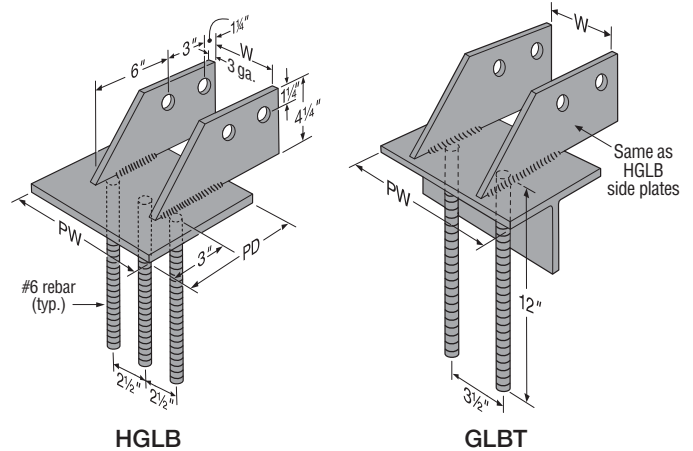
Installation:

- 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:

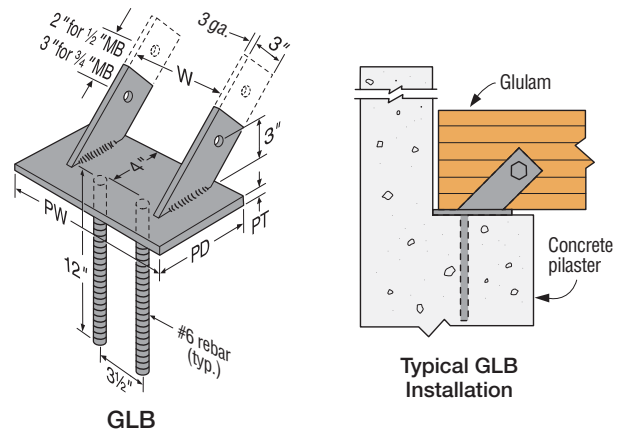
- Beam seats for sawn timber and other sizes may be ordered by specifying special dimensions; use the letter designations shown on the illustrations
- Specify if two-bolt GLB model is desired; see illustration

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Dimensions (in.)				Bolts	Allowable Bearing Loads ^{1,2}		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	I20, L10, L16, FL
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	



1. Allowable bearing stress for masonry is based on an f_c of 1,500 psi using the IBC (ACI 530 2.1.9.3) Allowable Stress Design. Wood bearing is based on f_c-perp of 650 psi.
2. When installed on masonry, use the lesser of the masonry or the wood allowable load values. When installed on concrete, a minimum f_c = 2,500 psi shall be used 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. The GLBT5 has a WT4x9 structural tee; the GLBT6 has a WT4x12 structural tee.
6. Specify "W" dimension when ordering.
7. Uplift loads do not apply for this connector.

Model No.	Dimensions (in.)				Bolts (Qty. - Dia.)	Allowable Bearing Loads ^{1,2}					Allowable Horizontal Bolt Loads ^{3,4}	Code Ref.	
	Width for Beam (W)	Bearing Plate				Masonry Bearing @ 375 psi	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	—	8,260	I20, L10, L16, FL
HGLBB		6	10	3/8	(2) 3/4	22,500	12,190	19,990	26,325	34,125	—	8,260	
HGLBC		7	10	3/8	(2) 3/4	26,250	14,220	23,320	30,715	39,815	—	8,260	
HGLBD		8	10	3/8	(2) 3/4	30,000	16,250	26,650	35,100	45,500	—	8,260	
GLBT512	3 1/4 to 11	5 1/4	12	5/16	(2) 3/4	23,625	10,665	17,490	23,035	29,860	36,685	8,260	
GLBT612		6 1/2	12	3/8	(2) 3/4	29,250	13,205	21,655	28,520	36,970	45,420	8,260	
GLBT516	3 1/4 to 15	5 1/4	16	5/16	(2) 3/4	31,500	10,665	17,490	23,035	29,860	36,685	8,260	
GLBT616		6 1/2	16	3/8	(2) 3/4	39,000	13,205	21,655	28,520	36,970	45,420	8,260	
GLBT520	3 1/4 to 19	5 1/4	20	5/16	(2) 3/4	39,375	10,665	17,490	23,035	29,860	36,685	8,260	
GLBT620		6 1/2	20	3/8	(2) 3/4	48,750	13,205	21,655	28,520	36,970	45,420	8,260	

1. Allowable bearing stress for masonry is based on an f_m of 1,500 psi using the IBC (ACI 530) Allowable Stress Design. Wood bearing is based on f_c-perp of 650 psi.
2. When installed on masonry, use the lesser of the masonry or the wood allowable load values. When installed on concrete, a minimum f_c = 2,500 psi shall be used 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. The GLBT5 has a WT4x9 structural tee; the GLBT6 has a WT4x12 structural tee.
6. Specify "W" dimension when ordering.
7. Uplift loads do not apply for this connector.

Face-Mount Hangers HU/HUC/HUCQ/HGUS

Glulam Beam and Double-Shear Joist Hangers

See Hanger Options on pp. 121–123 for hanger modifications, which may result in reduced loads.

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

HGUS — Face-mount hanger used for high load applications. 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.

HUCQ — Heavy duty joist hangers that incorporate Simpson Strong-Tie® Strong Drive® SDS Heavy-Duty Connector screws (included).

Material: See tables

Finish: Galvanized. Some products available in ZMAX® or HDG coating; see Corrosion Information, pp. 15–18.

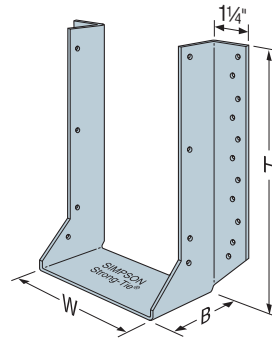
Installation:

- 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.
- HGUS — Nails must be driven at an angle through the joist or truss into the header to achieve the table loads.
- HUCQ — Install ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws (provided) in all round holes. Lag screws will not achieve the same load.
- With 3x carrying members, use 16d x 2½" (0.162" dia. x 2½" long) nails into the header and 16d commons into the joist with no load reduction. With 2x carrying members, use 10d x 1½" (0.148" dia. x 1½" long) nails into the header and 10d commons into the joist, and reduce the load to 0.64 of the table value.
- For installations to masonry or concrete, see pp. 279–281.

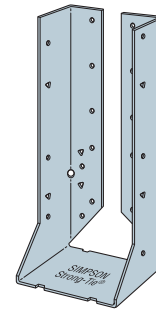
Options:

- HU hangers available with the header flanges turned in for 2⅝" and larger widths, with no load reduction — order HUC hanger.
- See Hanger Options on pp. 121–123, for sloped and/or skewed HU models, and HUC (concealed flange) models.
- Concealed flanges are not available for HGUS.
- HGUS may be skewed only up to a maximum of 45°. See Hanger Options pp. 121–123 or load reductions.
- Other sizes available; contact Simpson Strong-Tie.
- See also HUS series.
- HUCQ hangers cannot be modified.

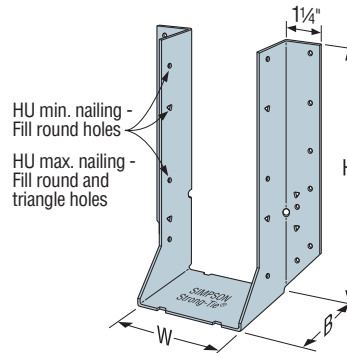
Codes: See p. 14 for Code Reference Key Chart



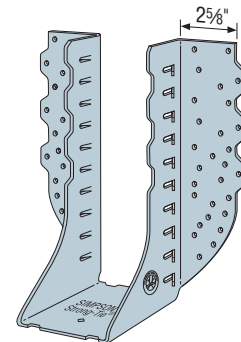
HU5.125/12



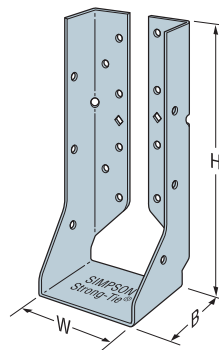
HUC210-2
Concealed Flanges
(HUCQ similar)



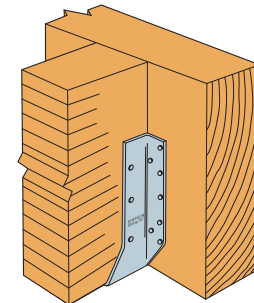
HU210-2



HGUS3.25/12



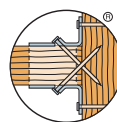
HUCQ410



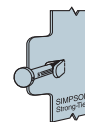
Typical HU Installation

Projection seat on most models for maximum bearing and section economy.

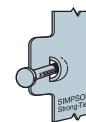
Model configurations may differ from those shown. Some HU models do not have triangle holes. Contact Simpson Strong-Tie for details.



Double-Shear Nailing Top View



Double-Shear Nailing Side View Do not bend tab



Dome Double-Shear Nailing Side View (Available on some models)
U.S. Patent 5,603,580

Top-Flange Hangers LEG/MEG/EG

Beam and Glulam Hangers

See Hanger Options on pp. 121–123 for hanger modifications, which may result in reduced loads.

Designed to support large members typically found in glulam beam construction.

Material: Stirrup — 7 gauge; LEG/MEG TF — 7 gauge; all other TF — 3 gauge

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

Installation:

- Use all specified fasteners: see General Notes
- Maintain minimum 4D end distance and edge distance from bolt to end of header and nearest loaded edge per NDS requirements

Options:

- See Hanger Options General Notes on p. 121.

Skewed Seat — Top Flange Models Only

- The LEG/MEG/EG series can be skewed up to 45°. The maximum allowable load is 10,000 lb. for LEG and MEG, 14,250 lb. for EG.

Sloped Seat — Top Flange Models Only

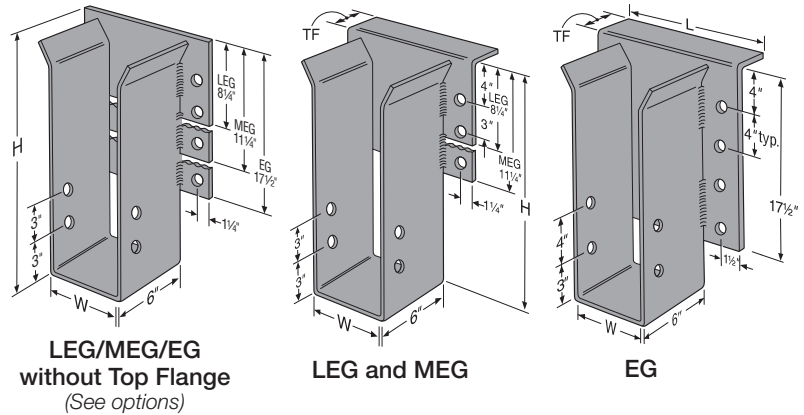
- The LEG/MEG/EG series can be sloped up to 45°. The maximum allowable load is 9,665 lb.; see illustration.

No Skewed And Skewed Combo Available.

Offset Top Flange

- The LEG/MEG (only) top flange may be offset left or right for placement at the end of a header (see illustration). The maximum allowable load is 5,665 lb. (Min. H = 11" for MEG, 9" for LEG.)
- No skews allowed on offset hangers.
- Models available without top flanges; see table loads.

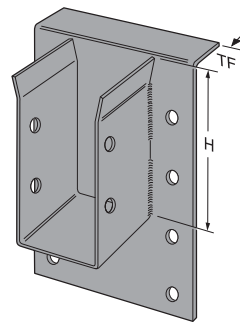
Codes: See p. 14 for Code Reference Key Chart



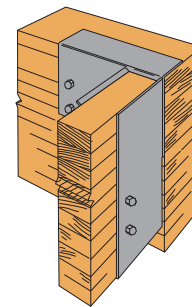
LEG/MEG/EG without Top Flange
(See options)

LEG and MEG

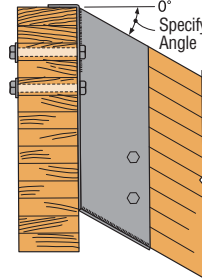
EG



EG with "H" dimension less than the face plate height. The EG's back plate is always 17 1/2", regardless of the stirrup height.



Typical LEG/MEG Top Flange Offset Left



Typical LEG Sloped Down Installation
(MEG/EG similar)

These products are available with additional corrosion protection. For more information, see p. 18.

Joist or Purlin Size	Model No.	Dimensions (in.)						Min. Header Depth	Bolts				Allowable Loads						Code Ref.
		L	W	Min. ³ H	Max. H	TF	Header		Joist		Without Top Flange		Top Flange No Triangle Theory		Top Flange Triangle Theory				
							Qty.		Dia.	Qty.	Dia.	Floor (100)	Roof (125)	Floor (100)	Roof (125)	Floor (100)	Roof (125)		
3/8 LAM	LEG3	12	3/4	9	33 1/2	2 1/2	10	4	3/4	2	3/4	3,465	4,330	12,675	13,215	12,675	13,215	I19, FL, L14	
	LEG5	12	5/4	9	32 1/2	2 1/2	10	4	3/4	2	3/4	3,465	4,330	16,290	16,290	13,040	13,865		
5/8 LAM	MEG5	12	5/4	9	32 1/2	2 1/2	13	6	3/4	2	3/4	5,170	6,460	19,710	19,710	14,835	16,860		
	EG5	11 3/4	5/4	11	32 1/2	2 1/2	20	8	1	2	1	8,870	11,085	20,895	21,815	17,885	19,865		
6/8 LAM	LEG7	12	6/8	9	31 1/2	2 1/2	10	4	3/4	2	3/4	3,465	4,330	16,290	16,290	13,040	13,865		
	MEG7	12	6/8	9	31 1/2	2 1/2	13	6	3/4	2	3/4	5,170	6,460	19,710	19,710	14,885	16,060		
	EG7	13 1/2	6/8	11	31 1/2	2 1/2	20	8	1	2	1	8,870	11,085	25,320	25,835	19,290	21,275		
8/4 LAM	EG9	15 1/2	8/8	11	30 1/2	2 1/2	20	8	1	2	1	8,870	11,085	25,320	25,835	20,080	22,875		

1. Roof loads are 125% of floor loads unless limited by other criteria.
2. Allowable loads assume a carrying member width of 5 1/2".
3. Specify H dimension.

4. Triangle Theory: Some code jurisdictions allow only half of the top flange bearing area to be considered when performing a top flange hanger calculation as there is non-uniform stress under the top flange (presumed to be a triangular shaped distribution). Therefore, loads are published above using the calculated "Triangle Theory." Loads are also published in the "No Triangle Theory" columns which are based on calculations assuming full bearing on the top flange which do not exceed the tested value with a reduction factor of 3.

Top-Flange Hangers HHB/GB/HGB

Beam and Purlin Hangers

See table on p. 178. See Hanger Options on pp. 121–123 for hanger modifications, which may result in reduced loads.

This series of beam and purlin hangers may be used for wood to wood or wood to steel applications. Precision forming provides dimensional accuracy and helps ensure proper bearing area and connection.

Material: See table on p. 178

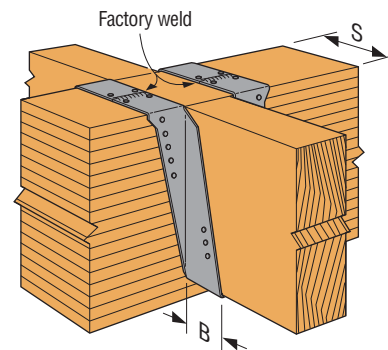
Finish: HHB, GB, HGB, all saddle hangers and all welded sloped and special hangers — Simpson Strong-Tie® gray paint. May be ordered hot-dip galvanized; specify HDG.

Installation:

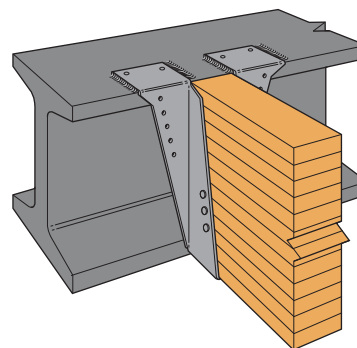
- Use specified fasteners; see General Notes.
- HHB, GB and HGB may be used for weld-on applications. The minimum required weld to the top flanges is $\frac{3}{16}$ " x 2" fillet weld to each side of each top flange tab. Distribute the weld equally on both top flanges. Welding cancels the top and face nailing requirements. Consult the code for special considerations when welding galvanized steel. The area should be well-ventilated. See p. 21, note m for weld information. Weld on applications produce the maximum allowable load listed. Uplift loads do not apply to welded applications.
- Ledgers must be evaluated for each application separately. Check TF dimension, nail length and nail location on ledger.
- For attaching to headers made up of multiple 2xs, refer to technical bulletin T-C-MPLYHEADR at strongtie.com.

Options:

- HHB – other widths are available; specify W dimension (the minimum W dimension is 2½").
- Saddle hangers are made to order; add "D" to model (e.g. HHBD3); specify S (for saddle) dimension. **It is recommended to add between $\frac{1}{16}$ " and $\frac{1}{8}$ " to beam dimension.** They may be used for most conditions except at end wall locations, and are preferred for nailer applications.
- The coating on special B hangers will depend on the manufacturing process used. Check with your Simpson Strong-Tie representative for details. Hot-dip galvanized available: specify HDG.
- B dimensions may be increased on some models.
- Hangers may be sloped down to a maximum of 45°. Use 70% of table downloads. Use 100% of table uplifts.



Typical HHB, GB and HGB Saddle Installation



HHB, GB and HGB are acceptable for weld-on applications. See Installation Information.

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 the top. These products can be used for retrofit on the framing members after they are temporarily placed in position. Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws (included) make installation fast and easy, with no pre-drilling required.

Material: See table

Finish: Galvanized, HHGU — Simpson Strong-Tie® gray paint. Available in hot-dip galvanized, order as "X" version and specify HDG.

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.)
- 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.
- For installation to concrete or masonry walls, see LGUM and HGUM hangers pp. 282–284.

Options:

- See Hanger Options General Notes on pp. 121–123.
- Other seat widths available. Order as "X" version, specify width.

Concealed Flange

- LGU, MGU, HGU and HHGU hangers 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
- LGU with W 3¼" or less, MGU with W 4" or less and HGU with W 4¼" or less, flanges cannot be concealed.

Skewed

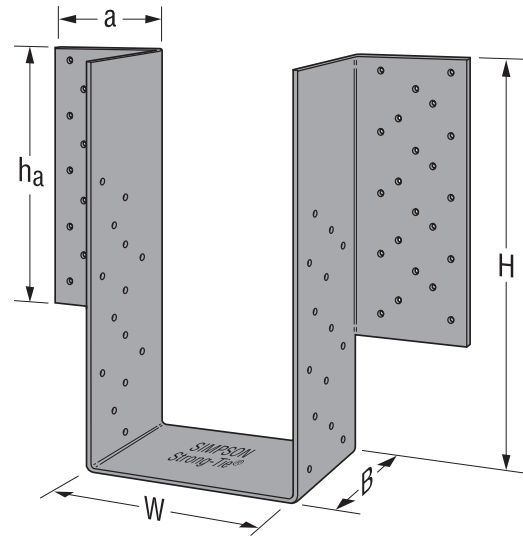
- LGU, MGU, HGU, LGUM and HGUM hangers are available skewed up to 45°.
- Apply the following reduction factors to published loads:

Reduction Factors for Skewed LGU, MGU, HGU

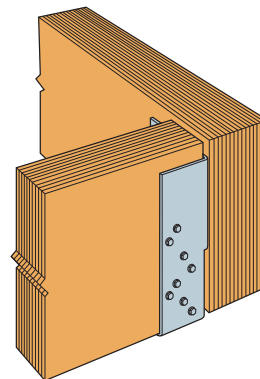
Model	Beam Cut	Download	Uplift
LGU	Square cut	0.90	0.60
	Bevel cut	0.90	0.60
MGU/HGU less than 6" wide	Square cut	0.75	0.65
	Bevel cut	0.80	0.65
MGU/HGU 6" and wider	Bevel cut	0.80	0.55

- Concealed flanges are not available with skewed models.

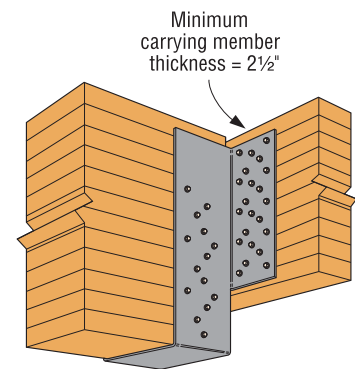
Codes: See p. 14 for Code Reference Key Chart



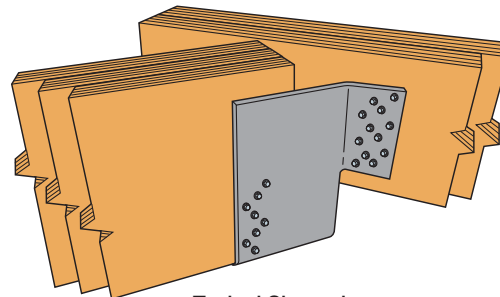
HHGU
(LGU, MGU, HGU similar)



Typical MGU Installation with Right Flange Concealed



Typical HHGU Installation



Typical Skewed MGU Installation
(Skewed left shown)

LGU/MGU/HGU/HHGU

High-Capacity Girder Hangers (cont.)

Visit strongtie.com/software to learn more about our Joist Hanger Selector software.

These products are available with additional corrosion protection. For more information, see p. 18.

Actual Carried Beam Width	Model No.	Ga.	Dimensions (in.)					Fasteners		Allowable Loads				Code Ref.	
			W	H (min.)	B	h _a	a	Face	Joist	DF/SP		SPF/HF			
										Uplift ¹	Download	Uplift ¹	Download		
										(160)	(100/115/125)	(160)	(100/115/125)		
3 1/8"	LGU3.25-SDS	10	3 1/4	8	4 1/2	7%	3 1/4	(16) 1/4" x 2 1/2" SDS	(12) 1/4" x 2 1/2" SDS	5,555	6,720	4,000	4,840	19, L12, FL	
	LGU3.63-SDS	10	3 5/8	8	4 1/2	7%	3 1/4	(16) 1/4" x 2 1/2" SDS	(12) 1/4" x 2 1/2" SDS	5,555	6,720	4,000	4,840		
3 1/2"	MGU3.63-SDS	10	3%	9 1/4	4 1/2	8%	4	(24) 1/4" x 2 1/2" SDS	(16) 1/4" x 2 1/2" SDS	7,260	9,450	5,225	6,805		
	HGU3.63-SDS	7	3%	11	5 1/4	10%	4 3/4	(36) 1/4" x 2 1/2" SDS	(24) 1/4" x 2 1/2" SDS	9,895	14,145	7,125	10,185		
5 1/8"	LGU5.25-SDS	10	5 1/4	8	4 1/2	7%	3 1/4	(16) 1/4" x 2 1/2" SDS	(12) 1/4" x 2 1/2" SDS	5,555	6,720	4,000	4,840		
	MGU5.25-SDS	10	5 1/4	9 1/4	4 1/2	8%	4	(24) 1/4" x 2 1/2" SDS	(16) 1/4" x 2 1/2" SDS	7,260	9,450	5,225	6,805		
	HGU5.25-SDS	7	5 1/4	11	5 1/4	10%	4 3/4	(36) 1/4" x 2 1/2" SDS	(24) 1/4" x 2 1/2" SDS	9,895	14,145	7,125	10,185		
5 1/4"	MGU5.50-SDS	10	5 1/2	9 1/4	4 1/2	8%	4	(24) 1/4" x 2 1/2" SDS	(16) 1/4" x 2 1/2" SDS	7,260	9,450	5,225	6,805		
	HGU5.50-SDS	7	5 1/2	11	5 1/4	10%	4 3/4	(36) 1/4" x 2 1/2" SDS	(24) 1/4" x 2 1/2" SDS	9,895	14,145	7,125	10,185		
	HHGU5.50-SDS	3	5 1/2	13	5 1/4	12%	4 3/4	(44) 1/4" x 2 1/2" SDS	(28) 1/4" x 2 1/2" SDS	14,550	17,845	10,475	12,850		
5 1/2"	MGU5.62-SDS	10	5%	9 1/4	4 1/2	8%	4	(24) 1/4" x 2 1/2" SDS	(16) 1/4" x 2 1/2" SDS	7,260	9,450	5,225	6,805		
	HGU5.62-SDS	7	5%	11	5 1/4	10%	4 3/4	(36) 1/4" x 2 1/2" SDS	(24) 1/4" x 2 1/2" SDS	9,895	14,145	7,125	10,185		
	HHGU5.62-SDS	3	5%	13	5 1/4	12%	4 3/4	(44) 1/4" x 2 1/2" SDS	(28) 1/4" x 2 1/2" SDS	14,550	17,845	10,475	12,850		
6 3/4"	MGU7.00-SDS	10	7	9 1/4	4 1/2	8%	4	(24) 1/4" x 2 1/2" SDS	(16) 1/4" x 2 1/2" SDS	7,260	9,450	5,225	6,805		
	HGU7.00-SDS	7	7	11	5 1/4	10%	4 3/4	(36) 1/4" x 2 1/2" SDS	(24) 1/4" x 2 1/2" SDS	9,895	14,145	7,125	10,185		
	HHGU7.00-SDS	3	7	13	5 1/4	12%	4 3/4	(44) 1/4" x 2 1/2" SDS	(28) 1/4" x 2 1/2" SDS	14,550	17,845	10,475	12,850		
8 3/4"	HGU9.00-SDS	7	9	11	5 1/4	10%	4 3/4	(36) 1/4" x 2 1/2" SDS	(24) 1/4" x 2 1/2" SDS	9,895	14,145	7,125	10,185		
	HHGU9.00-SDS	3	9	13	5 1/4	12%	4 3/4	(44) 1/4" x 2 1/2" SDS	(28) 1/4" x 2 1/2" SDS	14,550	17,845	10,475	12,850		
10 3/4"	HHGU11.00-SDS	3	11	13	5 1/4	12%	4 3/4	(44) 1/4" x 2 1/2" SDS	(28) 1/4" x 2 1/2" SDS	14,550	18,480 ⁴	10,475	13,305 ⁴		170

1. Uplift loads have been increased for wind or earthquake loading with no further increase allowed.

2. Specify H dimension. Maximum H = 30".

3. Header height must be at least as tall as the flange height (h_a).

4. Where noted in table, allowable loads may be increased for duration of load up to 20,455 lb. for DF/SP and 14,725 lb. for SPF/HF.

Top-Flange Hangers WMU/WP/WPU/HW/HWU

Purlin Hangers

The WPU, HWU and HW series purlin hangers offer the greatest design flexibility and versatility.

Material: WP/WPU — 7 ga. top flange, 12 ga. stirrup;
HW — 3 ga. top flange, 11 ga. stirrup; HWU — 3 ga. top flange, 10 ga. stirrup

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

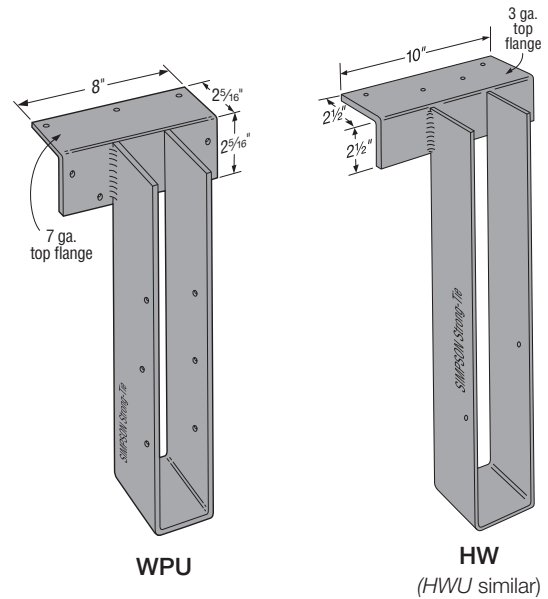
Installation:

- Hangers may be welded to steel headers with $\frac{3}{16}$ " for WPU/WP, and $\frac{1}{4}$ " for HW/HWU, by $1\frac{1}{2}$ " fillet welds located at each end of the top flange. Weld-on applications produce maximum allowable load listed. See p. 21, note m for weld information. For uplift loads refer to technical bulletin T-C-WELDUPFLT at strongtie.com.
- Hangers can support multi-ply carried members; the individual members must be secured together to work as a single unit before installation into the hanger.

Options:

- See Hanger Options, pp. 121–123 for hanger modifications and associated load reductions.

Codes: See p. 14 for Code Reference Key Chart



WPU

HW
(HWU similar)

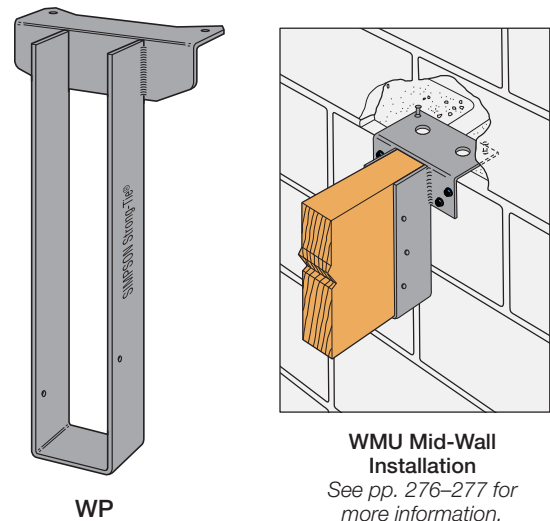
Some model configurations may differ from those shown. Contact Simpson Strong-Tie for details.

Nailer Table

The table indicates the maximum allowable loads for WP, WPU, HW or HWU hanger used on wood nailers. Nailers are wood members attached to the top of a steel I-beam, concrete or masonry wall.

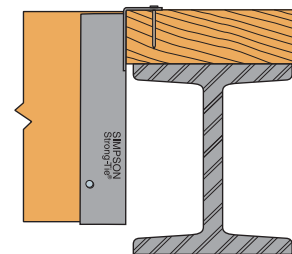
Model	Nailer	Top Flange Nailing	Allowable Loads			
			Uplift (160)	DF/SP	SPF/HF	LSL
WP	2x	(2) 10d x 1 1/2"	—	2,525	2,500	3,375
	(2) 2x	(2) 10d	—	3,255	3,255	—
	3x	(2) 16d x 2 1/2"	—	3,000	2,510	3,375
	4x	(2) 10d	—	3,255	3,255	—
WPU	(2) 2x	(7) 10d	700	3,255	—	—
	3x	(7) 16d x 2 1/2"	970	3,000	—	—
	4x	(4) 16d	1,095	3,255	—	—
HW	(2) 2x	(4) 10d	—	4,845	—	—
	3x	(4) 16d x 2 1/2"	—	4,860	—	—
	4x	(4) 16d	—	5,285	—	—
HWU	(2) 2x	(8) 16d x 2 1/2"	710	5,430	—	—
	3x	(8) 16d x 2 1/2"	970	5,430	—	—
	4x	(8) 16d	1,160	5,430	—	—

- Uplift value for the HWU hanger is for depth ≤ 18 ". Refer to uplift values in table below for taller depths.
- Attachment of nailer to supporting member is the responsibility of the Designer. See p. 29 for TB screws attachment option.



WP

WMU Mid-Wall Installation
See pp. 276–277 for more information.



Installation on Wood Nailer

Top-Flange Hangers WMU/WP/WPU/HW/HWU

Purlin Hangers (cont.)

Model	Joist (in.)		Fasteners			Allowable Loads Header Type								Code Ref.
	Width	Depth	Top	Face	Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	I-Joist	Masonry ³	
WMU	1½ to 1¾	9 to 28	(2) 16d DPLX	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	625	Mid-Wall Installations						3,380	170
	2½ to 7½	9 to 28	(2) 16d DPLX	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	625							4,175	
	1½ to 7½	9 to 28	(2) ¼" x 1¾" Titens	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	545	Top-of-Wall Installations						3,380	
WP	1½ to 7½	3½ to 30	(2) 10d x 1½"	—	(2) 10d x 1½"	—	2,865	3,250	—	2,500	2,000	2,030	—	FL, L14
	1½ to 7½	3½ to 30	(2) 10d	—	(2) 10d x 1½"	—	2,525	3,250	3,650	3,255	2,525	—	—	
	1½ to 7½	3½ to 30	(2) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	—	—	
WPU	1¾ to 5½	7¼ to 18	(3) 16d	(4) 16d	(6) 10d x 1½"	1,095	4,700	4,880	3,650	4,165	4,165	—	—	I19, FL, L14
	1¾ to 5½	18½ to 28	(3) 16d	(4) 16d	(6) 10d x 1½"	390	4,700	4,880	3,650	4,165	4,165	—	—	
HW	1½ to 7½	3½ to 32	(4) 10d	—	(2) 10d x 1½"	—	3,100	4,000	—	5,285	3,100	—	—	I10, I19, FL, L11, L14
	1½ to 7½	3½ to 32	(4) 16d	—	(2) 10d x 1½"	—	5,100	4,000	4,500	5,285	3,665	—	—	
HWU	1¾ to 3½	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1,160	6,335	5,500	5,535	6,335	5,415	—	—	I19, FL, L11, L14
	1¾ to 3½	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	965	6,335	5,500	5,535	6,335	5,415	—	—	
	1¾ to 3½	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	985	6,335	5,500	5,535	6,335	5,415	—	—	
	4½ to 7	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1,160	6,000	5,500	5,535	6,000	5,415	—	—	
	4½ to 7	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	965	6,000	5,500	5,535	6,000	5,415	—	—	
	4½ to 7	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	985	6,000	5,500	5,535	6,000	5,415	—	—	

- 16d sinkers (0.148" dia. x 3¼" long) may be used where 10d commons are called out with no load reduction.
- Uplift loads are based on DF/SP lumber and have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
- Minimum $f_m = 1,500$ psi.
- For hanger heights exceeding the joist height, the allowable load is 0.50 of the table load.
- Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

Glulam Beam Connectors

VB

Knee Brace

The VB provides lateral resistance force at the bottom of beams when installed approximately 45° or more to the vertical plane.

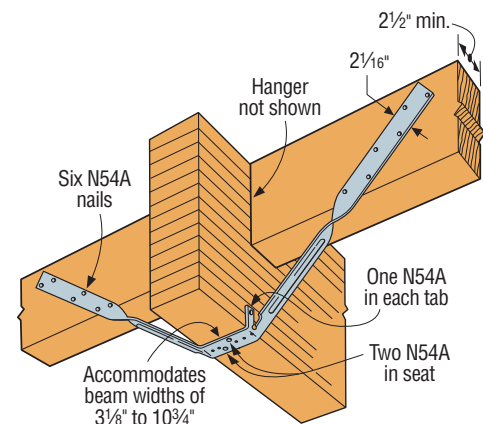
Material: 12 gauge

Finish: Galvanized

Installation:

- Use specified fasteners; see General Notes
- 16-N54A fasteners are included with the brace

Codes: See p. 14 for Code Reference Key Chart



Typical VB Installation

Model No.	H (Beam Depth)	L	Fasteners (Total)	Allowable Tension Loads ¹		Code Ref.
				Floor (100)	Roof (125)	
VB5	10" – 15"	5'	(16) N54A	990	1,240	I15, L7
VB7	15" – 22½"	7'	(16) N54A	990	1,240	
VB8	22½" – 28½"	8'	(16) N54A	990	1,240	
VB10	28½" – 36"	10'	(16) N54A	990	1,240	
VB12	36" – 42"	12'	(16) N54A	990	1,240	

1. Roof loads have been increased 25% with no further increase allowed.

Top-Flange Hangers GLS/HGLS/GLT/HGLT

Beam and Glulam Hangers

See table on p. 178. See Hanger Options on pp. 121–123 for hanger modifications, which may result in reduced loads.

GLT and HGLT accommodate typical structural requirements for timber and glulam beams. GLT top-flange depth allows installation on minimum 4x ledger (3½" net). Not acceptable for nailer applications. Funnel Flanges® allow easy installation of beams.

GLS and HGLS are heavy glulam saddle hangers.

Material: All welded GL series glulam hangers have a 3-gauge top flange. See p. 178 for stirrup gauge.

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

Installation:

- Use all specified fasteners; see General Notes.

GLT/HGLT:

- All GLTs used with sawn timbers have a 12" L dimension.
- **N54A nails** are included **with the hangers**.
- GLT may be attached to steel headers by ⅜" x 2½" fillet welds at each end of the header angle to obtain the tabulated loads. HGLT may be attached to steel headers by ¼" x 2½" fillet welds at each end of the header angle to obtain the lesser of the tabulated loads or 12,000 lb. For uplift loads refer to technical bulletin T-C-WELDDUPLFT at strongtie.com. See p. 21, note m for weld information.
- Not for use with SCL or LVL headers. See GLTV, HGLTV.

GLS/HGLS:

- Use Simpson Strong-Tie ¼" x 2½" SDS Heavy-Duty Connector screws when hangers are used with structural composite lumber.
- N54A nails are included with the hangers. **Alternate fasteners may be permitted.** See footnote 1 on p. 178.
- Loads listed are per stirrup.

To Order:

- GLS/HGLS — Specify H₁, H₂ and S dimensions (see illustration).
- Some engineered wood sizes are also available.

Options:

- See Hanger Options General Notes on p. 121.
- Bevel-cut the carried beam for skewed hangers.

Hanger Height

- For hangers exceeding the joist height by ½", allowable load is 50% of the table roof load.

Sloped and/or Skewed Seat

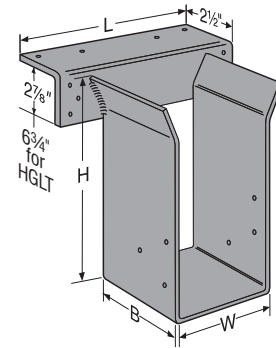
- GLT/GLTV/HGLT/HGLTV and GLS/HGLS series may be skewed to a maximum of 50° or sloped to a maximum of 45°.
- For skews greater than 15°, multiply the table uplift load by 0.50.
- For sloped only, the maximum allowable load is 6,500 lb. for the GLT/GLS/GLTV, 9,165 lb. for the HGLT/HGLS/HGLTV.
- For skewed only, the maximum allowable load for the GLT/GLS/GLTV is 6,550 lb.; for the HGLT/HGLS/HGLTV it is 7,980 lb. The deflection at full loading may reach ¼".
- Sloped and skewed GLT/GLS/GLTV configurations have a maximum allowable load of 5,500 lb. Sloped and skewed combinations are not allowed for the HGLT/HGLS/HGLTV.
- Sloped and/or skewed seat hangers may not be installed in non-backed nailer/header installations.

Sloped Top Flange

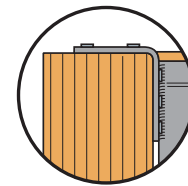
- A top flange may be sloped down left or down right to 30° with or without a sloped and/or skewed seat (see illustration). Reduce allowable table loads using straight-line interpolation of [(90-a)/90] x table load, where "a" is the sloped down angle.

Offset Top Flange

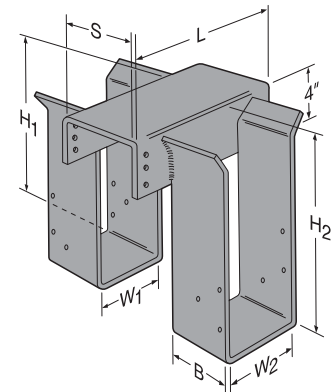
- The top flange may be offset left or right for placement at the end of a header. Minimum seat width 3¼". The maximum allowable load is 0.50 of the table load for the GLT/GLS/GLTV, and 0.45 for the HGLT/HGLS/HGLTV.
- For skewed and offset top-flange GLS/GLT/GLTV hangers, the maximum allowable load is 3,500 lb.
- 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.
- No uplift load.



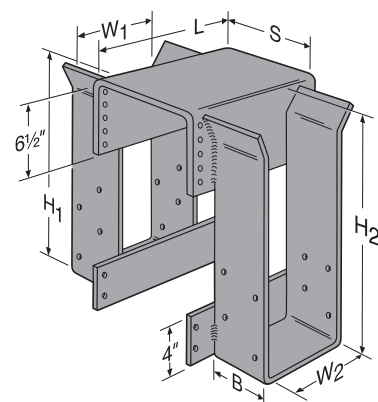
GLT
(HGLT similar)
(fasteners included)



Flatten edge of header to match top flange radius.



GLS

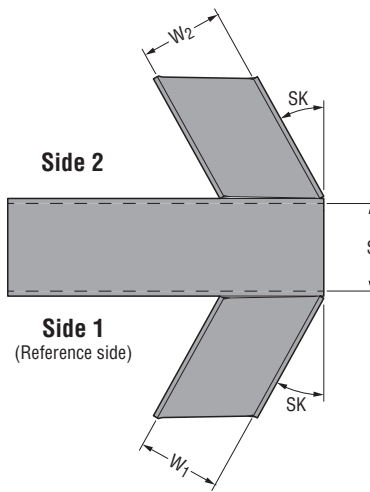


HGLS

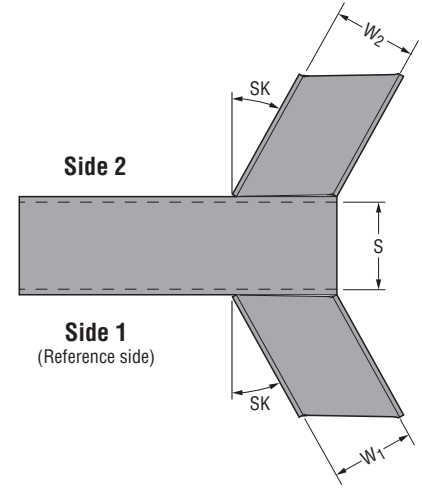
Top-Flange Hangers GLS/HGLS/GLT/HGLT

Beam and Glulam Hangers (cont.)

Model	Stirrup Width (W) (in.)	Top Flange Length (L) (in.)
GLT	3¼ – 5½	10
	5⅞ – 6⅞	12
HGLT	3¼ – 8¼	12
	8⅞	14
GLS	3¼ – 5⅞	9
	6⅞	12
HGLS	5¼ – 8⅞	12

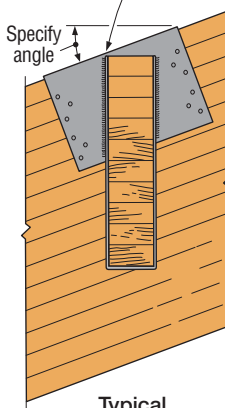


GLS (Skewed Inward)
Skewed Left, Offset Left
(Top View)

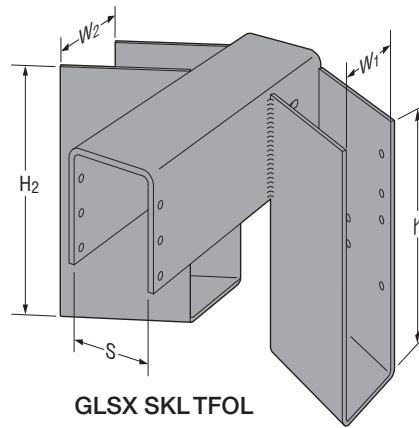


HGLS (Skewed Outward)
Skewed Right, Offset Left
(Top View)

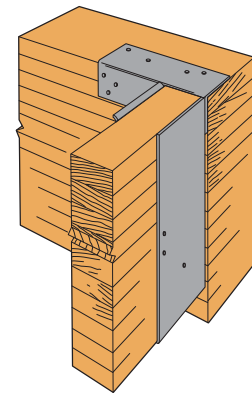
Specify low side, high side, or center flush with header (Low side flush shown)



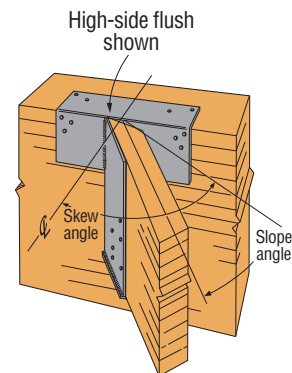
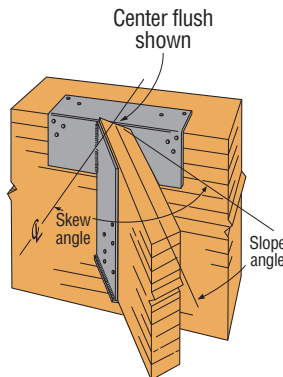
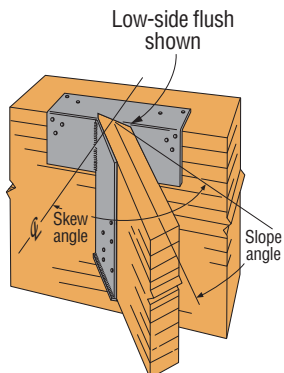
Typical HGLT Top Flange Sloped Down Left with Low Side Flush



GLSX SKLTFOL



Typical GLT Top Flange Offset Left (HGLT similar)



Typical GLT Sloped Down, Skewed Right
When ordering, specify Low-Side Flush, Center Flush or High-Side Flush

Top-Flange Hangers – Glulam Beam

These products are available with additional corrosion protection. For more information, see p. 18.

Glulam Beam Connectors

Joist or Purlin Size	Model No.	Ga.	Dimensions (in.)				Fasteners		Allowable Loads				Code Ref.	
			W	H	B	TF	Header	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)		
3 1/8 LAM	GLT3	7	3 1/4	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	8,165	8,165	8,165	119, FL, L14	
	HGLT3	7	3 1/4	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,265	12,685	12,750		
	GLS3-5	7	3 1/4	8 1/2 min.	5	5 1/4	(6) N54A	(6) N54A	1,865	11,555	11,695	11,785		
	GLS3-7	7	3 1/4	8 1/2 min.	5	6 7/8	(6) N54A	(6) N54A	1,865	11,555	11,695	11,785		
	GLS3-9	7	3 1/4	8 1/2 min.	5	8 7/8	(6) N54A	(6) N54A	1,865	11,555	11,695	11,785		
	HW3.25	11	3 1/4	5 min.	4	2 1/2	(4) 10d	(2) 10d	—	5,285	5,285	5,285		110, FL, L11
	HHB3	7	3 1/4	7 1/2 min.	3	2 1/2	(10) N54A	(6) N54A	1,950	6,085	6,225	6,235		119, FL, L14
	GB3	7	3 1/4	7 1/2 min.	3 1/2	2 1/2	(14) N54A	(6) N54A	1,950	7,795	8,030	8,185		170
	HU3.25/12TF	12	3 1/4	12	2 1/2	2 1/2	(16) 16d	(6) 10d	1,125	4,310	4,335	4,335		
	HU3.25/16.5TF	12	3 1/4	16 1/2	2 1/2	2 1/2	(20) 16d	(8) 10d	1,500	4,860	5,275	5,545		
3 1/2 LAM	GLT4	7	3 9/16	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	8,165	8,165	8,165	119, FL, L14	
	HGLT4	7	3 9/16	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,265	12,685	12,750		
5 1/8 LAM	GLT5	7	5 1/4	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	8,165	8,165	8,165		
	HGLT5	7	5 1/4	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,265	12,685	12,750		
	GLS5-5	7	5 1/4	8 1/2 min.	5	5 1/4	(6) N54A	(6) N54A	1,865	14,685	14,685	14,685		
	GLS5-7	7	5 1/4	8 1/2 min.	5	6 7/8	(6) N54A	(6) N54A	1,865	14,685	14,685	14,685		
	HGLS5	7	5 1/4	10 1/2 min.	6	SPEC	(14) N54A	(8) N54A	2,500	16,835	16,835	16,835		
	HW5.25	11	5 1/4	5 min.	2 1/2	2 1/2	(4) 10d	(2) 10d	—	5,285	5,285	5,285		110, FL, L11
	HHB5	7	5 1/4	7 1/2 min.	3	2 1/2	(10) N54A	(6) N54A	1,950	6,085	6,225	6,235		119, FL, L14
	GB5	7	5 1/4	7 1/2 min.	3 1/2	2 1/2	(14) N54A	(6) N54A	1,950	7,795	8,030	8,185		
	HGB5	7	5 1/4	7 1/2 min.	4	2 1/2	(14) N54A	(6) N54A	1,950	8,580	8,815	8,970	170	
	HU5.25/12TF	12	5 1/4	12	2 1/2	2 1/2	(16) 16d	(6) 16d	1,325	4,310	4,335	4,335		
HU5.25/16.5TF	12	5 1/4	16 1/2	2 1/2	2 1/2	(20) 16d	(8) 16d	1,765	4,860	5,275	5,550			
5 1/2 LAM	GLT6	7	5 9/16	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	8,165	8,165	8,165	119, FL, L14	
	HGLT6	7	5 9/16	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,265	12,685	12,750		
6 3/4 LAM	HHB7	7	6 7/8	7 1/2 min.	3	2 1/2	(10) N54A	(6) N54A	1,950	6,085	6,225	6,235		
	GB7	7	6 7/8	7 1/2 min.	3 1/2	2 1/2	(14) N54A	(6) N54A	1,950	7,795	8,030	8,185		
	HGB7	7	6 7/8	7 1/2 min.	4	2 1/2	(14) N54A	(6) N54A	1,950	8,580	8,815	8,970		
	GLT7	7	6 7/8	7 1/2 min.	5	2 1/2	(10) N54A	(6) N54A	1,865	8,165	8,165	8,165		
	HGLT7	7	6 7/8	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,265	12,685	12,750		
	GLS7-7	7	6 7/8	8 1/2 min.	5	6 7/8	(6) N54A	(6) N54A	1,865	14,685	14,685	14,685		
	GLS7-9	7	6 7/8	8 1/2 min.	5	8 7/8	(6) N54A	(6) N54A	1,865	14,685	14,685	14,685		
HGLS7	7	6 7/8	10 1/2 min.	6	SPEC	(14) N54A	(8) N54A	2,500	16,835	16,835	16,835			
7 LAM	HGLT7.12	7	7 1/8	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,265	12,685	12,750	119	
8 3/4 LAM	HGLT9	7	8 7/8	7 1/2 min.	6	2 1/2	(18) N54A	(6) N54A	1,865	12,750	12,750	12,750	119, FL, L14	
	HGLS9	7	8 7/8	10 1/2 min.	6	SPEC	(14) N54A	(8) N54A	2,500	16,835	16,835	16,835		

- N54A fasteners are supplied with hangers. For GLS and HGLS saddle hangers only, Simpson Strong-Tie® 1/4" x 2 1/2" Strong-Drive® SDS Heavy-Duty Connector screws (sold separately) may be substituted using full table loads.
- Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- GLT, HGLT, GLS, HGLS uplift loads only apply when "H" is 28" or less.
- Allowable loads for glulam sizes are based on 650 psi wood bearing.
- "Min. H" is the minimum H dimension that may be specified. For GLT, HGLT, GLS, HGLS hanger heights that exceed the joist height, allowable load is 0.50 of the table load.
- Allowable loads are shown for each stirrup.
- GLS, HGLS fasteners listed are for one side only. Fasteners supplied are for both sides of the saddle.
- SPEC: Specify the header dimensions for the saddle hangers. ("S" dimension is illustrated on p. 176.)
- Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d = 0.148" dia. x 3" long, N54A = 0.250" dia. x 2 1/2" long – annular ring. See pp. 26–27 for other nail sizes and information.

Codes: See p. 14 for Code Reference Key Chart

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 1/8" 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"-dia. machine bolts in slots away from bearing seat to allow for wood shrinkage

Options: • The Horizontal Load table gives other bolt options

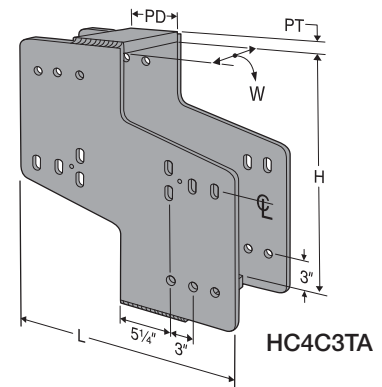
Ordering: • To order, add the width (W) and bearing plate size (PD) designation after the model name. Specify the H dimension. For dapped beams, reduce the H dimension by the PT dimension for each dap.

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

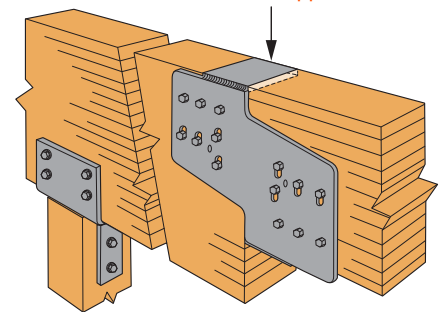
Codes: See p. 14 for Code Reference Key Chart

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	19½	8	60	2	—	—
HCCTA	19½	14	60	2	3	14,850
HC3A	25½	8	60	3	—	—
HC4C3TA	25½	14	60	3	4	19,720

1. Loads have been increased for wind or earthquake loading with no further increase allowed.
2. Horizontal loads are for Doug Fir-larch glulams minimum W = 3½". 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.



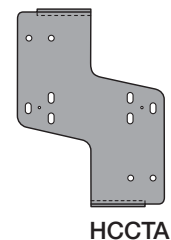
Subtract PT dimension from H dimension if beam is dapped.



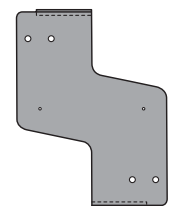
Glulam Beam Connectors

Allowable Download Table

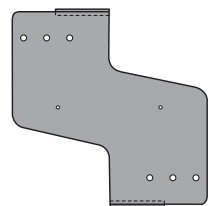
Model Size (Suffix)	Dimensions (in.)					Bolt Dia. (in.)	Two Rotation Bolts per Beam				Three Rotation Bolts per Beam				Code Ref.
	Beam Width	W	PT	PD	H ₁		H ₁ Allowable Roof Loads	Min. H	Min. H Allowable Roof Loads	H ₁	H ₁ Allowable Roof Loads	Min. H	Min. H Allowable Roof Loads		
3-5	3½	3¼	¾	5	¾	12	8,750	8	3,070	10	8,750	8	4,465	170	
3-7	3½	3¼	¾	7	¾	18	12,250	15	9,240	14	12,250	12	9,235		
5-5	5½	5¼	¾	5	¾	16	14,350	8	3,100	13	14,350	8	4,560		
5-7	5½	5¼	¾	7	¾	25	20,090	20	14,835	19	20,090	16	15,505		
5-9	5½	5¼	¾	9	¾	36	25,830	25	16,365	27	25,830	19	16,030		
5.62-5	5½	5½	¾	5	¾	18	17,190	8	3,100	14	17,190	8	4,640		
5.62-7	5½	5½	¾	7	¾	28	24,065	19	14,495	21	24,065	15	15,020		
7-5	6¾	6¾	1	5	¾	19	18,900	8	3,100	15	18,900	8	4,605		
7-7	6¾	6¾	1	7	¾	30	26,460	24	19,850	22	26,460	18	19,845		
7-9	6¾	6¾	1	9	¾	40	29,615	30	20,905	33	34,020	22	20,190		
9-5	8¾	8¾	1¼	5	¾	22	24,500	8	3,100	17	24,500	8	4,605		
9-7	8¾	8¾	1¼	7	¾	37	34,300	29	25,455	27	34,300	22	26,145		
9-9	8¾	8¾	1¼	9	¾	40	29,615	37	27,000	40	43,975	27	27,160		
11-5	10¾	10¾	1½	5	¾	26	30,100	8	3,100	20	30,100	8	4,605		
11-7	10¾	10¾	1½	7	¾	40	37,925	34	31,230	32	42,140	25	30,815		
11-9	10¾	10¾	1½	9	¾	40	29,615	40	29,615	40	43,975	32	33,630		
3.62-5	3½	3½	¾	5	¾	15	13,125	8	3,100	12	13,125	8	4,625		
3.62-9	3½	3½	¾	9	¾	34	23,625	16	8,710	25	23,625	13	9,125		
5.37-5	5¼	5½	1	5	¾	19	19,690	8	3,100	15	19,690	8	4,640		
5.37-9	5¼	5½	1	9	¾	40	29,605	20	12,190	34	35,440	16	13,040		
7.12-5	7	7½	1¼	5	¾	23	26,250	8	3,100	18	26,250	8	4,635		
7.12-9	7	7½	1¼	9	¾	40	29,600	24	15,670	40	44,330	19	16,950		



HCCTA



HCA



HC3A

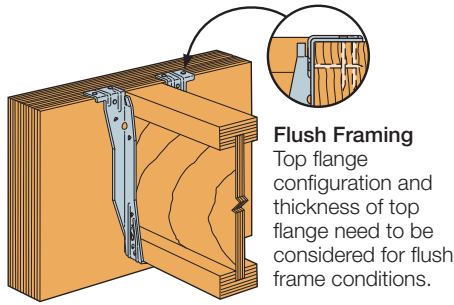
1. Allowable loads have been increased for roof live loads with no further increase allowed. Reduce where other loads govern.
2. Loads are based on 560 psi perpendicular to grain bearing stress.
3. H₁ is the minimum dimension required to achieve full load for the hinge connector. For H dimensions between 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.

Engineered Wood and Structural Composite Lumber Connectors

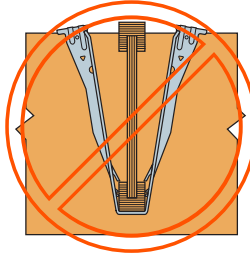


General Connector Installation

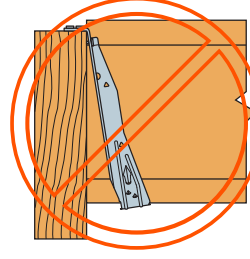
Top-Flange Hangers



Flush Framing
Top flange configuration and thickness of top flange need to be considered for flush frame conditions.



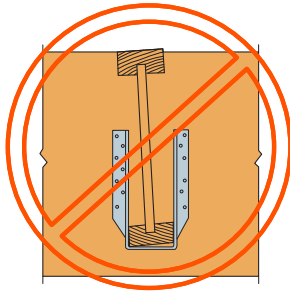
Hanger Over-Spread
If the hanger is over-spread, it can raise the I-joist above the header and may cause uneven surfaces and squeaky floors.



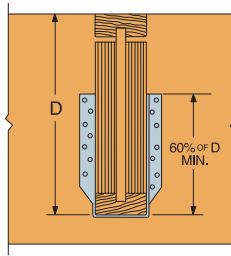
Hanger Not Plumb
A hanger "kicked-out" from the header can cause uneven surfaces and squeaky floors.

Prevent Rotation

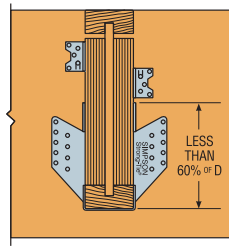
Hangers provide some joist rotation resistance; however, additional lateral restraint may be required for deep joists.



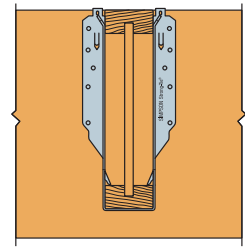
No Rotation Resistance
Lack of web stiffeners combined with short hanger allows unwanted rotation.



Rotation Prevented by Web Stiffeners
Hanger height should be at least 60% of the joist height.

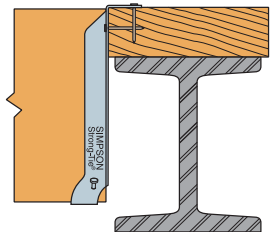


Rotation Prevented by Web Stiffeners
If hanger height is less than 60% of the joist height, add clips or blocking near the top.

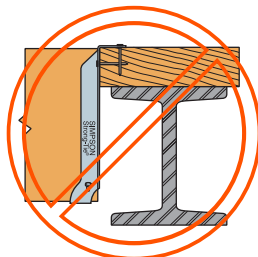


Rotation Prevented by Lateral Flange Support
Sides of hanger laterally support the top flange of the I-joist. No web stiffeners required.

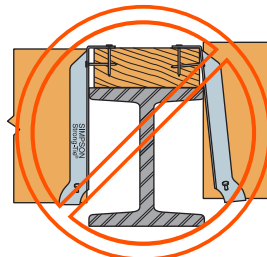
Wood Nailers



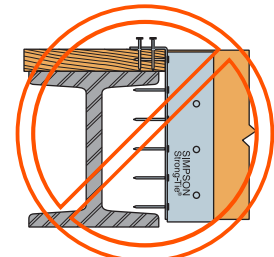
Correct Attachment



Nailer Too Wide
The loading may cause cross-grain bending. As a general rule, the maximum allowable overhang is 1/4", depending on nailer thickness.

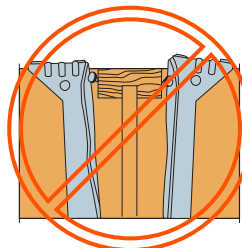


Nailer Too Narrow
Nailer should be full width.



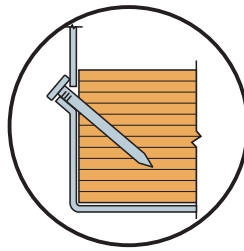
Nailer Too Thin
Or the wrong hanger for the application.

Toe-Nailing



Toe nailing causes squeaks and improper hanger installations. Do not toe nail I-joists before installing top-flange or face-mount hangers.

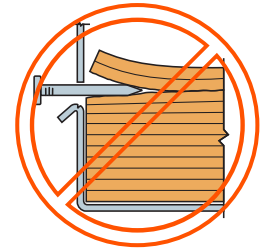
Positive Angle Nailing



Correct Nailing
Approx. 45° Angle



Nail Too Long



Nail at Wrong Angle

General Connector Installation

Wood I-Joists

Sloped Joists

For sloped joists up to 1/4:12 there is no reduction. For slopes greater than 1/4:12 see individual product pages or refer to technical bulletin T-C-SLOPEJST at strongtie.com.

Multiple Joists

Multiple joists should be adequately connected together to act as one unit.

Fasteners

Use the correct nails. Wood may split if the nails are too large. Hanger nails into flanges should not exceed 10d common (0.148 dia.), no longer than 1 1/2". Nails into web stiffeners should not exceed 16d commons (0.162 dia.).

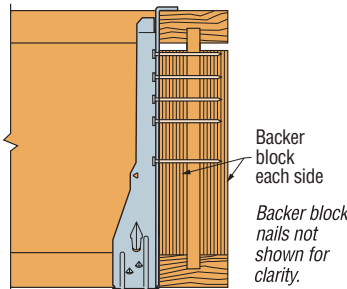
Eccentrically-Loaded I-Joists

Supporting a top flange hanger may require bottom flange restraining straps, blocking or directly-applied ceiling systems to prevent rotation at the hanger location.

Skewed Joists

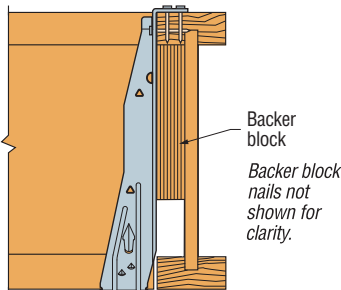
Joists may be skewed up to 2 1/2 degrees in a non-skewed hanger without any load reduction. Refer to individual hanger descriptions for information allowing any further skew applications.

I-Joist as a Header Installation



Face-Mount Hanger

When face-mount hangers are attached to I-joist headers, backer blocks must be installed to provide a nailing surface for the hanger nails. The backer blocks should be installed on both sides of the web and attached together with a minimum of (10) 10d nails. The hanger nails should extend through the web. Contact the I-Joist manufacturer for additional design considerations.



Top-Flange Hanger

When top-flange hangers are attached to I-joist headers, a backer block must be installed to prevent the top flange from rotating under load. The backer blocks should be installed with a minimum of (10) 10d nails clinched. Check with the joist manufacturer for additional design considerations.

CSC/FSS

Ceiling Support Clip / Furring Stabilizer Strap

Provides 1" separation between the furring channel and joist to allow for the use of Thermafiber® insulation and the attachment of the furring channel to all joists. Provides an efficient sound barrier, and a one-hour UL-listed fire rating.

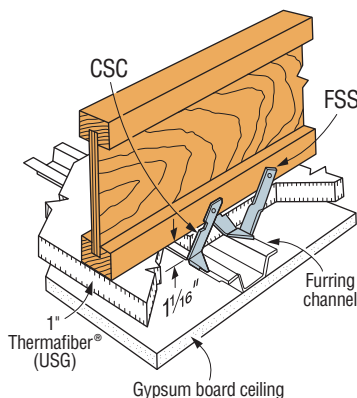
- UL-listed. See Underwriters Laboratory, Inc. Design No. L530 for USG gypsum board and Weyerhaeuser/TJI® joists.
- Check ICC-ES reports for individual I-joist manufacturer approvals.

Material: 24 gauge (minimum)

Finish: Galvanized

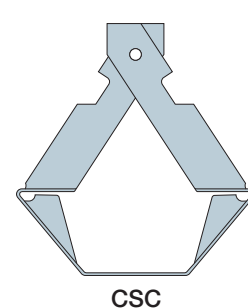
Installation:

- For CSC use (1) 8d x 1 1/2" nail
- For FSS use #8 self-tapping steel screw (not provided) into channel, twist 90°, bend upward and fasten to the side of joist bottom flange with screw or nail

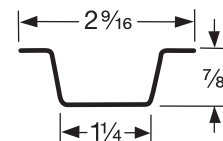


Typical CSC and FSS Installation

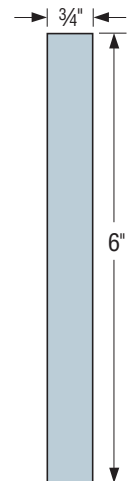
Thermafiber® and TJI® are registered trademarks of US Gypsum Company and Weyerhaeuser, respectively.



CSC



Furring Channel Detail



FSS
(See Installation Notes)

IUS/MIU

I-Joist 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.

The IUS is a hybrid hanger that incorporates the advantages of the face mount and top mount hanger. Installation is fast with the Strong-Grip™ seat, easy-to-reach face nails and self-jigging locator tabs.

The MIU series hangers are designed for commercial and high load I-joist applications without requiring web stiffeners. The MIU features Positive Angle Nailing (PAN), which minimizes splitting of the flanges while permitting time-saving nailing from a better angle.

Refer to Joist Manufacturer's literature or appropriate Simpson Strong-Tie® Connector Selection Guide for actual joist sizes.

Material: See table on pp. 187–192

Finish: Galvanized

Uplift Loads:

- Models have optional triangle joist nail holes for additional uplift. Properly attached web stiffeners are required.
- MIU — add four additional 10d x 1½" joist nails for a total uplift load of 975 lb.
- IUS — add web fillers and two 10d x 1½" joist nails in the triangle holes for a total uplift of 365 lb.

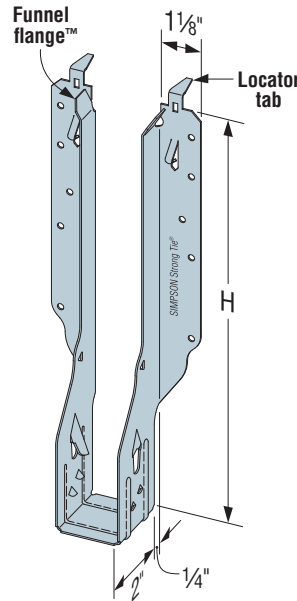
Installation:

- Use all specified fasteners. Verify that the header can take the required fasteners specified in the table. See pp. 181–182 for more installation information.
- IUS — fasten hanger to header. Position I-joist into hanger and snap into place. No joist nailing required. Some IUS models have triangle and round header nail holes. To achieve Max. download, fill both round and triangle holes.
- IUS — Locator tabs are not structural. They may be bent back to adjust for hanger placement.
- IUS — for rimboard applications see technical bulletin T-RIMBDHGR at strongtie.com.
- IUS — I-joists with web stiffeners or rectangular sections can be used with the installation of (2) 10d x 1½" nails into the optional triangle joist nails.
- IUS web stiffeners are not required with I-joists when the top flange is laterally supported by the sides of the hanger unless the manufacturer's no-web-stiffener reaction is exceeded.

Options:

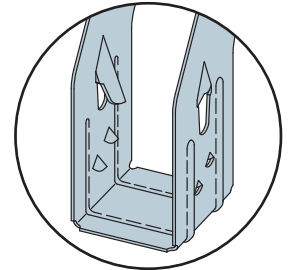
- These hangers cannot be modified. However, these models will normally accommodate a skew of up to 5°. For sloped joists up to ¼:12 there is no reduction, between ¼:12 and up to ½:12, tests show a 10% reduction in ultimate hanger strength. Local crushing of the bottom flange or excessive deflection may be limiting; check with joist manufacturer for specific limitations on bearing of this type.

Codes: Reference tables on pp. 187–192



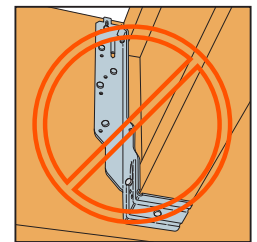
(Some IUS models have triangle holes in header flanges for min./max. nailing)

U.S. Patent 6,523,321



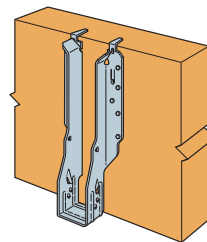
The Strong-Grip™ seat secures I-joists in position without joist nails.

Avoid a Misinstallation

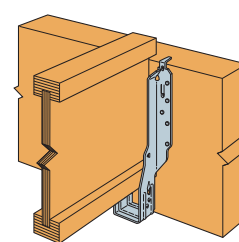


Do not make your own holes. Do not nail the bottom flange.

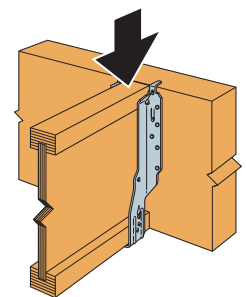
IUS Installation Sequence



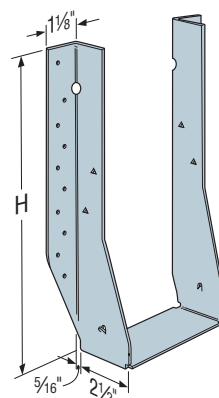
Step 1
Attach the IUS to the header.



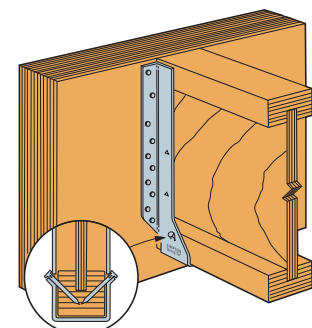
Step 2
Slide the I-joist downward into the IUS until it rests above the large teardrop.



Step 3
Firmly push or snap I-joist fully into the seat of the IUS.



MIU



MIU with Correct PAN Installation

Face-Mount Hangers U/HU/HUC/HUCQ

I-Joist and Structural Composite Lumber Hangers

See hanger tables on pp. 187–192.

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. These heavy-duty connectors are designed for schools and other structures requiring additional strength, longevity and safety factors.

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

Material: See tables on pp. 187–192

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.
- For installation to masonry or concrete, see p. 279.
- **HU/HUC** hangers can be welded to a steel member. Allowable loads are the lesser of the values in the hanger tables on pp. 187–192 or the weld capacity — refer to technical bulletin T-HUHUC-W at strongtie.com.
- When nailing into carrying member's end grain, the allowable load is **adjusted** by a factor of 0.67.
- For welding information, see technical bulletin T-C-HUHUC-W at strongtie.com.

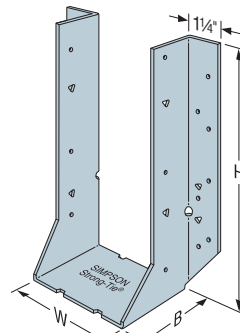
Options:

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

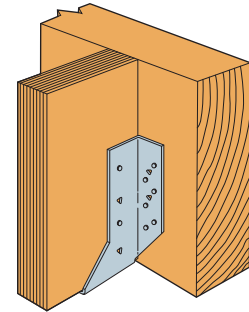
Sloped, Skewed and Sloped/Skewed:

- For low-cost, code-approved 45° skewed hangers, see SUR/SUL on pp. 198–199.
- For field-adjustable hangers, see LSU and LSSU on pp. 200–201.
- See modification table for available options and associated load capacities for U and HU hangers.
- HUCQ cannot be modified.

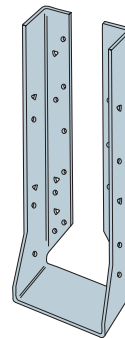
Codes: Reference tables on pp. 187–192



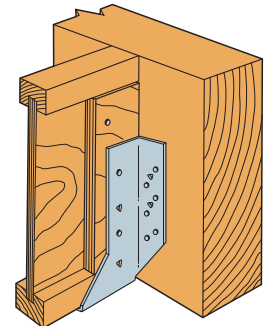
HU410



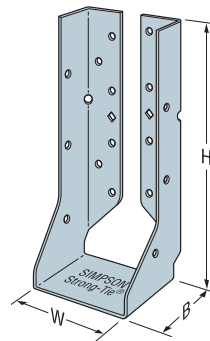
Typical HU7 Installation



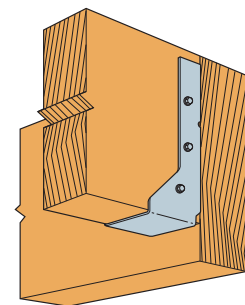
HUC412
Concealed Flanges



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.

Face-Mount Hangers U/HU/HUC/HUCQ

I-Joist and Structural Composite Lumber 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	16d Stainless-Steel Nails	Other Fastener Substitutions
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 (all conditions) 1.00 Smooth shank (normal seat) 1.00 Smooth shank (modified seat*) 0.50	16d → 16d x 2½" 1.00 16d → 10d 0.84 16d → 10d x 1½" 0.64

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 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

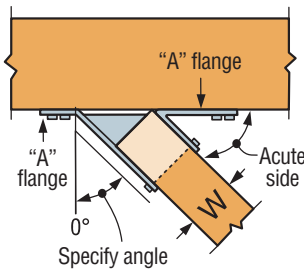
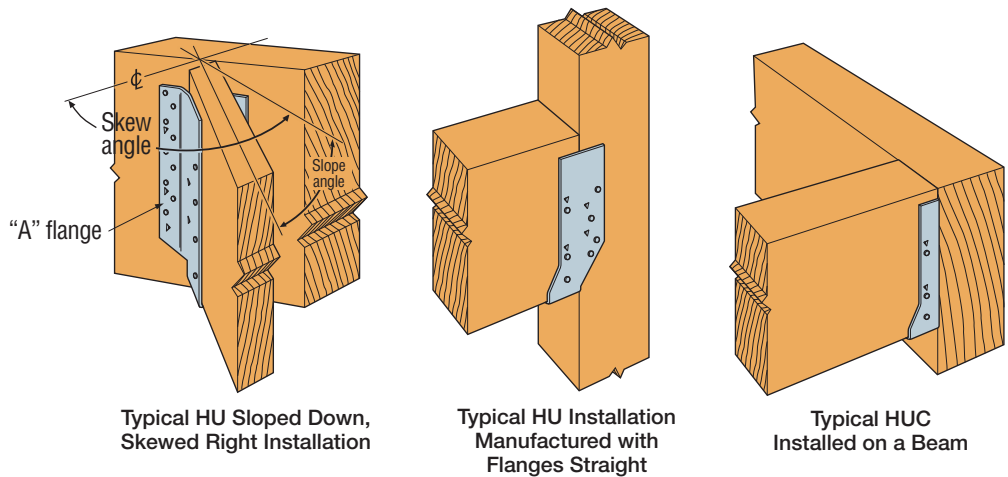
Allowable Download = Seat x Flange x Stainless Steel Nails x Other Fastener Substitutions x (Table Load)

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 sloped

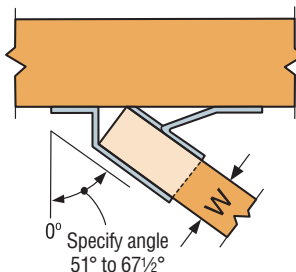
Maximum Skew Degree for Skewed HUC Hangers

Hanger Width (in.)	Maximum Skew (degree)
2⅝	31
2¾	31
2⅞	34
3	37
3⅛	41
3¼	42

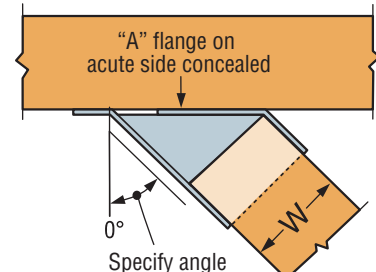
1. Widths greater than 3¼" maximum skew is 45°.



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)

Face-Mount Hangers HUS/HHUS/HGUS

Double-Shear SCL Hangers

See Hanger tables on pp. 187–192. See Hanger Options on pp. 121–123 for hanger modifications, which may result in reduced loads.

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 patented 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: See tables on pp. 187–192

Finish: Galvanized. Some products available in stainless steel or ZMAX®; see Corrosion Information, pp. 15–18

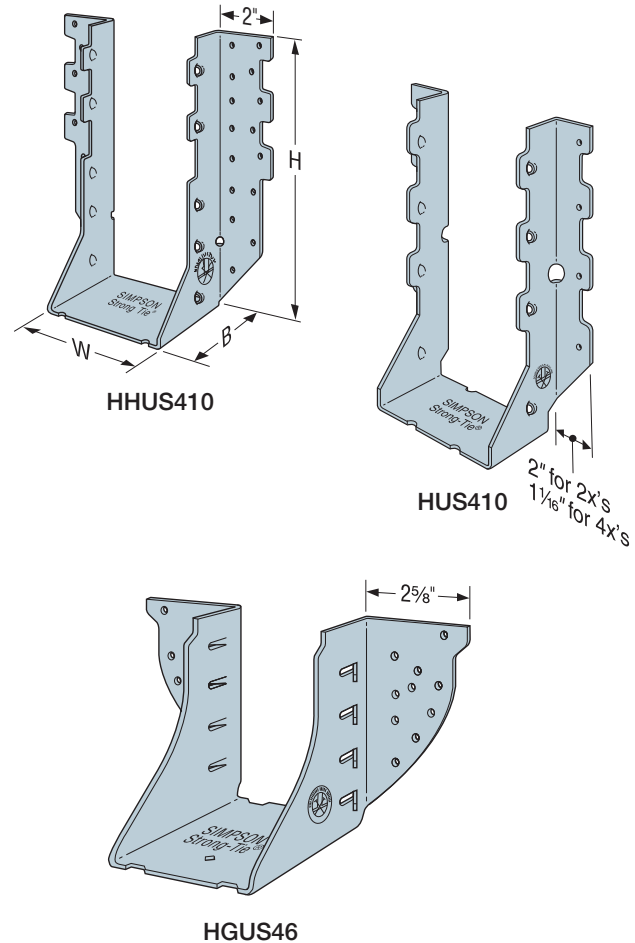
Installation:

- 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.
- 16d sinkers (0.148" dia. x 3¼" long) may be used where 10d commons are specified with no reduction in load. Where 16d commons are specified, 10d commons or 16d sinkers (0.148" dia. x 3¼" long) may be used at 0.85 of the table load.
- With 3x carrying members, use 16d x 2½" (Simpson Strong-Tie® N16) nails into the header and 16d commons into the joist with no load reduction. With 2x carrying members, use 10d x 1½" nails into the header and 10d commons into the joist, and reduce the load to 0.64 of the table value.

Options:

- Other sizes available; contact Simpson Strong-Tie for details.

Codes: Reference tables on pp. 187–192



HGUS/HHUS

See Hanger Options information on pp. 121–123.

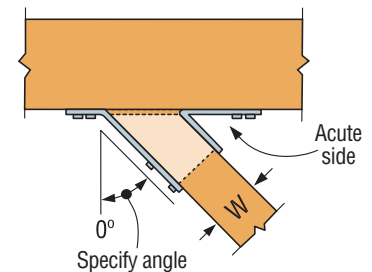
HHUS — Sloped and/or Skewed Seat

- 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
2" < W < 6"	square cut	0.46 of table load	0.41 of table load
W > 6"	bevel cut	0.85 of table load	0.41 of table load



Top View HHUS Hanger Skewed Right

(joist must be bevel cut)
All joist nails installed on the outside angle (non-acute side).

Face-Mount Hangers – Structural Composite Lumber

These products are available with additional corrosion protection. For more information, see p. 18. Codes: See p. 14 for Code Reference Key Chart.

Engineered Wood and Structural Composite Lumber Connectors

Actual Joist Size (in.)	Model No. ³	Ga.	Dimensions (in.)				Fasteners ⁵		Allowable Loads ⁴						Code Ref.		
			W	H	B	Min./Max. ²	Face	Joist	DF/SP Species Header			SPF/HF Species Header					
									Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Floor (100)	Snow (115)		Roof (125)	
1¾ x 5½	HU1.81/5	14	1⅞	5¾	2½	Min.	(12) 16d	(4) 10d x 1½"	610	1,785	2,015	2,165	1,540	1,735	1,865	I9, FL, L12	
			1⅞	5¾	2½	Max.	(16) 16d	(6) 10d x 1½"	915	2,380	2,685	2,890	2,050	2,315	2,490		
1¾ x 7¼	HU7	14	1⅞	6⅞	2½	Min.	(12) 16d	(4) 10d x 1½"	610	1,785	2,015	2,165	1,540	1,735	1,865	I9, FL, L12	
			1⅞	6⅞	2½	Max.	(16) 16d	(8) 10d x 1½"	1,515	2,380	2,685	2,890	2,050	2,315	2,490		
1¾ x 9½	HUS1.81/10	16	1⅞	8¾	3	—	(30) 16d	(10) 16d	3,000	5,135	5,295	5,400	4,705	5,105	5,195	I9, FL	
	HU9	14	1⅞	9⅞	2½	Min.	(18) 16d	(6) 10d x 1½"	915	2,680	3,020	3,250	2,305	2,605	2,800	I9, FL, L12	
			1⅞	9⅞	2½	Max.	(24) 16d	(10) 10d x 1½"	1,895	3,570	4,030	4,335	3,075	3,470	3,735		
	HUCQ1.81/9-SDS	14	1⅞	9	3	—	(8) ¼" x 1¾" SDS	(4) ¼" x 1¾" SDS	1,505	2,000	2,300	2,500	1,440	1,655	1,800		
1¾ x 11¼–11¾	HUS1.81/10	16	1⅞	8¾	3	—	(30) 16d	(10) 16d	3,000	5,135	5,295	5,400	4,705	5,105	5,195	I9, FL	
	HU11	14	1⅞	11⅞	2½	Min.	(22) 16d	(6) 10d x 1½"	915	3,275	3,695	3,970	2,820	3,180	3,425	I9, FL, L12	
			1⅞	11⅞	2½	Max.	(30) 16d	(10) 10d x 1½"	1,895	4,465	4,705	4,810	3,845	4,340	4,600		
	HUCQ1.81/11-SDS	14	1⅞	11	3	—	(10) ¼" x 1¾" SDS	(4) ¼" x 1¾" SDS	1,505	2,500	2,875	3,125	1,800	2,070	2,250		
1¾ x 14	HUS1.81/10	16	1⅞	8¾	3	—	(30) 16d	(10) 16d	3,000	5,135	5,295	5,400	4,705	5,105	5,195	I9, FL	
	U14		1⅞	10¼	2	—	(14) 16d	(6) 10d x 1½"	1,110	2,015	2,285	2,465	1,735	1,965	2,120		
	HU14	14	1⅞	13⅞	2½	Min.	(28) 16d	(8) 10d x 1½"	1,515	4,165	4,420	4,505	3,590	4,050	4,335	I9, FL, L12	
			1⅞	13⅞	2½	Max.	(36) 16d	(14) 10d x 1½"	2,015	5,055	5,275	5,420	4,615	5,000	5,130		
	HUCQ1.81/11-SDS	14	1⅞	11	3	—	(10) ¼" x 1¾" SDS	(4) ¼" x 1¾" SDS	1,505	2,500	2,875	3,125	1,800	2,070	2,250	I9, FL	
3½ x 7¼	HU48 / HUC48	14	3⅞	6⅞	2½	Min.	(10) 16d	(4) 10d	760	1,490	1,680	1,805	1,280	1,445	1,555	I9, FL, L12, L17	
			3⅞	6⅞	2½	Max.	(14) 16d	(6) 10d	1,135	2,085	2,350	2,530	1,795	2,025	2,180		
	HUS48	14	3⅞	6⅞	2	—	(6) 16d	(6) 16d	1,550	1,595	1,815	1,960	1,365	1,555	1,680		
	HGUS46	12	3⅞	4⅞	4	—	(20) 16d	(8) 16d	2,155	4,360	4,885	5,230	3,750	4,200	4,500	I9, FL, L17	
	HHUS48	14	3⅞	7⅞	3	—	(22) 16d	(8) 16d	2,000	4,210	4,770	5,140	3,615	4,095	4,415	I9, FL, L12, L17	
HGUS48	12	3⅞	7⅞	4	—	(36) 16d	(12) 16d	3,235	7,460	7,460	7,460	6,415	6,415	6,415	I9, FL, L17		
3½ x 9¼–9½	U410	16	3⅞	8¾	2	—	(14) 16d	(6) 10d	1,110	2,015	2,285	2,465	1,735	1,965	2,120	I9, FL, L12, L17	
	HUS410	14	3⅞	8⅞	2	—	(8) 16d	(8) 16d	2,990	2,125	2,420	2,615	1,820	2,070	2,240		
	HU410 / HUC410		3⅞	8¾	2½	Min.	(14) 16d	(6) 10d	1,135	2,085	2,350	2,530	1,795	2,025	2,180		
		3⅞	8¾	2½	Max.	(18) 16d	(10) 10d	1,895	2,680	3,020	3,250	2,305	2,605	2,800			
	HHUS410	14	3⅞	9	3	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875		
	HUCQ410-SDS	14	3⅞	9	3	—	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	4,680	4,955	4,955	3,370	3,570	3,570		
	HGUS48	12	3⅞	7⅞	4	—	(36) 16d	(12) 16d	3,235	7,460	7,460	7,460	6,415	6,415	6,415		I9, FL, L12
HGUS410	3⅞		9⅞	4	—	(46) 16d	(16) 16d	4,095	9,100	9,100	9,100	7,825	7,825	7,825			
3½ x 11¼–11¾	U410	16	3⅞	8¾	2	—	(14) 16d	(6) 10d	1,110	2,015	2,285	2,465	1,735	1,965	2,120	I9, FL, L12, L17	
	HUS412	14	3⅞	10½	2	—	(10) 16d	(10) 16d	3,635	2,660	3,025	3,265	2,275	2,590	2,795		
	HU412 / HUC412		3⅞	10⅞	2½	Min.	(16) 16d	(6) 10d	1,135	2,380	2,685	2,890	2,050	2,315	2,490		
			3⅞	10⅞	2½	Max.	(22) 16d	(10) 10d	1,895	3,275	3,695	3,970	2,820	3,180	3,425		
	HHUS410	14	3⅞	9	3	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875		
	HUCQ412-SDS	14	3⅞	11	3	—	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	5,460	5,560	5,560	3,930	4,000	4,000		
	HGUS48	12	3⅞	7⅞	4	—	(36) 16d	(12) 16d	3,235	7,460	7,460	7,460	6,415	6,415	6,415		
	HGUS410		3⅞	9⅞	4	—	(46) 16d	(16) 16d	4,095	9,100	9,100	9,100	7,825	7,825	7,825		
HGUS412	3⅞		10⅞	4	—	(56) 16d	(20) 16d	5,045	9,600	9,600	9,600	8,255	8,255	8,255			

See footnotes on p. 187.

Face-Mount Hangers – Structural Composite Lumber

These products are available with additional corrosion protection. For more information, see p. 18.

Codes: See p. 14 for Code Reference Key Chart.

Actual Joist Size (in.)	Model No. ³	Ga.	Dimensions (in.)				Fasteners ⁵			Allowable Loads ⁴						Code Ref.	
			W	H	B	Min./Max. ²	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 14	U414	16	3¾	10	2	—	(16) 16d	(6) 10d	1,110	2,305	2,615	2,820	1,980	2,245	2,425	I9, FL, L12, L17	
	HUS412	14	3¾	10½	2	—	(10) 16d	(10) 16d	3,635	2,660	3,025	3,265	2,275	2,590	2,795		
	HU416 / HUC416		3¾	13¾	2½	Min.	(20) 16d	(8) 10d	1,515	2,975	3,360	3,610	2,565	2,895	3,110		
			3¾	13¾	2½	Max.	(26) 16d	(12) 10d	2,015	3,870	4,365	4,695	3,330	3,760	4,045		
	HHUS410		3½	9	3	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875		
	HGUS410	12	3½	9½	4	—	(46) 16d	(16) 16d	4,095	9,100	9,100	9,100	7,825	7,825	7,825		I9, FL, L12
	HGUS412		3½	10¾	4	—	(56) 16d	(20) 16d	5,045	9,600	9,600	9,600	8,255	8,255	8,255		
	HGUS414		3½	12¾	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685		
HUCQ412-SDS	14	3¾	11	3	—	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	5,460	5,560	5,560	3,930	4,000	4,000			
3½ x 16	HU416 / HUC416	14	3¾	13¾	2½	Min.	(20) 16d	(8) 10d	1,515	2,975	3,360	3,610	2,565	2,895	3,110	I9, FL, L12, L17	
			3¾	13¾	2½	Max.	(26) 16d	(12) 10d	2,015	3,870	4,365	4,695	3,330	3,760	4,045		
	HGUS412	12	3½	10¾	4	—	(56) 16d	(20) 16d	5,045	9,600	9,600	9,600	8,255	8,255	8,255	I9, FL, L12	
			3½	12¾	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685		
	HUCQ412-SDS	14	3¾	11	3	—	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	5,460	5,560	5,560	3,930	4,000	4,000		
3½ x 18	HU416 / HUC416	14	3¾	13¾	2½	Min.	(20) 16d	(8) 10d	1,515	2,975	3,360	3,610	2,565	2,895	3,110	I9, FL, L12, L17	
			3¾	13¾	2½	Max.	(26) 16d	(12) 10d	2,015	3,870	4,365	4,695	3,330	3,760	4,045		
	HGUS412	12	3½	10¾	4	—	(56) 16d	(20) 16d	5,045	9,600	9,600	9,600	8,255	8,255	8,255	I9, FL, L12	
			3½	12¾	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685		
	HUCQ412-SDS	14	3¾	11	3	—	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,510	5,460	5,560	5,560	3,930	4,000	4,000		
5¼ x 7¼	HU68 / HUC68	14	5½	5¼	2½	Min.	(10) 16d	(4) 16d	900	1,490	1,680	1,805	1,280	1,445	1,555	I9, FL	
			5½	5¼	2½	Max.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	1,795	2,025	2,180		
	HGUS5.50/8	12	5½	6¼	4	—	(36) 16d	(12) 16d	3,235	7,460	7,460	7,460	6,415	6,415	6,415		
5¼ x 9¼–9½	HU610 / HUC610	14	5½	7¾	2½	Min.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	1,795	2,025	2,180	I9, FL, L12, L17	
			5½	7¾	2½	Max.	(18) 16d	(8) 16d	1,795	2,680	3,020	3,250	2,305	2,605	2,800		
	HHUS5.50/10	12	5½	9	3	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12	
	HUCQ610-SDS		5½	9	3	—	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,520	4,680	5,380	5,715	3,370	3,875	4,115		
	HGUS5.50/10		5½	8¼	4	—	(46) 16d	(16) 16d	4,095	9,100	9,100	9,100	7,825	7,825	7,825		
5¼ x 11¼–11¾	HU612 / HUC612	14	5½	9¾	2½	Min.	(16) 16d	(6) 16d	1,345	2,380	2,685	2,890	2,050	2,315	2,490	I9, FL, L12, L17	
			5½	9¾	2½	Max.	(22) 16d	(8) 16d	1,795	3,275	3,695	3,970	2,820	3,180	3,425		
	HHUS5.50/10	12	5½	9	3	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12	
	HUCQ612-SDS		5½	11	3	—	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,520	5,315	5,315	5,315	3,825	3,825	3,825		
	HGUS5.50/12		5½	10½	4	—	(56) 16d	(20) 16d	5,045	9,600	9,600	9,600	8,255	8,255	8,255		
5¼ x 14	HU616 / HUC616	14	5½	12¼	2½	Min.	(20) 16d	(8) 16d	1,795	2,975	3,360	3,610	2,565	2,895	3,110	I9, FL, L12, L17	
			5½	12¼	2½	Max.	(26) 16d	(12) 16d	2,695	3,870	4,365	4,695	3,330	3,760	4,045		
	HHUS5.50/10	12	5½	9	3	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12	
	HUCQ612-SDS		5½	11	3	—	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	2,520	5,315	5,315	5,315	3,825	3,825	3,825		
	HGUS5.50/14		5½	12½	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685		

1. Uplift loads based on DF/SP lumber and have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern. 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.
 2. Min. nailing quantity and load values — fill all round holes;
 Max. nailing quantity and load values — fill all round and triangle holes.

3. Hangers sorted in order of recommended selection for best overall performance and installation value.
 4. Allowable downloads are based on a joist bearing capacity of 750 psi.
 5. Nails: 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

Face-Mount Hangers – Structural Composite Lumber

These products are available with additional corrosion protection. For more information, see p. 18.

Codes: See p. 14 for Code Reference Key Chart.

Actual Joist Size (in.)	Model No. ³	Ga.	Dimensions (in.)				Fasteners ⁵		Allowable Loads ⁴						Code Ref.	
			W	H	B	Min./Max. ²	Face	Joist	DF/SP Species Header			SPF/HF Species Header				
									Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Floor (100)	Snow (115)		Roof (125)
5 1/4 x 16	HU616 / HUC616	14	5 1/2	12 1/16	2 1/2	Min.	(20) 16d	(8) 16d	1,795	2,975	3,360	3,610	2,565	2,895	3,110	I9, FL, L12, L17
			5 1/2	12 1/16	2 1/2	Max.	(26) 16d	(12) 16d	2,695	3,870	4,365	4,695	3,330	3,760	4,045	
	HHUS5.50/10	12	5 1/2	9	3	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12
	HUCQ612-SDS		5 1/2	11	3	—	(14) 1/4" x 2 1/2" SDS	(6) 1/4" x 2 1/2" SDS	2,520	5,315	5,315	5,315	3,825	3,825	3,825	
HGUS5.50/14		5 1/2	12 1/2	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685		
5 1/4 x 18	HU616 / HUC616	14	5 1/2	12 1/16	2 1/2	Min.	(20) 16d	(8) 16d	1,795	2,975	3,360	3,610	2,565	2,895	3,110	I9, FL, L12, L17
			5 1/2	12 1/16	2 1/2	Max.	(26) 16d	(12) 16d	2,695	3,870	4,365	4,695	3,330	3,760	4,045	
	HHUS5.50/10	12	5 1/2	9	3	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12
	HUCQ612-SDS		5 1/2	11	3	—	(14) 1/4" x 2 1/2" SDS	(6) 1/4" x 2 1/2" SDS	2,520	5,315	5,315	5,315	3,825	3,825	3,825	
HGUS5.50/14		5 1/2	12 1/2	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685		
7 x 9 1/4–9 1/2	HU410-2 / HUC410-2	14	7 1/8	9 1/8	2 1/2	Min.	(14) 16d	(6) 16d	1,345	2,085	2,350	2,530	1,795	2,025	2,180	I9, FL, L12, L17
			7 1/8	9 1/8	2 1/2	Max.	(18) 16d	(8) 16d	1,795	2,680	3,020	3,250	2,305	2,605	2,800	
	HHUS7.25/10	12	7 1/4	9	3 3/8	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12, L17
HGUS7.25/10	7 1/4		8 5/8	4	—	(46) 16d	(16) 16d	4,095	9,100	9,100	9,100	7,825	7,825	7,825		
7 x 11 1/4–11 7/8	HU412-2 / HUC412-2	14	7 1/8	11 1/8	2 1/2	Min.	(16) 16d	(6) 16d	1,345	2,380	2,685	2,890	2,050	2,315	2,490	I9, FL, L12, L17
			7 1/8	11 1/8	2 1/2	Max.	(22) 16d	(8) 16d	1,795	3,275	3,695	3,970	2,820	3,180	3,425	
	HHUS7.25/10	12	7 1/4	9	3 3/8	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12, L17
	HGUS7.25/12		7 1/4	10 5/8	4	—	(56) 16d	(20) 16d	5,045	9,600	9,600	9,600	8,255	8,255	8,255	
7 x 14	HU414-2 / HUC414-2	14	7 1/8	13 7/8	2 1/2	Min.	(20) 16d	(8) 16d	1,795	2,975	3,360	3,610	2,565	2,895	3,110	I9, FL, L12
			7 1/8	13 7/8	2 1/2	Max.	(26) 16d	(12) 16d	2,695	3,870	4,365	4,695	3,330	3,760	4,045	
	HHUS7.25/10	12	7 1/4	9	3 3/8	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12
	HGUS7.25/14		7 1/4	12 5/8	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685	
7 x 16	HU414-2 / HUC414-2	14	7 1/8	13 7/8	2 1/2	Min.	(20) 16d	(8) 16d	1,795	2,975	3,360	3,610	2,565	2,895	3,110	I9, FL, L12
			7 1/8	13 7/8	2 1/2	Max.	(26) 16d	(12) 16d	2,695	3,870	4,365	4,695	3,330	3,760	4,045	
	HHUS7.25/10	12	7 1/4	9	3 3/8	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12
	HGUS7.25/14		7 1/4	12 7/8	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685	
7 x 18	HU414-2 / HUC414-2	14	7 1/8	13 7/8	2 1/2	Min.	(20) 16d	(8) 16d	1,795	2,975	3,360	3,610	2,565	2,895	3,110	I9, FL, L12
			7 1/8	13 7/8	2 1/2	Max.	(26) 16d	(12) 16d	2,695	3,870	4,365	4,695	3,330	3,760	4,045	
	HHUS7.25/10	12	7 1/4	9	3 3/8	—	(30) 16d	(10) 16d	2,845	5,660	6,380	6,830	4,870	5,490	5,875	I9, FL, L12
	HGUS7.25/14		7 1/4	12 7/8	4	—	(66) 16d	(22) 16d	5,515	10,100	10,100	10,100	8,685	8,685	8,685	
7 x 14 to 30	For additional hangers see HGU/HHGU on pp. 194–195.															

1. Uplift loads based on DF/SP lumber and have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern. 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.
 2. Min. nailing quantity and load values — fill all round holes;
 Max. nailing quantity and load values — fill all round and triangle holes.

3. Hangers sorted in order of recommended selection for best overall performance and installation value.
 4. Allowable downloads are based on a joist bearing capacity of 750 psi.
 5. **Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

THAI

I-Joist and Structural Composite Lumber Hanger

Designed for I-joists, the THAI has extra long straps and can be field-formed to give height adjustability and top flange hanger convenience. Positive angle nailing helps eliminate splitting of the I-joist's bottom flange.

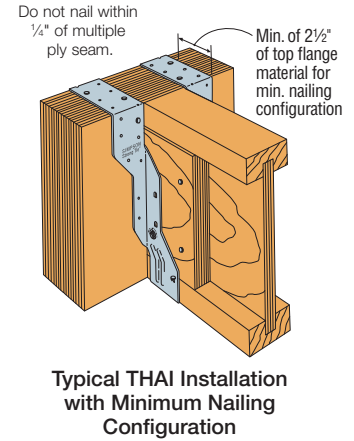
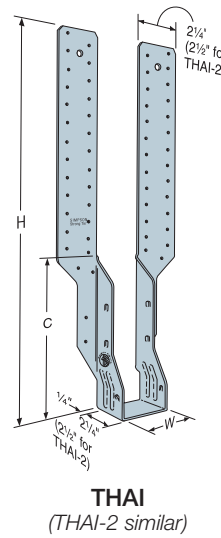
Material: THAI-2 — 14 gauge; all others — 18 gauge

Finish: Galvanized

Installation:

- Factory-order the THAI-2 for hanger width needed. See table for allowable widths.
- Use all specified fasteners. Verify that the header can take the fasteners specified in the table.
- Web stiffeners are required for all I-joists used with these hangers.
- When a total of 20 face nails are used in THAI straps, or 30 face nails are used in THAI-2 straps, the maximum load-carrying capacity is achieved.
- Reduce load given by allowable nail shear capacity for each nail less than maximum.
- A minimum nailing configuration is shown for top nailing installations. The strap must be field-formed over the top of the header by a minimum of 2½".
- Uplift — Lowest face nails must be filled to achieve uplift loads.

Codes: See p. 14 for Code Reference Key Chart.



Engineered Wood and Structural Composite Lumber Connectors

Joist Dimensions (in.)		Model No.	Hanger Dimensions (in.)			Code Ref.
Width	Depth		W ₁	H	C	
1½	9¼ – 14	THAI222	1⅞	22⅞	9⅞	I8, L15, FL
1¾	9¼ – 14	THAI1.81/22	1⅞	22¾	9¼	
2	9¼ – 14	THAI2.06/22	2⅞	22⅝	9⅞	
2⅞	9¼ – 14	THAI2.1/22	2⅞	22⅞	9⅞	
2¼ to 2⅞	9¼ – 14	THAI3522	2⅞	22½	9	
2½	9¼ – 14	THAI322	2⅞	22⅞	8⅞	
3½	9¼ – 14	THAI422	3⅞	21⅞	8⅞	
3 to 5¼	9¼ – 14	THAI-2	3⅞ to 5⅞	21⅞	8⅞	

1. The W dimension should be ordered at ⅞" to ⅝" greater than the joist width.

Nailing Options	Fasteners			Uplift (160)	Allowable Loads								
	Top	Face	Joist		LVL Header			DF/SP Header			SPF/HF Header		
					Floor (100)	Snow (115)	Roof (125)	Floor (100)	Snow (115)	Roof (125)	Floor (100)	Snow (115)	Roof (125)
THAI minimum	(4) 10d x 1½"	(2) 10d x 1½"	(2) 10d x 1½"	—	1,400	1,400	1,400	1,400	1,400	1,400	1,060	1,060	1,060
	(4) 10d	(2) 10d	(2) 10d x 1½"	—	1,715	1,715	1,715	1,835	1,835	1,835	1,590	1,590	1,590
THAI maximum	—	(20) 10d	(2) 10d x 1½"	215	2,200	2,200	2,200	2,200	2,200	2,200	1,920	2,200	2,200
THAI-2 minimum	(4) 10d	(2) 10d	(2) 10d x 1½"	—	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095	2,095
THAI-2 maximum	—	(30) 10d	(2) 10d x 1½"	215	3,390	3,900	4,135	3,390	3,900	4,135	2,940	3,310	3,310

1. Uplift loads are based on DF/SP lumber and have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern. For SPF/HF use 0.86 x DF/SP uplift load.
2. The minimum header depth to achieve the maximum nail configuration is 16".
3. For the THAI3522 supporting a 2¼" joist, the download shall be the lesser of the table load or 1,400 lb.
4. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See p. 26–27 for other nail sizes and information.

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 Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws to make installation fast and easy, with no pre-drilling 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 GU's. (Note: lag screws will not achieve the same loads.)
- Alternatively, the Strong-Drive SDS ¼" x 2½" face screws supplied with these hangers may be replaced with SDS ¼" x 3½" or SDS ¼" x 5" screws for 2-ply or 3-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:

- See Hanger Options information on pp. 121–123.
- 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
- LGU with W 3¼" or less, MGU with W 4" or less and HGU with W 4⅛" or less, flanges cannot be concealed.

Skewed

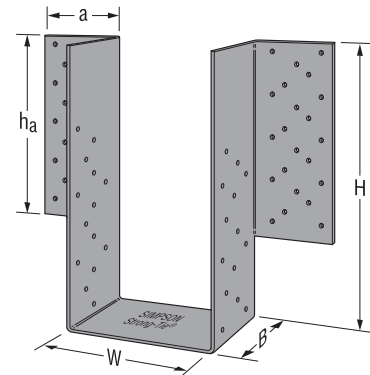
- LGU, MGU, HGU, LGUM and HGUM hangers are available skewed up to 45°.
- Apply the following reduction factors to published loads:

Reduction Factors for Skewed LGU, MGU, HGU

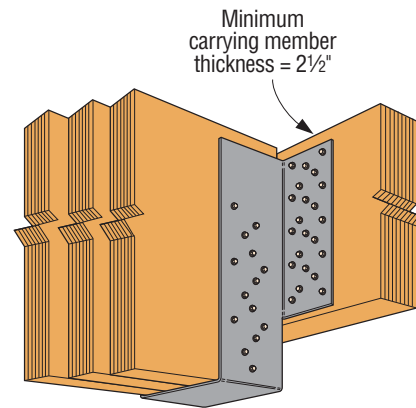
Model	Beam Cut	Download	Uplift
LGU	Square cut	0.90	0.60
	Bevel cut	0.90	0.60
MGU/HGU less than 6" wide	Square cut	0.75	0.65
	Bevel cut	0.80	0.65
MGU/HGU 6" and wider	Bevel cut	0.80	0.55

- Concealed flanges are not available with skewed models.

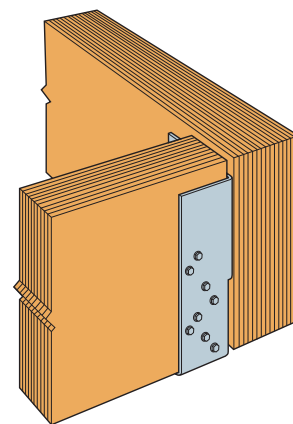
Codes: See p. 14 for Code Reference Key Chart



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. 18.

Actual Carried Beam Width (in.)	Model No.	Ga.	Dimensions (in.)					SDS Fasteners		Allowable Loads				Code Ref.
			W	H (min.)	B	h _a	a	Face	Joist	DF/SP		SPF/HF		
										Uplift	Download	Uplift	Download	
										160	100/115/125	160	100/115/125	
3½	LGU3.63-SDS	10	3½	8	4½	7¾	¾	(16) ¼" x 2½"	(12) ¼" x 2½"	5,555	6,720	4,000	4,840	19, FL, L12
3½	MGU3.63-SDS	10	3½	9¼	4½	8¾	4	(24) ¼" x 2½"	(16) ¼" x 2½"	7,260	9,450	5,225	6,805	
3½	HGU3.63-SDS	7	3½	11	5¼	10¾	4¼	(36) ¼" x 2½"	(24) ¼" x 2½"	9,895	14,145	7,125	10,185	
5¼	MGU5.50-SDS	10	5½	9¼	4½	8¾	4	(24) ¼" x 2½"	(16) ¼" x 2½"	7,260	9,450	5,225	6,805	
5¼	HGU5.50-SDS	7	5½	11	5¼	10¾	4¼	(36) ¼" x 2½"	(24) ¼" x 2½"	9,895	14,145	7,125	10,185	
5¼	HHGU5.50-SDS	3	5½	13	5¼	12¾	4¼	(44) ¼" x 2½"	(28) ¼" x 2½"	14,550	17,845	10,475	12,850	
7	HGU7.25-SDS	7	7¼	11	5¼	10¾	4¼	(36) ¼" x 2½"	(24) ¼" x 2½"	9,895	14,145	7,125	10,185	
7	HHGU7.25-SDS	3	7¼	13	5¼	12¾	4¼	(44) ¼" x 2½"	(28) ¼" x 2½"	14,550	17,845	10,475	12,850	

- Uplift loads have been increased for earthquake and wind loading, with no further increase allowed.
- Specify H dimension. Maximum H = 30".
- Header height must be at least as tall as flange height (h_a).

DU/DHU/DHUTF

Drywall Hangers

The DU/DHU face-mount and the DHUTF top-mount hangers are designed to carry joist floor loads to a wood stud wall through two layers of 5/8" gypsum board (drywall). These hangers install after the drywall is in place. The hangers come in sizes that accommodate most joists used in multi-family construction including I-joists and trusses.

Material: DU — 14 gauge; DHU and DHUTF — 12 gauge

Finish: Galvanized

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

- Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws are provided with the hanger.
- Drywall is installed first.
- DU and DHU are mounted with top of hanger flush with top of wall and tight to the drywall.
- Wall top plates must be restrained to prevent rotation. Use a stud plate tie connector at the back of each stud or provide equivalent restraint by another method as determined by Designer.
- Upper plate splices must occur at a stud location.

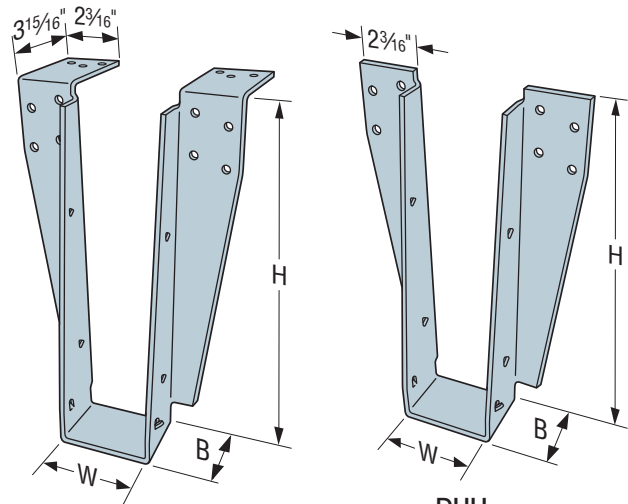
Options: • The DHU may be ordered with one flange concealed for widths at least 2 1/2" wide; specify which flange when ordering. Use 74% of the table downloads and 100% of table uplift loads.

- The DHU / DHUTF may be ordered skewed up to 45°. Use 75% of the table downloads and 50% of table uplift loads.

Codes: See p. 14 for Code Reference Key Chart

Two-Hour, Fire-Rated Wall

Simpson Strong-Tie has completed ASTM E814 standard testing at an accredited laboratory. The use of the DU/DHU/DHUTF hangers does not reduce the two-hour, fire wall assembly rating. The hangers tested provide an F (flame) and T (temperature) rating.



DHUTF
U.S. Patent 9,394,680

DHU
(DU similar)
U.S. Patent 9,394,680

Fastener Table

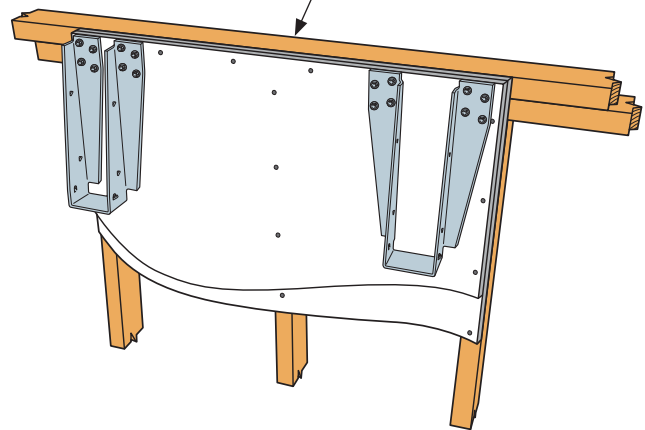
Model	Ga.	B (in.)	Fasteners		
			Joist	Face	Top
DU	14	2	(2) 10d x 1 1/2"	(4) 1/4" x 3.5" SDS	—
DHU	12	2.5	(2) 10d x 1 1/2"	(8) 1/4" x 3.5" SDS	—
DHUTF	12	2.5	(2) 10d x 1 1/2"	(8) 1/4" x 3.5" SDS	(6) 10d x 1 1/2"

Allowable Loads

Model	Condition ¹	DF/SP Allowable Loads		SPF/HF Allowable Loads		Code Ref.
		Uplift (160) ^{3,4}	Down (100) ²	Uplift (160) ³	Down (100) ²	
DU	Over (2) layers 5/8" drywall	95	1,110	170	880	19
DHU DHUTF	Over (2) layers 5/8" drywall	95	1,410	170	1,185	

1. Loads assume 5/8" Type X drywall attached per IBC. Wall assembly must consist of minimum two 2x4 plate members with studs spaced not more than 16" o.c. For alternate solutions to mounting over single layer of drywall, refer to the technical bulletin T-C-TFWALL at strongtie.com.
2. Hangers spaced closer than 16" o.c. shall reduce allowable load proportionately.
3. Triangle nail holes may be filled with (4) additional 10d x 1 1/2" to achieve an Allowable Uplift Load of 750 lb.
4. DF carried members with minimum 1 1/2" x 2 1/2" solid sawn chord dimension may increase Allowable Uplift Load to 170 lb.
5. Allowable downloads may be increased to 1,885 lb. for DF/SP and 1,585 lb. for SPF/HF using the DHU3.56/24 or DHUTF3.56/24 models.
6. For DHU/DHUTF two-sided (back-to-back) application on a 2x6 wall, use 1,200 lb. allowable download for DF/SP plates and use 1,005 lb. for SPF/HF plates.
7. For DU two-sided (back-to-back) application on a 2x6 wall use 1,075 lb. allowable download for DF/SP plates and use 880 lb. for SPF/HF plates.
8. For installations of two layers of gypsum wall board over 5/8" maximum wood structural panel, the DHU/DHUTF has a capacity of 1,975 lb. allowable download for DF/SP plates and has a capacity of 1,660 lb. for SPF/HF plates.
9. For the DU, if a 5/8" structural wood panel is used between the drywall and studs, use 1,110 lb. allowable download for DF/SP plates and use 880 lb. for SPF/HF plates.

Where gravity load on top of wall is less than 150 plf, provide plate rotation resistance per Designer.

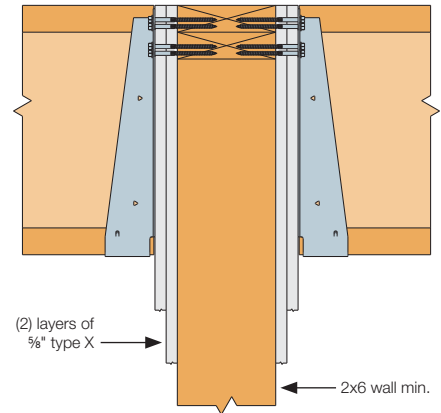


Typical Installation Showing DHU with Concealed Flange Option (at left) and a DHU Standard Installation

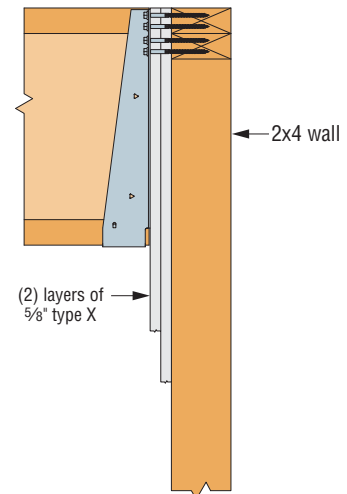
DU/DHU/DHUTF

Drywall Hangers (cont.)

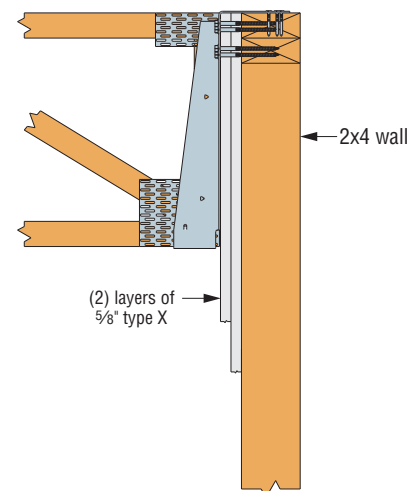
Joist Size (in.)	Face Mount		Top Flange	Dimensions (in.)	
	DU Models	DHU Models	DHUTF Models	W	H
2x10	DU210	DHU210	DHU210TF	1 ⁹ / ₁₆	9 ¹ / ₈
2x12	DU212	DHU212	DHU212TF	1 ⁹ / ₁₆	11 ¹ / ₈
1 ³ / ₄ x 9 ¹ / ₂	DU1.81/9.5	DHU1.81/9.5	DHU1.81/9.5TF	1 ¹ / ₁₆	9 ⁷ / ₁₆
1 ³ / ₄ x 11 ⁷ / ₈	DU1.81/11.88	DHU1.81/11.88	DHU1.81/11.88TF	1 ¹ / ₁₆	11 ¹ / ₁₆
1 ³ / ₄ x 14	DU1.81/14	DHU1.81/14	DHU1.81/14TF	1 ¹ / ₁₆	13 ¹ / ₁₆
1 ³ / ₄ x 16	DU1.81/16	DHU1.81/16	DHU1.81/16TF	1 ¹ / ₁₆	15 ¹ / ₁₆
2 x 9 ¹ / ₂	DU2.1/9.5	DHU2.1/9.5	DHU2.1/9.5TF	2 ¹ / ₈	9 ⁷ / ₁₆
2 x 11 ⁷ / ₈	DU2.1/11.88	DHU2.1/11.88	DHU2.1/11.88TF	2 ¹ / ₈	11 ¹ / ₁₆
2 x 14	DU2.1/14	DHU2.1/14	DHU2.1/14TF	2 ¹ / ₈	13 ¹ / ₁₆
2 x 16	DU2.1/16	DHU2.1/16	DHU2.1/16TF	2 ¹ / ₈	15 ¹ / ₁₆
2 ¹ / ₁₆ x 9 ¹ / ₂	DU2.1/9.5	DHU2.1/9.5	DHU2.1/9.5TF	2 ¹ / ₈	9 ⁷ / ₁₆
2 ¹ / ₁₆ x 11 ⁷ / ₈	DU2.1/11.88	DHU2.1/11.88	DHU2.1/11.88TF	2 ¹ / ₈	11 ¹ / ₁₆
2 ¹ / ₁₆ x 14	DU2.1/14	DHU2.1/14	DHU2.1/14TF	2 ¹ / ₈	13 ¹ / ₁₆
2 ¹ / ₁₆ x 16	DU2.1/16	DHU2.1/16	DHU2.1/16TF	2 ¹ / ₈	15 ¹ / ₁₆
2 ⁵ / ₁₆ x 9 ¹ / ₂	DU2.37/9.5	DHU2.37/9.5	DHU2.37/9.5TF	2 ³ / ₈	9 ⁷ / ₁₆
2 ⁵ / ₁₆ x 11 ⁷ / ₈	DU2.37/11.88	DHU2.37/11.88	DHU2.37/11.88TF	2 ³ / ₈	11 ¹ / ₁₆
2 ⁵ / ₁₆ x 14	DU2.37/14	DHU2.37/14	DHU2.37/14TF	2 ³ / ₈	13 ¹ / ₁₆
2 ⁵ / ₁₆ x 16	DU2.37/16	DHU2.37/16	DHU2.37/16TF	2 ³ / ₈	15 ¹ / ₁₆
2 ⁵ / ₁₆ x 18	—	DHU2.37/18	DHU2.37/18TF	2 ³ / ₈	17 ¹ / ₁₆
2 ⁵ / ₁₆ x 20	—	DHU2.37/20	DHU2.37/20TF	2 ³ / ₈	19 ¹ / ₁₆
2 ¹ / ₂ x 9 ¹ / ₂	—	DHU2.56/9.5	DHU2.56/9.5TF	2 ⁹ / ₁₆	9 ⁷ / ₁₆
2 ¹ / ₂ x 11 ⁷ / ₈	—	DHU2.56/11.88	DHU2.56/11.88TF	2 ⁹ / ₁₆	11 ¹ / ₁₆
2 ¹ / ₂ x 14	—	DHU2.56/14	DHU2.56/14TF	2 ⁹ / ₁₆	13 ¹ / ₁₆
2 ¹ / ₂ x 16	—	DHU2.56/16	DHU2.56/16TF	2 ⁹ / ₁₆	15 ¹ / ₁₆
2 ¹ / ₂ x 18	—	DHU2.56/18	DHU2.56/18TF	2 ⁹ / ₁₆	17 ¹ / ₁₆
2 ¹ / ₂ x 20	—	DHU2.56/20	DHU2.56/20TF	2 ⁹ / ₁₆	19 ¹ / ₁₆
3 ¹ / ₂ x 9 ¹ / ₂	—	DHU3.56/9.5	DHU3.56/9.5TF	3 ³ / ₁₆	9 ⁷ / ₁₆
3 ¹ / ₂ x 11 ⁷ / ₈	—	DHU3.56/11.88	DHU3.56/11.88TF	3 ³ / ₁₆	11 ¹ / ₁₆
3 ¹ / ₂ x 14	—	DHU3.56/14	DHU3.56/14TF	3 ³ / ₁₆	13 ¹ / ₁₆
3 ¹ / ₂ x 16	—	DHU3.56/16	DHU3.56/16TF	3 ³ / ₁₆	15 ¹ / ₁₆
3 ¹ / ₂ x 18	—	DHU3.56/18	DHU3.56/18TF	3 ³ / ₁₆	17 ¹ / ₁₆
3 ¹ / ₂ x 20	—	DHU3.56/20	DHU3.56/20TF	3 ³ / ₁₆	19 ¹ / ₁₆
3 ¹ / ₂ x 22	—	DHU3.56/22	DHU3.56/22TF	3 ³ / ₁₆	21 ¹ / ₁₆
3 ¹ / ₂ x 24	—	DHU3.56/24	DHU3.56/24TF	3 ³ / ₁₆	23 ¹ / ₁₆



Two-Sided Installation Over (2) Layers of Drywall



Typical Installation over (2) Layers of Drywall



Typical Installation over (2) Layers of Drywall

SUR/SUL/HSUR/HSUL

Skewed 45° Hangers for I-Joist and SCL



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 SUR/L1.81, 2.06, 2.1, 2.37, 2.56 and HSUR/L series are 45° skewed hangers designed specifically to ease the installation of single and double I-joists. In addition to Positive Angle Nailing these hangers encapsulate the top flange of the I-joist, so no web stiffeners are required for standard installation.

The full range of 45° skewed hangers feature obround nail holes on the acute side allowing nails to be easily installed parallel to the joist. Installation is further simplified with no required bevel cuts.

Material: See table on p. 199

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

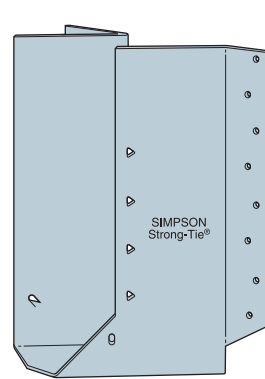
Installation:

- Use all specified fasteners; see General Notes.
- Illustrations show left and right skews SUR/L (SUR = skewed right; SUL = skewed left).
- The joist end may be square cut or bevel cut.
- Fill all round and obround nail holes with specified fasteners to achieve table loads. Where noted, triangle holes in the joist flange may be filled for additional uplift capacity (see footnote on p. 199).
- For I-joists with flanges less than 1 5/16", web stiffeners are required for all double joist hangers when using hangers that are 14 gauge and lighter.

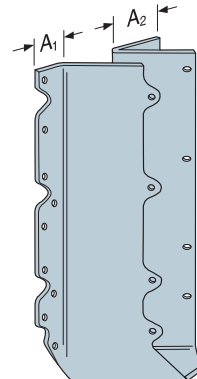
Options:

- These hangers will accommodate a 40° to 50° skew.
- Available with the A2 flange turned in on (2) 2x and 4x models only (see illustration). For example, specify HSURC410, HSULC410, SURC210-2, or SULC210-2.

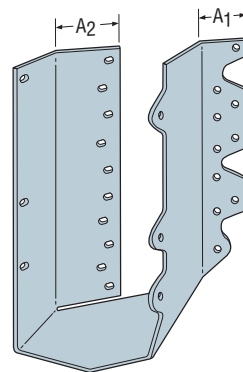
Codes: See p. 14 for Code Reference Key Chart



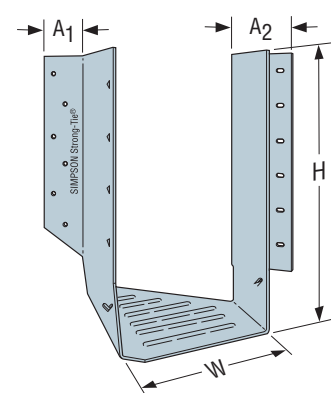
SUL2.56/11



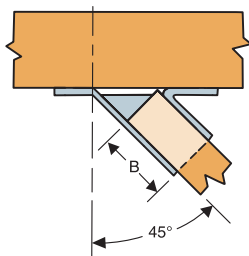
HSUR414



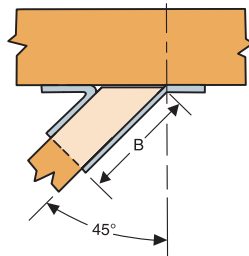
HSULC
Available for 3"- and 3 1/2"-wide joists only



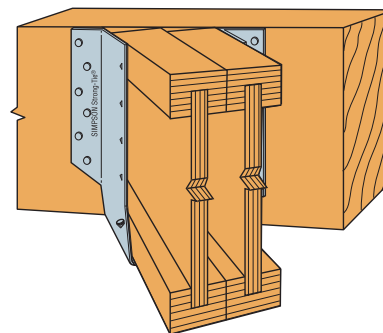
HSUR4.12/9



Typical SUR Installation with Square Cut Joist
(HSUR similar)



Typical SUL Installation with Bevel Cut Joist
(HSUL similar)



Typical HSUR4.12/9 Installation

LSU/LSSU/LSSUI

Adjustable Rafter 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.

This series attaches joists or rafters to headers, sloped up or down, and skewed left or right, up to 45°.

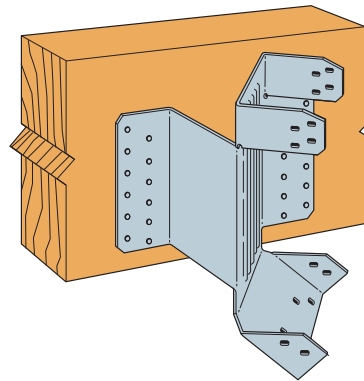
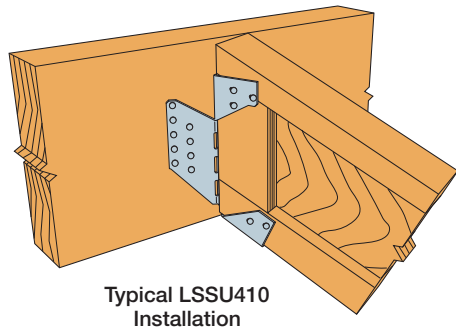
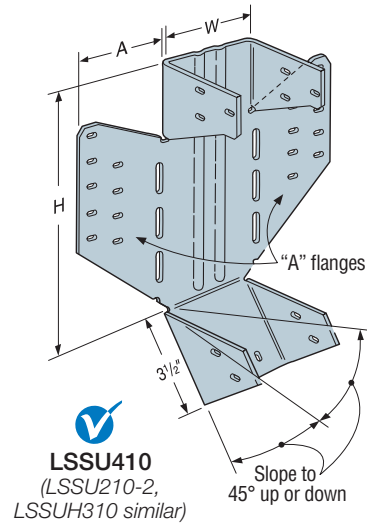
Material: See table

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- Attach the sloped joist at both ends so that the horizontal force developed by the slope is fully supported by the supporting members
- Web stiffeners required for I-joist applications
- To see an installation video on this product, visit strongtie.com

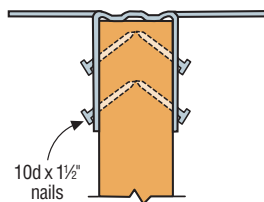
Codes: See p. 14 for Code Reference Key Chart



The LSU5.12 must be factory-skewed 0° to 45°. It may be field-sloped to 45°. (LSU4.12, LSU4.28 and LSU3510-2 similar)
Hanger shown skewed right.

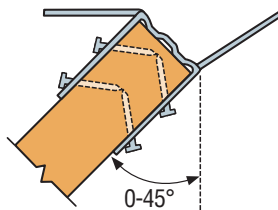
LSU and LSSU Installation Sequence

(For Skewed or Sloped/Skewed Applications)



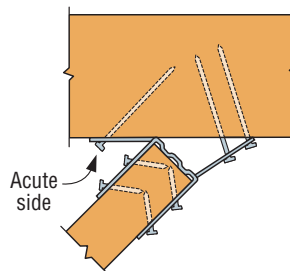
Step 1

Nail hanger to slope-cut carried member, installing seat nail first. No bevel necessary. Install joist nails at 45° angle.



Step 2

Skew flange from 0-45°. Bend other flange back along centerline of slots until it meets the header. Bend one time only.



Step 3

Attach hanger to the carrying member, acute angle side first (see footnote 5). Install nails at an angle.

LSU/LSSU/LSSUI

Adjustable Rafter Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Actual Joist Width (in.)	Model No.	Ga.	Dimensions (in.)			Fasteners		Allowable Loads								Code Ref.
			W	H	A	Face	Joist	DF/SP Species Header				SPF/HF Species Header				
								Uplift (160)	Floor (100)	Roof		Uplift (160)	Floor (100)	Roof		
										Snow (115)	Const. (125)			Snow (115)	Const. (125)	
Sloped Only Hangers																
1½	LSSU210	18	1⅞	8½	1⅝	(10) 10d	(7) 10d x 1½"	875	1,110	1,275	1,390	625	960	1,105	1,200	I8, L15, FL
1¾	LSSUI25	18	1⅞	8½	1½	(10) 10d	(7) 10d x 1½"	875	1,110	1,275	1,390	625	960	1,105	1,200	
2	LSSUI2.06	18	2⅞	8½	1¾	(10) 10d	(7) 10d x 1½"	875	1,110	1,275	1,390	625	960	1,105	1,200	170
2¼	LSSU2.1	18	2⅞	8½	1¾	(10) 10d	(7) 10d x 1½"	875	1,110	1,275	1,390	625	960	1,105	1,200	I8, L15, FL
2½ - 2⅝	LSSUI35	18	2⅞	8½	1⅝	(10) 10d	(7) 10d x 1½"	875	1,110	1,275	1,390	625	960	1,105	1,200	
2½ - 2⅞	LSSUH310	16	2⅞	8½	3⅞	(18) 16d	(12) 10d x 1½"	1,150	2,295	2,295	2,295	990	1,930	1,930	1,930	170
3	LSSU210-2	16	3⅞	8½	2⅞	(18) 16d	(12) 10d x 1½"	1,150	2,430	2,795	3,035	990	2,160	2,485	2,700	I8, L15, FL
3½	LSSU410	16	3⅞	8½	2⅝	(18) 16d	(12) 10d x 1½"	1,150	2,430	2,795	3,035	990	2,160	2,485	2,700	
4	LSU4.12	14	4⅞	9	2¼	(24) 16d	(16) 10d x 1½"	1,150	3,215	3,700	4,020	990	2,785	3,200	3,480	170
4⅞	LSU4.28	14	4¼	9	2⅝	(24) 16d	(16) 10d x 1½"	1,150	3,215	3,700	4,020	990	2,785	3,200	3,480	
4½ - 4¾	LSU3510-2	14	4¾	8⅞	3⅝	(24) 16d	(16) 10d x 1½"	1,150	3,215	3,700	4,020	990	2,785	3,200	3,480	
5	LSU5.12	14	5⅞	9	2¼	(24) 16d	(16) 10d x 1½"	885	3,215	3,700	3,785	760	2,785	3,200	3,280	
Skewed Hangers or Sloped and Skewed Hangers																
1½	LSSU210	18	1⅞	8½	1⅝	(9) 10d	(7) 10d x 1½"	785	995	1,145	1,205	625	860	995	1,050	I8, L15, FL
1¾	LSSUI25	18	1⅞	8½	1½	(9) 10d	(7) 10d x 1½"	785	995	1,145	1,205	625	860	995	1,050	
2	LSSUI2.06	18	2⅞	8½	1¾	(9) 10d	(7) 10d x 1½"	785	995	1,145	1,205	625	860	995	1,050	170
2¼	LSSU2.1	18	2⅞	8½	1¾	(9) 10d	(7) 10d x 1½"	785	995	1,145	1,205	625	860	995	1,050	I8, L15, FL
2½ - 2⅝	LSSUI35	18	2⅞	8½	1⅝	(9) 10d	(7) 10d x 1½"	785	995	1,145	1,205	625	860	995	1,050	
2½ - 2⅞	LSSUH310	16	2⅞	8½	3⅞	(14) 16d	(12) 10d x 1½"	1,150	1,600	1,600	1,600	990	1,385	1,385	1,385	170
3	LSSU210-2	16	3⅞	8½	2⅞	(14) 16d	(12) 10d x 1½"	1,150	1,625	1,625	1,625	990	1,365	1,365	1,365	I8, L15, FL
3½	LSSU410	16	3⅞	8½	2⅝	(14) 16d	(12) 10d x 1½"	1,150	1,625	1,625	1,625	990	1,365	1,365	1,365	
4	LSU4.12 ³	14	4⅞	9	2¼	(24) 16d	(16) 10d x 1½"	1,150	2,300	2,300	2,300	990	1,990	1,990	1,990	170
4⅞	LSU4.28 ³	14	4¼	9	2⅝	(24) 16d	(16) 10d x 1½"	1,150	2,300	2,300	2,300	990	1,990	1,990	1,990	
4½ - 4¾	LSU3510-2 ³	14	4¾	8⅞	3⅝	(24) 16d	(16) 10d x 1½"	1,150	2,300	2,300	2,300	990	1,990	1,990	1,990	
5	LSU5.12 ³	14	5⅞	9	2¼	(24) 16d	(16) 10d x 1½"	885	1,790	1,790	1,790	760	1,550	1,550	1,550	

- Roof loads are 125% of floor loads unless limited by other criteria.
- Uplift loads include a 60% increase for wind or earthquake loading with no further increase is allowed; reduce where other loads govern.
- LSU3510-2, LSU4.12, LSU4.28 and LSU5.12 skew option must be factory-ordered.
- Minimum 11" joist height for LSU3510-2, LSU4.12, LSU5.12; 9½" for all others.
- For skewed LSSU/LSSUI hangers, the inner most face fasteners on the acute angle side are not installed.
- Do not substitute 10d x 1½" nails for face nails on slope and skew combinations or skewed only LSU, LSSU and LSSUI. See pp. 26–27 for other nail sizes and information.
- Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

HRC/HHRC

Hip Ridge Connectors

The HRC series are field slopeable connectors that attach hip roof beams to the end of a ridge beam. The HRC may be sloped downward a maximum of 45°.

HHRC accommodates higher loads and uses Simpson Strong-Tie® Strong-Drive® SD Connector screws.

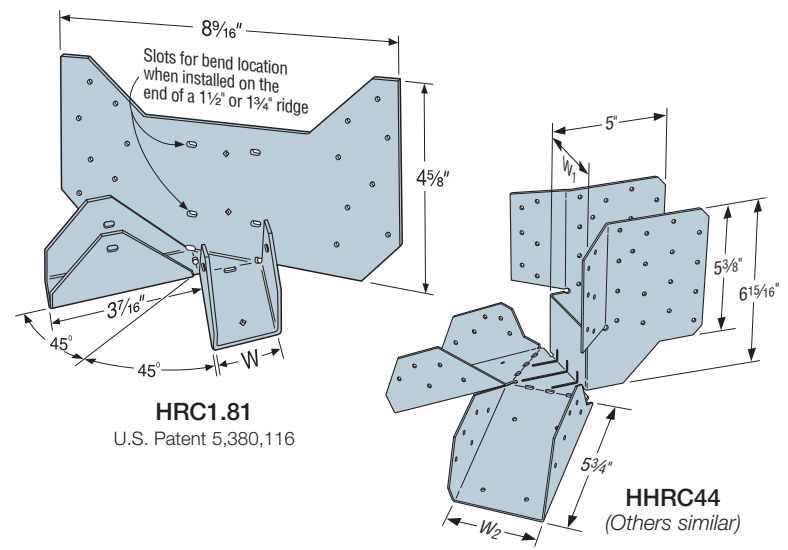
Material: HRC181 — 16 gauge; HHRC — 12 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners (included with HHRC); see General Notes.
- On end of ridge — use optional diamond holes on HRC1.81 to secure the HRC. Bend face flanges on HRC1.81 back flush with ridge, and complete nailing.
- HRC1.81 on face of ridge — adjust to correct height and install nails.
- Double bevel-cut hip members to achieve full bearing capacity with HRC.
- The HRC may be sloped to 45° with no reduction in loads.

Codes: See p. 14 for Code Reference Key Chart



Engineered Wood and Structural Composite Lumber Connectors

HRC Allowable Loads

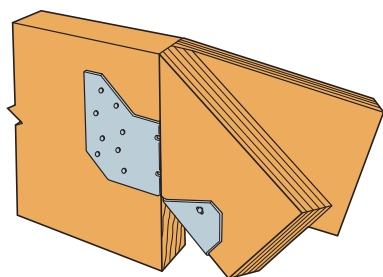
Model No.	W (in.)	Member Size		Fasteners		DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
		Hip	Ridge	Carrying Member	Each Hip	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
HRC1.81	1 13/16	1 3/4"	2x or 1 3/4" wide	(16) 10d x 1 1/2"	(2) 10d x 1 1/2"	290	720	830	900	250	625	720	780	18, L15, FL

1. Allowable loads shown are for each hip. Total load carried by the connector is double this number.
2. Uplift loads include a 60% increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
3. Roof loads are 125% of floor loads unless limited by other criteria.
4. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

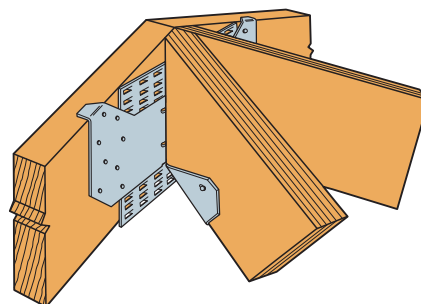
HHRC Allowable Loads

Model No.	Member Type	Connection Members		Connector Width (in.)		Fasteners ³		Allowable Loads Per Hip (lb.)			
		Ridge	Hip	Ridge (W1)	Hip (W2)	Ridge	Each Hip	DF/SP		SPF/HF	
								Uplift (160)	Download (100/115/125)	Uplift (160)	Download (100/115/125)
HHRC4/1.81	SCL/Sawn lumber	4x	1 3/4"	3 3/8"	1 13/16"	(4) SD10212	(2) SD10112	1,490	2,580	1,285	2,220
HHRC44	SCL/Sawn lumber	4x	4x	3 3/8"	3 3/8"	(4) SD10212	(2) SD10212	1,970	2,800	1,695	2,410
HHRC5.25/3.25	SCL/Glulam	5 1/4"	3 3/8"	5 1/4"	3 3/4"	(4) SD10212	(2) SD10212	1,970	2,800	1,695	2,410
HHRC5.37/3.12	SCL/Sawn lumber	5 1/4"	2-2x	5 1/4"	3 3/4"	(4) SD10212	(2) SD10212	1,970	2,800	1,695	2,410
HHRC5.37/3.56	SCL/Sawn lumber / Glulam	5 1/4"	3 1/2"	5 3/8"	3 3/8"	(4) SD10212	(2) SD10212	1,970	2,800	1,695	2,410
HHRC5.25/3.62	SCL/Sawn lumber / Glulam	5 1/4"	4x/2-1 3/4"	5 1/4"	3 3/8"	(4) SD10212	(2) SD10212	1,970	2,800	1,695	2,410

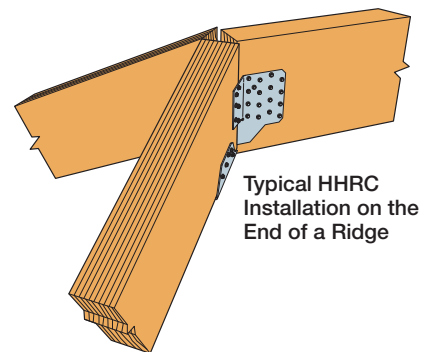
1. Allowable loads shown are for each hip. Total load carried at the ridge is double the load listed.
2. Uplift loads include an increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
3. See p. 145 for solid sawn sizes.
- 4 **Fasteners:** SD10212 = 0.162" dia. x 2 1/2" long Strong-Drive® SD Connector screws (provided).
SD10112 = 0.162" dia. x 1 1/2" long Strong-Drive® SD Connector screws used only on HHRC4/1.81 hip connection (provided).



Typical HRC Installation on the End of a Ridge



Optional HRC1.81 Installation



Typical HHRC Installation on the End of a Ridge

VPA

Variable Pitch Connector

The VPA may be sloped in the field, offering a versatile solution for attaching rafters to the top plate. It will adjust to accommodate slopes between 3:12 and 12:12, making it a complement to the versatile LSSU. This connector eliminates the need for notched rafters, beveled top plates and toe nailing.

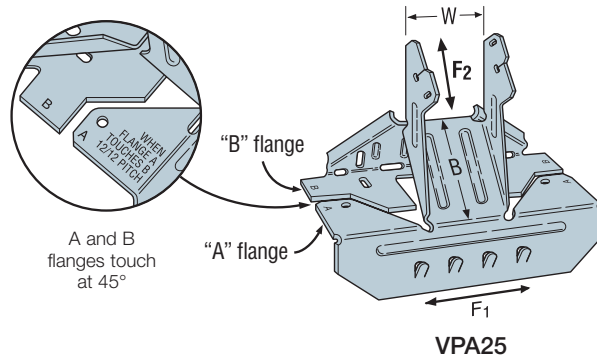
Material: 18 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes

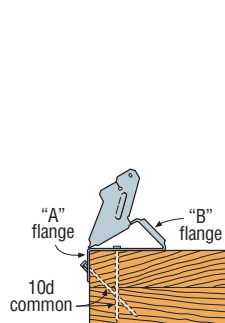
Codes: See p. 14 for Code Reference Key Chart



Actual Joist Width (in.)	Model No.	W (in.)	B (in.)	Fasteners		Allowable Loads								Code Ref.
						Carrying Member	Carried Member	Uplift		Download		Lateral		
				DF/SP Species	SPF Species			DF/SP Species				SPF/HF Species		
				(160)	(160)	(160)	(160)	F ₁	F ₂	F ₁	F ₂			
1½	VPA2	1⅞	2	(8) 10d	(2) 10d x 1½"	295	250	1,050	870	375	250	325	250	l8, L15, FL
1¾	VPA25	1⅞	2	(8) 10d	(2) 10d x 1½"	295	250	1,050	870	375	250	325	250	
2	VPA2.06	2⅞	2	(9) 10d	(2) 10d x 1½"	295	250	1,230	1,020	375	250	325	250	170
2⅞	VPA2.1	2⅞	2	(9) 10d	(2) 10d x 1½"	295	250	1,230	1,020	375	250	325	250	
2¼ - 2⅞	VPA35	2⅞	2	(9) 10d	(2) 10d x 1½"	295	250	1,230	1,020	375	250	325	250	l8, L15, FL
2½ - 2⅞	VPA3	2⅞	2	(9) 10d	(2) 10d x 1½"	295	250	1,230	1,020	375	250	325	250	
3½	VPA4	3⅞	2	(11) 10d	(2) 10d x 1½"	295	250	1,230	1,020	375	250	325	250	

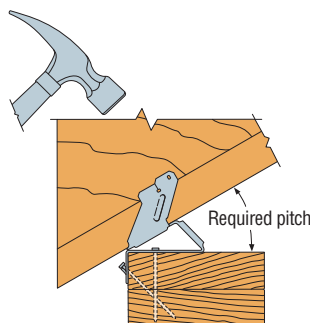
1. Uplift loads include a 60% increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Loads may not be increased for short-term loading.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26-27 for other nail sizes and information.

VPA Installation Sequence



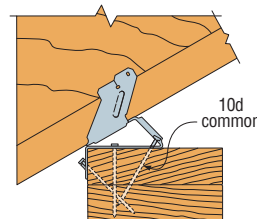
Step 1

Install top nails and face PAN nails in "A" flange to outside wall top plate.



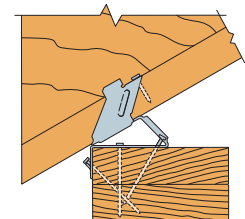
Step 2

Seat rafter with a hammer, adjusting "B" flange to the required pitch.



Step 3

Install "B" flange nails in the obround nail holes, locking the pitch.



Step 4

Bend tab with hammer and install 10d x 1½" nail into tab nail hole. Hammer nail in at an approximate 45° angle to limit splitting.

HCP

Hip Corner Plate

For complementary ridge connection, see p. 202.

The HCP connects a rafter or joist to double top plates at a 45° angle.

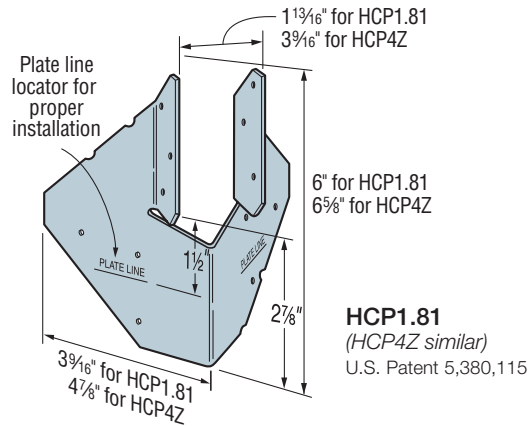
Material: 18 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- Attach HCP to double top plates.
- Birdsmouth not required for table uplift loads but may be required for download.
- Install rafter and complete nailing. Rafter may be sloped to 45°.

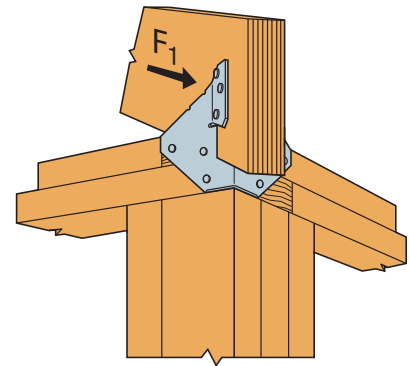
Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Member Size (in.)	Model No.	Fasteners		DF/SP Allowable Loads		SPF/HF Allowable Loads		Code Ref.
		To Rafters	To Plates	(160)		(160)		
				Uplift	F ₁	Uplift	F ₁	
1 3/4	HCP1.81	(6) 10d x 1 1/2"	(6) 10d x 1 1/2"	645	300	555	260	I8, L15, FL
3 1/2	HCP4Z	(8) 10d	(8) 10d	1,000	265	860	230	

1. Loads include a 60% increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. The HCP can be installed on the inside and the outside of the wall with a flat bottom chord truss and achieve twice the load capacity.
3. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.



Typical HCP Installation

Top-Flange Hangers ITS/MIT/HIT

Engineered Wood Product 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.

Simpson Strong-Tie offers a dedicated range of top flange I-joint hangers that meet the unique needs of I-joists while offering superior performance and ease of installation.

ITS

The innovative ITS sets the standard for engineered wood top flange hangers. The ITS installs faster and uses fewer nails than any other EWP top flange hanger. The Strong-Grip™ seat and Funnel Flange™ features allow standard joist installation without requiring joist nails resulting in the lowest installed cost. The Strong-Grip seat firmly secures I-joists with flange thicknesses from 1½" to 1½".

MIT/HIT — Positive Angle Nailing (PAN)

PAN is specifically designed for I-joists when used with the MIT or HIT. With PAN, the nail hole material is not removed, but is formed to channel and confine the path of the nail at approximately 45°. PAN minimizes splitting of the flanges while permitting time-saving nailing from a better angle. See Top Flange tables on pp. 218–227.

Refer to Joist Manufacturer's literature or appropriate Simpson Strong-Tie® Connector Selection Guide for actual joist sizes.

Material: ITS — 18 gauge; MIT, HIT — 16 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners. Verify that the header can take the required fasteners specified in the table.
- See pp. 181–182 for more installation information.
- ITS — no joist nailing required for standard I-joist installation without web stiffeners. When supporting I-joists with web stiffeners or rectangular SCL member (2) 10d x 1½" must be installed into optional triangle joist nail holes for standard installation values.
- ITS — optional triangle nail holes may be used for additional load. See allowable load tables. Refer to technical bulletin T-C-OPTUPLIFT at strongtie.com for additional options.
- MIT — optional triangle nail holes may be used for increased uplift capacity. See Optional Nailing For Increased Uplift table.
- HIT — closed PAN nail holes may be used for increased uplift capacity. See Optional Nailing For Increased Uplift table.
- For sloped joists up to ¼:12 there is no reduction, between ¼:12 and up to ½:12, tests show a 10% reduction in ultimate hanger strength. Local crushing of the bottom flange or excessive deflection may be limiting; check with joist manufacturer for specific limitations on bearing of this type.

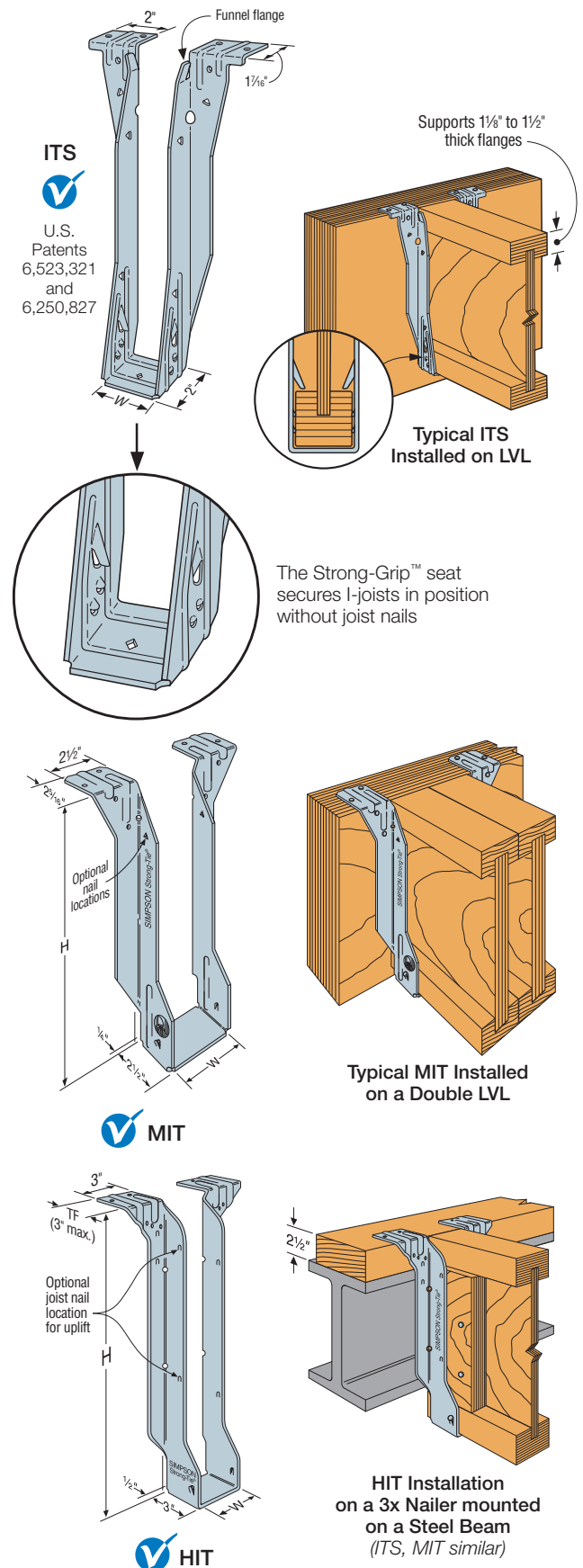
Allowable Loads:

- The ITS, MIT and HIT hangers have locations for optional nails if additional uplift is needed. Optional uplift nailing requires the addition of properly-secured web stiffeners. See the load tables for minimum required fasteners and allowable uplift loads.

Options:

- Because these hangers are fully die-formed, they cannot be modified. However these models will normally accommodate a skew of up to 5°.

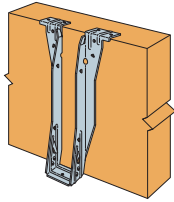
Codes: See p. 14 for Code Reference Key Chart



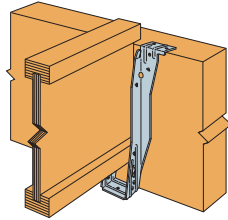
Top-Flange Hangers ITS/MIT/HIT

Engineered Wood Product Hangers (cont.)

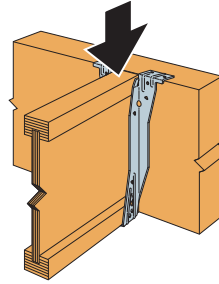
ITS Installation Sequence



Step 1
Attach the ITS to the header.

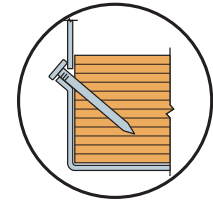


Step 2
Slide the I-joint downward into the ITS until it rests above the Strong-Grip™ seat.



Step 3
Firmly push or snap I-joint fully into the seat of the ITS.

Positive Angle Nailing



Correct Nailing
Approx. 45° angle

IT Series with Various Header Applications

Model	Fasteners			Allowable Loads Header Type								Code Ref.
	Top	Face	Joist	Uplift ^{2,3} (160)	LVL ⁴	PSL	LSL	DF/SP	SPF/HF	DF/SCL ⁵ I-Joist	SPF/HF I-Joist	
ITS Series ¹⁰ (Standard Installation)	(4) 10d x 1½"	(2) 10d x 1½"	—	105	1,395	1,245	1,625	1,440	1,140	1,085	940	119, L14, FL
	(4) 10d	(2) 10d	—	105	1,550	1,365	1,780	1,520	1,150	—	—	
	(4) 16d	(2) 16d	—	105	1,785	1,735	1,905	1,635	1,225	—	—	
ITS Series ^{7,10} (Alternate Installation)	(4) 10d	(4) 10d	—	105	1,735	1,595	1,885	1,955	1,230	—	—	170
	(4) 16d	(4) 16d	—	105	1,785	1,735	1,905	1,955	1,490	—	—	
	(4) 10d	(4) 10d	(4) 10d x 1½"	630	1,735	1,595	1,885	1,955	1,230	—	—	
	(4) 16d	(4) 16d	(4) 10d x 1½"	630	1,785	1,735	1,905	1,955	1,490	—	—	
MIT Series ¹⁰	(4) 10d x 1½"	(4) 10d x 1½"	(2) 10d x 1½"	215	2,035	1,500	1,605	2,035	1,115	1,250	895	119, L14, FL
	(4) 10d	(4) 10d	(2) 10d x 1½"	215	2,335	2,000	1,605	2,245	1,665	—	—	
	(4) 16d	(4) 16d	(2) 10d x 1½"	215	2,550	2,140	2,115	2,305	1,665	—	—	
HIT Series	(4) 16d	(6) 16d	(2) 10d x 1½"	315	2,550	2,220	2,500	2,875	2,000	—	—	

1. Loads may not be increased for duration of load.
2. Uplift loads are based on DF/SP lumber and have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern. For SPF/HF use 0.86 x DF/SP uplift load.
3. ITS uplift loads are valid for all lumber species and need not be reduced for duration of load.
4. Applies to LVL headers made primarily from Douglas Fir or Southern Pine. For LVL made primarily from Spruce Pine Fir or similar less dense veneers, use the values found in the SPF/HF column.
5. DF I-joists include flanges made from solid sawn Douglas Fir, LVL made primarily of Douglas Fir/Southern Pine, or LSL. For flanges with thicknesses

- from 1½" to 1⅝", use 0.85 of the I-joint header load. For flanges with thicknesses from 1⅝" to 1¾", use 0.75 of the I-joint header load.
6. SCL (structural composite lumber) is LVL, LSL and Parallam® PSL.
7. Web stiffeners required for the ITS Alternate Installation when installing optional joist nails for additional uplift load.
8. Code Values are based on DF/SP header species.
9. I-joists with flanges less than 1⅝" thick used in combination with hangers thinner than 14 gauge may deflect an additional ½ inch beyond the standard ⅝" limit.
10. For 2¼" and 2⅞" wide joists, see tables on pp. 219–220 for allowable loads.

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Optional Nailing for Increased Uplift

Model	Fasteners			Allowable Uplift Loads (160)
	Top	Face	Joist	
ITS	(4) 10d x 1½"	(4) 10d x 1½"	(4) 10d x 1½"	630
	(4) 10d	(4) 10d	(4) 10d x 1½"	630
	(4) 16d	(4) 16d	(4) 10d x 1½"	630
MIT	(4) 10d x 1½"	(4) 10d x 1½"	(4) 10d x 1½"	575
	(4) 16d	(4) 16d	(4) 10d x 1½"	575
HIT	(4) 16d	(6) 16d	(4) 10d x 1½"	575
	(4) 16d x 2½"	(6) 16d x 2½"	(4) 10d x 1½"	575
	(4) 16d	(6) 16d	(6) 10d x 1½"	850

Nails: 16d = 0.162" dia. x 3½" long,
16d x 2½" = 0.162" dia. x 2½" long,
10d = 0.148" dia. x 3" long,
10d x 1½" = 0.148" dia. x 1½" long.
See pp. 26–27 for other nail sizes and information.

1. Loads are based on Doug Fir, and have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Web stiffeners are required on I-joint for additional nailing.

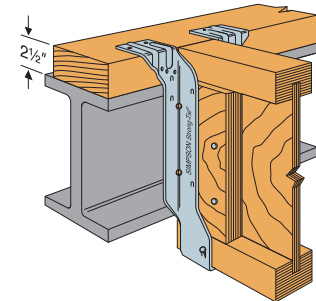
Top-Flange Hangers ITS/MIT/HIT

Engineered Wood Product Hangers (cont.)

Nailer Table

This table indicates various allowable loads for ITS/MIT/HIT hangers used on wood nailers. The header nail type must be substituted for those listed in other tables. See technical bulletin T-C-NAILERUPLFT at strongtie.com for other uplift values and options.

Model	Nailer	Top Flange Nailing	Joist Nailing	Uplift (160)	Allowable Loads	
					DF/SP	SPF/HF
ITS Series	2x	(6) 10d x 1 1/2"	—	105	1,260	1,260
	2x	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	355	1,260	1,260
	(2) 2x	(6) 10d	—	105	1,220	1,220
	(2) 2x	(8) 10d	(4) 10d x 1 1/2"	630	1,745	1,530
	3x	(6) 16d x 2 1/2"	—	105	1,500	—
	3x	(8) 16d x 2 1/2"	(4) 10d x 1 1/2"	630	1,540	—
	4x	(6) 16d	—	105	1,525	—
	4x	(8) 16d	(4) 10d x 1 1/2"	630	1,905	—
	Steel	(4) 0.157 x 5/8" PAT	—	—	1,400	1,400
MIT Series	2x	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	215	1,475	1,440
	(2) 2x	(8) 10d	(2) 10d x 1 1/2"	215	1,630	1,255
	3x	(8) 16d x 2 1/2"	(2) 10d x 1 1/2"	215	1,975	—
	4x	(8) 16d	(2) 10d x 1 1/2"	215	2,250	—
		Steel	(4) 0.157 x 5/8" PAT	(2) 10d x 1 1/2"	—	2,045
HIT Series	(2) 2x	(10) 10d	(2) 10d x 1 1/2"	315	2,595	—
	3x	(10) 16d x 2 1/2"	(2) 10d x 1 1/2"	315	2,835	—
	4x	(10) 16d	(2) 10d x 1 1/2"	315	2,875	—

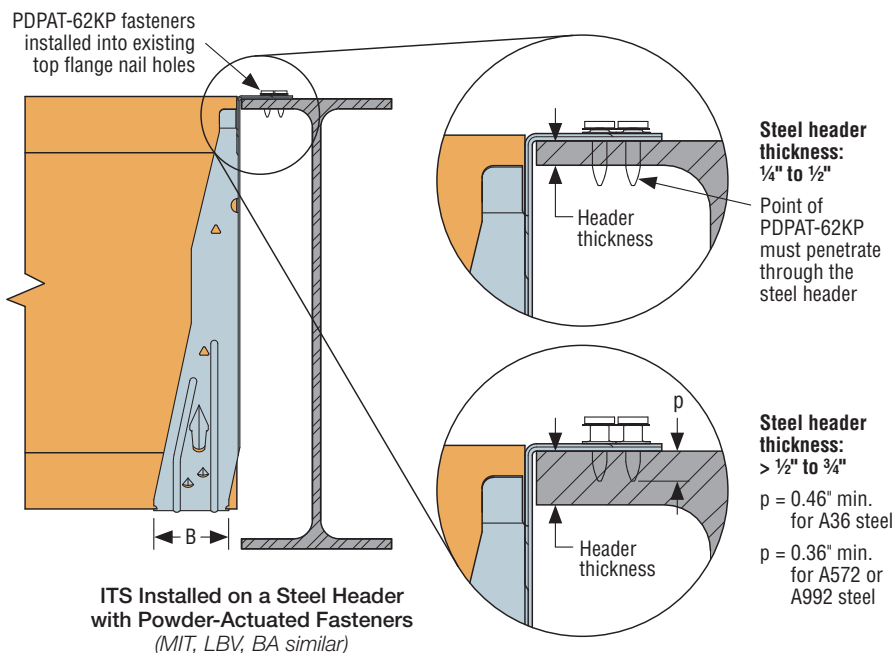


HIT Installation
on a 3x Nailer mounted
on a Steel Beam
(ITS, MIT similar)

1. Uplift loads are based on DF/SP members only. See technical bulletin T-C-NAILERUPLFT at strongtie.com for SPF/HF values.

2. Steel nailer allowable loads apply to steel header material with thickness between 1/4" and 3/4" with minimum $F_y = 36$ ksi. Design of steel header by Designer.

3. 0.157" x 5/8" long powder-actuated fastener = PDPAT-62KP. A red (level 5) or purple (level 6) load may be required to achieve specified penetration.



Top-Flange Hangers LBV/BA/B/HB

I-Joist and Structural Composite Lumber 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.

The BA hanger is a cost-effective hanger used for structural composite lumber and high-capacity I-joists. When modifications are not needed, such as slope or skew, the BA performs similarly to the B hanger at a significant cost savings. When used with I-joists, the positive angle nailing at the joist seat allows the hanger to be used without web stiffeners.

The LBV, B and HB hangers are also available for I-joists and structural composite lumber but have the ability to be fabricated with slopes and skews to match field conditions.

See Top Flange tables on pp. 218–227.

Material: See tables on pp. 218–227.

- For modified hangers, gauge may increase from that specified for non-modified hangers. Hanger configurations, height and fastener quantity may increase from the tables depending on joist size, skew and slope.

Finish: LBV, B, BA and HB — Galvanized; all saddle hangers and all welded sloped and special hangers — Simpson Strong-Tie® gray paint. LBV, B, BA and HB may be ordered hot-dip galvanized; specify HDG.

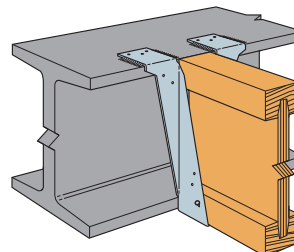
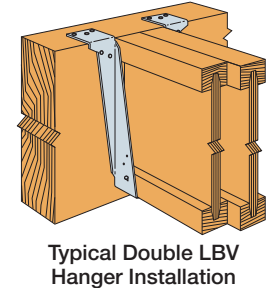
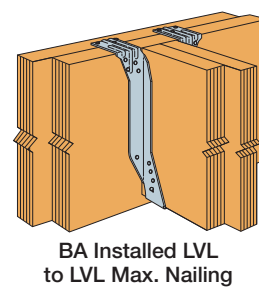
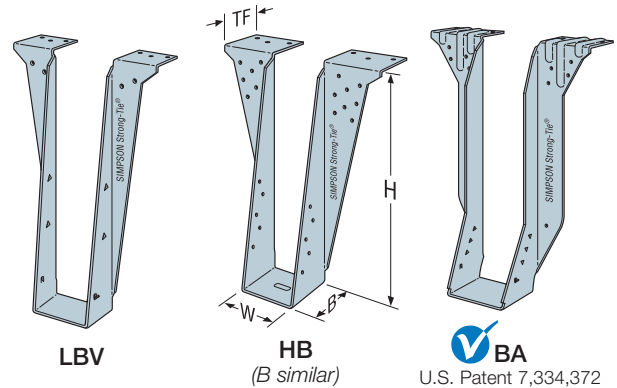
Installation:

- Use all specified fasteners; see General Notes and nailer table.
- LBV, B, BA and HB may be used for weld-on applications. Weld size to match material thickness (approximate thickness shown). The minimum required weld to the top flanges is $\frac{1}{8}$ " x 2" fillet weld to each side of each top flange tab for 14 and 12 gauge and $\frac{3}{16}$ " x 2" fillet weld to each side of each top flange tab for 7 gauge and 10 gauge. Distribute the weld equally on both top flanges. Welding cancels the top and face nailing requirements. Consult the code for special considerations when welding galvanized steel. The area should be well-ventilated, see p. 21, note m for weld information. Weld on applications produce the maximum allowable down load listed. For uplift loads refer to technical bulletin T-C-WELDUPLFT at strongtie.com.
- LBV hangers do not require the use of web stiffeners for non-sloped or non-skewed applications.
- B and HB hangers require the use of web stiffeners. BA min. nailing does not require web stiffeners. BA max. nailing requires the use of web stiffeners.
- Ledgers must be evaluated for each application separately. Check TF dimension, nail length and nail location on ledger.
- Refer to technical bulletin T-C-SLOPEJUST at strongtie.com for information regarding load reductions on selected hangers which can be used without modification to support joists which have shallow slopes ($\leq \frac{3}{4}:12$).
- For modified hangers, fastener quantity may increase from the tables depending on joist size, skew and slope.
- Bevel cut the carried member for skewed applications.
- Web stiffeners are required for all B and HB hangers and also for modified LBV hangers when supporting I-joists.

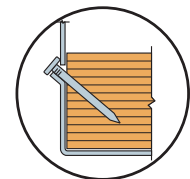
Options:

- BA is not modifiable. See modifications on pp. 122–123.
- Other widths are available; specify W dimension (the minimum W dimension is $1\frac{1}{16}$ ").
- The coating on special B hangers will depend on the manufacturing process used. Check with your Simpson Strong-Tie representative for details. Hot-dip galvanized available: specify HDG.
- Refer to technical bulletin T-C-BSERIES at strongtie.com for the complete line of LBV, BA, B and HB hangers, including models not shown here, their available modification combinations and their associated reduction factors.

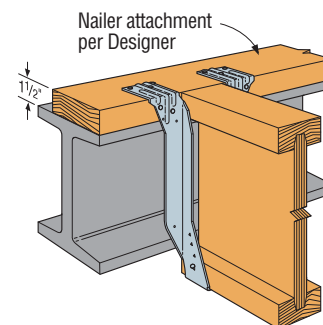
Codes: See p. 14 for Code Reference Key Chart



BA, B, HB and LBV are acceptable for weld-on applications (LBV shown). See Installation Information.



LBV features positive angle nailing, no web stiffeners are required.



BA, B, HB and LBV are acceptable for nailer applications. (BA shown on 2x nailer)

Top-Flange Hangers LBV/BA/B/HB

I-Joist and Structural Composite Lumber Hangers (cont.)

Nailer Table

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

Model No.	Nailer	Top Flange Nailing	Uplift ¹ (160)	Allowable Loads	
				DF/SP	SPF/HF
LBV	2x	(10) 10d x 1½"	265	2,280	2,085
	(2) 2x	(10) 10d	265	1,955	1,530
	3x	(10) 16d x 2½"	265	2,490	—
	4x	(10) 16d	265	2,590	—
	Steel	(6) 0.157 x ⅝" PAT	—	3,105	3,105
BA	2x	(10) 10d x 1½"	265	2,220	1,755
	(2) 2x	(14) 10d	265	2,695	2,235
	3x	(14) 16d x 2½"	265	3,230	—
	4x	(14) 16d	265	3,230	—
	Steel	(6) 0.157 x ⅝" PAT	—	3,695	3,695
B	(2) 2x	(14) 10d	710	3,615	2,770
	3x	(14) 16d x 2½"	825	3,725	—
	4x	(14) 16d	825	3,800	—
HB	4x	(22) 16d	1,550	5,500	—

- Uplift values are for DF/SP members only. LBV and BA hangers resist more uplift when web stiffeners are used. Refer to technical bulletin T-C-NAILERUPLFT at strongtie.com for additional information.
- See p. 210 for reductions on modified hangers on nailers.
- B hangers require (6) 10d x 1½" joist nails to achieve published loads. For joist members 2½" or wider, 16d x 2½" joist nails should be installed for additional uplift loads on the 3x and 4x nailer applications of 970 lb. and 1,010 lb., respectively.
- Steel nailer allowable loads apply to steel header material with thickness between ¼" and ¾" with minimum F_y = 36 ksi. Design of steel header by Designer.
- 0.157" x ⅝" long powder-actuated fastener = PDPAT-62KP. A red (level 5) or purple (level 6) load may be required to achieve specified penetration. See installation on p. 207.

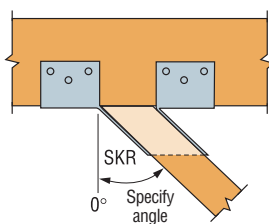
Nails: 16d = 0.162" dia. x 3½" long; 16d x 2½" = 0.162" dia. x 2½" long; 10d = 0.148" dia. x 3" long; 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

B Series with Various Header Applications

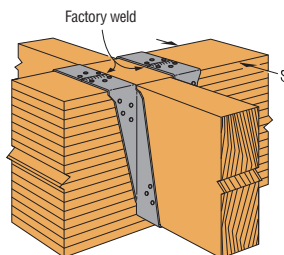
Model Series	Fasteners			Allowable Loads Header Type								Code Ref.
	Top	Face	Joist	Uplift ³ (160)	LVL8	PSL	LSL	DF/SP	SPF/HF	I-Joist ⁹		
										DF/SCL	SPF/HF	
LBV (Min.)	(6) 10d x 1½"	(4) 10d x 1½"	(2) 10d x 1½"	265	2,295	2,610	2,270	1,790	1,835	1,495	1,340	I19, L14, FL
	(6) 10d	(4) 10d	(2) 10d x 1½"	265	2,295	2,610	2,645	2,310	2,060	—	—	
	(6) 16d	(4) 16d	(2) 10d x 1½"	265	2,910	2,885	3,190	2,590	2,060	—	—	
LBV (Max.)	(6) 10d x 1½"	(4) 10d x 1½"	(6) 10d x 1½"	635	2,295	2,610	2,270	1,790	1,835	1,495	1,350	
	(6) 10d	(4) 10d	(6) 10d x 1½"	785	2,295	2,610	2,645	2,310	2,060	—	—	
	(6) 16d	(4) 16d	(6) 10d x 1½"	895	2,910	2,885	3,190	2,590	2,060	—	—	
BA (Min.)	(6) 10d x 1½"	(10) 10d x 1½"	(2) 10d x 1½"	—	—	—	—	—	—	1,495	1,495	
	(6) 10d	(10) 10d	(2) 10d x 1½"	265	3,230	3,630	4,005	3,080	2,425	—	—	
	(6) 16d	(10) 16d	(2) 10d x 1½"	265	4,015	3,705	4,005	3,435	2,665	—	—	
BA (Max.)	(6) 10d	(10) 10d	(8) 10d x 1½"	1,170	3,555	3,630	4,120	3,625	2,465	—	—	
	(6) 16d	(10) 16d	(8) 10d x 1½"	1,170	4,715	4,320	4,500	3,800	2,665	—	—	
B ²	(6) 10d	(8) 10d	(6) 10d x 1½"	990	3,555	3,195	3,640	3,625	2,190	—	—	
	(6) 16d	(8) 16d	(6) 16d x 2½"	1,010	4,135	3,355	4,500	3,800	2,650	—	—	
HB ²	(6) 16d	(16) 16d	(10) 16d x 2½"	2,610	5,815	5,640	6,395	5,650	3,820	—	—	

- This table assumes joists with F_{cL} = 750 psi. For other joists, check that bearing and joist nails are adequate.
- Loads for Bs and HBs assume a joist width of 2½" or greater.
- Uplift loads are based on DF/SP lumber and have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern. For SPF/HF use 0.86 x DF/SP uplift load.
- Loads may not be increased for short-term loading.
- Web stiffeners required when more than two joist nails are used.
- SCL (structural composite lumber) is LVL (laminated veneer lumber), LSL (laminated strand lumber) and Parallam® PSL.
- Code values are based on DF/SP header species.
- Applies to LVL headers made primarily from Douglas Fir or Southern Pine. For LVL made primarily from Spruce-Pine-Fir or similar less dense veneers, use the values found in the SPF/HF column.
- DF I-joists include flanges made from solid sawn Douglas Fir, LVL made primarily of Douglas Fir/Southern Pine, or LSL. For flanges with thicknesses from 1⅝" to 1¾", use 0.85 of the I-joist header load. For flanges with thicknesses from 1⅜" to 1⅝", use 0.75 of the I-joist header load.

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Top View B Hanger Skewed Right



Typical BD Saddle Installation

Saddle Hanger

Saddle hangers are made to order; add "D" to model (e.g. BD412); specify S (for saddle) dimension. They may be used for most conditions except at end wall locations and are preferred for nailer applications. Minimum S dimension (saddle width) is 3⅞". Minimum supporting member width is 3½". Minimum nailer thickness apply. Saddle hangers achieve catalog load listed. Saddle hangers on stud walls do not achieve catalog loads.

Top-Flange Hangers LBV/BA/B/HB

I-Joist and Structural Composite Lumber Hangers (cont.)

B Series Modifications and Associated Load Reductions¹

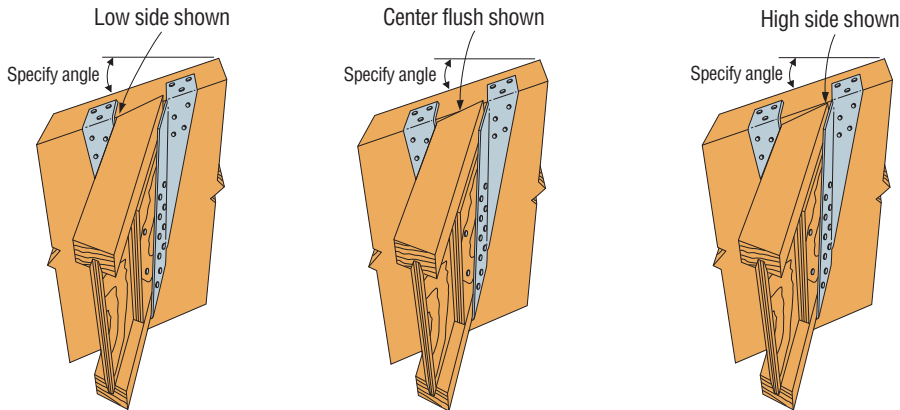
Hanger	Condition	Seat						Top Flange		
		Sloped Down 45° Max.	Sloped Up 45° Max.	Skewed 45° Max.	Sloped Down and Skewed	Sloped Up and Skewed	Top Flange Sloped 35° Max.	Top Flange Bent Open or Closed 30° Max.		
LBV	Min. height →	6	6	6	9¼	14	9¼	14	11¼	9¼
	All widths	1.00	0.91	1.00	0.90	1.00	0.91	0.91	(90-a) / 90	(90-a) / 90
B	Min. height →	6	6	6	9¼	14	9¼	14	14	9¼
	W < 2½"	0.82	0.66	0.95	0.54	0.82	0.64	0.64	(90-a) / 90	(90-a) / 90
	W ≥ 2½"	0.80	0.95	1.00	0.70	1.00	0.80	0.80	(90-a) / 90	(90-a) / 90
HB	Min. height →	8	8	8	11¼	14	11¼	14	14	11¼
	W < 2½"	0.84	0.70	1.00	0.47	0.84	0.62	0.69	(90-a) / 90	(90-a) / 90
	W ≥ 2½"	0.87	0.70	0.96	0.59	0.87	0.70	0.70	(90-a) / 90	(90-a) / 90

1. Reduction factors are not cumulative. Use the lowest factor that applies.
2. Web stiffeners required for sloped or skewed conditions.
3. For straight-line interpolation, "a" is the specified angle.

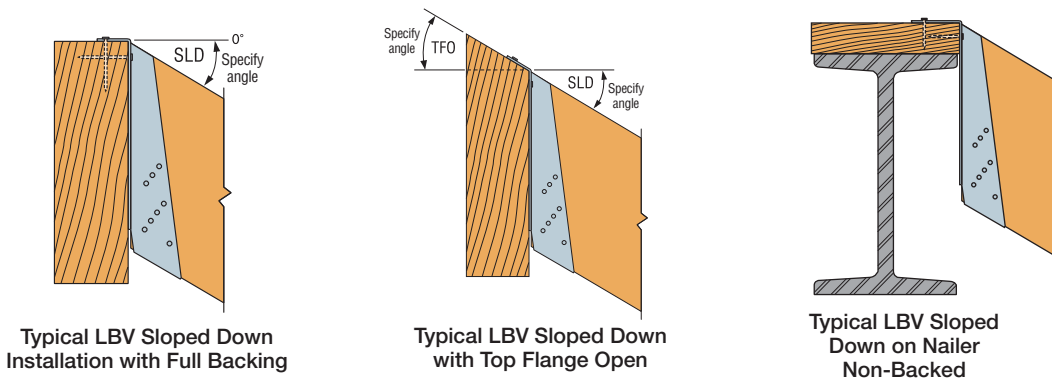
Reduction Factor Instructions

Allowable Download = Lower of (Seat or Top Flange) × (Table Load)

Allowable Uplift = 0.90 × (Table Load) for B with W < 2½"
 = 0.71 × (Table Load) for HB with W < 2½"
 = 1.00 × (Table Load) for all others



B hanger sloped down and skewed left with sloped top flange installation.
 When ordering, specify low side flush, center flush or high side flush.



Top-Flange Hangers W/WP/WPU/WMU/HW/HWU/HWP/HWPH

I-Joist and Structural Composite Lumber Hangers

The W, WP, WPU, HWU and HW series are designed to hang joists, purlins or beams. WMU hangers are designed for use on standard 8"-grouted masonry block wall construction. Some models have an "I" in the model number which indicates a size specific for an I-Joist and have the same properties and modifications as the standard series. Models that have an "I" in the model number (e.g., HWI) have the same properties and modifications as the standard models without the "I" in the name (e.g., HW).

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

Material: See tables on pp. 218–227

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

Installation:

- Use all specified fasteners.
- Hangers may be welded to steel headers with $\frac{1}{8}$ " for W, $\frac{3}{16}$ " for WP, WPU, and $\frac{1}{4}$ " for HW, HWU by $1\frac{1}{2}$ " fillet welds located at each end of the top flange, see p. 21, note m for weld information. Weld-on applications produce maximum allowable load listed. For uplift loads refer to technical bulletin T-C-WELDUPLFT at strongtie.com (WPU and HWU hangers only).
- Hangers can support multi-ply carried members; the individual members must be secured together to work as a single unit before installation into the hanger.
- Hangers can support joists sloped up to $\frac{1}{4}$:12 using table loads. For joists sloping between $\frac{1}{4}$:12 and $\frac{3}{4}$:12 use 85% of the table loads.
- Web stiffeners are required for standard joist nailing configuration with these hangers.

Options:

- See Hanger Options information on pp. 121–123.
- Some models are available in Type A (bevel cut joist). All models are 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.
- Skewed HWs have face nails and require a minimum header depth of $3\frac{1}{2}$ ".
- 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. Specify whether low side, high side or center of joist will be flush with the top of the header (see illustration).
- Uplift loads are not available for open/closed TF, TF sloped and offset options.

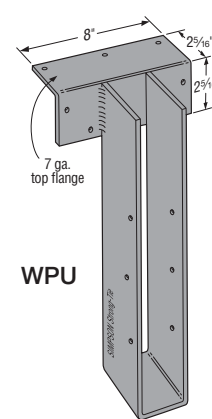
Saddle Hanger

- To order, add D to model and specify S dimension (see illustration).
- Saddle hangers achieve catalog load listed. Saddle hangers on stud walls do not achieve catalog loads.
- Recommended S dimension is $\frac{1}{16}$ " oversized for carrying members $2\frac{1}{2}$ " wide and less or $\frac{1}{8}$ " oversized for greater than $2\frac{1}{2}$ " wide.
- Saddle versions are available on the W and HW models.

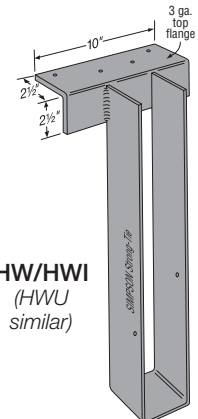
Ridge Hanger (not available for uplift models)

- 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.

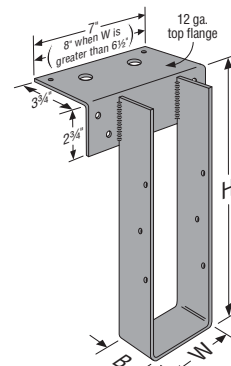
Codes: See p. 14 for Code Reference Key Chart



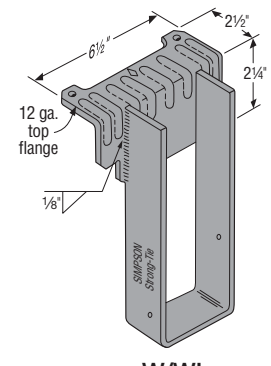
WPU



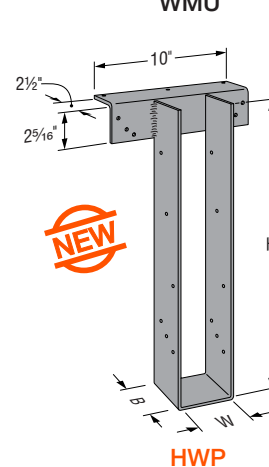
HW/HWI
(HWU similar)



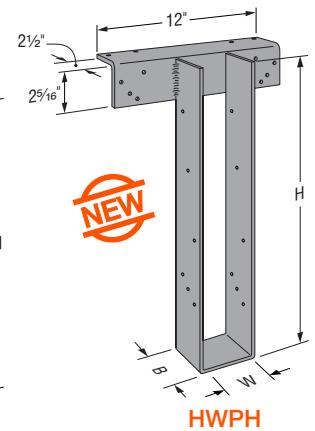
WMU



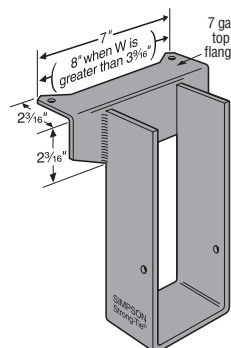
W/WI



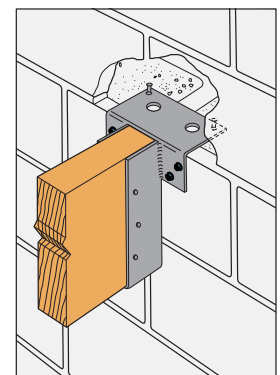
HWP



HWPH



WP/WPI



WMU Mid-Wall Installation
See pp. 276–277 for models and more information

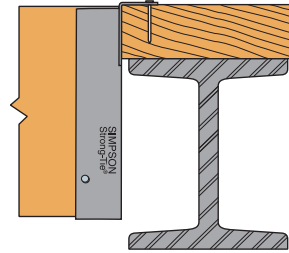
Top-Flange Hangers W/WP/WPU/WMU/HW/HWU/HWP/HWPH

I-Joist and Structural Composite Lumber Hangers (cont.)

Model	Nailer	Top Flange Nailing	Uplift ¹ (160)	Allowable Loads	
				DF/SP	SPF/HF
W	2x	(2) 10d x 1 1/2"	—	1,600	1,600
	(2) 2x	(2) 10d	—	1,665	—
	3x	(2) 16d x 2 1/2"	—	1,765	—
	4x	(2) 10d	—	2,200	—
WP	2x	(2) 10d x 1 1/2"	—	2,525	2,500
	(2) 2x	(2) 10d	—	3,255	3,255
	3x	(2) 16d x 2 1/2"	—	3,000	2,510
	4x	(2) 10d	—	3,255	3,255
WPU	(2) 2x	(7) 10d	710	3,255	—
	3x	(7) 16d x 2 1/2"	970	3,000	—
	4x	(7) 16d	1,095	3,255	—
HWP	(2) 2x	(3) 10d	710	4,615	—
	3x	(3) 16d x 2 1/2"	970	4,615	—
	4x	(3) 16d x 2 1/2"	1,535	5,045	—
HW	(2) 2x	(4) 10d	—	4,860	—
	3x	(4) 16d x 2 1/2"	—	4,845	—
	4x	(4) 16d	—	5,285	—
HWU	(2) 2x	(8) 16d x 2 1/2"	710	5,430	—
	3x	(8) 16d x 2 1/2"	970	5,430	—
	4x	(8) 16d	1,160	5,430	—
HWPH	(2) 2x	(4) 16d x 2 1/2"	710	6,400	—
	3x	(4) 16d x 2 1/2"	970	6,470	—
	4x	(4) 16d	1,550	6,470	—

Nailer Table

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



Installation on Wood Nailer

- Uplift values for the WPU and HWU hangers are for depths ≤ 18" and are for DF/SP values only. Refer to uplift values in table below for taller depths.
- Attachment of nailer to supporting member is the responsibility of the Designer.

W Series with Various Header Applications

Model	Joist (in.)		Fasteners			Allowable Loads Header Type							Code Ref.	
	Width	Depth	Top	Face	Joist	Uplift (160)	LVL ⁴	PSL	LSL	DF/SP	SPF/HF	I-Joist		Masonry ⁵
W	1 1/2 to 4	3 1/2 to 30	(2) 10d x 1 1/2"	—	(2) 10d x 1 1/2"	—	1,635	1,740	—	1,600	1,415	—	—	170
	1 1/2 to 4	3 1/2 to 30	(2) 10d	—	(2) 10d x 1 1/2"	—	2,150	2,020	—	2,200	1,435	—	—	119, L14, FL
	1 1/2 to 4	3 1/2 to 30	(2) 16d	—	(2) 10d x 1 1/2"	—	2,335	1,950	2,335	1,765	1,435	—	—	170
WMU	1 1/2 to 1 3/4	9 to 28	(2) 16d DPLX	(4) 1/4" x 1 3/4" Titens	(6) 10d x 1 1/2"	625	Mid-Wall Installation						3,380	170
	2 1/2 to 7 1/2	9 to 28	(2) 16d DPLX	(4) 1/4" x 1 3/4" Titens	(6) 10d x 1 1/2"	625	Top-of-Wall Installation						4,175	
	1 1/2 to 7 1/2	9 to 28	(2) 1/4" x 1 3/4" Titens	(4) 1/4" x 1 3/4" Titens	(6) 10d x 1 1/2"	545	Top-of-Wall Installation						3,380	
WP	1 1/2 to 7 1/2	3 1/2 to 30	(2) 10d x 1 1/2"	—	(2) 10d x 1 1/2"	—	2,865	3,250	—	2,500	2,000	2,030	—	119, L14, FL
	1 1/2 to 7 1/2	3 1/2 to 30	(2) 10d	—	(2) 10d x 1 1/2"	—	2,525	3,250	3,650	3,255	2,525	—	—	
	1 1/2 to 7 1/2	3 1/2 to 30	(2) 16d	—	(2) 10d x 1 1/2"	—	3,635	3,320	3,650	3,255	2,600	—	—	
WPU	1 1/2 to 5 1/2	7 1/2 to 18	(3) 16d	(4) 16d	(6) 10d x 1 1/2"	1,095	4,700	4,880	3,650	4,165	4,165	—	—	160
	1 1/2 to 5 1/2	18 1/2 to 28	(3) 16d	(4) 16d	(6) 10d x 1 1/2"	390	4,700	4,880	3,650	4,165	4,165	—	—	
HWP	1 1/2 to 7	6 to 15%	(3) 16d	(6) 16d	(10) 10d x 1 1/2"	1,535	3,995	4,500	4,350	3,955	3,955	—	—	160
	1 1/2 to 7	15 3/4 to 32	(3) 16d	(6) 16d	(12) 10d x 1 1/2"	1,570	3,995	4,500	4,350	3,955	3,955	—	—	
HW	1 1/2 to 7 1/2	3 1/2 to 32	(4) 10d	—	(2) 10d x 1 1/2"	—	3,100	4,000	—	5,285	3,100	—	—	119, L14, FL
	1 1/2 to 7 1/2	3 1/2 to 32	(4) 16d	—	(2) 10d x 1 1/2"	—	5,100	4,000	4,500	5,285	3,665	—	—	
HWU	1 3/4 to 3 1/2	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1 1/2"	1,160	6,335	5,500	5,535	6,335	5,415	—	—	119, L14, FL
	1 3/4 to 3 1/2	18 1/2 to 28	(4) 16d	(4) 16d	(6) 10d x 1 1/2"	965	6,335	5,500	5,535	6,335	5,415	—	—	
	1 3/4 to 3 1/2	28 1/2 to 32	(4) 16d	(4) 16d	(8) 10d x 1 1/2"	985	6,335	5,500	5,535	6,335	5,415	—	—	
	4 1/2 to 7	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1 1/2"	1,160	6,000	5,500	5,535	6,000	5,415	—	—	
	4 1/2 to 7	18 1/2 to 28	(4) 16d	(4) 16d	(6) 10d x 1 1/2"	965	6,000	5,500	5,535	6,000	5,415	—	—	
HWPH	2 1/2 to 7	6 to 15%	(4) 16d	(8) 16d	(10) 10d x 1 1/2"	1,685	6,595	7,025	5,450	5,920	4,740	—	—	160
	2 1/2 to 7	15 3/4 to 32	(4) 16d	(8) 16d	(12) 10d x 1 1/2"	2,075	6,595	7,025	5,450	5,920	4,740	—	—	

- Uplift loads are based on DF/SP lumber and have been increased 60% for wind or earthquake loading with no further increase allowed. For normal loading applications such as cantilever construction refer to Simpson Strong-Tie® Connector Selector™ software or conservatively divide the uplift load by 1.6. For SPF/HF use 0.86 x DF/SP uplift load.
- Applies to LVL headers made primarily from Douglas Fir or Southern Pine. For LVL made primarily from Spruce Pine Fir or similar less dense veneers, use the values found in the SPF/HF column.
- WP quantity of nail holes in top flange varies.

- Top-flange hangers on the following pages with "I" in the model name (e.g. HWI) use the same design information in the above tables for the models without the "I" in the name (e.g. HW).
- Minimum $f_m = 1,500$ psi. See Installation Notes on pp. 276–277.
- For hanger heights exceeding the joist height, the allowable load is 0.50 of the table load.
- Nails:** 16d and 16d DPLX = 0.162" dia. x 3 1/2" long, 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

Parallam® is a registered trademark of Weyerhaeuser.

Top-Flange Hangers W/WP/WPU/WMU/HW/HWU/HWP/HWPH

I-Joist and Structural Composite Lumber Hangers (cont.)

Modifications and Associated Load Reductions for W/WP/WPU/WMU/HW/HWU

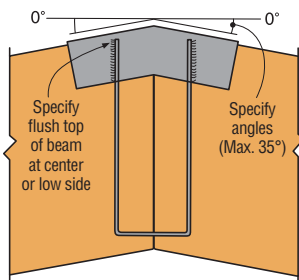
Seat			Top Flange				Joist Height
Seat Sloped Up or Down 45° Max.	Seat Skewed Left or Right 84° Max. ¹	Seat Sloped and Skewed	Top Flange ² Sloped 30° Max.	Top Flange Bent ² Open or Closed 30° Max.	Top Flange Offset	Top Flange Offset and Skewed Seat	Joist Shorter Than Hanger
1.00	1.00	1.00	(90-x) / 90	(90-a) / 90 HW cannot be bent closed	0.50	Type B: Use the lower of the factor or max. load W ≤ 3½" use 0.25 / 1,335 lb. max. W > 3½" use 0.30 / 1,620 lb. max. Bevel cut: 0.50 or 2,000 lb. max.	By more than ½" 0.50 By ½" or less 1.00

1. WPU, WNPW, HWU have a maximum skew of 45° and can only be skewed when $W \leq 3\frac{3}{16}$ ".
2. For straight-line interpolation, "a" is the specified angle.
3. Reduction factors are not cumulative. Use the lowest factor that applies.

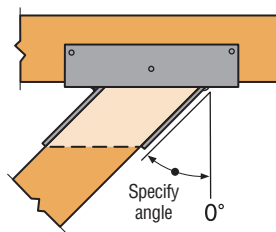
Reduction Factor Instructions

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

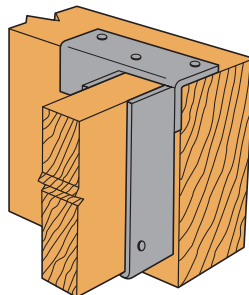
Allowable Uplift = as noted in table per height. (WPU, WNPW, HWU only)



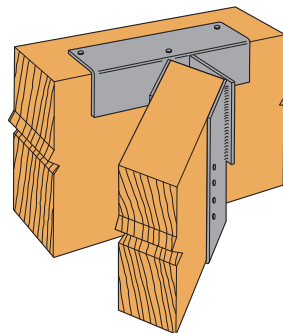
Typical W Ridge Installation



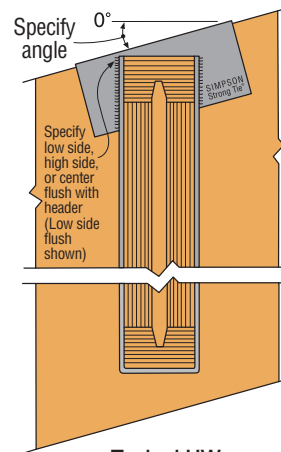
Typical W Top View Skewed Left Type A Hanger (Bevel-cut joist shown)



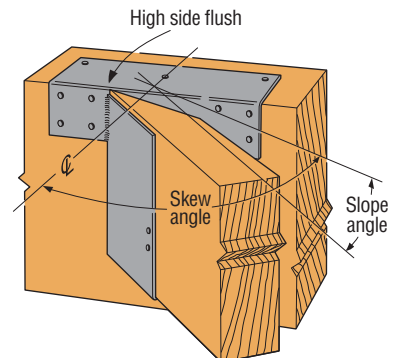
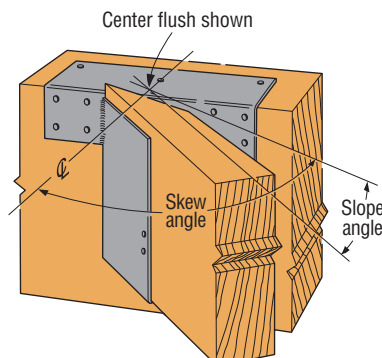
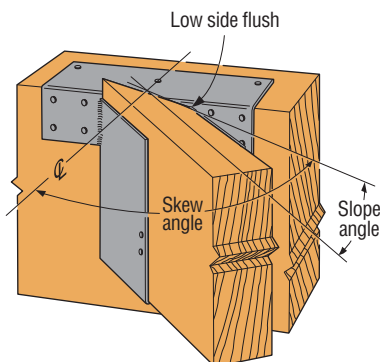
Typical W Top Flange Offset Left



Typical W Skewed Left Type B Hanger (Square-cut joist shown)



Typical HW Top Flange Sloped Down Left with Low Side Flush



Typical HW 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.

GLTV/HGLTV

Heavy-Duty Hangers

GLTV and 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.

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

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. Verify that the header can take the required fasteners specified in the table.
- This series may be used for weld-on applications. Minimum required weld is a $\frac{3}{16}$ " x $2\frac{1}{2}$ " fillet weld at each end of the top flange for GLTV, and a $\frac{1}{4}$ " x $2\frac{1}{2}$ " fillet weld at each end of the top flange for HGLTV; see p. 21, note m for weld information. Weld-on applications produce maximum loads listed. For uplift loads refer to technical bulletin T-C-WELDUPFLT at strongtie.com.
- Web stiffeners are required with I-joists using this hanger style.
- GLTV or HGLTV hangers may be installed on ledgers provided the ledgers are made of 4x solid sawn or $3\frac{1}{2}$ " SCL shown in the table below. Thinner lumber must be evaluated by the building Designer.
- HGLTV hangers should not be attached to nailers.

Options:

- See Hanger Options information on pp. 121–123.
- Hot-dip galvanized; specify HDG.
- Bevel-cut the carried beam for skewed hangers.

Hanger Height

- For hangers exceeding the joist height by $\frac{1}{2}$ ", allowable load is 50% of the table roof load.

Sloped and/or Skewed Seat

- GLT/GLTV/HGLT/HGLTV and GLS/HGLS series may be skewed to a maximum of 50° or sloped to a maximum of 45° .
- For skews greater than 15° , multiply the table uplift load by 0.50.
- For sloped only, the maximum allowable load for the GLT/GLS/GLTV is 6,500 lb.; for the HGLT/HGLS/HGLTV it is 9,165 lb.
- For skewed only, the maximum allowable load for the GLT/GLS/GLTV is 6,550 lb.; for the HGLT/HGLS/HGLTV it is 7,980 lb. The deflection at full loading may reach $\frac{1}{4}$ ".
- Sloped and skewed GLT/GLS/GLTV configurations have a maximum allowable load of 5,500 lb. Sloped and skewed combinations are not allowed for the HGLT/HGLS/HGLTV.
- Sloped and/or skewed seat hangers may not be installed in non-backed nailer/header installations.

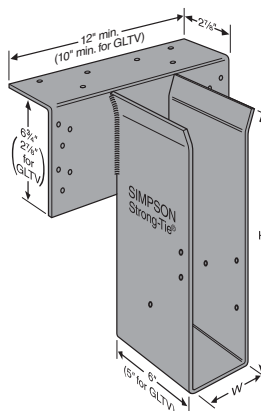
Sloped Top Flange

- A top flange may be sloped down left or down right to 30° with or without a sloped and/or skewed seat (see illustration). Reduce allowable table loads using straight-line interpolation (see p. 213).

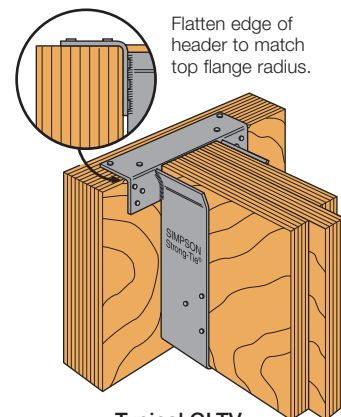
Offset Top Flange

- The top flange may be offset left or right for placement at the end of a header. Minimum seat width $\frac{3}{4}$ ". The maximum allowable load is 0.50 of the table load for the GLT/GLS/GLTV, and 0.45 for the HGLT/HGLS/HGLTV.
- For skewed and offset top-flange GLS/GLT/GLTV hangers, the maximum allowable load is 3,500 lb.
- 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.
- No uplift load.

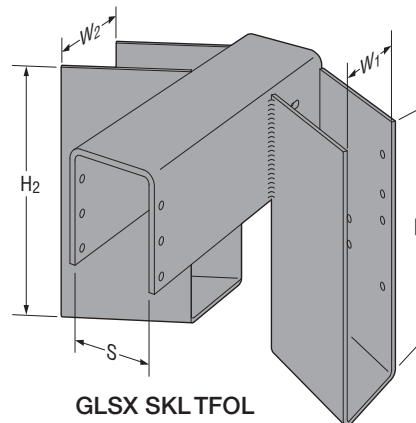
Codes: See p. 14 for Code Reference Key Chart



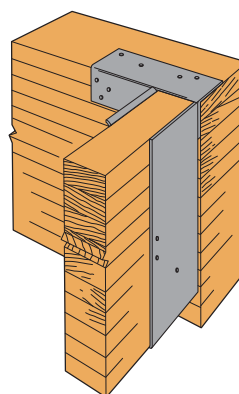
HGLTV
(GLTV similar)



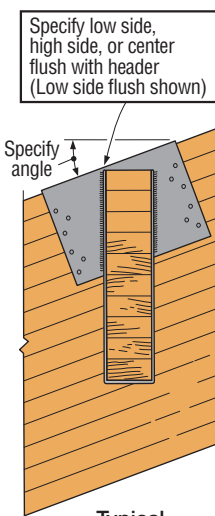
Typical GLTV Installation



GLSX SKLTFOL



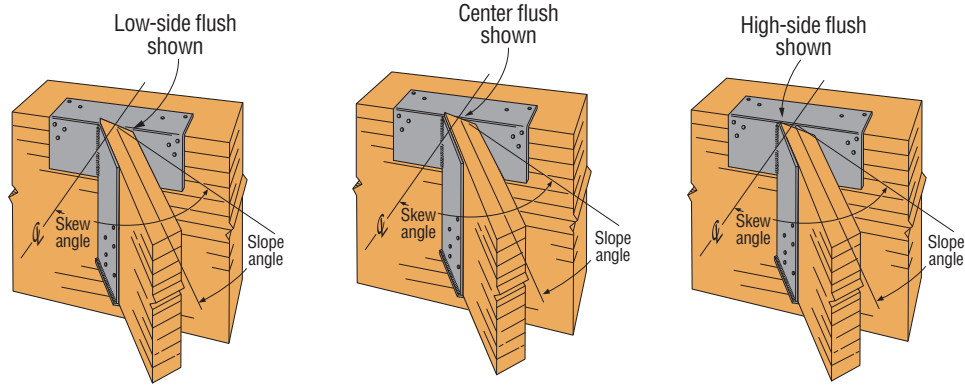
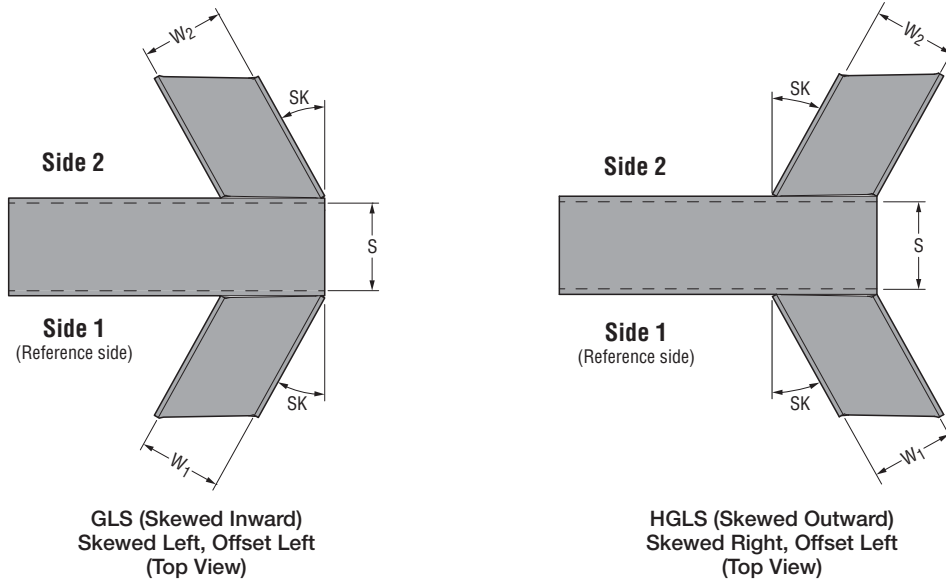
Typical GLT Top Flange Offset Left
(HGLT similar)



Typical HGLT Top Flange Sloped Down Left with Low Side Flush

GLTV/HGLTV

Heavy-Duty Hangers (cont.)



Typical GLT Sloped Down, Skewed Right
When ordering, specify low side flush, center flush or high side flush

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Fasteners			Allowable Loads Header Type							Code Ref.
	Top	Face	Joist	Uplift (160)	LVL ⁴	PSL	LSL	DF/SP	SPF/HF	Nailer ⁵	
GLTV series	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,915	7,200	5,145	5,930	I19, L14, FL
HGLTV series	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—	

- Uplift loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
- Uplift loads only apply when "H" is 28" or less. Uplift loads for nailer applications is limited to 710 lb.
- For hanger heights exceeding the joist height, the allowable load is 0.50 of the table load.
- Applies to LVL headers made primarily from Douglas Fir or Southern Pine. For LVL made primarily from Spruce Pine Fir or similar less dense veneers, use the values found in the SPF/HF column.
- Nailer shall be minimum 2-2x, 3x or 4x DF/SP. Use 16d x 2½" nails.
- For SCL products made primarily from Douglas Fir or Southern Pine use 1,640 lb. for uplift. For SPF member use 1,115 lb. for uplift.
- Nails:** 16d = 0.162" dia. x 3½" long. See pp. 26–27 for other nail sizes and information.

EGQ

High-Capacity 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 EGQ hanger is a high capacity top flange connector designed for use with Structural Composite Lumber beams. It utilizes Simpson Strong-Tie® 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 ¼" x 3" Strong-Drive SDS Heavy-Duty Connector screws, which are provided with the EGQ. (Lag screws will not achieve the same load.)
- All multiple members must be fastened together to act as a single unit.
- Multiple member headers may require additional fasteners at hanger locations. Quantity and location to be determined by Designer. See Strong-Drive SDS Heavy-Duty Connector screw section for additional information and applications.

Options:

- See Hanger Options information on pp. 121–123

Skewed Seat

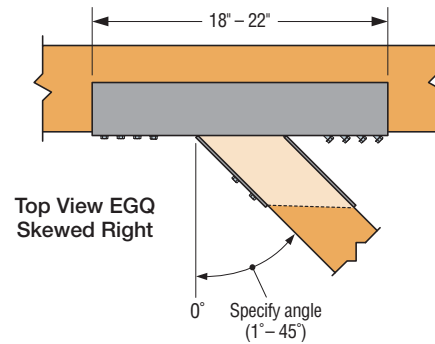
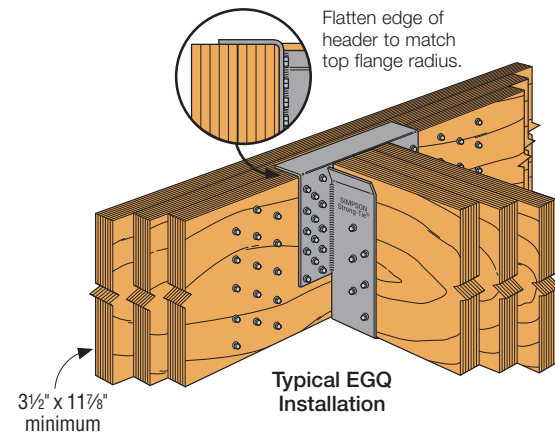
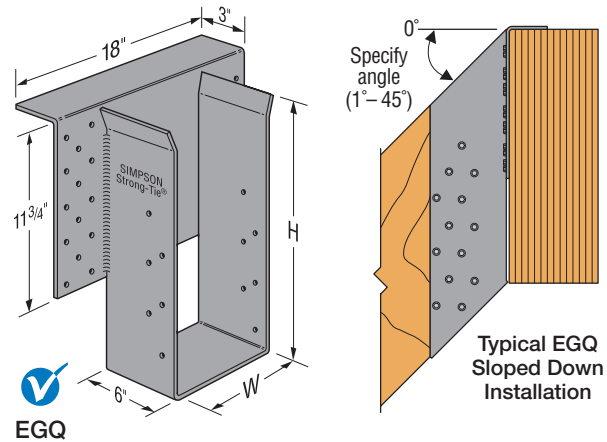
- The EGQ can be skewed a maximum of 45°
- The maximum allowable download when skewed is 16,300 lb.
- The maximum allowable uplift when skewed is 5,770 lb.
- Joist must be bevel cut for skewed seat installation

Sloped Seat

- The EGQ 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. 14 for Code Reference Key Chart



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These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Joist or Purlin Size	Dimensions (in.)			Fasteners		Allowable Loads Header Type				Code Ref.
		W	H (Min.)	H (Max.)	Header	Joist	Uplift (160)	LVL/LSL	PSL	DF/SP	
EGQ3.62-SDS3	3½	3¾	11¼	32	(28) ¼" x 3" SDS	(12) ¼" x 3" SDS	6,365	19,800	18,680	19,800	I19, L14, FL
EGQ5.50-SDS3	5¼	5½	11¼	32	(28) ¼" x 3" SDS	(12) ¼" x 3" SDS	6,365	19,800	18,680	19,800	
EGQ7.25-SDS3	7	7¼	11¼	32	(28) ¼" x 3" SDS	(12) ¼" x 3" SDS	6,365	19,800	18,680	19,800	

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

MSC

Multiple Seat Connector

The MSC supports the ridge and two valleys for roof construction. Ideal for dormer roof applications.

Material: Top flange — 3 gauge, Stirrups — 11 gauge (MSC2 and MSC1.81), 7 gauge (MSC4 and MSC5)

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

Installation:

- Distribute the total load evenly about the centerline to avoid eccentric loading
- Fasten all built-up members together as one unit
- Net height will be calculated based on specified valley member depth and slope by the factory unless noted otherwise

Sloped and/or Skewed Valleys

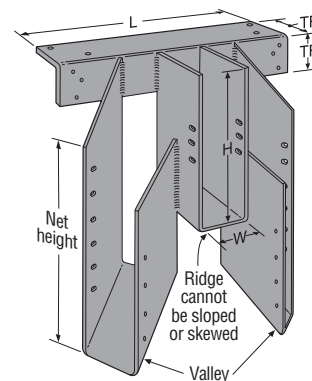
- The valley stirrups can be sloped down to 45° and skewed from 25° to 45°. (MSC5 skewed 20°-45°.)
- The total design load of the hanger is split between the ridge (20%) and each valley (40%).
- MSC connectors can be used for two valley connections with no ridge member. Divide the total load by two for each valley load.
- Many combinations of joist sizes, slopes and skews can be manufactured (refer to worksheet T-MSC-WS at strongtie.com).

Codes: See p. 14 for Code Reference Key Chart

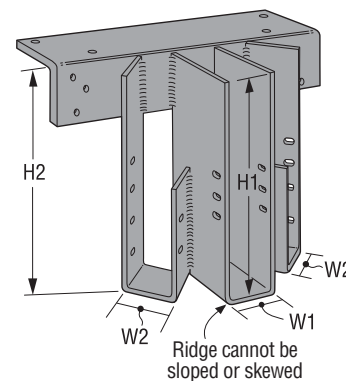
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Dimensions (in.)				Fasteners		Hips		Allowable Loads DF/SP			Code Ref.
	W	H (Min)	TF	L	Header	Joist	Max. Skew	Max. Slope	Floor/Snow/Roof (100/115/125)			
									Valley	Ridge	Total	
MSC2	1 1/16	5 1/2	2 7/8	12	(10) 16d	(18) 10d x 1 1/2" (26) 10d x 1 1/2"	45°	0°	2,535	1,265	6,335	I19, L14, FL
								45°	2,010	1,005	5,025	
MSC1.81	1 1/16	5 1/2	2 7/8	12	(10) 16d	(18) 10d x 1 1/2" (26) 10d x 1 1/2"	45°	0°	2,535	1,265	6,335	
								45°	2,010	1,005	5,025	
MSC4	3 9/16	7 1/2	2 7/8	18	(10) 16d	(18) 10d (26) 10d	45°	0°	3,335	1,665	8,335	
								45°	3,335	1,665	8,335	
MSC5	5 1/4	9 1/2	2 7/8	26	(13) 16d	(18) 16d (26) 16d	45°	0°	6,450	3,220	16,125	
								45°	6,290	3,145	15,725	

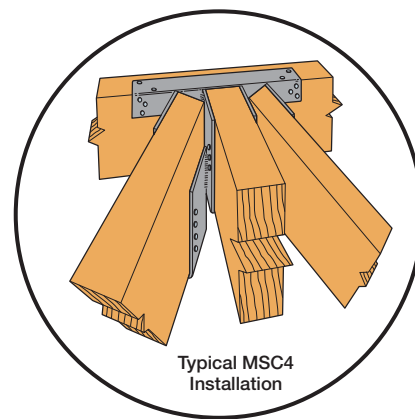
1. Valley loads are for each valley.
2. Other valley-ridge load distributions are allowed provided the sum of all three carried members is distributed symmetrically about the center of the hanger and combined do not exceed the total load.
3. MSC4 is also available in 3 1/8" glulam width.
4. MSC5 is also available in widths up to 5 1/2". W₂ minimum width is 3 1/8".
5. MSC4 is also available in widths down to 1 1/16". Use 10d x 1 1/2" nails and MSC2 allowable loads.
6. Refer to technical bulletin T-MSC-WS at strongtie.com for the hip valley rafter pitch conversion table.
7. **Nails:** 16d = 0.162" dia. x 3 3/8" long, 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26-27 for other nail sizes and information.



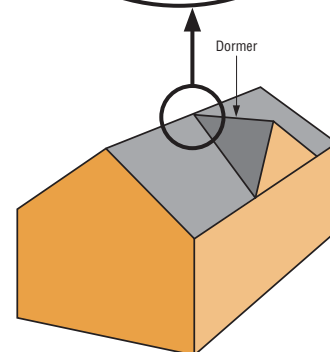
MSC4 with Valley Sloped and Skewed 45°



MSC1.81 with Valley Skewed 45° and Sloped 0°



Typical MSC4 Installation



Top-Flange Hangers – I-Joists and SCL

Actual Joist Size (in.)	Model No.	Web ⁷ Stiff Req.	Ga.	Dimensions (in.)				Fasteners ⁵			Allowable Loads Header Type ^{1,2,6}						
				W	H	B	TF	Solid Header		Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	DF/SCL I-Joist ³
								Top	Face								
5 x 16	MIT5.12/16	— ⁷	16	5 1/8	16	2 1/2	2 9/16	(4) 16d	(4) 16d	(2) 10d x 1 1/2"	215	2,550	2,140	2,115	2,305	1,665	1,230
	LBV5.12/16	—	14	5 1/8	16	2 1/2	2 1/2	(6) 16d	(4) 16d	(2) 10d x 1 1/2"	265	2,910	2,885	3,190	2,590	2,060	1,495
	HB5.12/16	✓	10	5 1/8	16	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI316-2	✓	12	5 1/8	16	2 1/2	2 9/16	(3) 16d	—	(2) 10d x 1 1/2"	—	3,635	3,320	3,650	3,255	2,600	2,030
5 x 18	B5.12/18	✓	12	5 1/8	18	2 1/2	2 1/2	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB5.12/18	✓	10	5 1/8	18	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI318-2	✓	12	5 1/8	18	2 1/2	2 9/16	(3) 16d	—	(2) 10d x 1 1/2"	—	3,635	3,320	3,650	3,255	2,600	2,030
5 x 20	B5.12/20	✓	12	5 1/8	20	2 1/2	2 1/2	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB5.12/20	✓	10	5 1/8	20	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI320-2	✓	12	5 1/8	20	2 1/2	2 9/16	(3) 16d	—	(2) 10d x 1 1/2"	—	3,635	3,320	3,650	3,255	2,600	2,030
5 x 22	B5.12/22	✓	12	5 1/8	22	2 1/2	2 1/2	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB5.12/22	✓	10	5 1/8	22	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI322-2	✓	12	5 1/8	22	2 1/2	2 9/16	(3) 16d	—	(2) 10d x 1 1/2"	—	3,635	3,320	3,650	3,255	2,600	2,030
5 x 24	B5.12/24	✓	12	5 1/8	24	2 1/2	2 1/2	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB5.12/24	✓	10	5 1/8	24	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI324-2	✓	12	5 1/8	24	2 1/2	2 9/16	(3) 16d	—	(2) 10d x 1 1/2"	—	3,635	3,320	3,650	3,255	2,600	2,030
5 x 26	B5.12/26	✓	12	5 1/8	26	2 1/2	2 1/2	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB5.12/26	✓	10	5 1/8	26	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI326-2	✓	12	5 1/8	26	2 1/2	2 9/16	(3) 16d	—	(2) 10d x 1 1/2"	—	3,635	3,320	3,650	3,255	2,600	2,030
5 x 28	B5.12/28	✓	12	5 1/8	28	2 1/2	2 1/2	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB5.12/28	✓	10	5 1/8	28	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
5 x 30	B5.12/30	✓	12	5 1/8	30	2 1/2	2 1/2	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB5.12/30	✓	10	5 1/8	30	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
5 1/4 x 7 1/4	WPU5.50/7.25	✓	12	5 1/2	7 1/4	3	2 9/16	(3) 16d	(4) 16d	(6) 10d	1,095	4,700	4,880	—	4,165	4,165	—
5 1/4 x 9 1/4	HB5.50/9.25	✓	10	5 1/2	9 1/4	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWU5.50/9.25	✓	10	5 1/2	9 1/4	3 1/4	2 1/2	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.50/9.25	✓	7	5 1/2	9 1/4	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
5 1/4 x 9 1/2	HB5.50/9.5	✓	10	5 1/2	9 1/2	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WP5.50/9.5	✓	12	5 1/2	9 1/2	2 1/2	2 9/16	(3) 16d	—	(2) 10d	—	3,635	3,320	3,650	3,255	2,600	2,030
	HWU5.50/9.5	✓	10	5 1/2	9 1/2	3 1/4	2 1/2	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.59	✓	7	5 1/8	9 1/2	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV5.59	✓	7	5 1/8	9 1/2	6	2 7/8	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
5 1/4 x 11 1/4	HB5.50/11.25	✓	10	5 1/2	11 1/4	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWU5.50/11.25	✓	10	5 1/2	11 1/4	3 1/4	2 1/2	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.50/11.25	✓	7	5 1/2	11 1/4	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
5 1/4 x 11 7/8	HB5.50/11.88	✓	10	5 1/2	11 7/8	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WP5.50/11.88	✓	12	5 1/2	11 7/8	2 1/2	2 9/16	(3) 16d	—	(2) 10d	—	3,635	3,320	3,650	3,255	2,600	2,030
	HWU5.50/11.88	✓	10	5 1/2	11 7/8	3 1/4	2 1/2	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.511	✓	7	5 1/8	11 7/8	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV5.511	✓	7	5 1/8	11 7/8	6	2 7/8	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
5 1/4 x 12	HB5.50/12	✓	10	5 1/2	12	3 1/2	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWU5.50/12	✓	10	5 1/2	12	3 1/4	2 1/2	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.512	✓	7	5 1/8	12	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV5.512	✓	7	5 1/8	12	6	2 7/8	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—

See footnotes on p. 218.

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Engineered Wood and Structural Composite Lumber Connectors

Top-Flange Hangers – I-Joists and SCL

Actual Joist Size (in.)	Model No.	Web ⁷ Stiff Req.	Ga.	Dimensions (in.)				Fasteners ⁵			Allowable Loads Header Type ^{1,2,6}						
				W	H	B	TF	Solid Header		Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/ HF	DF/SCL I-Joist ³
								Top	Face								
5¼ x 14	HB5.50/14	✓	10	5½	14	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWU5.50/14	✓	10	5½	14	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.514	✓	7	5⅝	14	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,700	7,200	5,145	—
	HGLTV5.514	✓	7	5⅝	14	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
5¼ x 16	HB5.50/16	✓	10	5½	16	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWU5.50/16	✓	10	5½	16	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.516	✓	7	5⅝	16	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV5.516	✓	7	5⅝	16	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
5¼ x 18	HB5.50/18	✓	10	5½	18	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWU5.50/18	✓	10	5½	18	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.518	✓	7	5⅝	18	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV5.518	✓	7	5⅝	18	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
5¼ x 18¾	GLTV5.50/18.75	✓	7	5½	18¾	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV5.50/18.75	✓	7	5½	18¾	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
5¼ x 20	HB5.50/20	✓	10	5½	20	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWU5.50/20	✓	10	5½	20	3¼	2½	(4) 16d	(4) 16d	(6) 10d	965	6,000	5,500	5,535	6,000	5,415	—
	GLTV5.520	✓	7	5⅝	20	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV5.520	✓	7	5⅝	20	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 7¼	HWU7.12/7.25	✓	10	7½	7¼	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
7 x 9¼	HB7.12/9.25	✓	10	7½	9¼	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI49.25-2	✓	12	7½	9¼	2½	2⅝	(3) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	2,030
	HWU7.12/9.25	✓	10	7½	9¼	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV49.25-2	✓	7	7½	9¼	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
7 x 9½	B7.12/9.5	✓	12	7½	9½	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB7.12/9.5	✓	10	7½	9½	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI49.5-2	✓	12	7½	9½	2½	2⅝	(3) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	2,030
	HWU7.12/9.5	✓	10	7½	9½	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV49.5-2	✓	7	7½	9½	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
7 x 11¼	HB7.12/11.25	✓	10	7½	11¼	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI411.25-2	✓	12	7½	11¼	2½	2⅝	(3) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	2,030
	HWU7.12/11.25	✓	10	7½	11¼	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV411.25-2	✓	7	7½	11¼	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV411.25-2	✓	7	7½	11¼	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 11⅞	B7.12/11.88	✓	12	7½	11⅞	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB7.12/11.88	✓	10	7½	11⅞	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI411.88-2	✓	12	7½	11⅞	2½	2⅝	(3) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	2,030
	HWU7.12/11.88	✓	10	7½	11⅞	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV411.88-2	✓	7	7½	11⅞	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV411.88-2	✓	7	7½	11⅞	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 14	B7.12/14	✓	12	7½	14	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB7.12/14	✓	10	7½	14	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI414-2	✓	12	7½	14	2½	2⅝	(3) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	2,030
	HWU7.12/14	✓	10	7½	14	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV414-2	✓	7	7½	14	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV414-2	✓	7	7½	14	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 16	B7.12/16	✓	12	7½	16	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB7.12/16	✓	10	7½	16	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	WPI416-2	✓	12	7½	16	2½	2⅝	(3) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	2,030
	HWU7.12/16	✓	10	7½	16	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV416-2	✓	7	7½	16	5	2⅞	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV416-2	✓	7	7½	16	6	2⅞	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—

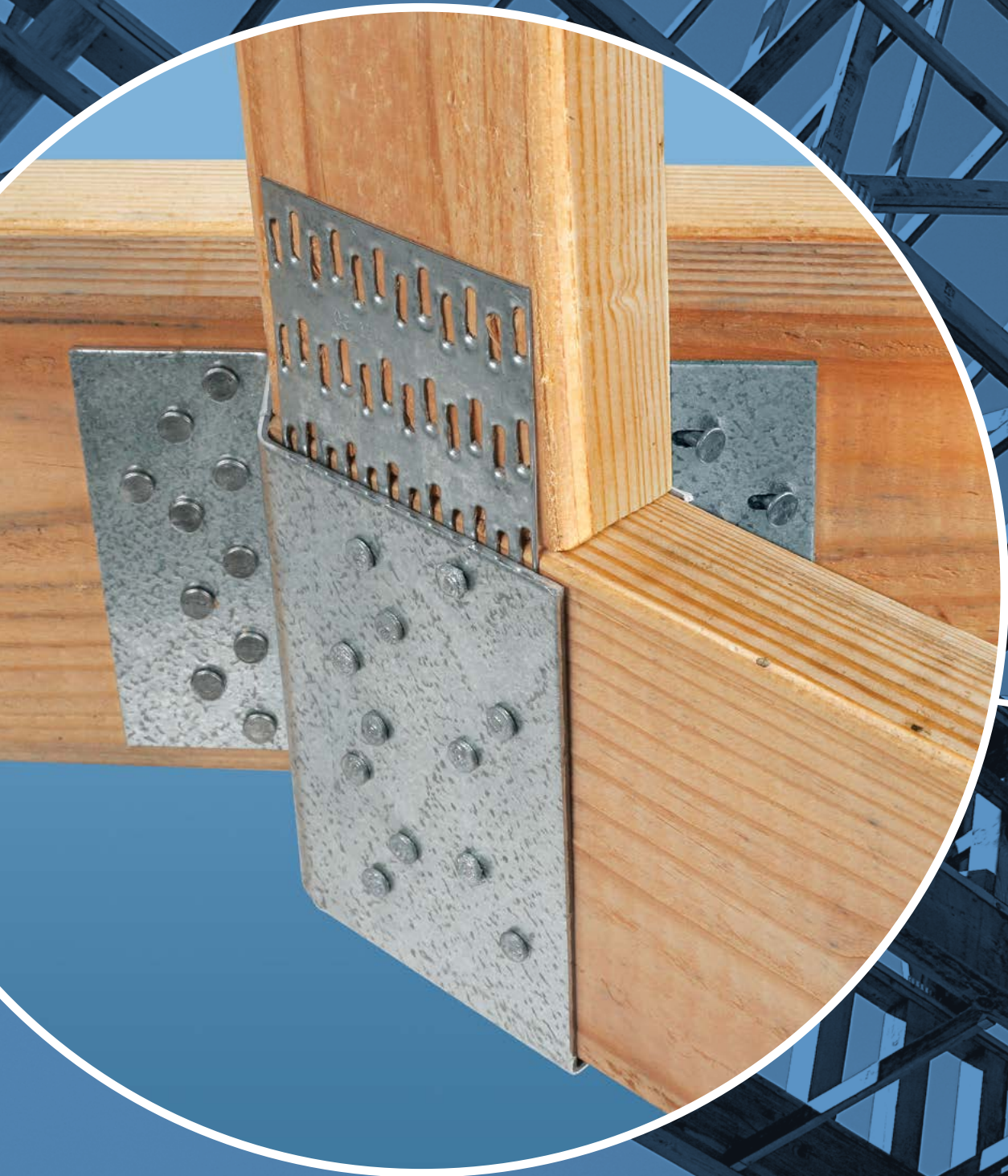
See footnotes on p. 218.

Top-Flange Hangers – I-Joists and SCL

Actual Joist Size (in.)	Model No.	Web ⁷ Stiff Req.	Ga.	Dimensions (in.)				Fasteners ⁵			Allowable Loads Header Type ^{1,2,6}						
				W	H	B	TF	Solid Header		Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	DF/SCL I-Joist ³
								Top	Face								
7 x 18	B7.12/18	✓	12	7½	18	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB7.12/18	✓	10	7½	18	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWI418-2	✓	11	7½	18	2½	2½	(4) 16d	—	(2) 10d	—	5,100	4,000	4,500	5,285	3,665	—
	HWU7.12/18	✓	10	7½	18	¾	2½	(4) 16d	(4) 16d	(6) 10d	1,160	6,000	5,500	5,535	6,000	5,415	—
	GLTV418-2	✓	7	7½	18	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV418-2	✓	7	7½	18	6	2¾	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 18¾	GLTV418.75-2	✓	7	7½	18¾	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	4,260	—
7 x 20	B7.12/20	✓	12	7½	20	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB7.12/20	✓	10	7½	20	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWI420-2	✓	11	7½	20	2½	2½	(4) 16d	—	(2) 10d	—	5,100	4,000	4,500	5,285	3,665	—
	HWU7.12/20	✓	10	7½	20	¾	2½	(4) 16d	(4) 16d	(6) 10d	965	6,000	5,500	5,535	6,000	5,415	—
	GLTV420-2	✓	7	7½	20	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,700	7,200	5,145	—
	HGLTV420-2	✓	7	7½	20	6	2¾	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 22	B7.12/22	✓	12	7½	22	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650	—
	HB7.12/22	✓	10	7½	22	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWI422-2	✓	11	7½	22	2½	2½	(4) 16d	—	(4) 10d	—	5,100	4,000	4,500	5,285	3,665	—
	GLTV422-2	✓	7	7½	22	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV7.12/22	✓	7	7½	22	6	2¾	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
	7 x 24	B7.12/24	✓	12	7½	24	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650
HB7.12/24		✓	10	7½	24	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
HWI424-2		✓	11	7½	24	2½	2½	(4) 16d	—	(4) 10d	—	5,100	4,000	4,500	5,285	3,665	—
GLTV424-2		✓	7	7½	24	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
HGLTV7.12/24		✓	7	7½	24	6	2¾	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 26		B7.12/26	✓	12	7½	26	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650
	HB7.12/26	✓	10	7½	26	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
	HWI426-2	✓	11	7½	26	2½	2½	(4) 16d	—	(6) 10d	—	5,100	4,000	4,500	5,285	3,665	—
	GLTV426-2	✓	7	7½	26	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV426-2	✓	7	7½	26	6	2¾	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
	7 x 28	B7.12/28	✓	12	7½	28	2½	2½	(6) 16d	(8) 16d	(6) 16d	1,010	4,135	3,355	4,500	3,800	2,650
HB7.12/28		✓	10	7½	28	3½	3	(6) 16d	(16) 16d	(10) 16d	2,610	5,815	5,640	6,395	5,650	3,820	—
HWI428-2		✓	11	7½	28	2½	2½	(4) 16d	—	(6) 10d	—	5,100	4,000	4,500	5,285	3,665	—
GLTV428-2		✓	7	7½	28	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
HGLTV428-2		✓	7	7½	28	6	2¾	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 30		HWI430-2	✓	11	7½	30	2½	2½	(4) 16d	—	(6) 10d	—	5,100	4,000	4,500	5,285	3,665
	GLTV430-2	✓	7	7½	30	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV430-2	✓	7	7½	30	6	2¾	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—
7 x 32	HWI432-2	✓	11	7½	32	2½	2½	(4) 16d	—	(6) 10d	—	5,100	4,000	4,500	5,285	3,665	—
	GLTV432-2	✓	7	7½	32	5	2¾	(4) 16d	(6) 16d	(6) 16d	1,295	7,500	7,400	5,750	7,200	5,145	—
	HGLTV432-2	✓	7	7½	32	6	2¾	(6) 16d	(12) 16d	(6) 16d	1,295	10,585	9,485	9,500	8,835	6,770	—

See footnotes on p. 218.

Plated Truss Connectors



THA/THAC

Adjustable Truss 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.

The THA series have extra long straps that can be field-formed to give height adjustability and top flange hanger convenience. THA hangers can be installed as top flange or face-mount hangers.

THA4x and THA2x-2 models feature a dense nail pattern in the straps, which provides more installation options and allows for easy top flange installation.

Material: See table

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes.

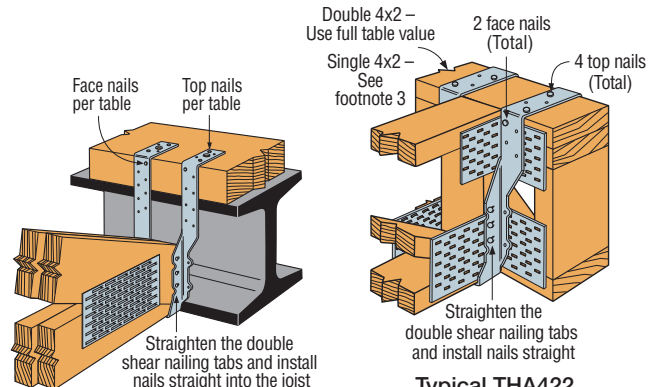
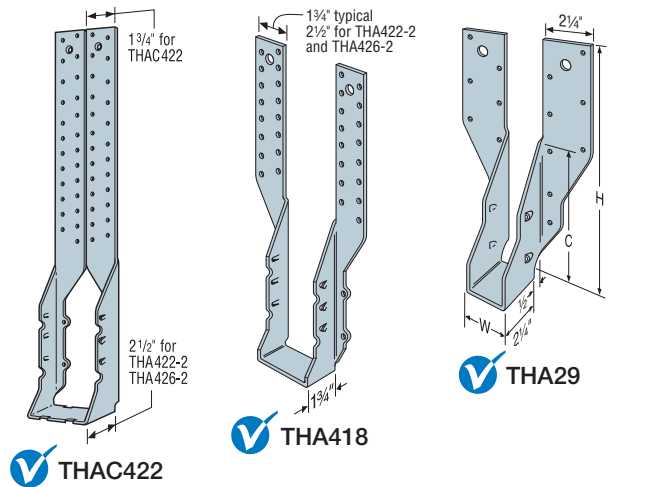
The following installation methods may be used:

- **Top Flange Installation** — The straps must be field formed over the header — see table for minimum top flange requirements. Install top and face nails according to the table. Top nails shall not be within 1/4" from the edge of the top flange members. For the THA29, nails used for joist attachment must be driven at an angle so that they penetrate through the corner of the joist and into the header. For all other top flange installations, straighten the double shear nailing tabs and install the nails straight into the joist.
- **Face Mount Installation** — Install all face nails according to the table. Not all nail holes will be filled on all models. On models where there are more nail holes than required, the lowest four face holes must be filled. Nails used for the joist attachment must be driven at an angle so that they penetrate through the corner of the joist into the header.
- **Alternate Installation** — The THA 4x hangers may be installed in a top flange configuration using the tabulated fasteners for face-mount installation and achieve the face-mount installation loads. Install the tabulated face nails into the face and top of the carrying member. Nails used for the joist attachment must be driven at an angle so that they penetrate through the corner of the joist into the header.
- **Uplift** — Lowest face nails must be filled to achieve uplift loads.

Options:

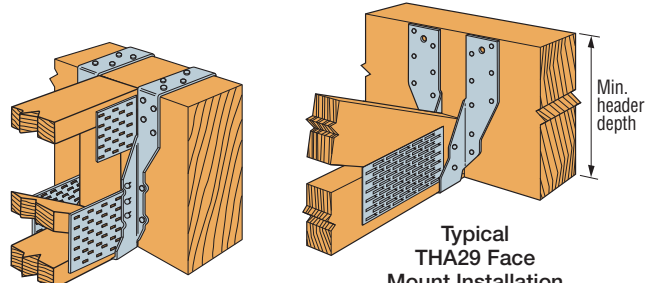
- THA hangers available with the header flanges turned in for 3 5/8" (except THA413) and larger, with no load reduction — order THAC hanger.

Codes: See p. 14 for Code Reference Key Chart



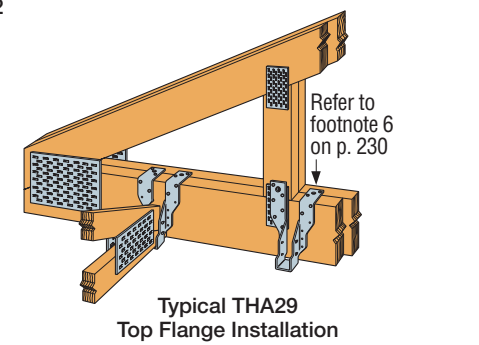
Typical THA Top Flange Installation on a Nailer
(except THA29)

Typical THA422 Top Flange Installation on a 4x2 Floor Truss

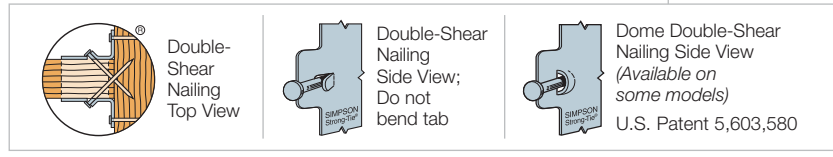


Alternate Installation of THA422

Typical THA29 Face Mount Installation



Typical THA29 Top Flange Installation



Plated Truss Connectors

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THA/THAC

Adjustable Truss Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Ga.	Dimensions (in.)				Min. ⁵ Top Flange	Min. Header Depth	Fasteners				DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		W	H	C	Carrying Member			Carried Member		Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)			
					Top			Face	Straight											Slant		
Top-Flange Installation³																						
THA29	18	1½	9¼	5½	27/16	—	(4) 10d	(4) 10d	—	(4) 10d	560	2,260	2,310	2,350	2,350	480	1,740	1,785	1,815	1,815	18, L15, FL	
THA213	18	1½	13¾	5½	1½	—	(4) 10d	(2) 10d	(4) 10d x 1½"	—	—	1,615	1,615	1,615	1,615	—	1,280	1,280	1,280	1,280		
THA218	18	1½	17¾	5½	2	—	(4) 10d	(2) 10d	(4) 10d x 1½"	—	—	1,615	1,615	1,615	1,615	—	1,280	1,280	1,280	1,280		
THA218-2	16	3½	17¼	8	2	—	(4) 16d	(2) 16d	(6) 10d	—	—	2,245	2,245	2,245	2,245	—	1,935	1,935	1,935	1,935		
THA222-2	16	3½	22¾	8	2	—	(4) 16d	(2) 16d	(6) 10d	—	—	2,245	2,245	2,245	2,245	—	1,935	1,935	1,935	1,935		
THA413	18	3%	13¾	4½	1½	—	(4) 10d	(2) 10d	(4) 10d	—	—	1,615	1,615	1,615	1,615	—	1,280	1,280	1,280	1,280		
THA418	16	3%	17½	7¾	2	—	(4) 16d	(2) 16d	(6) 10d	—	—	2,245	2,245	2,245	2,245	—	1,935	1,935	1,935	1,935		
THA422	16	3%	22	7¾	2	—	(4) 16d	(2) 16d	(6) 10d	—	—	2,245	2,245	2,245	2,245	—	1,935	1,935	1,935	1,935		
THA426	14	3%	26	7¾	2	—	(4) 16d	(4) 16d	(6) 16d	—	—	2,435	2,435	2,435	2,435	—	2,095	2,095	2,095	2,095		FL
THA422-2	14	7¼	22¼	9¾	2	—	(4) 16d	(4) 16d	(6) 16d	—	—	3,330	3,330	3,330	3,330	—	2,865	2,865	2,865	2,865		FL,170
THA426-2	14	7¼	26¼	9¾	2	—	(4) 16d	(4) 16d	(6) 16d	—	—	3,330	3,330	3,330	3,330	—	2,865	2,865	2,865	2,865	FL,170	
Face-Mount Installation⁴																						
THA29	18	1½	9¼	5½	—	9¼	—	(16) 10d	—	(4) 10d	560	2,125	2,310	2,350	2,350	480	1,740	1,785	1,815	1,815	18, L15, FL	
THA213	18	1½	13¾	5½	—	13¾	—	(14) 10d	—	(4) 10d	1,170	1,955	2,020	2,065	2,065	780	1,680	1,735	1,775	1,775		
THA218	18	1½	17¾	5½	—	17¾	—	(18) 10d	—	(4) 10d	1,170	1,955	2,020	2,065	2,065	780	1,680	1,735	1,775	1,775		
THA218-2	16	3½	17¼	8	—	14¼	—	(22) 16d	—	(6) 16d	1,855	3,695	3,695	3,695	3,695	1,595	3,185	3,185	3,185	3,185		
THA222-2	16	3½	22¾	8	—	14¼	—	(22) 16d	—	(6) 16d	1,855	3,695	3,695	3,695	3,695	1,595	3,185	3,185	3,185	3,185		
THA413	18	3%	13¾	4½	—	13¾	—	(14) 10d	—	(4) 10d	1,170	1,940	2,235	2,400	2,400	780	1,660	1,910	2,075	2,210		
THA418	16	3%	17½	7¾	—	14¼	—	(22) 16d	—	(6) 16d	1,855	3,695	3,695	3,695	3,695	1,595	3,185	3,185	3,185	3,185		
THA422	16	3%	22	7¾	—	14¼	—	(22) 16d	—	(6) 16d	1,855	3,695	3,695	3,695	3,695	1,595	3,185	3,185	3,185	3,185		
THA426	14	3%	26	7¾	—	16¼	—	(30) 16d	—	(6) 16d	1,855	4,480	4,480	4,480	4,480	1,595	3,855	3,855	3,855	3,855		FL
THA422-2	14	7¼	22¼	9¾	—	16¾	—	(30) 16d	—	(6) 16d	1,855	5,160	5,520	5,520	5,520	1,595	4,440	4,745	4,745	4,745		FL,170
THA426-2	14	7¼	26¼	9¾	—	18	—	(38) 16d	—	(6) 16d	1,855	5,520	5,520	5,520	5,520	1,595	4,745	4,745	4,745	4,745	FL,170	

- Uplift has been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- Wind (160) is a download rating.
- For single 4x2 top chord carrying members or single 2x nailers, the following THA hangers can be installed using 10d x 1½" top nails and (2) 16d face nails with reduced allowable loads as noted:
THA418/THA422: 1,415 lb. for DF/SP, 1,215 lb. for SPF; THA426: 2,245 lb. for DF/SP, 1,930 lb. for SPF;
THA422-2/THA426-2: 2,345 lb. for DF/SP, 2,015 lb. for SPF. Loads are based on hanger installations at panel points.
- Face-mount installation loads are based on minimum of 2-ply 2x carrying member. For single 2x carrying members, use 10d x 1½" nails into the carrying member and tabulated fasteners into the carried member, and use 0.80 of the table value for 18 gauge, and 0.68 of the table value for 16 gauge and 14 gauge.
- Min. Top Flange refers to the minimum length of strap that must be field formed over the header.
- For the THA 2x models, one strap may be installed vertically according to the face mount nailing requirements and the other strap wrapped over the truss chord according to the top flange nailing requirements (see drawing on p. 229) and achieve full tabulated top flange installation loads.
- Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

THASR/L

Adjustable/Skewable Truss Hangers

The THASR/L hangers combine the height adjustability of THA hangers with field skewability, offering maximum flexibility for the installer, and eliminating the need for special orders. Shipped at 22½° right or left, the THASR/L hangers can be field skewed from 22½° to 75° (up to 85° for the THASR/L29 and THASR/L29-2).

The THASR/L29, 29-2 and 422 are replacing the former 218, 218-2 and 418 versions.

Features:

- The THASR/L single and two-ply versions have straps 9" tall. The 4x version has 22" straps to fit more parallel-chord truss applications.
- The versions have only one acute side bend line to ease design and installation.
- Joist fasteners are only required from one side for skews greater than 22½°.
- Rated for installation with either nails or Simpson Strong-Tie® Strong-Drive® SD Connector screws.

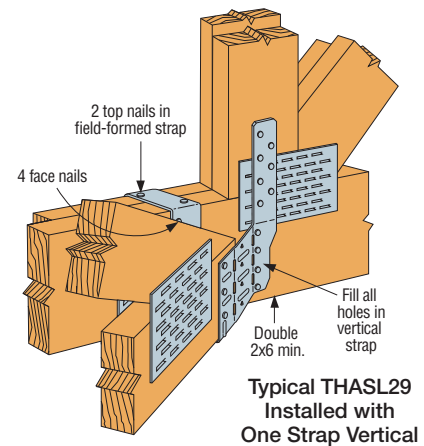
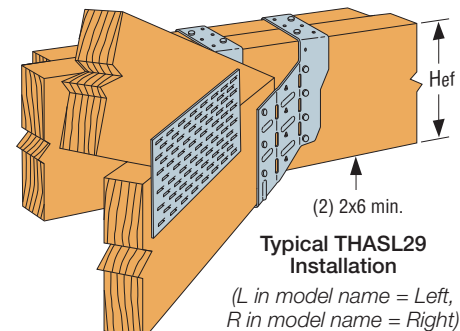
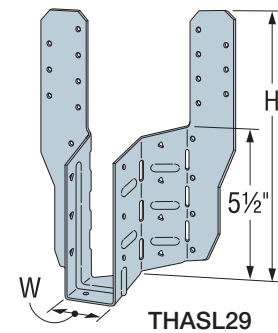
Material: 16 gauge

Finish: Galvanized

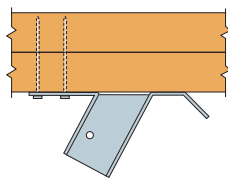
Installation:

- Use all specified fasteners; see General Notes.
- Product is factory skewed to 22½° and may be field skewed from 22½° to 75° (up to 85° for the THASR/L29 and THASR/L29-2). See Installation Sequence below for skews greater than 22½°.
- For 22½° skew installations, fill all triangle holes. Triangle holes do not need to be filled for skews greater than 22½°.
- For all installations, fill the fastener hole(s) in the bottom of the hanger seat (THASR/L29 has one and all other models have two).
- For top flange installations, the straps must be field-formed over the header a minimum of 2".
- THASR/L29 and THASR/L29-2 — For installations where either strap cannot be field-formed over the header, install the strap(s) vertical and fill all holes. Loads must be reduced as noted in the table footnotes.
- THASR/L422 — For face-mount installations, install the carrying member fasteners into the lowest holes.

Codes: See p. 14 for Code Reference Key Chart

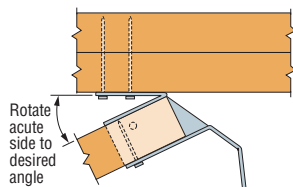


Installation Sequence for Skews > 22½°



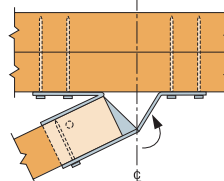
Step 1

Install acute side top and/or face header fasteners.



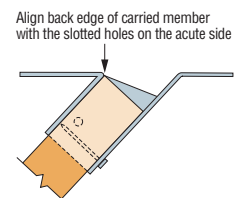
Step 2

Utilizing a piece of scrap fastened to the hanger (on obtuse side only), bend the hanger along the acute side bend line to the desired angle.



Step 3

Bend the obtuse side of the hanger back toward the header until the narrow nailing flange lies flat against the header, and install obtuse side header top and/or face fasteners.



Step 4

Install joist/truss and install the carried member fasteners on the obtuse side and seat only.

THASR/L

Adjustable/Skewable Truss Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Allowable Loads for Installation with Nails

Min. Carried Member	Model No.	Dim. (in.)		Min. Heff	Skew (Degree)	Fasteners			DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		W	H			Carrying Member		Carried Member	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
						Top	Face												
Top-Flange Installation⁵																			
2x truss	THASR/L29	1%	9%	5 1/2	22 1/2	(4) 10d	(8) 10d	(7) 10dx1 1/2"	795	1,975	1,975	1,975	1,975	685	1,695	1,700	1,700	1,700	
						23 to 74	(4) 10d	(8) 10d	(4) 10dx1 1/2"	385	1,485	1,485	1,485	1,485	330	1,275	1,275	1,275	1,275
						75 to 85	(4) 10d	(8) 10d	(4) 10dx1 1/2"	410	1,850	1,895	1,895	1,895	355	1,380	1,420	1,445	1,545
2-2x truss	THASR/L29-2	3 1/8	9%	5 1/2	22 1/2	(4) 10d	(8) 10d	(8) 10d	825	1,660	1,660	1,660	1,660	710	1,425	1,425	1,425	1,425	
						23 to 45	(4) 10d	(8) 10d	(5) 10d	295	1,285	1,285	1,285	1,285	255	1,105	1,105	1,105	1,105
						46 to 85	(4) 10d	(8) 10d	(5) 10d	260	1,285	1,285	1,285	1,285	225	1,105	1,105	1,105	1,105
4x truss	THASR/L422	3%	22	8	22 1/2	(4) 10d	(4) 10d	(8) 10d	—	1,115	1,115	1,115	1,115	—	960	960	960	960	
						23 to 45	(4) 10d	(4) 10d	(5) 10d	—	925	925	925	925	—	795	795	795	795
						46 To 75	(4) 10d	(4) 10d	(5) 10d	—	745	745	745	745	—	640	640	640	640
Face-Mount Installation																			
4x truss	THASR/L422	3%	22	5 1/2	22 1/2	—	(8) 10d	(8) 10d	—	810	810	810	810	—	700	700	700	700	
						23 to 45	—	(8) 10d	(5) 10d	—	730	730	730	730	—	625	625	625	625
						46 to 75	—	(8) 10d	(5) 10d	—	730	730	730	730	—	625	625	625	625

Allowable Loads for Installation with Strong-Drive® SD Connector Screws

Min. Carried Member	Model No.	Dim. (in.)		Min. Heff	Skew (Degree)	Fasteners			DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		W	H			Carrying Member		Carried Member	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
						Top	Face												
Top-Flange Installation⁵																			
2x truss	THASR/L29	1%	9%	5 1/2	22 1/2	(4) SD #9x2 1/2"	(8) SD #9x2 1/2"	(7) SD #9x1 1/2"	1,085	2,510	2,665	2,765	2,790	935	1,735	1,835	1,905	2,140	
						23 to 45	(4) SD #9x2 1/2"	(8) SD #9x2 1/2"	(4) SD #9x1 1/2"	660	1,995	2,075	2,125	2,220	540	1,400	1,450	1,485	1,600
						46 to 85	(4) SD #9x2 1/2"	(8) SD #9x2 1/2"	(4) SD #9x1 1/2"	535	1,995	2,075	2,125	2,220	460	1,400	1,450	1,485	1,600
2-2x truss	THASR/L29-2	3 1/8	9%	5 1/2	22 1/2	(4) SD #9x2 1/2"	(8) SD #9x2 1/2"	(8) SD #9x2 1/2"	1,450	2,745	2,745	2,745	2,745	1,075	2,360	2,360	2,360	2,360	
						23 to 45	(4) SD #9x2 1/2"	(8) SD #9x2 1/2"	(5) SD #9x2 1/2"	530	1,915	1,915	1,915	1,915	455	1,645	1,645	1,645	1,645
						46 to 85	(4) SD #9x2 1/2"	(8) SD #9x2 1/2"	(5) SD #9x2 1/2"	665	1,530	1,530	1,530	1,530	540	1,315	1,315	1,315	1,315
4x truss	THASR/L422	3%	22	8	22 1/2	(4) SD #9x2 1/2"	(4) SD #9x2 1/2"	(8) SD #9x2 1/2"	—	1,140	1,140	1,140	1,140	—	980	980	980	980	
						23 to 45	(4) SD #9x2 1/2"	(4) SD #9x2 1/2"	(5) SD #9x2 1/2"	—	1,065	1,065	1,065	1,065	—	915	915	915	915
						46 to 75	(4) SD #9x2 1/2"	(4) SD #9x2 1/2"	(5) SD #9x2 1/2"	—	870	870	870	870	—	750	750	750	750
Face-Mount Installation																			
4x truss	THASR/L422	3%	22	5 1/2	22 1/2	—	(8) SD #9x2 1/2"	(8) SD #9x2 1/2"	—	1,600	1,720	1,720	1,720	—	895	1,030	1,120	1,435	
						23 to 45	—	(8) SD #9x2 1/2"	(5) SD #9x2 1/2"	—	1,330	1,330	1,330	1,330	—	895	1,030	1,120	1,145
						46 to 75	—	(8) SD #9x2 1/2"	(5) SD #9x2 1/2"	—	1,330	1,330	1,330	1,330	—	895	1,030	1,120	1,145

- Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- Wind (160) is a download rating.
- Minimum carried member heel height shall be 4 1/2".
- H_{eff} is the distance from the top of the hanger seat to the top of the carrying member.
- For tabulated top flange installation loads, the straps must be wrapped over the header a minimum of 2". Allowable downloads for the THASR/L29 and THASR/L29-2 with one or both straps installed vertically (with all holes filled) are 90% of the tabulated downloads for skews greater than 22 1/2° and 85% of the tabulated downloads for 22 1/2° skews. Allowable uplift capacities are 100% of the tabulated uplift load capacities.
- Allowable downloads for 75°–85° skews with one or both straps installed vertically (with all holes filled) shall be limited to 75% of these loads.
- Nails:** 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.
- Screws:** SD #9 x 1 1/2" (model SD9112) = 0.131" dia. x 1 1/2" long, SD #9 x 2 1/2" (model SD9212) = 0.131" dia. x 2 1/2" long.

Plated Truss Connectors

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W/WP/WMU

Plated Truss Top-Flange Hangers

The W and WP hangers offer design flexibility and versatility supporting trusses off of wood or steel. WMU hangers are designed for use on standard 8" grouted masonry block wall construction.

Material: W, WMU — 12 gauge top flange and stirrup, WP — 7 gauge top flange and 12 gauge stirrup

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

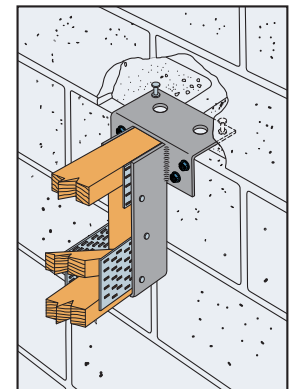
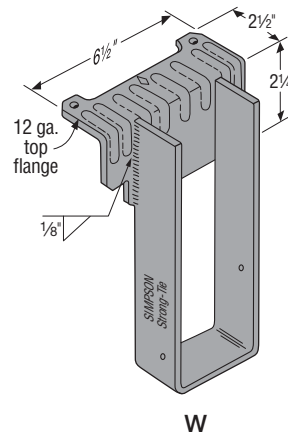
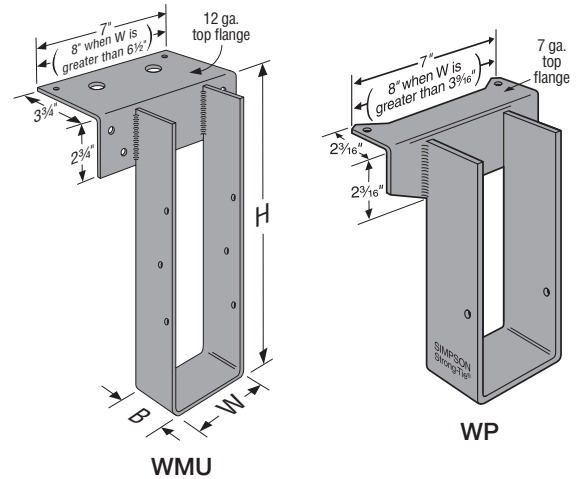
Installation:

- Use all specified fasteners.
- Hangers may be welded to steel headers with 1/8" for W, and 3/16" for WP, by 1 1/2" fillet welds located at each end of the top flange. Weld-on applications produce maximum allowable load listed. Uplift loads do not apply to this application.
- Hangers can support multi-ply carried members; the individual members must be secured together to work as a single unit before installation into the hanger.
- **WMU Mid-Wall Installation:** Installed between blocks with duplex nails cast into grout with a minimum of one grouted course above and below the top flange and one #5 vertical rebar minimum 24" long in each adjacent cell.
- **WMU Top-of-Wall Installation:** Install on top of wall to a grouted beam with masonry screws.
- **WMU — Minimum $f_m = 1,500$ psi. See pp. 276–277.**

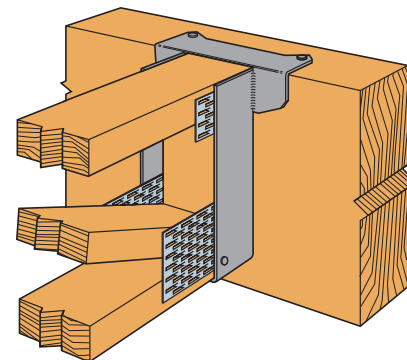
Options:

- For skewed trusses, see p. 153, Type B Hanger illustration.
- For 4x2 trusses, specify "alternate nail pattern" (ANP) which relocates the nails to the top and bottom cords. See Hanger Options, pp.122–123 for hanger modifications.

Codes: See p. 14 for Code Reference Key Chart



WMU Mid-Wall Installation



Typical WP Installation with Alternate Nailing Pattern (ANP) for 4x2 Truss

Nailer Table

The table indicates the maximum allowable loads for W and WP 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	Allowable Loads		
			DF/SP	SPF/HF	LSL
W	2x	(2) 10d x 1 1/2"	1,600	1,600	—
	(2) 2x	(2) 10d	1,665	1,665	—
	3x	(2) 16d x 2 1/2"	1,765	1,740	—
	4x	(2) 10d	2,200	2,200	—
WP	2x	(2) 10d x 1 1/2"	2,525	2,500	3,375
	(2) 2x	(2) 10d	3,255	3,255	—
	3x	(2) 16d x 2 1/2"	3,000	2,510	3,375
	4x	(2) 10d	3,255	3,255	—

W/WP/WMU

Plated Truss Top-Flange Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

W Series with Various Headers

Model	Joist		Fasteners			Allowable Loads Header Type								Code Ref.
	Width ⁴	Depth	Top	Face	Joist	Uplift (160)	LVL	PSL	LSL	DF/SP	SPF/HF	I-Joist	Masonry	
W	1½ to 3½	3½ to 30	(2) 10d x 1½"	—	(2) 10d x 1½"	—	1,635	1,740	—	1,600	1,415	—	—	I10, L11, FL
	1½ to 3½	3½ to 30	(2) 10d	—	(2) 10d x 1½"	—	2,150	2,020	—	2,200	1,435	—	—	
	1½ to 3½	3½ to 30	(2) 16d	—	(2) 10d x 1½"	—	2,335	1,950	2,335	1,765	1,435	—	—	
WP	1½ to 7	3½ to 30	(2) 10d x 1½"	—	(2) 10d x 1½"	—	2,865	3,250	—	2,500	2,000	2,030	—	170
	1½ to 7	3½ to 30	(2) 10d	—	(2) 10d x 1½"	—	2,525	3,250	3,650	3,255	2,600	—	—	I19, L14, FL
	1½ to 7	3½ to 30	(2) 16d	—	(2) 10d x 1½"	—	3,635	3,320	3,650	3,255	2,600	—	—	

- Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- WM hangers are limited based on joist bearing capacity for the specific wood species, up to the maximum test value of 4,175 lbs. All headers are grouted masonry block.
- Joist dimensions do not include truss plate thickness.
- Nails:** 16d and 16d DPLX = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

Model No.	Ga.	Dimensions (in.)				Fasteners		DF/SP Allowable Loads				SPF/HF Allowable Loads			
		W	Min. H	B	TF	Carrying Member	Carried Member	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)
W1.62x	12	1½	4	2½	2½	(2) 10d	(2) 10d x 1½"	2,200	2,200	2,200	2,200	1,435	1,435	1,435	1,435
WP3.31x	12	3⅝	4	2½	2⅝	(2) 10d	(2) 10d	3,255	3,255	3,255	3,255	2,600	2,600	2,600	2,600
W3.62x	12	3⅝	4	2½	2½	(2) 10d	(2) 10d	2,200	2,200	2,200	2,200	1,435	1,435	1,435	1,435
WP3.62x	12	3⅝	4	2½	2⅝	(2) 10d	(2) 10d	3,255	3,255	3,255	3,255	2,600	2,600	2,600	2,600
WP7.25x	12	7¼	4	2½	2⅝	(2) 10d	(2) 10d	3,255	3,255	3,255	3,255	2,600	2,600	2,600	2,600

- Wind (160) is a download rating.
- "Min. H" is the minimum H dimension that may be ordered and desired H dimension should be specified. For hanger heights exceeding the joist height, the allowable load is 0.50 of the table load.
- Nails:** 16d DPLX = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

LUS/MUS/HUS/HHUS/HGUS/HGUQ

Face-Mount Joist 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.

All hangers in this series have double shear nailing — an innovation that distributes the load through two points on each joist nail for greater strength. This allows for fewer nails, faster installation, and the use of all common nails for the same connection.

Double-shear hangers range from the light capacity LUS hangers to the highest capacity HGUS hangers. For medium load truss applications, the MUS offers a lower cost alternative and easier installation than the HUS or THA hangers, while providing greater load capacity and bearing than the LUS.

HGUQ hangers provide similar capacities as HGUS double-shear hangers, but they use Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws instead of nails for faster and easier installation. In addition, the Strong-Drive SDS Heavy-Duty Connector screws help transfer the load between the piles of the supporting girder when they penetrate all piles.

Material: See tables on pp. 236–237

Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; **HGUQ available in HDG**; see Corrosion Information, pp. 15–18.

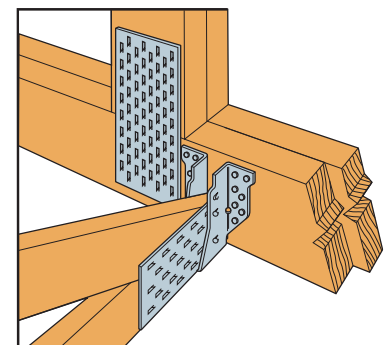
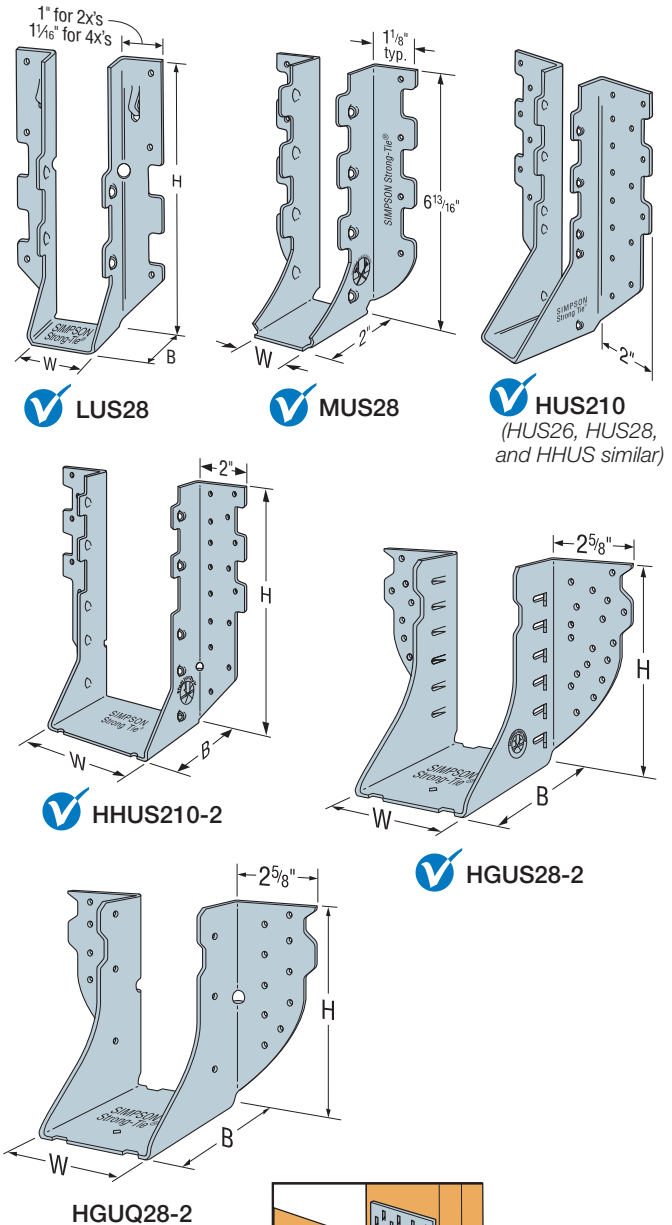
Installation:

- Use all specified fasteners; see General Notes.
- Nails must be driven at an angle through the joist or truss into the header to achieve the table loads.
- Simpson Strong-Tie Strong Drive SDS Heavy-Duty Connector screws are supplied with the HGUQ.
- The thickness of the supporting girder must be equal to or greater than the screw length for applications where the length of the supplied screws exceeds the thickness of the supporting girder, 3" or 4 1/2" screws may be substituted for the longer length screws with no load reduction, or a shim block may be used as approved by the Designer.
- Not designed for welded or nailer applications.

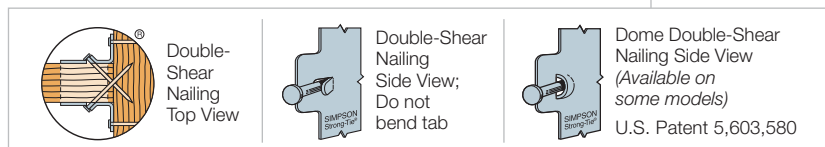
Options:

- LUS and MUS hangers cannot be modified.
- Concealed flanges are not available for HGUS and HHUS.
- Other sizes available; consult your Simpson Strong-Tie representative.

Codes: See p. 14 for Code Reference Key Chart



Typical HUS26 Installation with Reduced Heel Height
(Truss Designer to provide fastener quantity for connecting multiple members together)



LUS/MUS/HUS/HHUS/HGUS/HGUQ

Face-Mount Joist Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Min. Heel Height	Ga.	Dimensions (in.)			Fasteners	
			W	H	B	Carrying Member	Carried Member
Single 2x Sizes							
LUS24	2½"	18	1⅞"	3⅞"	1¾"	(4) 10d	(2) 10d
LUS26	4¼"		1⅞"	4¾"	1¾"	(4) 10d	(4) 10d
MUS26	4⅞"	18	1⅞"	5⅞"	2"	(6) 10d	(6) 10d
HUS26	4⅞"	16	1⅞"	5⅞"	3"	(14) 16d	(6) 16d
HGUS26	4⅞"	12	1⅞"	5⅞"	5"	(20) 16d	(8) 16d
LUS28	4⅞"	18	1⅞"	6⅞"	1¾"	(6) 10d	(4) 10d
MUS28	6⅞"	18	1⅞"	6⅞"	2"	(8) 10d	(8) 10d
HUS28	6½"	16	1⅞"	7"	3"	(22) 16d	(8) 16d
HGUS28	6⅞"	12	1⅞"	7⅞"	5"	(36) 16d	(12) 16d
LUS210	4¼"	18	1⅞"	7⅞"	1¾"	(8) 10d	(4) 10d
HUS210	8⅞"	16	1⅞"	9"	3"	(30) 16d	(10) 16d

1. See table below for allowable loads.

Model No.	DF Allowable Loads					SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
	Uplift1 (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift1 (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift1 (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
Single 2x Sizes																
LUS24	490	670	765	825	1,045	490	725	830	895	1,135	420	575	655	705	895	I7, FL, L17
LUS26	1,165	865	990	1,070	1,355	1,165	940	1,075	1,165	1,475	1,005	740	845	915	1,160	
MUS26	1,090	1,295	1,480	1,605	1,825	1,090	1,410	1,610	1,745	1,825	940	1,110	1,265	1,370	1,570	
HUS26	1,550	2,720	3,095	3,335	3,335	1,550	2,950	3,335	3,335	3,335	1,335	2,330	2,650	2,820	2,865	FL
HGUS26	1,050	4,360	4,885	5,230	5,390	1,050	4,725	5,290	5,390	5,390	905	3,750	4,200	4,500	4,635	
LUS28	1,165	1,100	1,255	1,360	1,725	1,165	1,200	1,365	1,480	1,835	1,005	940	1,075	1,165	1,475	I7, FL, L17
MUS28	1,555	1,730	1,975	2,140	2,645	1,555	1,880	2,150	2,330	2,645	1,335	1,475	1,690	1,830	2,275	
HUS28	2,000	3,965	4,120	4,220	4,335	2,000	3,790	3,960	4,070	4,335	1,720	2,905	3,035	3,125	3,435	
HGUS28	1,790	6,745	6,970	7,125	7,275	1,790	6,460	6,705	6,870	7,275	1,540	4,960	5,160	5,290	5,745	FL
LUS210	1,165	1,340	1,525	1,650	2,090	1,165	1,445	1,660	1,795	2,270	1,005	1,145	1,305	1,415	1,745	I7, FL, L17
HUS210	3,000	4,255	4,445	4,575	5,020	3,000	4,105	4,310	4,450	4,930	2,580	3,150	3,315	3,425	3,815	

Note: For dimensions and fastener information, see table above. See table footnotes on p. 237.

Plated Truss Connectors

HHUS/HGUS

See Hanger Options information on pp. 121–123.

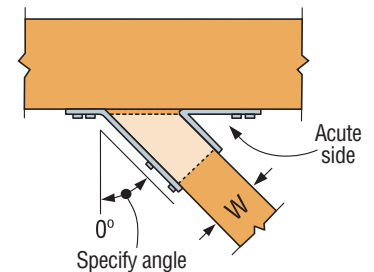
HHUS — Sloped and/or Skewed Seat

- 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
2" < W < 6"	Square cut	0.46 of table load	0.41 of table load
W > 6"	Bevel cut	0.85 of table load	0.41 of table load



Top View HHUS Hanger Skewed Right

(Joist must be bevel cut)
All joist nails installed on the outside angle (non-acute side).

HTU

Face-Mount Truss Hanger

The HTU face-mount truss hanger has nail patterns designed specifically for shallow heel heights, so that full allowable loads (with minimum nailing) apply to heel heights as low as 3/8". Minimum and maximum nailing options provide solutions for varying heel heights and end conditions.

Alternate allowable loads are provided for gaps between the end of the truss and the carrying member up to 1/2" max. to allow for greater construction tolerances (maximum gap for standard allowable loads is 1/8" per ASTM D1761 and D7147). See technical bulletin T-C-HANGERGAPS at strongtie.com for more information.

Material: 16 gauge

Finish: Galvanized

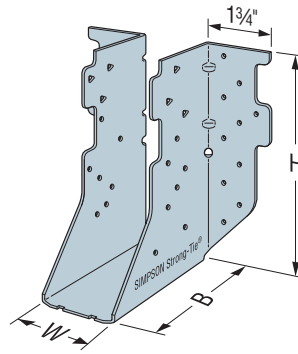
Installation:

- Use all specified fasteners; see General Notes
- Can be installed filling round holes only, or filling round and triangle holes for maximum values
- See alternate installation for applications using the HTU26 on a 2x4 carrying member or HTU28 or HTU210 on a 2x6 carrying member for additional uplift capacity

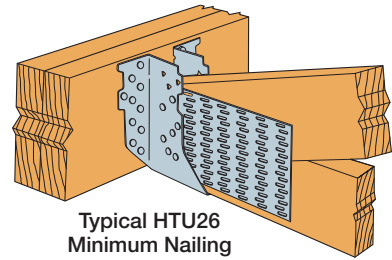
Options:

- HTU may be skewed up to 67 1/2°. See Hanger Options on p. 239 for allowable loads.
- See engineering letter L-C-HTUSD at strongtie.com for installation with Strong-Drive® SD fasteners.

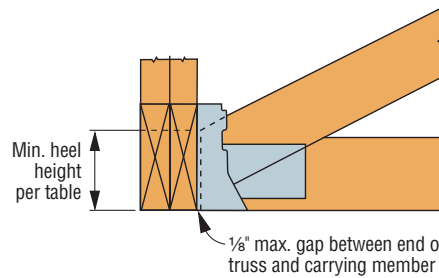
Codes: See p. 14 for Code Reference Key Chart



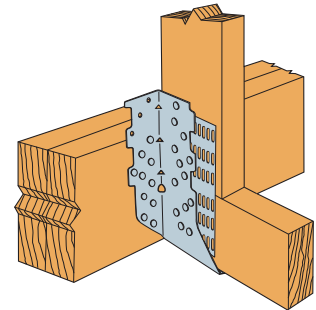
HTU26



Typical HTU26 Minimum Nailing Installation



HTU Installation for Standard Allowable Loads
(For 1/2" maximum gap, use Alternate Allowable Loads.)



Alternate Installation – HTU28 Installed on 2x6 Carrying Member (HTU210 similar)

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Standard Allowable Loads (1/8" Maximum Hanger Gap)

Model No.	Min. Heel Height	Dimensions (in.)			Fasteners		DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		W	H	B	Carrying Member	Carried Member	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
Single 2x Sizes																	
HTU26	3 1/2	1 5/8	5 7/8	3 1/2	(20) 16d	(11) 10d x 1 1/2"	730	2,940	3,045	3,045	3,045	630	1,920	1,920	1,920	1,920	I7, L17, FL
HTU26 (Min.)	3 7/8	1 5/8	5 7/8	3 1/2	(20) 16d	(14) 10d x 1 1/2"	1,250	2,940	3,200	3,200	3,200	1,075	2,015	2,015	2,015	2,015	
HTU26 (Max.)	5 1/2	1 5/8	5 7/8	3 1/2	(20) 16d	(20) 10d x 1 1/2"	1,555	2,940	3,340	3,600	4,010	1,335	2,530	2,870	3,095	3,450	
HTU28 (Min.)	3 7/8	1 5/8	7 1/8	3 1/2	(26) 16d	(14) 10d x 1 1/2"	1,235	3,820	3,895	3,895	3,895	1,060	2,920	2,920	2,920	2,920	
HTU28 (Max.)	7 1/4	1 5/8	7 1/8	3 1/2	(26) 16d	(26) 10d x 1 1/2"	2,140	3,820	4,340	4,680	5,435	1,840	3,285	3,730	4,025	4,675	
HTU210 (Min.)	3 7/8	1 5/8	9 1/8	3 1/2	(32) 16d	(14) 10d x 1 1/2"	1,330	4,355	4,355	4,355	4,355	1,145	3,265	3,265	3,265	3,265	
HTU210 (Max.)	9 1/4	1 5/8	9 1/8	3 1/2	(32) 16d	(32) 10d x 1 1/2"	3,315	4,705	5,345	5,760	5,995	2,850	4,045	4,595	4,955	5,155	
Double 2x Sizes																	
HTU26-2 (Min.)	3 7/8	3 5/8	5 7/8	3 1/2	(20) 16d	(14) 10d	1,515	2,940	3,340	3,600	3,910	1,305	2,465	2,465	2,465	2,465	I7, L17, FL
HTU26-2 (Max.)	5 1/2	3 5/8	5 7/8	3 1/2	(20) 16d	(20) 10d	2,175	2,940	3,340	3,600	4,485	1,870	2,530	2,870	3,095	3,855	
HTU28-2 (Min.)	3 7/8	3 5/8	7 1/8	3 1/2	(26) 16d	(14) 10d	1,530	3,820	4,310	4,310	4,310	1,315	3,235	3,235	3,235	3,235	
HTU28-2 (Max.)	7 1/4	3 5/8	7 1/8	3 1/2	(26) 16d	(26) 10d	3,485	3,820	4,340	4,680	5,850	2,995	3,285	3,730	4,025	5,030	
HTU210-2 (Min.)	3 7/8	3 5/8	9 1/8	3 1/2	(32) 16d	(14) 10d	1,755	4,705	4,815	4,815	4,815	1,510	3,610	3,610	3,610	3,610	
HTU210-2 (Max.)	9 1/4	3 5/8	9 1/8	3 1/2	(32) 16d	(32) 10d	4,110	4,705	5,345	5,760	7,200	3,535	4,045	4,595	4,955	6,190	

1. The maximum hanger gap is measured between the joist (or truss) end and the carrying member.
2. Minimum heel heights required for full table loads are based on a minimum 2/12 pitch.
3. Uplift has been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
4. Wind (160) is a download rating.
5. For hanger gaps between 1/8" and 1/2", use the Alternate Allowable Loads.
6. Truss chord cross-grain tension may limit allowable loads in accordance with ANSI/TPI 1-2014. Simpson Strong-Tie® Connector Selector™

- Software includes the evaluation of cross-grain tension in its hanger allowable loads. For additional information, contact Simpson Strong-Tie.
7. Loads shown are based on a minimum 2-ply 2x carrying member. For single 2x carrying members, use N10 (10d x 1 1/2") nails into the header and reduce the allowable download to 0.70 of the table value. The allowable uplift is 100% of the table load.
 8. **Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

HTU

Face-Mount Truss Hanger (cont.)

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Alternate Installation Table for 2x4 and 2x6 Carrying Member

Model No.	Min. Heel Height (in.)	Minimum Carrying Member	Fasteners		DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
			Carrying Member	Carried Member	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
HTU26 (Min.)	3 7/8	(2) 2x4	(10) 16d	(14) 10d x 1 1/2"	925	1,470	1,670	1,800	2,040	795	1,265	1,435	1,550	1,755	I7, L17, FL
HTU26 (Max.)	5 1/2	(2) 2x4	(10) 16d	(20) 10d x 1 1/2"	1,310	1,470	1,670	1,800	2,250	1,125	1,265	1,435	1,550	1,935	
HTU28 (Max.)	7 1/4	(2) 2x6	(20) 16d	(26) 10d x 1 1/2"	1,970	2,940	3,340	3,600	3,905	1,695	2,530	2,870	3,095	3,360	
HTU210 (Max.)	9 1/4	(2) 2x6	(20) 16d	(32) 10d x 1 1/2"	2,760	2,940	3,340	3,600	3,905	2,375	2,530	2,870	3,095	3,360	

- See table above for dimensions and additional footnotes.
- Maximum hanger gap for the alternate installation is 1/2".
- Wind (160) is a download rating.
- Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

Alternate Allowable Loads (1/2" Maximum Hanger Gap)

Model No.	Min. Heel Height	Dimensions (in.)			Fasteners		DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		W	H	B	Carrying Member	Carried Member	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
Single 2x Sizes																	
HTU268	3 1/2	1 5/8	5 7/16	3 1/2	(20) 16d	(11) 10d x 1 1/2"	670	2,735	2,735	2,735	2,735	575	1,725	1,725	1,725	1,725	I7, L17, FL
HTU26 (Min.)	3 7/8	1 5/8	5 7/16	3 1/2	(20) 16d	(14) 10d x 1 1/2"	1,175	2,940	3,100	3,100	3,100	1,010	1,955	1,955	1,955	1,955	
HTU26 (Max.)	5 1/2	1 5/8	5 7/16	3 1/2	(20) 16d	(20) 10d x 1 1/2"	1,215	2,940	3,340	3,600	3,760	1,045	2,370	2,370	2,370	2,370	
HTU28 (Min.)	3 7/8	1 5/8	7 1/16	3 1/2	(26) 16d	(14) 10d x 1 1/2"	1,125	3,770	3,770	3,770	3,770	970	2,825	2,825	2,825	2,825	
HTU28 (Max.)	7 1/4	1 5/8	7 1/16	3 1/2	(26) 16d	(26) 10d x 1 1/2"	1,920	3,820	4,340	4,680	5,015	1,695	3,285	3,730	3,765	3,765	
HTU210 (Min.)	3 7/8	1 5/8	9 1/16	3 1/2	(32) 16d	(14) 10d x 1 1/2"	1,250	3,600	3,600	3,600	3,600	1,075	2,700	2,700	2,700	2,700	
HTU210 (Max.)	9 1/4	1 5/8	9 1/16	3 1/2	(32) 16d	(32) 10d x 1 1/2"	3,255	4,705	5,020	5,020	5,020	2,800	3,765	3,765	3,765	3,765	
Double 2x Sizes																	
HTU26-2 (Min.)	3 7/8	3 3/16	5 7/16	3 1/2	(20) 16d	(14) 10d	1,515	2,940	3,340	3,500	3,500	1,305	2,205	2,205	2,205	2,205	I7, L17, FL
HTU26-2 (Max.)	5 1/2	3 3/16	5 7/16	3 1/2	(20) 16d	(20) 10d	1,910	2,940	3,340	3,500	3,500	1,645	2,205	2,205	2,205	2,205	
HTU28-2 (Min.)	3 7/8	3 3/16	7 1/16	3 1/2	(26) 16d	(14) 10d	1,490	3,820	3,980	3,980	3,980	1,280	2,985	2,985	2,985	2,985	
HTU28-2 (Max.)	7 1/4	3 3/16	7 1/16	3 1/2	(26) 16d	(26) 10d	3,035	3,820	4,340	4,680	5,555	2,610	3,285	3,730	4,025	4,165	
HTU210-2 (Min.)	3 7/8	3 3/16	9 1/16	3 1/2	(32) 16d	(14) 10d	1,755	4,255	4,255	4,255	4,255	1,510	3,190	3,190	3,190	3,190	
HTU210-2 (Max.)	9 1/4	3 3/16	9 1/16	3 1/2	(32) 16d	(32) 10d	3,855	4,705	5,345	5,760	6,470	3,315	4,045	4,595	4,855	4,855	

See table footnotes on p. 238.

Options: See Hanger Options information on pp. 121–123.

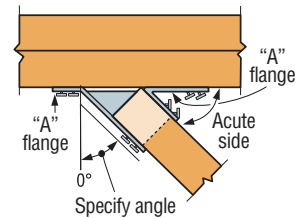
Skewed Seat

- Skewable up to 67 1/2°.
- Available in single and 2-ply size.
- No bevel cut required.

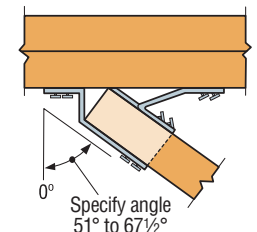
Allowable Loads for Skewed HTU Hangers

Model No.	Skew Angle (Degree)	Fasteners		DFL/SP Allowable Loads ^{1,2}		HF/SPF Allowable Loads ^{1,2}	
		Carrying Member	Carried Member	Uplift (133/160)	Download (100/115/125)	Uplift (133/160)	Download (100/115/125)
HTU26	< 51	(20) 16d	(14) 10d x 1 1/2"	1,315	2,945	1,130	2,530
	51-67 1/2	(20) 16d	(12) 10d x 1 1/2"	970	2,595	835	2,230
HTU28	< 51	(26) 16d	(20) 10d x 1 1/2"	2,015	3,060	1,730	2,630
	51-67 1/2	(26) 16d	(17) 10d x 1 1/2"	1,485	2,815	1,280	2,420
HTU210	< 51	(32) 16d	(26) 10d x 1 1/2"	2,715	3,175	2,335	2,730
	51-67 1/2	(32) 16d	(22) 10d x 1 1/2"	2,005	3,040	1,725	2,615
HTU26-2	< 51	(20) 16d	(14) 10d	1,335	2,555	1,145	2,200
	51-67 1/2	(20) 16d	(12) 10d	1,110	2,700	955	2,320
HTU28-2	< 51	(26) 16d	(20) 10d	2,470	3,890	2,120	3,345
	51-67 1/2	(26) 16d	(17) 10d	1,710	3,775	1,470	3,245
HTU210-2	< 51	(32) 16d	(26) 10d	3,600	4,935	3,100	4,245
	51-67 1/2	(32) 16d	(22) 10d	2,255	4,790	1,940	4,120

- Uplift loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
- Allowable downloads may not be increased.
- Maximum hanger gap between end of joist (truss) and face of carrying member is 1/8".
- Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long, 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.



Top View HTU Hanger Skewed Right < 51°



Top View HTU Hanger Skewed Right ≥ 51°

HHSUQ

Heavy Severe Skew Truss Hanger

The HHSUQ is a high-load, face-mount, truss-to-truss hanger designed to accommodate severe skews (45°–84°) for hip trusses, enabling a greater range of installation applications. Fastening the HHSUQ with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws makes installation fast and easy, while eliminating the inconvenience of bolted applications.

Material: Back plate — 3 gauge; stirrup — 7 gauge

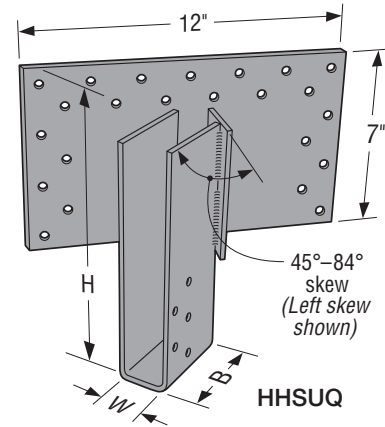
Finish: Simpson Strong-Tie® gray paint

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

- The joist/truss end may be square cut or bevel cut. 3/8" minimum heel height.
- Strong-Drive SDS Heavy-Duty Connector screws supplied for all round holes.
- All multiple members must be fastened together to act as a single unit.

To Order: Left or right skew must be specified.

Codes: See p. 14 for Code Reference Key Chart

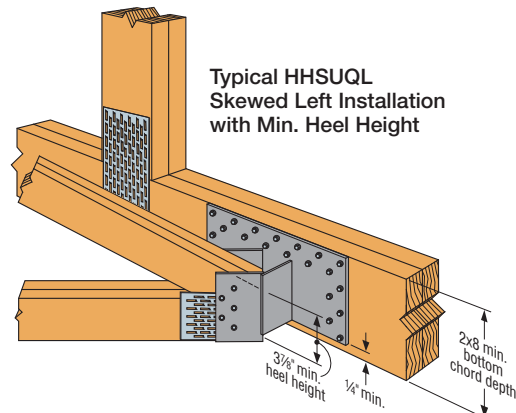
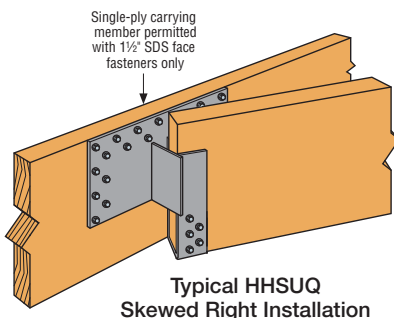


Plated Truss Connectors

Model Number	Dimensions (in.)			SDS Fasteners		DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
	W	H	B	Face	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
HHSUQ28-SDS	1 5/8	7 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 1 1/2"	1,170	4,215	4,405	4,530	1,005	3,025	3,160	3,250	160
HHSUQ28-2-SDS	3 3/16	7 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 3"	1,250	5,065	5,065	5,065	1,075	5,065	5,065	5,065	
HHSUQ210-SDS	1 5/8	9 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 1 1/2"	1,170	4,215	4,405	4,530	1,005	3,025	3,160	3,250	
HHSUQ210-2-SDS	3 3/16	9 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 3"	1,250	5,065	5,065	5,065	1,075	5,065	5,065	5,065	
HHSUQ212-SDS	1 5/8	11 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 1 1/2"	1,170	4,215	4,405	4,530	1,005	3,025	3,160	3,250	
HHSUQ212-2-SDS	3 3/16	11 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 3"	1,250	5,065	5,065	5,065	1,075	5,065	5,065	5,065	
HHSUQ214-SDS	1 5/8	13 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 1 1/2"	1,170	4,215	4,405	4,530	1,005	3,025	3,160	3,250	
HHSUQ214-2-SDS	3 3/16	13 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 3"	1,250	5,065	5,065	5,065	1,075	5,065	5,065	5,065	
HHSUQ48-SDS	3 3/8	7 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 3"	1,250	5,065	5,065	5,065	1,075	5,065	5,065	5,065	
HHSUQ410-SDS	3 3/8	9 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 3"	1,250	5,065	5,065	5,065	1,075	5,065	5,065	5,065	
HHSUQ412-SDS	3 3/8	11 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 3"	1,250	5,065	5,065	5,065	1,075	5,065	5,065	5,065	
HHSUQ414-SDS	3 3/8	13 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 3"	1,250	5,065	5,065	5,065	1,075	5,065	5,065	5,065	
HHSUQ1.81/7-SDS	1 13/16	7 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 1 1/2"	1,170	5,065	5,065	5,065	1,005	5,065	5,065	5,065	
HHSUQ1.81/9-SDS	1 13/16	9 1/2	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 1 1/2"	1,170	5,065	5,065	5,065	1,005	5,065	5,065	5,065	
HHSUQ1.81/11-SDS	1 13/16	11 7/8	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 1 1/2"	1,170	5,065	5,065	5,065	1,005	5,065	5,065	5,065	
HHSUQ1.81/14-SDS	1 13/16	13 1/4	3 1/2	(23) 1/4" x 3"	(5) 1/4" x 1 1/2"	1,170	5,065	5,065	5,065	1,005	5,065	5,065	5,065	

1. Allowable Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Strong-Drive® SDS Heavy-Duty Connector screws that penetrate all plies of the supporting girder (screws must penetrate a minimum of 1" into the last truss ply) may also be used to transfer the load through all the plies of the supporting girder. When Strong-Drive SDS Heavy-Duty Connector screws do not penetrate all plies of the supporting girder truss, supplemental Strong-Drive SDS Heavy-Duty Connector screws at the hanger locations may be required to transfer the load to the truss plies not penetrated by the face fasteners, as determined by the Designer. 3" long Strong-Drive SDS Heavy-Duty Connector screws into face may be replaced with 4 1/2" or 6" long Strong-Drive SDS Heavy-Duty Connector screws with no load reduction.
3. Loads shown are based on a minimum 2-ply 2x8 carrying member. For single 2x carrying members, replace 3" long Strong-Drive SDS Heavy-Duty Connector screws face fasteners with 1 1/2" long Strong-Drive SDS Heavy-Duty Connector screws and reduce the allowable download to 2,630 lb. for DF/SP and 1,895 lb. for SPF/HF. The tabulated allowable uplift load is not reduced.

4. Girders must be adequately laterally braced to prevent excessive displacement due to secondary torsional stresses (Ref ANSI/TPI 1-2014 Section 7.5.3.5).
5. Truss chord cross-grain tension may limit allowable loads. Designer to refer to ANSI/TPI Section 7.5.3.2 for connection details, limitations, and reductions.
6. Simpson Strong-Tie® Strong-Drive SDS Heavy-Duty Connector screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2007 Sections 7.5.3.4 and 8.9.2 are met (pre-drilling required through the plate using a maximum of 5/32" bit).
7. For installations into LSL or PSL, use DF/SP table loads.



THAR/L422

Skewed Truss Hangers

Designed for 4x2 floor trusses and 4x beams, the THAR/L422 has a standard skew of 45°. Straps must be bent for top flange installation. PAN nailing helps eliminate splitting of 4x2 truss bottom chords.

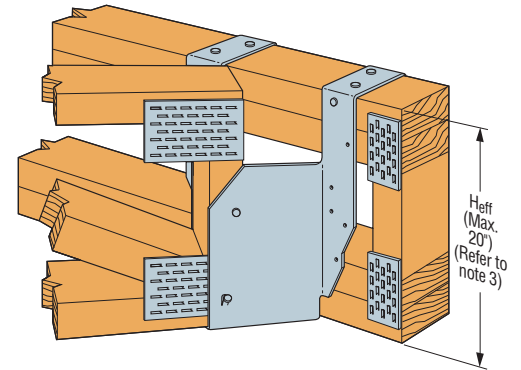
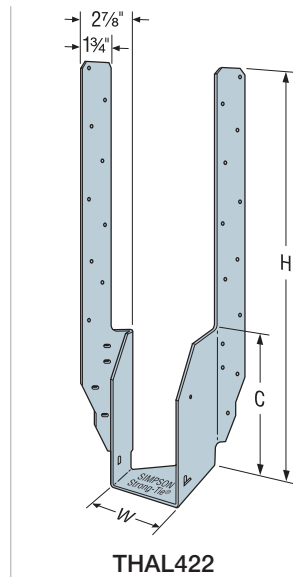
Material: 16 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- Straps must be field-formed over the header a minimum of 2½"
- Minimum and maximum nailing configurations available — see table for nailing requirements

Codes: See p. 14 for Code Reference Key Chart



Typical THAL422 Installation with Minimum Nailing on a Floor Truss with Double 4x2 Top Chord

Model No.	Ga.	Dimensions (in.)			Min. Top Chord on Carrying Member	Effective Height H_{eff}^3	Fasteners				DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
		W	H	C			Carrying Member		Carried Member		Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
							Top	Face	Straight	Slant									
THAR/L422 (Min.)	16	3%	22%	8	Single 4x2	9 min.	(4) 10d x 1½"	(2) 10d x 1½"	(1) 10d x 1½"	(2) 10d x 1½"	—	880	880	880	—	755	755	755	I8, L15, FL
					Double 4x2	9 to 12	(4) 10d	(2) 10d	(1) 10d	(2) 10d x 1½"	—	1,525	1,525	1,525	—	1,315	1,315	1,315	
						> 12	(4) 10d	(2) 10d	(1) 10d	(2) 10d x 1½"	—	1,090	1,090	1,090	—	935	935	935	
THAR/L422 (Max.)	16	3%	22%	8	Double 4x2	9 min.	(4) 10d	(8) 10d	(1) 10d	(2) 10d x 1½"	310	1,675	1,675	1,675	265	1,440	1,440	1,440	

1. Uplift has been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Roof loads are 125% of floor loads unless limited by other criteria. Floor loads may be adjusted for load durations according to the code provided they do not exceed those in the roof column.
3. Where the top of the carried member is flush with the top of the carrying member, H_{eff} is equal to the depth of the carried member. Otherwise, H_{eff} shall be measured from the top of the bearing seat to the top of the carrying member.
4. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

LTHMA

Multiple Truss Hanger

A light capacity hanger designed to carry two or three trusses in a terminal hip installation.

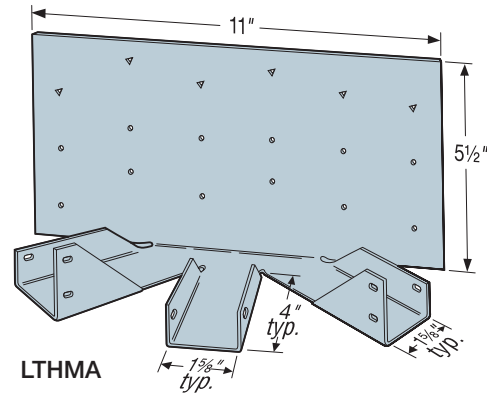
Material: 16 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- The total load must be symmetrically distributed about the centerline to avoid eccentric loading of the connector
- Fill round holes for girder trusses with 2x4 bottom chords
- Fill round and triangle holes for girder trusses with 2x6 bottom chords

Codes: See p. 14 for Code Reference Key Chart

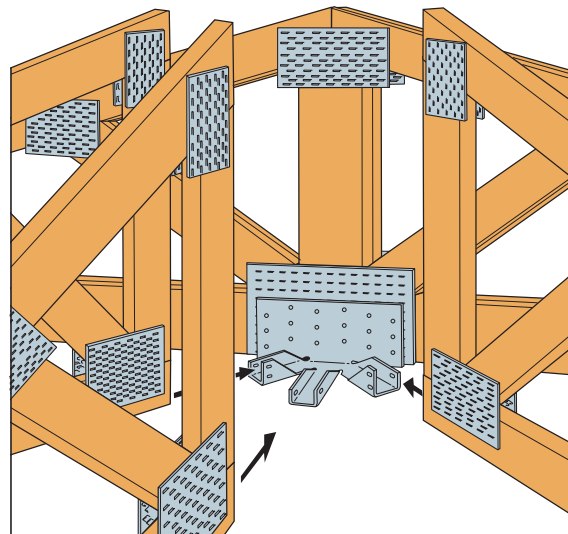


Plated Truss Connectors

Model No.	Header	Fasteners			DF/SP Allowable Loads												Code Ref.
		Header	Hips (Total)	Jack	Uplift (160)			Floor (100)			Snow (115)			Roof (125/160)			
					Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total	
LTHMA	1-ply 2x4	(12) 10d x 1 1/2"	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	55	20	130	485	110	1,080	540	125	1,205	540	125	1,205	IL15, FL
	2-ply 2x4	(12) 10d	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	55	20	130	600	130	1,330	675	150	1,500	675	150	1,500	
	1-ply 2x6	(18) 10d x 1 1/2"	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	55	20	130	635	140	1,410	635	140	1,410	635	140	1,410	
	2-ply 2x6	(18) 10d	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	85	25	195	900	200	2,000	1,035	230	2,300	1,050	240	2,340	

Model No.	Header	Fasteners			SPF/HF Allowable Loads												Code Ref.
		Header	Hips (Total)	Jack	Uplift (160)			Floor (100)			Snow (115)			Roof (125/160)			
					Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total	
LTHMA	1-ply 2x4	(12) 10d x 1 1/2"	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	50	10	110	440	55	935	485	65	1,035	485	65	1,035	IL15, FL
	2-ply 2x4	(12) 10d	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	50	10	110	540	70	1,150	570	75	1,215	570	75	1,215	
	1-ply 2x6	(18) 10d x 1 1/2"	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	50	10	110	570	75	1,215	570	75	1,215	570	75	1,215	
	2-ply 2x6	(18) 10d	(6) 10d x 1 1/2"	(2) 10d x 1 1/2"	85	15	185	815	100	1,730	930	125	1,985	940	120	2,000	

1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Hip loads are for each hip.
3. Load distribution is 45% for each hip and 10% for jack. Other hip/jack load distributions are allowed if the sum of all three carried members does not exceed the total load and the hip members are equally loaded.
4. Truss chord cross-grain tension may limit allowable loads in accordance with ANSI/TPI 1-2014. Simpson Strong-Tie® Connector Selector™ Software includes the evaluation of cross-grain tension in its hanger allowable loads. For additional information, contact Simpson Strong-Tie.
5. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.



Typical LTHMA Installation

THJU

Truss Hip/Jack Hanger

The THJU hip/jack hanger offers the most flexibility and ease of installation without sacrificing performance. The U-shaped hanger works for right- and left-hand hips and can be ordered to fit a range of hip skews (up to 67½°) as well as various single and 2-ply hip/jack combinations. Also can be installed before or after the hip and jack.

THJU26 is sized for the standard hip/jack combination with a 45° left- or right-hand hip. The wide seat of THJU26-W accommodates a 2-ply hip and 2-ply jack combination with a 45° maximum hip skew, or a standard single-ply hip/jack configuration with a maximum 67½° hip skew. Intermediate seat widths are available for other hip/jack or hip/hip combinations.

Material: 12 gauge

Finish: Galvanized

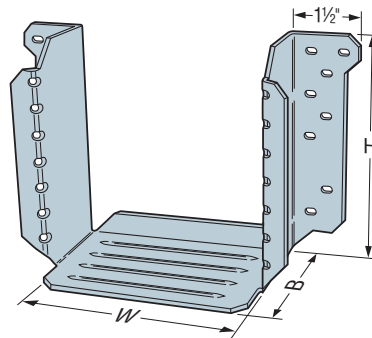
Installation:

- Use all specified fasteners; see General Notes

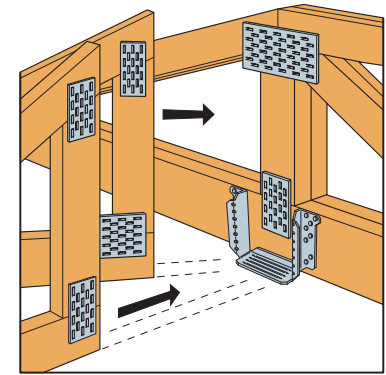
Options:

- THJU is available in intermediate seat widths between 5½" (THJU26 width) and 8½" (THJU26-W width) with no load reduction.
- For double-hip installation, divide the total allowable load by 2 to determine the allowable load for each hip. Order as THJU26X and specify width; see table for reference.
- Allowable download and uplift for all intermediate widths is 100% of the THJU26-W table loads.
- Order as a THJU26X and specify width. See table for reference.

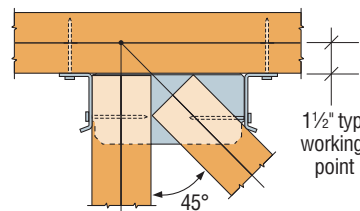
Codes: See p. 14 for Code Reference Key Chart



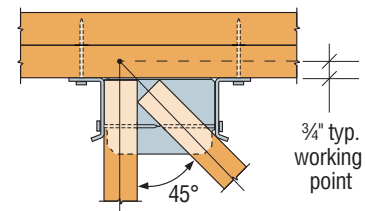
THJU26



Typical THJU26 Installation



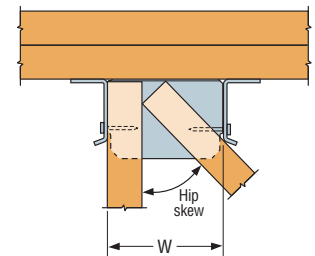
THJU26-W Top View
2-Ply Hip / 2-Ply Jack Installation



THJU26 Top View
Right Hand Hip Installation

THJU Intermediate Width Options

Carried Member Combination	Hip Skew	Width (W)
2-ply hip and single-ply jack	45°	6¾"
Single-ply hip and 2-ply jack	45°	6¾"
Double (terminal) hip	45°	7¾"
2-ply hip and 2-ply jack	45°	Use THJU26-W
Single-ply hip and single-ply jack	44°–46°	Use THJU26
	47°–49°	5½"
	50°–52°	5¾"
	53°–55°	6"
	56°–57°	6¾"
	58°–59°	6¾"
	60°–61°	7"
	62°–63°	7¾"
	64°–65°	Use THJU26-W



THJU Top View Installation

Model No.	Min. Carried Member	Dimensions (in.)			Fasteners			DF/SP Allowable Loads					SPF/HF Allowable Loads				Code Ref.	
		W	H	B	Carrying Member	Hip	Jack	Uplift (160)	Download				Uplift (160)	Download				
									Floor (100)	Snow (115)	Roof (125)	Wind (160)		Floor (100)	Snow (115)	Roof (125)		Wind (160)
THJU26	2x4	5½"	5½"	3½"	(16) 10d	(4) 10d	(4) 10d	745	1,915	1,915	1,915	1,915	645	1,645	1,645	1,645	1,645	FL, I13
	2x6 or end. vert. ³				(16) 10d	(7) 10d	(7) 10d	1,310	2,255	2,350	2,350	2,350	1,125	1,935	2,020	2,020	2,020	
THJU26-W	2x4	8½"	5½"	3½"	(16) 10d	(4) 10d	(4) 10d	710	1,825	1,825	1,825	1,825	610	1,570	1,570	1,570	1,570	
	2x6 or end. vert. ³				(16) 10d	(7) 10d	(7) 10d	1,240	1,965	1,965	1,965	1,965	1,065	1,690	1,690	1,690	1,690	

1. Tabulated loads are the total allowable loads of the hip and jack members combined; 65%–85% of the total load shall be distributed to the hip member, and the remaining percentage of total load shall be distributed to the jack. The combined hip and jack load may not exceed the published total load.
2. Uplift loads have been increased 60% for wind or earthquake loading with no further increase allowed.
3. For full load, the jack requires either a min. 2x6 bottom chord or a

- min. 2x4 end vertical; the hip requires either a min. 2x6 bottom chord or a min. 2x6 end vertical for hip skews up to 60°. For hip skews greater than 60° (THJU26-W only), a min. 2x6 bottom chord or min. 2x8 end vertical is required.
4. With single 2x carrying members use 10d x 1½" nails and use 100% of the table value.
5. For single 2x jacks, 10d x 1½" nails may be substituted for the specified 10d commons with no reduction in load.
6. Truss chord cross-grain tension may limit allowable loads.
7. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

TJC

Jack Truss Connector

TJC is a versatile connector for jack trusses. Adjustable from 0 to 85 degree (shipped with 67.5 degree bend). Nail hole locations allow for easy installation. Minimum nailing option on TJC37 provides faster installation and lower installed cost.

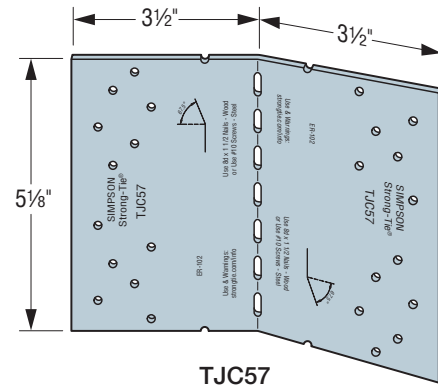
Material: 16 gauge

Finish: Galvanized

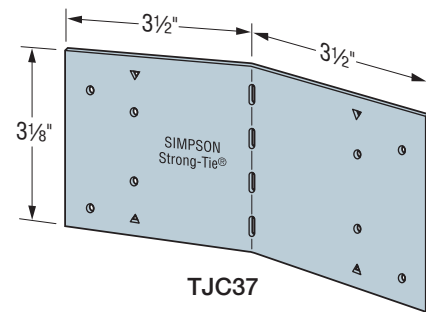
Installation:

- Use all specified fasteners; see General Notes.
- TJC37 can be installed filling round holes only, or filling round and triangle holes for maximum values.
- To reduce the potential for splitting, install the TJC with a minimum 3/16" edge distance on the chord members.
- Position the jack truss on the inside of the bend line with the end of the jack truss flush with the bend line.
- Bend the TJC to the desired position (one bend cycle only).
- No bevel cut required.
- Attachment of TJC to the top chord requires the Designer to check connection geometry for placement on both carried and carrying chord members. See Top Chord Member Sizes table below for suggested chord sizes.
- Supported jack member is a single 2x.

Codes: See p. 14 for Code Reference Key Chart



TJC57

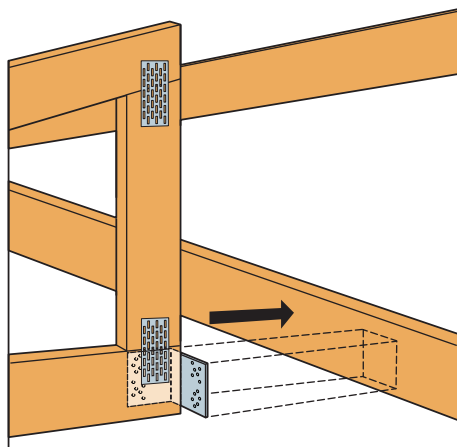


TJC37

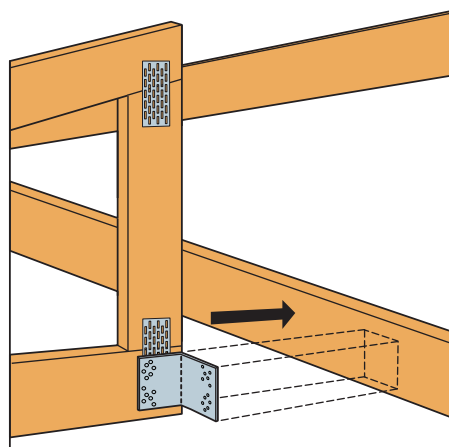
Plated Truss Connectors

Standard Installation

Model No.	Fasteners		Allowable Loads								Code Ref.
	Carrying Member	Carried Member	DF/SP				SPF/HF				
			0°	1°-60°	61°-67.5°	68°-85°	0°	1°-60°	61°-67.5°	68°-85°	
TJC37 (Min.)	(4) 8d x 1 1/2"	(4) 8d x 1 1/2"	340	300	320	285	290	260	275	245	IP1, L18, FL
TJC37 (Max.)	(6) 8d x 1 1/2"	(6) 8d x 1 1/2"	580	485	425	425	500	415	365	365	
TJC57	(12) 8d x 1 1/2"	(12) 8d x 1 1/2"	865	830	850	850	745	715	730	730	
	(12) SD9112	(12) SD9112	1,140	990	990	990	980	850	850	850	



Typical TJC57 Standard Installation
(TJC37 similar)



Typical TJC57 Alternate Installation
(TJC37 similar)

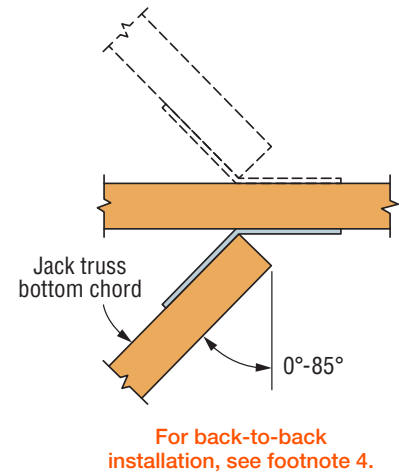
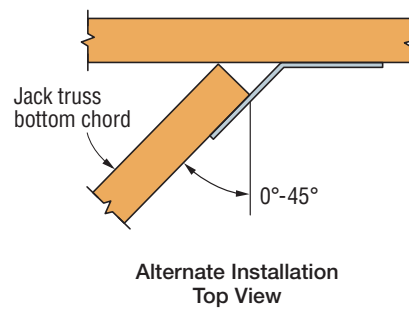
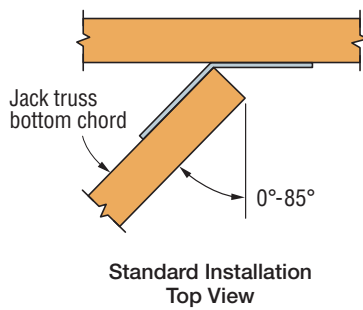
TJC

Jack Truss Connector (cont.)

Alternate Installation

Model No.	Fasteners		Allowable Loads			
	Carrying Member	Carried Member	DF/SP		SPF/HF	
			0°	1°-45°	0°	1°-45°
TJC37 (Alt. min.)	(4) 8d x 1½"	(4) 8d x 1½"	255	225	220	195
TJC37 (Alt. max.)	(6) 8d x 1½"	(6) 8d x 1½"	435	365	375	310
TJC57 (Alt.)	(12) 8d x 1½"	(12) 8d x 1½"	785	740	675	635

1. No load duration increase allowed.
2. Allowable loads are for upward or downward direction.
3. TJC37 and TJC57 require single-ply carried members with minimum 2x4 and 2x6 cord members, respectively.
4. For back-to-back installation on a single-ply girder/hip member, use a 0.70 reduction of table loads.
5. **Nails:** 8d x 1½" = 0.131" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.
6. **Screws:** SD9112 = 0.131" dia. x 1½" long.



Top Chord Member Sizes

Part	Pitch		
	≤ 3:12	≤ 7:12	≤ 12:12
TJC37	2x6	2x6	2x8
TJC57	2x8	2x8	2x10

LTHJA26

Truss Hip/Jack 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 LTHJA26 is a lighter capacity version of the THJA26 and offers the lowest-cost alternative for light hip/jack load applications.

Material: 18 gauge

Finish: Galvanized

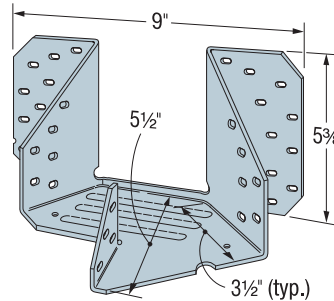
Installation:

- Use all specified fasteners; see General Notes.
- Shall be attached to a double girder truss to allow for required minimum nail penetration. See footnote 3.
- 10d x 1 1/2" nails must be installed into bottom of hip members through bottom of hanger seat for table loads.

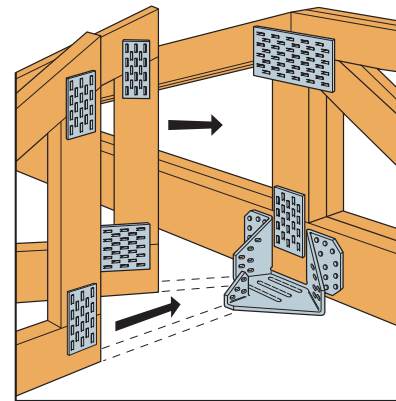
Options:

- These hangers can not be modified

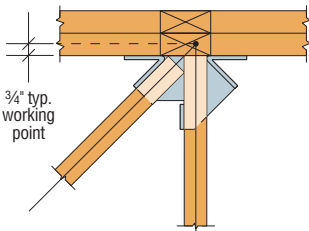
Codes: See p. 14 for Code Reference Key Chart



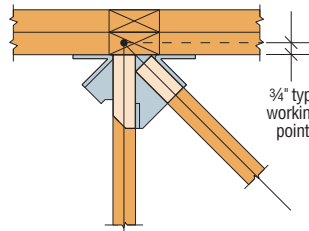
LTHJA26
US Patent 7,913,472



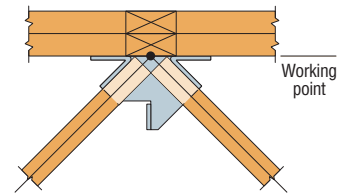
Typical LTHJA26 Installation



Top View
Left-Hand Hip Installation



Top View
Right-Hand Hip Installation



Top View
Terminal Hip without
Center Common Jack

Model No.	Carried Member Combination	Fasteners			Carried Member	DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		Carrying Member	Hip (each)	Jack		Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
LTHJA26	Side hip and center jack	(20) 10d	(7) 10d x 1 1/2"	(4) 10d x 1 1/2"	Jack	75	290	290	290	290	65	245	245	245	245	111, FL
				—	Hip	220	875	875	875	875	185	735	735	735	735	
				—	Hip and jack	295	1,165	1,165	1,165	1,165	250	980	980	980	980	
	(20) 10d	(7) 10d x 1 1/2"	—	Hip (each)	290	635	635	635	635	245	535	535	535	535		
			—	Two hips	580	1,270	1,270	1,270	1,270	490	1,070	1,065	1,065	1,065		

1. Uplift loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Wind (160) is a download rating.
3. Loads shown are based on a minimum (2) 2x6 carrying member. For single 2x carrying members (min. 2x6), use 10d x 1 1/2" nails and use 0.67 of the table value.
4. Tabulated hip and jack allowable loads assume that 75% of the total load is distributed to the hip and 25% to the jack. It is permitted to distribute 65% to 85% of the tabulated total load to the hip, and the remaining percentage of total load to the jack. The combined hip and jack load may not exceed the published Total Load.
5. Truss chord cross-grain tension may limit allowable loads in accordance with ANSI/TPI 1-2014. Simpson Strong-Tie® Connector Selector™ software includes the evaluation of cross-grain tension in its hanger allowable loads. For additional information, contact Simpson Strong-Tie.
6. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

THJA26

Truss Hip/Jack Hanger

The versatile THJA26 can accommodate right- or left-hand hips (at 45-degree skew), and can be installed before or after the hip and jack. Can also be used for double (terminal) hips.

Material: 14 gauge

Finish: Galvanized

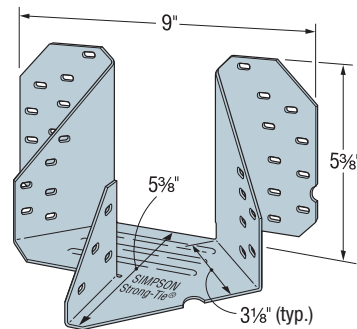
Installation:

- Use all specified fasteners; see General Notes.
- All multiple members must be fastened together to act as a single unit.
- Shall be attached to a double girder truss to allow for required minimum nail penetration. See footnote 3.

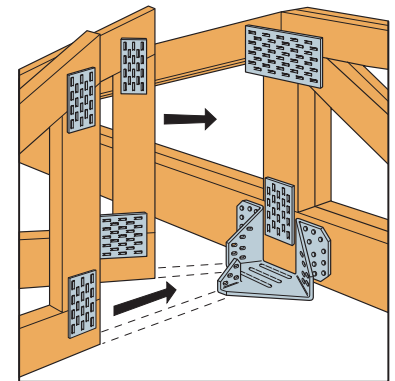
Options:

- These hangers cannot be modified

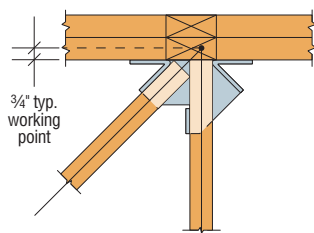
Codes: See p. 14 for Code Reference Key Chart



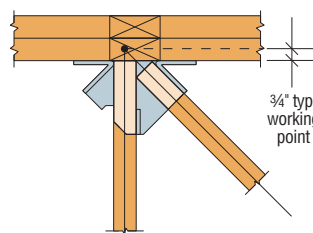
THJA26



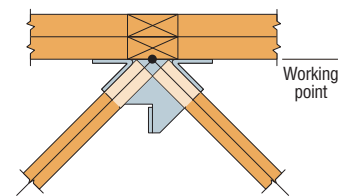
Typical THJA26 Installation



Top View
Left-Hand Hip Installation



Top View
Right-Hand Hip Installation



Top View
Terminal Hip without
Center Common Jack

Model No.	Fasteners			Carried Member	DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
	Carrying Member	Hip	Jack		Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
THJA26	(20) 16d	(6) 10d x 1 1/2"	(4) 10d x 1 1/2"	Hip	720	2,010	2,310	2,450	2,450	590	1,740	2,000	2,100	2,100	111, FL
				Jack	240	670	770	815	815	195	580	670	700	700	
				Total	960	2,680	3,080	3,265	3,265	785	2,320	2,670	2,800	2,800	

1. Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Wind (160) is a download rating.
3. Loads shown are based on a minimum (2) 2x6 carrying member. For single 2x carrying members (min. 2x6), use 10d x 1 1/2" nails and use 0.67 of the table value. For (2) 2x4 carrying members, multiply the download by 0.50.
4. 16d sinkers (0.148" dia. x 3 1/4" long) may be substituted for the specified 16d commons at 0.85 of the table load.
5. Tabulated hip and jack allowable loads assume that 75% of the total load is distributed to the hip and 25% to the jack. It is permitted to distribute 65% to 85% of the tabulated total load to the hip, and the remaining percentage of total load to the jack. The combined hip and jack load may not exceed the published Total Load.
6. For terminal hips, divide the total allowable load by 2 to determine the allowable load for each hip.
7. Truss chord cross-grain tension may limit allowable loads in accordance with ANSI/TPI 1-2014. Simpson Strong-Tie® Connector Selector™ software includes the evaluation of cross-grain tension in its hanger allowable loads. For additional information, contact Simpson Strong-Tie.
8. **Nails:** 16d = 0.162" dia. x 3 1/2" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26-27 for other nail sizes and information.

MTHMQ/MTHMQ-2

Multiple Truss Hangers

The MTHMQ and MTHMQ-2 are designed for carrying two or three trusses. The design offers concealed flanges and installs with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws for easier installation.

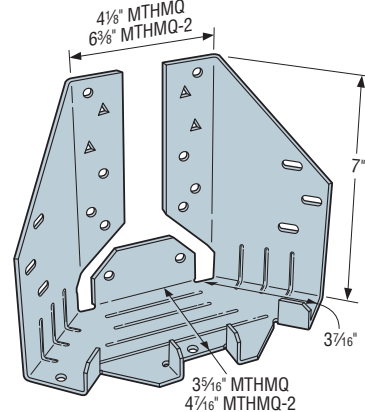
Material: 12 gauge

Finish: Galvanized (G90)

Installation:

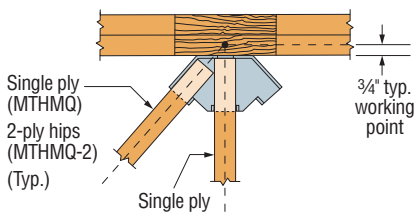
- Use all specified fasteners; see General Notes.
- Can be installed filling round holes only, or filling round and triangle holes for maximum load. For all installations, fill the fastener holes in the bottom of the hanger seat.
- For installations at panel points with 2x6 bottom chords, do not fill the triangle holes unless approved by the Truss Designer.

Codes: See p. 14 for Code Reference Key Chart

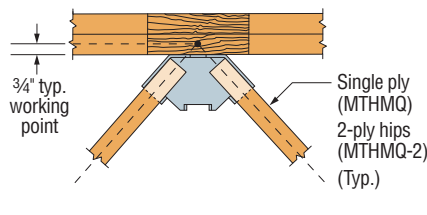


MTHMQ-SDS3
(MTHMQ-2-SDS3 similar)

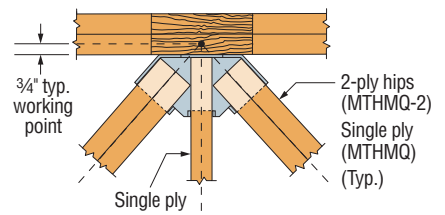
Plated Truss Connectors



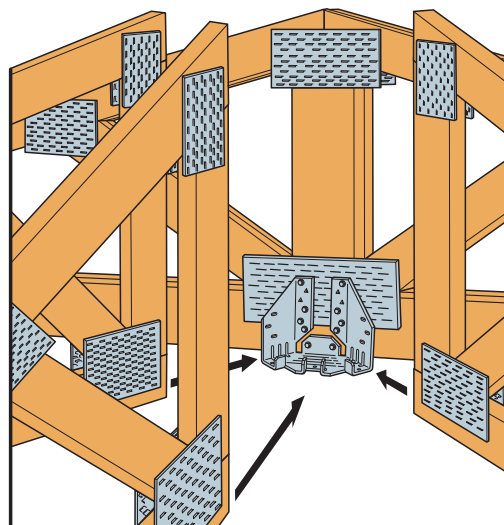
**MTHMQ Top View
Left Hand Hip Installation**
(MTHMQ-2 similar)



**MTHMQ Top View
Terminal Installation without
Center Common Jack**
(MTHMQ-2 similar)



**MTHMQ-2 Top View
Terminal Installation with
Center Common Jack**
(MTHMQ similar)



**Typical MTHMQ Min. Installation
at Panel Point**

MTHMQ/MTHMQ-2

Multiple Truss Hangers (cont.)

Right or Left Hand Hip Installation (Two-Member Connection)^{3,4}

Model No.	Min. Carrying Member ^{2,3}	SDS Fasteners			DF/SP Allowable Loads						SPF/HF Allowable Loads						Code Ref.
		Carrying Member	Hip	Jack	Uplift (160)			Download (100/115/125/160)			Uplift (160)			Download (100/115/125/160)			
					Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total	
MTHMQ-SDS3 (Min.)	(2) 2x6	(10) ¼" x 3"	(4) ¼" x 3"	(1) ¼" x 3"	440	145	585	1,965	655	2,620	315	105	420	1,415	470	1,885	170
MTHMQ-SDS3 (Max.)	(2) 2x8	(14) ¼" x 3"	(4) ¼" x 3"	(1) ¼" x 3"	440	145	585	2,715	905	3,620	315	105	420	1,955	650	2,605	
MTHMQ-2-SDS3 (Min.)	(2)	(12) ¼" x 3"	(5) ¼" x 3"	(1) ¼" x 3"	800	265	1,065	2,905	970	3,875	575	190	765	2,090	700	2,790	
MTHMQ-2-SDS3 (Max.)	(2) 2x8	(16) ¼" x 3"	(5) ¼" x 3"	(1) ¼" x 3"	800	265	1,065	3,330	1,110	4,440	575	190	765	2,395	800	3,195	

Terminal Type Installation (Three-Member Connection)⁵

Model No.	Min. Carrying Member ^{2,3}	SDS Fasteners			DF/SP Allowable Loads						SPF/HF Allowable Loads						Code Ref.
		Carrying Member	Hips (Total)	Jack	Uplift (160)			Download (100/115/125/160)			Uplift (160)			Download (100/115/125/160)			
					Hip (Ea.)	Jack	Total	Hip (Ea.)	Jack	Total	Hip (Ea.)	Jack	Total	Hip (Ea.)	Jack	Total	
MTHMQ-SDS3 (Min.)	(2) 2x6	(10) ¼" x 3"	(8) ¼" x 3"	(1) ¼" x 3"	505	250	1,260	1,470	730	3,670	360	185	905	1,055	530	2,640	170
MTHMQ-SDS3 (Max.)	(2) 2x8	(14) ¼" x 3"	(8) ¼" x 3"	(1) ¼" x 3"	505	250	1,260	1,985	995	4,965	360	185	905	1,430	715	3,575	
MTHMQ-2-SDS3 (Min.)	(2) 2x6	(12) ¼" x 3"	(10) ¼" x 3"	(1) ¼" x 3"	685	340	1,710	2,015	1,010	5,040 ⁷	490	250	1,230	1,450	730	3,630 ⁷	
MTHMQ-2-SDS3 (Max.)	(2) 2x8	(16) ¼" x 3"	(10) ¼" x 3"	(1) ¼" x 3"	685	340	1,710	2,655	1,330	6,640	490	250	1,230	1,910	960	4,780	

- Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- A minimum 2-ply carrying member is required for the tabulated loads. With single 2x carrying members, use ¼" x 1½" Strong-Drive® SDS Heavy-Duty Connector screws into the carrying member and reduce the load to 0.60 of the table value.
- For installations on 2x6 carrying members not at a panel point, the four upper-most face fasteners are not installed. For installations on 2x6 carrying members at a panel point, fasteners are installed into the round holes only (minimum vertical member sizes are 2x6 and 2x8 for the MTHMQ and MTHMQ-2, respectively).
- Tabulated two-member allowable loads assume that 75% of the total load is distributed to the hip and 25% to the jack. It is permitted to distribute 65% to 85% of the tabulated total load to the hip, and the remaining percentage of total load to the jack. The combined hip and jack load may not exceed the published Total Load.

- For terminal hips divide the total allowable load by 2 to determine the allowable load for each hip.
- Tabulated three-member loads assume that each hip carries 40% of the total load and the jack carries 20% of the total load. Other hip/jack load distributions are allowed if the sum of all three carried members does not exceed the total load and the hip members are equally loaded.
- The total allowable download for the MTHMQ-2-SDS3 (Min.) for a 3-member connection at the 115/125/160 load duration is 5,400 lb. (DF/SP) and 3,890 lb. (SPF/HF).
- Truss chord cross-grain tension may limit allowable loads as determined by the Designer in accordance with ANSI/TPI 1-2014.
- Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Section 7.5.3.4 and 8.9.2 are met (pre-drilling required through the plate using a maximum of ½" bit).

THJM

Multiple Truss Hip Jack Hanger

The THJM is a non-welded hanger designed to carry radial-end jack framing and provide optimal efficiency for those multi-plane, angled bay roofs over breakfast, study and library alcoves. The unique patent pending design of the THJM accommodates 2x4 girder bottom chords and uses our Strong-Drive® SDS Heavy-Duty Connector screws for easy installation with minimal fasteners.

Features:

- The THJM hangers are designed for installation with ¼" x 3" Strong-Drive® SDS Heavy-Duty Connector screws that are included with the parts.
- The THJM2-4-SDS3 is designed for four incoming jack trusses with the outer jacks being 22½° from the face of the girder and the inner jacks being 45° from each other and the outer jacks.
- The THJM2-5-SDS3 is designed for five jacks coming into the hanger at 30° from the girder and each other.
- Tabs on the seats of the THJM assist in the placement of the jacks and also include obround holes for optional slant nails (10d x 1½") when increased uplift is required.

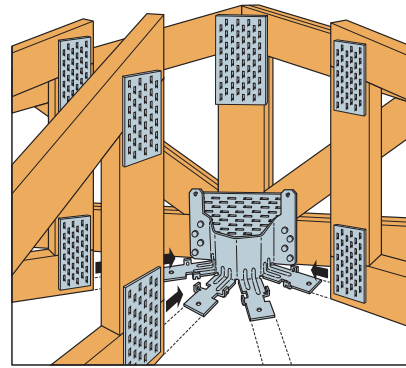
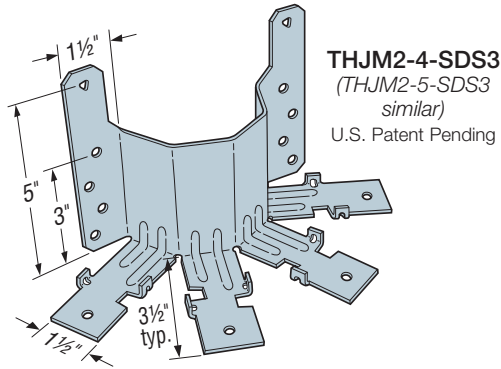
Material: 12 gauge

Finish: Galvanized

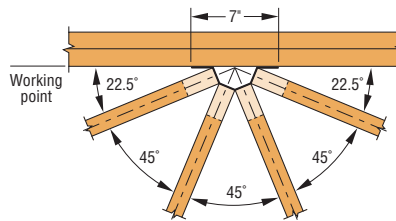
Installation:

- Use all specified fasteners; see General Notes.
- Each carried jack truss requires one ¼" x 3" Strong-Drive SDS Heavy-Duty Connector screw installed into the bottom chord through the bottom of the hanger seat.
- For installation on girders with 2x6 or 2x8 bottom chords, install one additional ¼" x 3" Strong-Drive SDS Heavy-Duty Connector screw in the triangular hole on each vertical strap.
- Install two 10d x 1½" slant nails in the obround holes on each of the seat tabs to achieve the additional uplift load noted in the footnote.

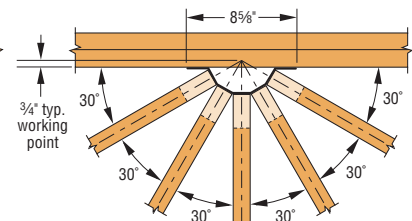
Codes: See p. 14 for Code Reference Key Chart



Typical THJM Installation



THJM2-4-SDS3 Top View Installation



THJM2-5-SDS3 Top View Installation

Model No.	SDS Fasteners		DF/SP Allowable Loads					SPF/HF Allowable Loads				Code Ref.	
	Carrying Member ³	Carried Members (Total)	Total Uplift (160)6	Total Download				Total Uplift (160)6	Total Download				
				Floor (100)	Snow (115)	Roof (125)	Wind (160)		Floor (100)	Snow (115)	Roof (125)		Wind (160)
THJM2-4-SDS3	(8) ¼" x 1 ½"	(4) ¼" x 3"	535	2,000	2,300	2,500	3,030	535	1,440	1,655	1,800	2,180	113, FL
	(8) ¼" x 3"	(4) ¼" x 3"	535	3,270	3,270	3,270	3,270	535	2,355	2,355	2,355	2,355	
THJM2-5-SDS3	(8) ¼" x 1 ½"	(5) ¼" x 3"	620	2,000	2,300	2,500	3,030	445	1,440	1,665	1,800	2,180	
	(8) ¼" x 3"	(5) ¼" x 3"	620	3,360	3,765	3,765	3,765	620	2,420	2,710	2,710	2,710	

1. Tabulated loads are the total allowable loads of all carried members combined; the load on any single carried member shall not exceed 25% of the total published load for the THJM2-4 or 20% of the total published load for the THJM2-5.
 2. Uplift loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
 3. A minimum 2-ply carrying member is required for the ¼" x 3" Strong-Drive® SDS Heavy-Duty Connector screws (provided). For single 2x carrying members, use ¼" x 1 ½" Strong-Drive SDS screws (not supplied) with corresponding loads.

4. A minimum 2-ply carrying member is required for the tabulated loads.
 5. Truss chord cross-grain tension may limit allowable loads per ANSI/TPI 1-2014. The optional triangle holes may be used for installation on 2x6 and larger carrying members, for a total of 10 fasteners into the carrying member, to resist cross-grain tension forces when no other mechanical reinforcement is available.
 6. Tabs on the seats of the THJM hangers have obround holes for optional 10d x 1 ½" slant nails (2 per carried member) when additional uplift capacity is required. Total allowable uplift with the optional 10d x 1 ½" slant nailing is 970 lb. (DF/SP/SPF/HF).

THGQ/THGQH/HTHGQ

Hangers for SCL or Truss Girders Attached to Truss



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.

A lower cost alternative to bolted hangers, the THGQ and THGQH hangers for multi-ply girder trusses use Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws to provide high load capacities and easier installation compared to bolts. The Strong-Drive® SDS Heavy-Duty Connector screws help transfer the load between the plies of the supporting girder when they penetrate all plies.

THGQ and THGQH models offer minimum and optional maximum fastener quantities to accommodate varying design needs. Allowable loads for various girder web member sizes provide additional installation options.

The HTHGQ is a high-load version designed to carry multi-ply trusses or composite lumber up to 5-ply girder trusses. For high-load capacities and easier installation compared to bolts, the HTHGQ is designed for use with Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws.

Material: THGQ — 7 gauge; THGQH/HTHGQ — 3 gauge

Finish: THGQ — Galvanized; THGQH/HTHGQ — Simpson Strong-Tie® gray paint

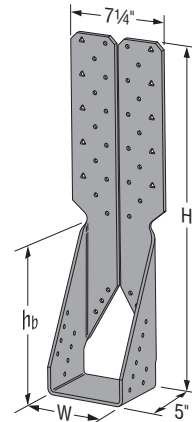
Installation:

- Use all specified fasteners. See General Notes.
- Can be installed filling round holes only, or filling round and triangle holes for maximum values.
- Strong-Drive SDS Heavy-Duty Connector screws supplied for all round and triangle holes. Installation may not require use of all Strong-Drive SDS Heavy-Duty Connector screws.
- All multiple members must be fastened together to act as a single unit.
- The thickness of the supporting girder must be equal to or greater than the screw length. For applications where the length of the supplied screws exceeds the thickness of the supporting girder, 3" or 4½" screws may be substituted for the longer length screws with no load reduction, or a shim block may be used as approved by the Designer.
- Girders must be adequately laterally braced to prevent excessive displacement due to secondary torsional stresses (Ref ANSI/TPI 1-2014 Section 7.5.3.5).

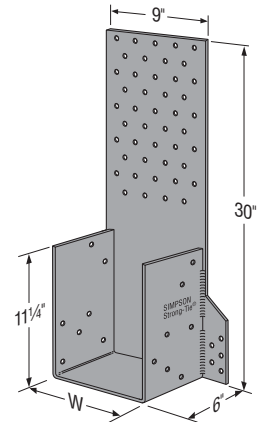
Options:

- See Hanger Options information on pp. 121–123.
- THGQH may be skewed 45° for the models shown. See p. 253.
- For Hem-Fir or Spruce-Pine-Fir members, multiply tabulated allowable loads for the skewed THGQH by 0.86. Connector must be installed centered on girder vertical webs.

Codes: See p. 14 for Code Reference Key Chart

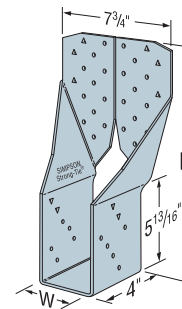


THGQH5.50
(Others similar)

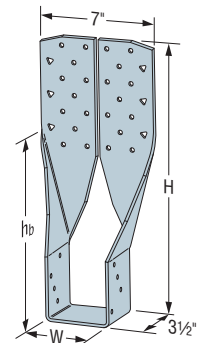


HTHGQ
(Others similar)

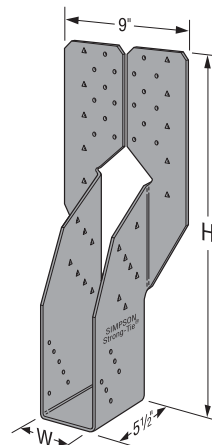
U.S. Patent Pending



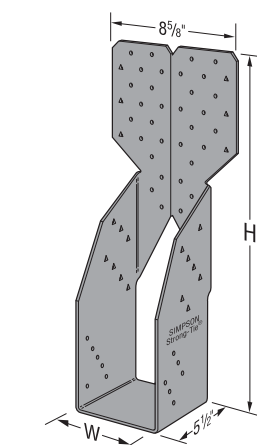
THGQ2-SDS3
(THGQ3-SDS4.5 similar)



THGQ3.62
(Others similar)



THGQH2-SDS3



THGQH3-SDS4.5
(THGQH4-SDS6 similar)

THGQ/THGQH/HTHGQ

Hangers for SCL or Truss Girders Attached to Truss (cont.)

Allowable Loads for Multi-Ply Truss Girder

Model No.	Dim. (in.)		Max. B.C. Depth	Min. Vert. Web Size	SDS Fasteners		DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
	W	H			Face	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
THGQ2-SDS3 (Min.)	3 ⁵ / ₁₆	16	2x8	2x6	(22) 1/4" x 3"	(10) 1/4" x 3"	3,600	7,920	7,920	7,920	7,920	2,590	5,700	5,700	5,700	5,700	FL
					(28) 1/4" x 3"		3,600	10,080	10,080	10,080	10,080	2,590	7,260	7,260	7,260	7,260	
THGQ2-SDS3 (Max.)	3 ⁵ / ₁₆	16	2x8	2x6	(22) 1/4" x 3"	(14) 1/4" x 3"	4,535	9,240	9,770	9,770	9,770	3,265	6,655	7,035	7,035	7,035	
					(28) 1/4" x 3"		4,535	11,760	12,435	12,435	12,435	3,265	8,465	8,955	8,955	8,955	
THGQH2-SDS3 (Min.)	3 ⁵ / ₁₆	25	2x10	2x6	(18) 1/4" x 3"	(12) 1/4" x 3"	3,875	7,560	7,685	7,685	7,685	2,790	5,445	5,535	5,535	5,535	
					(28) 1/4" x 3"		3,875	11,760	11,950	11,950	11,950	2,790	8,465	8,605	8,605	8,605	
THGQH2-SDS3 (Max.)	3 ⁵ / ₁₆	25	2x10	2x6	(18) 1/4" x 3"	(26) 1/4" x 3"	7,635	7,560	7,940	7,940	7,940	5,495	5,445	5,715	5,715	5,715	
					(28) 1/4" x 3"		9,900	11,760	12,350	12,350	12,350	7,130	8,465	8,890	8,890	8,890	
THGQ3-SDS4.5 (Min.)	4 ¹⁵ / ₁₆	16	2x8	2x6	(22) 1/4" x 4 1/2"	(10) 1/4" x 4 1/2"	3,600	7,920	7,920	7,920	7,920	2,590	5,700	5,700	5,700	5,700	
					(28) 1/4" x 4 1/2"		3,600	10,080	10,080	10,080	10,080	2,590	7,260	7,260	7,260	7,260	
THGQ3-SDS4.5 (Max.)	4 ¹⁵ / ₁₆	16	2x8	2x6	(22) 1/4" x 4 1/2"	(14) 1/4" x 4 1/2"	4,535	9,140	9,140	9,140	9,140	3,265	6,580	6,580	6,580	6,580	
					(28) 1/4" x 4 1/2"		4,535	11,635	11,635	11,635	11,635	3,265	8,375	8,375	8,375	8,375	
THGQH3-SDS4.5 (Min.)	4 ¹⁵ / ₁₆	25	2x10	2x8	(32) 1/4" x 4 1/2"	(12) 1/4" x 4 1/2"	3,875	12,565	12,565	12,565	12,565	2,790	9,045	9,045	9,045	9,045	
					(38) 1/4" x 4 1/2"		3,875	14,920	14,920	14,920	14,920	2,790	10,740	10,740	10,740	10,740	
THGQH3-SDS4.5 (Max.)	4 ¹⁵ / ₁₆	25	2x10	2x8	(32) 1/4" x 4 1/2"	(26) 1/4" x 4 1/2"	9,900	12,980	12,980	12,980	12,980	7,130	9,345	9,345	9,345	9,345	
					(38) 1/4" x 4 1/2"		9,900	15,415	15,415	15,415	15,415	7,130	11,100	11,100	11,100	11,100	
THGQH4-SDS6 (Min.)	6 ⁹ / ₁₆	25	2x12	2x8	(34) 1/4" x 6"	(12) 1/4" x 6"	3,875	13,875	13,875	13,875	13,875	2,790	9,990	9,990	9,990	9,990	
					(40) 1/4" x 6"		3,875	16,320	16,320	16,320	16,320	2,790	11,750	11,750	11,750	11,750	
THGQH4-SDS6 (Max.)	6 ⁹ / ₁₆	25	2x12	2x8	(34) 1/4" x 6"	(26) 1/4" x 6"	9,900	14,280	14,335	14,335	14,335	7,130	10,280	10,320	10,320	10,320	
					(40) 1/4" x 6"		9,900	16,800	16,865	16,865	16,865	7,130	12,095	12,145	12,145	12,145	

1. Allowable uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Connector must be installed centered on girder vertical webs.
3. Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Section 7.5.3.4 and 8.9.2 are met (pre-drilling required through the plate using a maximum of 5/32" bit).
4. Strong-Drive SDS Heavy-Duty Connector screws that penetrate all plies of the supporting girder (screws must penetrate a minimum of 1" into the last truss ply) may also be used to transfer the

- load through all the plies of the supporting girder. When Strong-Drive SDS Heavy-Duty Connector screws do not penetrate all plies of the supporting girder truss, supplemental Strong-Drive SDS Heavy-Duty Connector screws at the hanger locations may be required to transfer the load to the truss plies not penetrated by the face fasteners, as determined by the Designer.
5. The supporting girder truss must have adequate thickness to accommodate the screw length, so that the screw does not protrude out the back of the girder. 3"- or 4 1/2"-long Strong-Drive SDS Heavy-Duty Connector screws may be substituted for the longer Strong-Drive SDS screws with no load reduction.
6. For installations to LSL, use 1/4" x 3" Strong-Drive SDS Heavy-Duty Connector screws and use the DF/SP table loads.
7. Wind (160) is a download rating.

Plated Truss Connectors

Allowable Loads for Heavy Multi-Ply Truss Girder

Model No.	Width (W) (in.)	SDS Fasteners		DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		Carrying Member	Carried Member	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
HTHGQ2-SDS	3 ⁵ / ₁₆	(55) 1/4" x 4 1/2"	(14) 1/4" x 3"	3,940	17,130	18,010	18,600	20,660	3,390	11,885	12,520	12,940	14,425	170
HTHGQ3-SDS	4 ¹⁵ / ₁₆			3,940	20,735	20,735	20,735	20,735	3,390	15,710	16,345	16,765	17,835	
HTHGQ4-SDS	6 ⁹ / ₁₆			3,940	20,735	20,735	20,735	20,735	3,390	16,630	17,835	17,835	17,835	
HTHGQ5-SDS	8 ¹ / ₈			3,940	20,735	20,735	20,735	20,735	3,390	16,630	17,835	17,835	17,835	

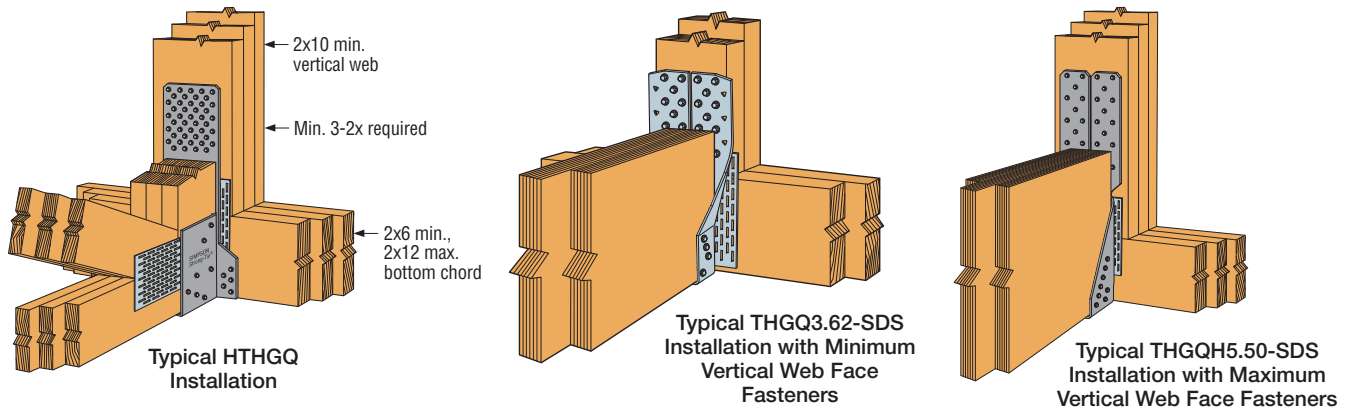
1. Tabulated allowable loads must be selected based on duration of load as permitted by the applicable building code.
2. The uplift loads have been increased for wind or earthquake loading with no further increase allowed. Reduce when other load durations govern.
3. Wind (160) is a download rating.
4. Connector must be installed centered on minimum 2x10 vertical web.
5. A minimum 3-ply carrying member is required for the tabulated loads.

6. Carrying truss plies must be adequately fastened together as determined by Designer.
7. Truss chord cross-grain tension may limit allowable loads as determined by the Designer in accordance with ANSI/TPI 1-2014.
8. Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Section 7.5.3.4 and 8.9.2 are met (pre-drilling required through the plate using a maximum of 5/32" bit).

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THGQ/THGQH/HTHGQ

Hangers for SCL or Truss Girders Attached to Truss (cont.)

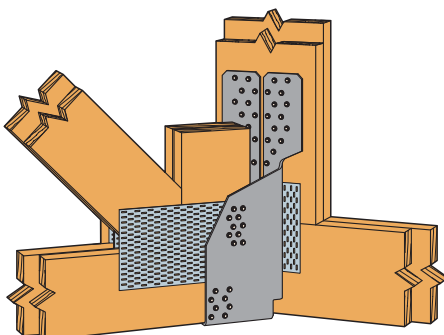


Allowable Loads for Structural Composite Lumber (SCL)

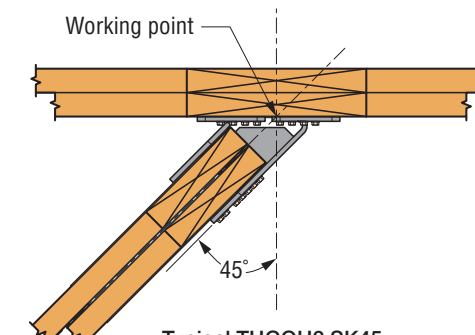
Model No.	Dimensions (in.)			Bottom Chord Size	Min. Vert. Web Size	SDS Fasteners		DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
	W	H	h _b			Face	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
THGQ3.62-SDS (Min.)	3½	16½	10	2x8 Max.	2x6	(22) ¼" x 3"	(8) ¼" x 3"	2,620	6,310	6,310	6,310	6,310	2,250	5,425	5,425	5,425	5,425	170
THGQ3.62-SDS (Max.)					2x8	(28) ¼" x 3"	(8) ¼" x 3"	2,620	8,825	8,825	8,825	8,825	2,250	7,360	7,590	7,590	7,590	
THGQH3.62-SDS (Min.)	3½	24½	11	2x8 or 2x10	2x6	(26) ¼" x 3"	(18) ¼" x 3"	3,525	10,920	11,080	11,080	11,080	3,030	7,800	8,970	9,530	9,530	
THGQH3.62-SDS (Max.)					2x8	(36) ¼" x 3"	(18) ¼" x 3"	3,525	12,080	12,080	12,080	12,080	3,030	10,390	10,390	10,390	10,390	
THGQ5.50-SDS (Min.)	5½	17¼	8¼	2x8 Max.	2x6	(24) ¼" x 4½"	(8) ¼" x 4½"	2,620	7,315	7,315	7,315	7,315	2,250	6,295	6,295	6,295	6,295	
THGQ5.50-SDS (Max.)					2x8	(32) ¼" x 4½"	(8) ¼" x 4½"	2,620	8,655	8,655	8,655	8,655	2,250	7,445	7,445	7,445	7,445	
THGQH5.50-SDS (Min.)	5½	25	11¼	2x8 or 2x10	2x6	(28) ¼" x 4½"	(16) ¼" x 4½"	3,525	10,640	10,640	10,640	10,640	3,030	8,400	9,150	9,150	9,150	
THGQH5.50-SDS (Max.)					2x8	(38) ¼" x 4½"	(16) ¼" x 4½"	3,525	15,960	17,325	17,325	17,325	3,030	11,400	13,110	14,250	14,900	
THGQH7.25-SDS (Min.)	7¼	24½	11¼	2x8 or 2x10	2x6	(28) ¼" x 6"	(16) ¼" x 6"	3,525	11,760	12,070	12,070	12,070	3,030	8,400	9,660	10,380	10,380	
THGQH7.25-SDS (Max.)					2x8	(38) ¼" x 6"	(16) ¼" x 6"	3,525	15,565	15,565	15,565	15,565	3,030	11,400	13,110	13,385	13,385	
					2x10	(46) ¼" x 6"	(16) ¼" x 6"	3,525	18,360	18,360	18,360	18,360	3,030	13,800	15,790	15,790	15,790	

See THGQ footnotes on page 252.

Model #	Max. B.C. Depth (in.)	Min. Vertical Web Size	SDS Fasteners		DF/SP Allowable Loads	
			Face	Joist	Uplift (160)	Down (100/115/125)
THGQH2 SK45	17	2x6	(18) ¼"x3"	(18) ¼"x3"	4,570	6,090
			(28) ¼"x3"			9,470
THGQH3 SK45	14	2x8	(30) ¼"x4½"	(18) ¼"x4½"	3,875	10,270
			(36) ¼"x4½"			12,480
THGQH4 SK45	13	2x8	(34) ¼"x6"	(18) ¼"x6"	3,180	11,890
			(40) ¼"x6"			13,990



Typical THGQH2 SK45 Installation Skewed Left



Typical THGQH2 SK45 Installation Skewed Left (Top view)

THGBV/THGBHV/THGWV

SCL-to-Truss Girder Hangers

An extension of the THGB/THGBH/THGW series, these high-capacity hangers are designed for attaching 2-ply, 3-ply or 4-ply sized structural composite lumber (SCL) to a girder truss. The THGBV offers optional installation with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws, while the bolted THGBHV and THGWV offer higher load capacities. Two bucket heights are available for each width to accommodate a range of SCL sizes. Options for skewing or dropping the buckets for conditions where the SCL joist is lower than the girder bottom chord provide additional design flexibility for a variety of SCL-to-truss connections.

Material: 3 gauge

Finish: Simpson Strong-Tie® gray paint

Installation:

- Use all specified fasteners; see General Notes.
- All multiple members must be fastened together to act as a single unit.
- Maximum 11 7/8" bottom chord in the carrying member to allow for the minimum bolt end distance.
- Bolts must be installed symmetrically when using less than 8 bolts on the 8-bolt backplate.
- Girders must be adequately laterally braced to prevent excessive displacement due to secondary torsional stresses (Ref. ANSI/TPI 1-2014 Section 7.5.3.5).
- Shall be attached to a 2-ply girder truss to allow for required minimum screw penetration. See footnote 4.

Options:

- See Hanger Options information on pp. 121–123.
- THGB/THGBH/THGBV/THGBHV hangers can be skewed to a maximum of 45°. Allowable download or uplift is 0.87 of table load.

Skewed Seat

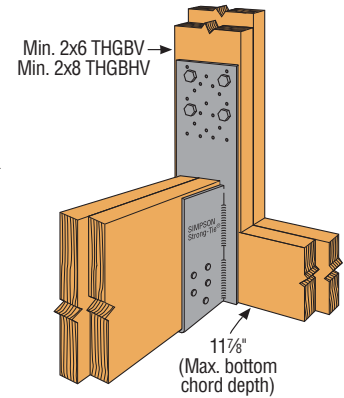
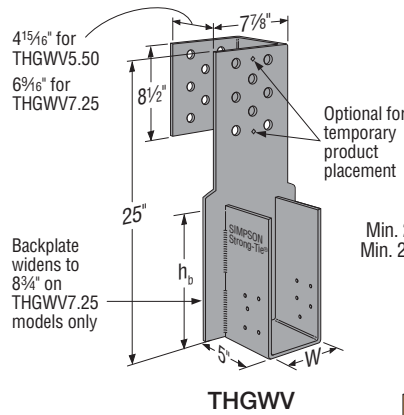
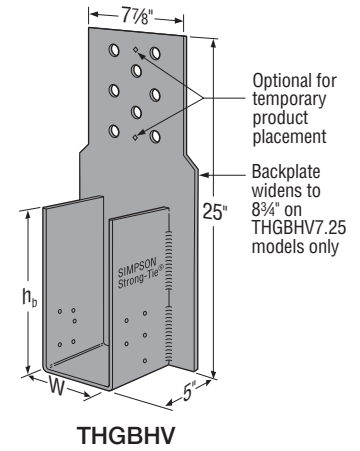
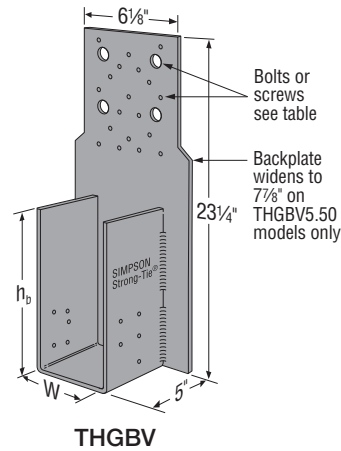
- THGB/THGBH/THGBV/THGBHV hangers can be skewed to a maximum of 45°.
- The maximum allowable down load and uplift load for skew is 0.87 of the table load.

Dropped Bucket

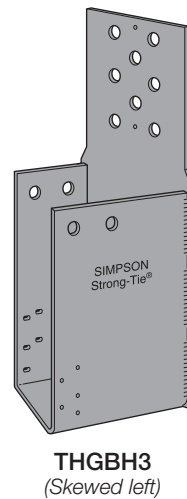
- THGBV/THGBHV backplates can be extended to allow for up to a 6" dropped bucket.
- Allowable loads are 100% of the table loads.
- Order as "X" version, specify the total backplate height, BK_PLT, equal to the hanger height (H) plus the dropped bucket amount (db). Ex: a THGBV3.62/9 with a 4" dropped bucket would have a total backplate height of 27 1/4".

Codes: See p. 14 for Code Reference Key Chart

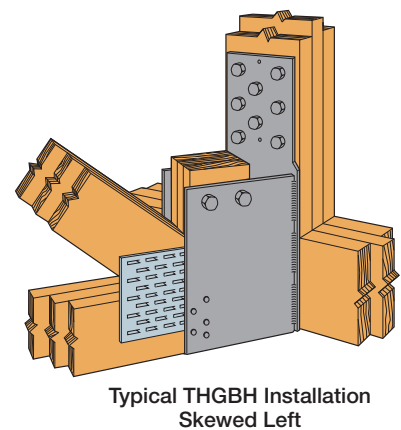
Joist Dimensions (in.)		Model No.	Hanger Dimensions (in.)	
Width	Depth		W	h _b
3 1/2	9 1/4 – 14	THGBV3.62/9	3 3/8	9
		THGBHV3.62/9		
	11 1/4 – 20	THGBV3.62/11		11
		THGBHV3.62/11		
5 1/4	9 1/4 – 14	THGBV5.50/9	5 1/2	9
		THGBHV5.50/9		
		THGWV5.50/9		
	11 1/4 – 20	THGBV5.50/11		11
		THGBHV5.50/11		
		THGWV5.50/11		
7	9 1/4 – 14	THGBHV7.25/9	7 1/4	9
		THGWV7.25/9		
	11 1/4 – 20	THGBHV7.25/11		11
		THGWV7.25/11		



Typical THGBV3.62/9 Installation



THGBH3 (Skewed left)



Typical THGBH Installation Skewed Left

THGBV/THGBHV/THGWV

SCL-to-Truss Girder Hangers (cont.)

Model No.	Beam Width (in.)	Fasteners		Length of Bolt in Carrying Member	DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		Carried Member	Carrying Member		Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
THGBV3.62/9 THGBV3.62/11	3½	(10) 10d	(4) ¾" MB	3	2,570	6,030	6,835	7,375	8,715	2,570	5,160	5,840	6,290	7,320	160
				4½		6,910	7,780	8,350	8,715		6,385	7,185	7,320	7,320	
				6		6,910	7,780	8,350	8,715		6,400	7,200	7,320	7,320	
			(19) ¼" x 3" SDS	—		7,980	8,675	8,675	8,675		5,700	6,245	6,245	6,245	
THGBHV3.62/9 THGBHV3.62/11	3½	(10) 10d	(8) ¾" MB	3	2,570	10,105	10,345	10,505	10,915	2,570	7,465	7,675	7,815	8,285	160
				4½		10,915	10,915	10,915	10,915		9,165	9,165	9,165	9,165	
				6		10,915	10,915	10,915	10,915		9,165	9,165	9,165	9,165	
THGBV5.50/9 THGBV5.50/11	5¼	(10) 10d	(4) ¾" MB	3	2,570	6,030	6,835	7,375	8,715	2,570	5,160	5,840	6,290	7,320	160
				4½		6,910	7,780	8,350	8,715		6,385	7,185	7,320	7,320	
				6		6,910	7,780	8,350	8,715		6,400	7,200	7,320	7,320	
			(19) ¼" x 3" SDS	—		7,980	8,675	8,675	8,675		5,700	6,245	6,245	6,245	
THGBHV5.50/9 THGBHV5.50/11	5¼	(10) 10d	(8) ¾" MB	3	2,570	10,915	10,915	10,915	10,915	2,570	9,165	9,165	9,165	9,165	160
				4½		12,665	12,665	12,665	12,665		10,500	10,640	10,640	10,640	
				6		12,815	12,815	12,815	12,815		10,500	10,710	1,765	10,765	
THGBHV7.25/9 THGBHV7.25/11	7	(10) 10d	(4) ¾" MB	3	2,570	6,040	6,850	7,390	8,715	2,570	5,165	5,845	6,295	7,320	160
				4½		6,910	7,780	8,350	8,715		6,385	7,185	7,320	7,320	
				6		6,910	7,780	8,350	8,715		6,400	7,200	7,320	7,320	
THGBHV7.25/9 THGBHV7.25/11	7	(10) 10d	(6) ¾" MB	3	2,570	9,065	10,010	10,010	10,010	2,570	7,750	8,410	8,410	8,410	160
				4½		10,010	10,010	10,010	10,010		8,410	8,410	8,410	8,410	
				6		10,010	10,010	10,010	10,010		8,410	8,410	8,410	8,410	
THGBHV7.25/9 THGBHV7.25/11	7	(10) 10d	(8) ¾" MB	3	2,570	10,915	10,915	10,915	10,915	2,570	9,165	9,165	9,165	9,165	160
				4½		13,830	15,060	15,060	15,060		12,650	12,650	12,650	12,650	
				6		13,830	15,060	15,060	15,060		12,650	12,650	12,650	12,650	
THGWV5.50/9 THGWV5.50/11	5¼	(10) 10d	(8) ¾" MB	4½	2,570	21,320	21,835	21,835	21,835	2,570	18,340	18,340	18,340	18,340	160
THGWV7.25/9 THGWV7.25/11	7	(10) 10d	(8) ¾" MB	6	2,570	24,165	24,165	24,165	24,165	2,570	20,300	20,300	20,300	20,300	160

- Allowable loads are based on a SCL (LVL, PSL or LSL) carried member with an allowable F'_c of 750 psi and equivalent Specific Gravity of 0.50 or higher.
- Uplift loads have been increased for earthquake or wind loading with no further increase allowed. Reduce where other loads govern.
- A 3-ply carrying member is required for the THGWV5.50/9 and THGWV5.50/11; a 4-ply carrying member is required for the THGWV7.25/9 and THGWV7.25/11.
- Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws require a minimum 2-ply (3") carrying member.
- Bolts and Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector

screws are permitted to be installed through metal truss connector plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Sections 7.5.3.4 and 8.9.2 are met.

- Wind (160) is a download rating.
- To achieve published loads, machine bolts (MB) into the girder truss shall be installed with the nut on the opposite side of the hanger with a standard cut washer (except THGWVs). Standard cut washers are required for THGBV and THGBHV.
- Nails:** 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

THGB/THGBH/THGW

Truss Girder Hangers

High capacity, welded hangers for multi-ply girder trusses. The THGB series offers optional installation with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws, and the bolted THGBH and THGW hangers offer higher design loads. For a lower cost alternative that uses Strong-Drive SDS Heavy-Duty Connector screws instead of bolts and offers high load capacities, see the THGQ/THGQH series.

Material: 3 gauge

Finish: Simpson Strong-Tie® gray paint

Installation:

- Use all specified fasteners; see General Notes
- All multiple members must be fastened together to act as a single unit
- Maximum $11\frac{7}{8}$ " bottom chord in the carrying member to allow for the minimum bolt end distance
- Bolts must be installed symmetrically when using less than 8 bolts on the 8-bolt backplate
- Girders must be adequately laterally braced to prevent excessive displacement due to secondary torsional stresses (Ref ANSI/TPI 1-2014 Section 7.5.3.5)

Options:

- See Hanger Options information on pp. 121–123.

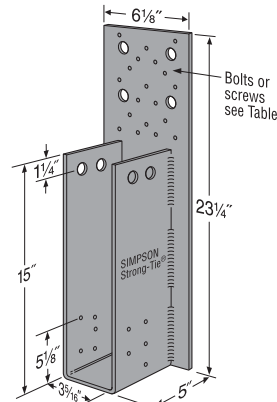
Skewed Seat

- THGB/THGBH/THGBV/THGBHV hangers can be skewed to a maximum of 45°.
- The maximum allowable down load and uplift load for skew is 0.87 of the table load.

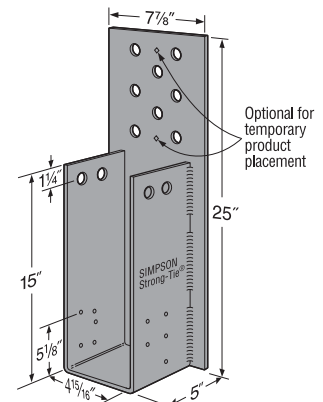
Dropped Bucket

- THGBV/THGBHV backplates can be extended to allow for up to a 6" dropped bucket.
- Allowable loads are 100% of the table loads.
- Order as "X" version, specify the total backplate height, BK_PLT, equal to the hanger height (H) plus the dropped bucket amount (d_b).
Ex: a THGBV3.62/9 with a 4" dropped bucket would have a total backplate height of 27 $\frac{1}{4}$ ".

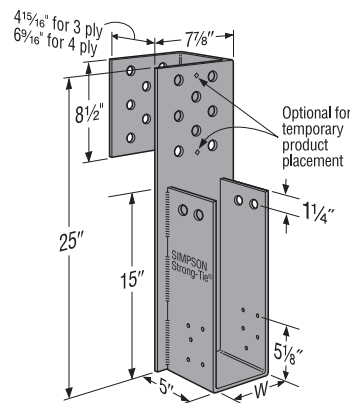
Codes: See p. 14 for Code Reference Key Chart



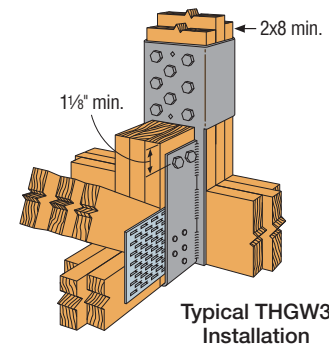
THGB2
(THGB3 similar)



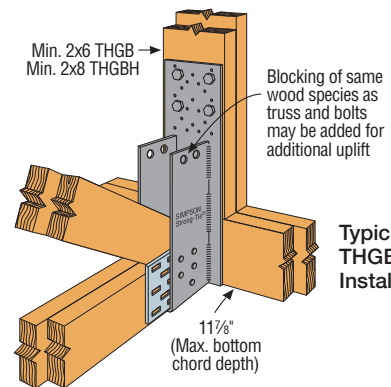
THGB3
(THGBH2 and THGBH4 similar)



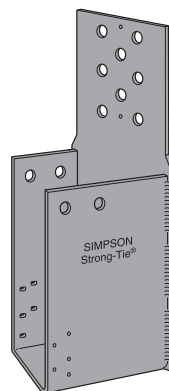
THGW3
U.S. Patent 6,230,466



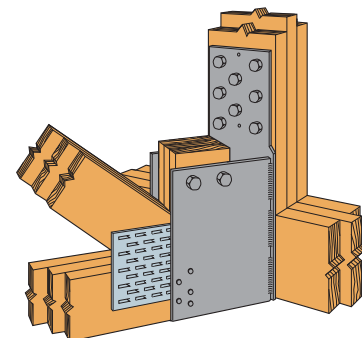
Typical THGW3 Installation



Typical THGB2 Installation



THGBH3
(Skewed left)



Typical THGBH Installation Skewed Left

THGB/THGBH/THGW

Truss Girder Hangers (cont.)

Model No.	Width (W) (in.)	Fasteners		Length of Bolt in Carrying Member	DF/SP Allowable Loads					SPF/HF Allowable Loads					Code Ref.
		Carried Member	Carrying Member		Uplift1 (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	Uplift1 (160)	Floor (100)	Snow (115)	Roof (125)	Wind (160)	
THGB2	3 ⁵ / ₁₆	(10) 10d and (2) 3/4" MB	(4) 3/4" MB	3	9,700	6,030	6,835	7,375	8,715	8,145	5,160	5,840	6,290	7,320	FL
				4 ¹ / ₂	9,700	6,910	7,780	8,350	8,715	8,145	6,385	7,185	7,320	7,320	
				6	9,700	6,910	7,780	8,350	8,715	8,145	6,400	7,200	7,320	7,320	
THGB2	3 ⁵ / ₁₆	(10) 10d and (2) 3/4" MB	(19) 1/4" x 3" SDS	—	8,675	7,980	8,675	8,675	8,675	6,245	5,700	6,245	6,245	6,245	
THGBH2	3 ⁵ / ₁₆	(10) 10d and (2) 3/4" MB	(8) 3/4" MB	3	9,700	10,105	10,345	10,505	10,915	8,145	7,465	7,675	7,815	8,285	
				4 ¹ / ₂	9,700	10,915	10,915	10,915	10,915	8,145	9,165	9,165	9,165	9,165	
				6	9,700	10,915	10,915	10,915	10,915	8,145	9,165	9,165	9,165	9,165	
THGB3	4 ¹⁵ / ₁₆	(10) 10d and (2) 3/4" MB	(4) 3/4" MB	3	9,700	6,030	6,835	7,375	8,715	8,145	5,160	5,840	6,290	7,320	
				4 ¹ / ₂	9,700	6,910	7,780	8,350	8,715	8,145	6,385	7,185	7,320	7,320	
				6	9,700	6,910	7,780	8,350	8,715	8,145	6,400	7,200	7,320	7,320	
THGB3	4 ¹⁵ / ₁₆	(10) 10d and (2) 3/4" MB	(19) 1/4" x 3" SDS	—	8,675	7,980	8,675	8,675	8,675	6,245	5,700	6,245	6,245	6,245	
THGBH3	4 ¹⁵ / ₁₆	(10) 10d and (2) 3/4" MB	(8) 3/4" MB	3	9,700	10,915	10,915	10,915	10,915	8,145	9,165	9,165	9,165	9,165	
				4 ¹ / ₂	9,700	12,665	12,665	12,665	12,665	8,145	10,500	10,640	10,640	10,640	
				6	9,700	12,815	12,815	12,815	12,815	8,145	10,500	10,710	10,765	10,765	
THGBH4	6 ⁹ / ₁₆	(10) 10d and (2) 3/4" MB	(4) 3/4" MB	3	9,700	6,040	6,850	7,390	8,715	8,145	5,165	5,845	6,295	7,320	
				4 ¹ / ₂	9,700	6,910	7,780	8,350	8,715	8,145	6,385	7,185	7,320	7,320	
				6	9,700	6,910	7,780	8,350	8,715	8,145	6,400	7,200	7,320	7,320	
THGBH4	6 ⁹ / ₁₆	(10) 10d and (2) 3/4" MB	(6) 3/4" MB	3	9,700	9,065	10,010	10,010	10,010	8,145	7,750	8,410	8,410	8,410	
				4 ¹ / ₂	9,700	10,010	10,010	10,010	10,010	8,145	8,410	8,410	8,410	8,410	
				6	9,700	10,010	10,010	10,010	10,010	8,145	8,410	8,410	8,410	8,410	
THGBH4	6 ⁹ / ₁₆	(10) 10d and (2) 3/4" MB	(8) 3/4" MB	3	9,700	10,915	10,915	10,915	10,915	8,145	9,165	9,165	9,165	9,165	
				4 ¹ / ₂	9,700	13,830	15,060	15,060	15,060	8,145	12,650	12,650	12,650	12,650	
				6	9,700	13,830	15,060	15,060	15,060	8,145	12,650	12,650	12,650	12,650	
THGW3-3 ⁶	4 ¹⁵ / ₁₆	(10) 10d and (2) 3/4" MB	(8) 3/4" MB	4 ¹ / ₂	9,700	21,830	21,830	21,830	21,830	8,145	18,340	18,340	18,340	18,340	
THGW3-4 ⁶				6	9,700	21,830	21,830	21,830	21,830	8,145	18,340	18,340	18,340	18,340	
THGW4-3 ⁶	6 ⁹ / ₁₆	(10) 10d and (2) 3/4" MB	(8) 3/4" MB	4 ¹ / ₂	9,700	24,165	24,165	24,165	24,165	8,145	20,300	20,300	20,300	20,300	
THGW4-4 ⁶				6	9,700	24,165	24,165	24,165	24,165	8,145	20,300	20,300	20,300	20,300	

- Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- A 3-ply carrying member is required for the THGW3-3 and THGW4-3; a 4-ply carrying member is required for the THGW3-4 and THGW4-4. For all other models, a minimum 2-ply carrying member is required.
- Simpson Strong-Tie® Strong Drive® SDS Heavy-Duty Connector screws require a minimum 2-ply (3") carrying member.
- Bolts and Simpson Strong-Tie Strong Drive screws are permitted to be installed through metal truss connector plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Sections 7.5.3.4 and 8.9.2 are met.

- 10-10d nails for the carried member will achieve the maximum down loads. Uplift loads are 2,570 lb. for DF/SP and 2,210 lb. for SPF/HF. To achieve maximum uplift, install nails and bolts listed in the table.
- Loads for THGW models require that the supported member have minimum 2x6 end verticals to ensure end-grain bearing. Contact Simpson Strong-Tie for loads when horizontal members are bearing in the hanger seat.
- Wind (160) is a download rating.
- To achieve published loads, machine bolts (MB) into the girder truss shall be installed with the nut on the opposite side of the hanger with a standard cut washer (except THGWs). Standard cut washers are required for THGB and THGBH.
- Nails:** 10d = 0.148" dia. x 3" long. See pp. 26-27 for other nail sizes and information.

HTHMQ

Heavy Multiple Truss Hanger

The HTHMQ is a versatile, high-capacity truss hanger designed for various lumber types and multiple-ply trusses. The truss hanger accommodates a greater range of structural designs while accommodating right- or left-hand hips (at 30°- 60° skews), which can be used for terminal hips with or without the center common jack. The HTHMQ can accommodate various widths of lumber.

Features:

- Available in various stirrup widths to accommodate various lumber types and multiple ply trusses
- Installed with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws that eliminate the inconvenience of bolted installation
- Enables 2-3 member connection for a broader range of structural designs

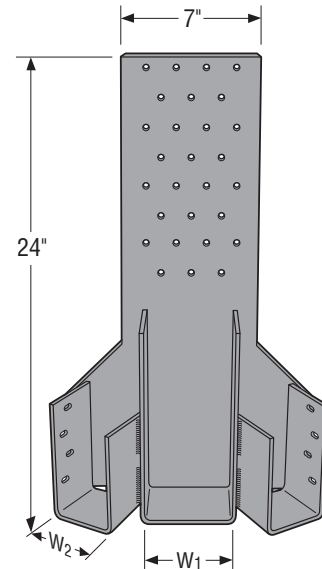
Material: Back plate — 3 gauge; stirrup — 7 gauge

Finish: Simpson Strong-Tie® gray paint

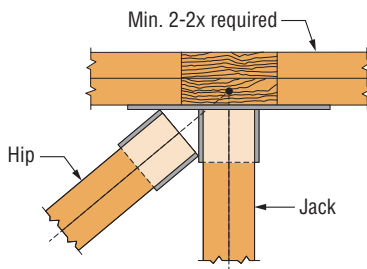
Installation:

- Use all specified fasteners; see General Notes.
- Strong-Drive SDS Heavy-Duty Connector screws supplied with connector.
- All multiple members must be fastened together to act as a single unit.
- Shall be attached to a minimum double girder truss to allow for required minimum screw penetration. See footnote 5.
- Girders must be adequately laterally braced to prevent excessive displacement due to secondary torsional stresses (Ref ANSI/TPI 1-2014 Section 7.5.3.5).
- See below for different installation options.

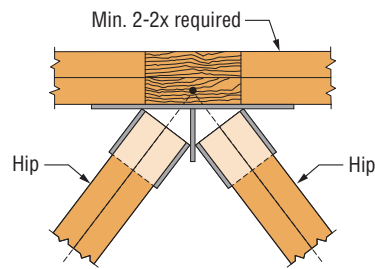
Codes: See p. 14 for Code Reference Key Chart



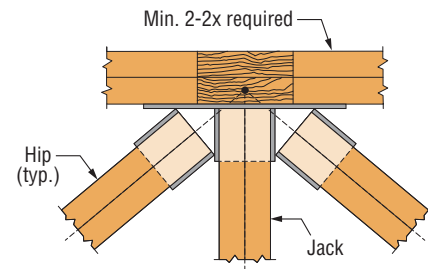
HTHMQ



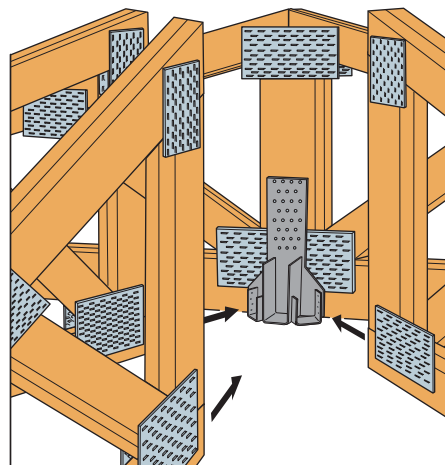
HTHMQL Top View
Left-Hand Hip Installation



HTHMQN Top View
Terminal Hip Installation
without Common Center Jack



HTHMQ Top View
Terminal Installation
with Center Common Jack



Typical HTHMQ Installation

HTHMQ

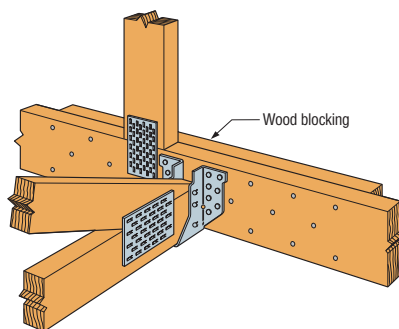
Heavy Multiple Truss Hanger (cont.)

Model No.	Dimensions (in.)			SDS Fasteners			DF/SP Allowable Loads						SPF/HF Allowable Loads						Code Ref.
	W ₁	W ₂	Hip Skew Angle	Carrying Member	Hips (Total)	Jack	Uplift (160)			Down (100/115/125/160)			Uplift (160)			Down (100/115/125/160)			
							Hip (ea)	Jack	Total	Hip (ea)	Jack	Total	Hip (ea)	Jack	Total	Hip (ea)	Jack	Total	
HTHMQ-SDS	1½ – 4¼	1¾	30°–60°	(34) ¼" x 3"	(8) ¼" x 1½"	(4) ¼" x 1½"	1,085	545	2,715	4,045	2,020	10,110	935	470	2,340	2,790	1,395	6,975	170
HTHMQ-2-SDS	1½ – 4¼	3¾	30°–60°	(34) ¼" x 3"	(8) ¼" x 2½"	(4) ¼" x 1½"	1,085	545	2,715	4,585	2,290	11,460	935	470	2,340	3,945	1,970	9,860	
HTHMQN-SDS	—	1¾	30°–60°	(34) ¼" x 3"	(8) ¼" x 1½"	—	920	—	1,840	4,045	—	8,090	790	—	1,580	2,790	—	5,580	
HTHMQN-2-SDS	—	3¾	30°–60°	(34) ¼" x 3"	(8) ¼" x 2½"	—	920	—	1,840	4,695	—	9,390	790	—	1,580	4,040	—	8,080	
HTHMQR/L-SDS	1½ – 4¼	1¾	30°–60°	(34) ¼" x 3"	(4) ¼" x 1½"	(4) ¼" x 1½"	1,470	490	1,960	4,045	1,350	5,395	1,265	420	1,685	2,790	930	3,720	
HTHMQR/L-2-SDS	1½ – 4¼	3¾	30°–60°	(34) ¼" x 3"	(4) ¼" x 2½"	(4) ¼" x 1½"	1,470	490	1,960	6,190	2,065	8,255	1,265	420	1,685	4,865	1,620	6,485	

1. Tabulated allowable loads must be selected based on duration of load as permitted by the applicable building code.
2. The uplift loads have been increased for wind or earthquake loading with no further increase allowed. Reduce when other load durations govern.
3. Specify W₁ where applicable and Hip Skew Angle.
4. Connector must be installed centered on minimum 2x8 vertical web.
5. A minimum 2-ply carrying member is required for the tabulated loads.
6. Carrying truss plies must be adequately fastened together as determined by Designer.
7. Truss chord cross-grain tension may limit allowable loads as determined by the Designer in accordance with ANSI/TPI 1-2014.
8. Tabulated allowable loads for three-member configurations assume that each hip carries 40% of the total load and the jack carries 20% of the total load. Tabulated allowable loads for single hip-jack configurations assume that 75% of the total load is distributed to the hip and 25% to the jack.
9. Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Section 7.5.3.4 and 8.9.2 are met (pre-drilling required through the plate using a maximum of ½" bit).
10. ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screw may be substituted for the ¼" x 3" Strong-Drive SDS Heavy-Duty Connector screw provided with the HTHMQ with no load reduction. Back-to-back installations require a 3-ply minimum girder.

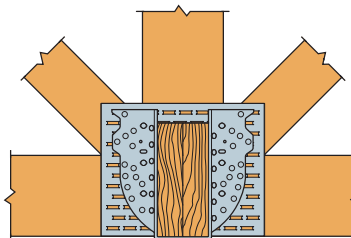
Alternate Installations

- Block(s) should be of similar size/grade as the truss member to which it is attached. Blocking should be designed to act as one unit with the truss members.
- Block(s) should be of sufficient size to accept all carried/carrying member nails, and develop full seat bearing as specified in Simpson Strong-Tie publications.
- Truss Designer is to confirm blocking size/grade, fasteners required and application.
- Fasteners used to attach the additional blocking should be independent of the truss hanger fasteners.



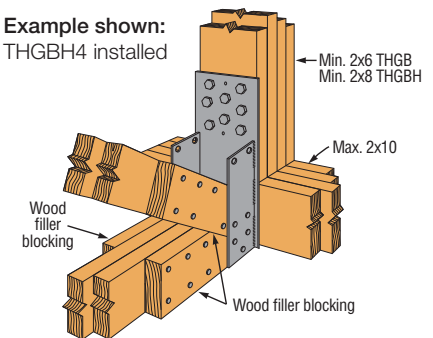
- 1 Use of Wood Blocking to Achieve the Full Design Load Value of a Face-Mount Hanger Attached to a Single Ply Carrying (Girder) Member. (Block designed by Engineer of Record or Truss Designer.)

Example shown: HGUS210-2 installed on a 2x6 bottom chord (Other applications similar)



- 2 Connection Design to Achieve Specified Nailing of a Face-Mount Hanger at a Panel Point. Nails located in joints formed by the intersection of wood members or with edge or end distances less than suggested by NDS have no load resistance. The hanger allowable load value shall be reduced by the nail shear value for each header nail less than the specified quantity. Connection shall be approved by the Truss Designer.

Example shown: THGBH4 installed



- 3 Use of Wood Filler Blocking for Carried Member Width Less than Hanger Width. (Block designed by Designer or Truss Designer.)

DSC

Drag Strut Connector

The DSC drag-strut connector transfers the diaphragm shear forces from the girder truss or beam to the shearwalls. The DSC5 has been designed to optimize fastener location, resulting in a connector that outperforms the DSC4 with fewer fasteners. The DSC2 is a smaller, lighter version that installs with fewer screws.

Features:

- The DSC5 requires 40% fewer fasteners than our previous DSC4, and gets 12% higher loads
- Left hand and right hand versions available
- DSCs install with the ¼" x 3" Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws provided

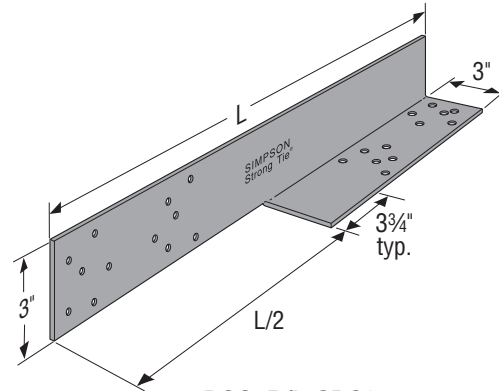
Material: DSC2 — 7 gauge; DSC5 — 3 gauge

Finish: DSC2 — Galvanized;
DSC5 — Simpson Strong-Tie® gray paint

Installation:

- Use all specified fasteners; see General Notes
- Strong-Drive SDS Heavy-Duty Connector screws are provided

Codes: See p. 14 for Code Reference Key Chart

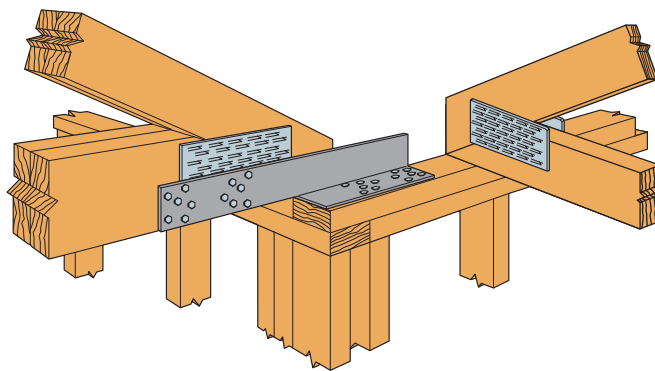


DSC5R/L-SDS3
(DSC2 similar)
(Right hand DSC shown; specify right or left hand when ordering)
U.S. Patent 6,655,096

Plated Truss Connectors

Model No.	L (in.)	SDS Fasteners	DF/SP Allowable Loads		SPF/HF Allowable Loads		Code Ref.
			Compression (160)	Tension (160)	Compression (160)	Tension (160)	
DSC2R/L-SDS3	16	(20) ¼" x 3"	2,590	3,720	1,865	2,680	FL
DSC5R/L-SDS3	21	(24) ¼" x 3"	4,745	5,925	3,415	4,265	

1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws minimum penetration is 2¾", minimum end distance is 2½" for DSC2 and 3¾" for DSC5 and minimum edge distance is ¾" for full load values.
3. Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Section 7.5.3.4 are met (pre-drilling required through the plate using a maximum of ½" bit).



Typical DSC5R-SDS3 Installation
(DSC2 similar)

AHEP

Adjustable Hip-End Purlin

For wood and cold-formed steel trusses, the Simpson Strong-Tie® AHEP is a structural purlin that also serves as an installation lateral restraint and spacer during the truss erection process. The AHEP attaches to the leading edge of step-down hip trusses, eliminating the need for drop-top chords, 2x lumber or gable end fillers. The interlocking design of the AHEP allows them to install linearly, aligned with the end jacks, to maintain framing spacing from eave to hip or peak. Roof sheathing/decking attaches directly to the purlin with knurled pneumatic fasteners or low-profile head, self-drilling screws. Adjustable in length, the AHEP is designed to accommodate a pitch range of 3/12 to 9/12 as a structural purlin and up to 12/12 as an installation lateral restraint and spacer.

Features:

- A structural purlin to which sheathing can be directly attached — no need to remove temporary bracing
- Accurately spaces the installed trusses and helps meet the temporary top-chord lateral restraint recommendations of WTCA/TPI BCSI on step-down hip ends
- Adjustable in length to accommodate a wide pitch range

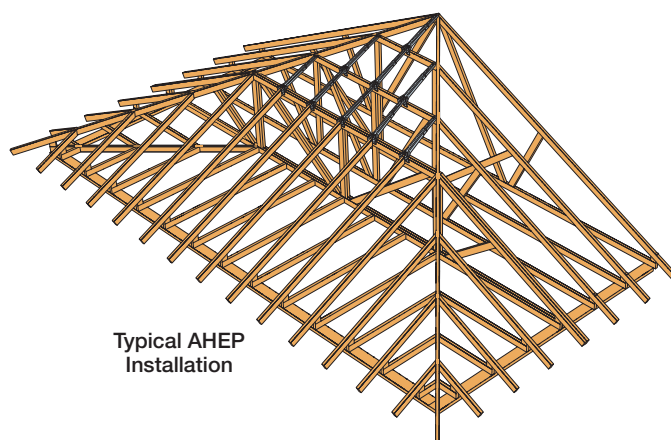
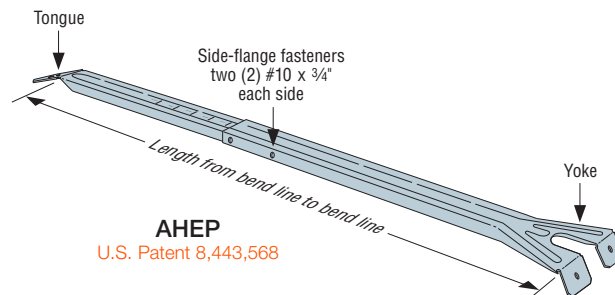
Material: 20 gauge (33 mil)

Finish: Galvanized

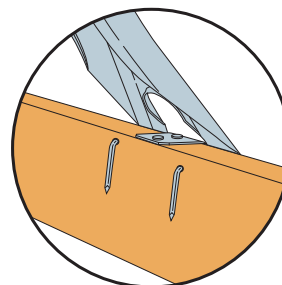
Installation:

- Use all specified fasteners; see General Notes.
- Prior to installation, the AHEP must be set to the proper length and the two tubes fastened together with four #10 x 3/4" self-drilling screws through the round holes in the side flanges for pitches between 3/12 and 9/12; and in the triangular and upper round hole when the AHEP will be used as an installation restraint and spacer at pitches 9/12 up to 12/12.
- For trusses spaced 24" o.c., the pitch markings on the inner tube may be used to line up the tubes to the correct length for a given pitch. For other spacings, the length of the AHEP must be set to the calculated sloping length (from leading edge to leading edge of the framing members).
- To install the AHEPs on wood trusses, use four 10d (0.148" x 3") nails. The two nails at the bottom of the part (the yoke end) must be clinched.
- Sheathing is attached to the AHEP with knurled pneumatic fasteners or low-profile-head, self-drilling screws.
- For efficiency, the AHEPs should be installed in line with the end jacks so that framing alignment can be maintained from eave to hip/ridge.

Codes: See p. 14 for Code Reference Key Chart



Typical AHEP Installation



The two nails at the bottom of the part (the yoke end) must be clinched

Online Calculator for AHEP Installation

A Web-based calculator is available to help Designers check AHEP applicability based on the actual hip-end roof pitch, input live and dead loads, truss and purlin spacing and the selected sheathing and deflection criteria. To view the calculator, visit strongtie.com/webapps/ahep.

Model No.	Fasteners		Sheathing Option	Allowable Down Loads						Code Ref.
	AHEP Side Flanges	To Hip Trusses		3/12 Pitch		3.1/12 Pitch		9/12 Pitch		
				L/180	3/16"	L/180	3/16"	L/180	3/16"	
AHEP	(4) #10	(4) 10d	None	180	240	180	240	135	150	I13, FL
			1 1/2" (min.) wood sheathing	250	345	210	275	160	175	

1. No load duration increase allowed.
2. Allowable loads apply to wood with a specific gravity of 0.42 or greater.
3. Designer shall insure attached members are adequately designed to resist applied loads.
4. Straight line interpolation can be used to determine allowable loads for pitches between 3.1/12 and 9/12.
5. **Nails:** 10d = 0.148 dia. x 3" long. **Screws:** #10 = #10 x 3/4" long self-drilling screws. See pp. 26–27 for other nail sizes and information.

TSF

Truss Spacer

The TSF is a fast and accurate method for spacing trusses that eliminates layout marking of top plates and can be left in place under the sheathing. Accuracy is improved, spacing errors are minimized, and it is easy to use.

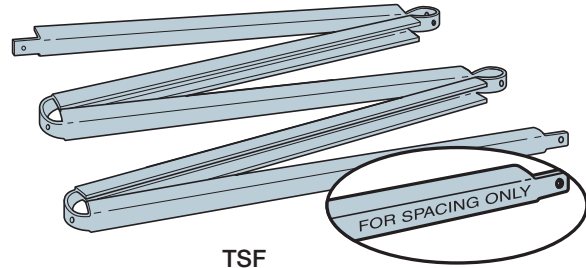
Material: 24 gauge

Finish: Galvanized

Installation:

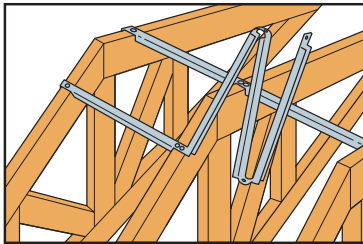
- See installation sequence below.
- TSF Truss Spacers do not provide bracing of any kind and are not structural members. The TSF is for spacing only. Refer to instructions from architect, engineer, truss manufacturer or other for bracing and installation information.

Codes: See p. 14 for Code Reference Key Chart



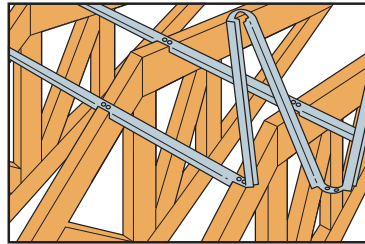
TSF

Model No.	Dimensions			Code Ref.
	W	O.C. Spacing	Total Length	
TSF2-16	1½"	16"	8'	180
TSF2-24	1½"	24"	10'	



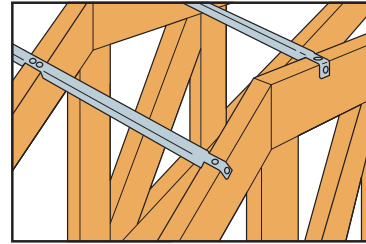
Step 1

Nail starting notch to first member.



Step 2

As each successive member is positioned, unfold TSF to next notch. The notch teeth grip member and align it for nailing.



Step 3

If spacer does not align with end truss, break spacer off at notch. Then, hammer spacer flat, fold it under and nail.

TSBR

Truss Spacer-Restraint

The Simpson Strong-Tie® TSBR truss spacer-restraint is a time-saving lateral-restraint product for wood and CFS framing that improves quality and safety while helping to meet the prescriptive recommendations of the WTCA/TPI. Easier to install than wood bracing, the TSBR firmly grips the trusses, capturing on-center spacing and keeping them vertical and plumb after placement, resulting in a better truss installation. The unique design eliminates additional time spent measuring truss spacing and laying out temporary lateral bracing. And once installed, the TSBR can remain in place to be sheathed over, thereby eliminating the need to remove temporary bracing and creating a safer, more stable work platform.

Features:

- Enables the quick and accurate spacing of trusses without measuring or adjusting
- Helps meet prescriptive temporary bracing recommendations of the BCSI
- Easily “grabs” onto the truss — may be put in place with one hand
- Stays in place during sheathing, saving time and making the roof more stable for workers
- Installs in less time and requires less total bracing material than prescriptive wood bracing methods — reducing labor costs
- The TSBR is a direct replacement for the TSB truss spacer bracer

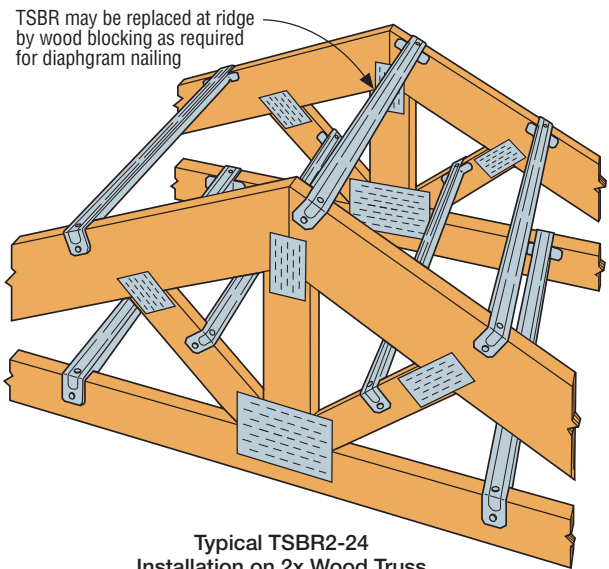
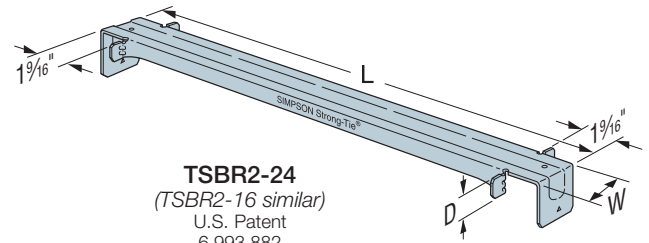
Material: 22 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- TSBR lateral restraint locations are as recommended in Table B2-1 of WTCA/TPI BCSI or the BCSI B2 Summary Sheet. For more information see the Simpson Strong-Tie *Wood Truss Bracing and Restraint Guide* (F-TSBR2BD22) at strongtie.com.

Codes: See p. 14 for Code Reference Key Chart



Typical TSBR2-24 Installation on 2x Wood Truss

Plated Truss Connectors

Model No.	Dimensions (in.)			Fasteners (Total)	Allowable Loads (lb.)				Code Ref.
	L	W	D		DF/SP		SPF/HF		
					Compression	Tension	Compression	Tension	
TSBR2-16 (Min.)	17½	1¼	1¼	(2) 10d	540	180	465	155	170
TSBR2-16 (Max.)	17½	1¼	1¼	(4) 10d x 1½"	540	455	465	390	
TSBR2-24 (Min.)	25½	1¾	1	(2) 10d	500	180	430	155	113, FL
TSBR2-24 (Max.)	25½	1¾	1	(4) 10d x 1½"	500	455	430	390	

1. No load duration increase allowed.
 2. Minimum nailing meets or exceeds the temporary lateral restraint recommendations of WTCA/TPI BCSI.
 3. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long, 10d = 0.148" dia. x 3" long.
 See pp. 26–27 for other nail sizes and information.

TBD22

Diagonal Brace

The TBD22 diagonal truss brace offers a time-saving substitute for 2x4 diagonal bracing that helps meet the recommendations of WTCA/TPI BCSI. The TBD travels in a box like a flat strap, and is formed into an A-shape as it is pulled from the carton to provide rigidity and prevent sagging between trusses during installation. As it is fastened to the trusses the brace flattens, allowing sheathing to be installed right over it and saving the time typically needed to remove 2x4 bracing.

When installed on the top and bottom chords as well as the web planes, the TBD captures the lateral construction and wind forces delivered by the TSB truss spacer restraints and transfers it diagonally in tension to the edge of the braced-truss system. When used in conjunction with the TSB, the TBD22 meets or exceeds the the recommendations set forth by the WTCA/TPI BCSI.

Features:

- Helps meet prescriptive temporary bracing recommendations of the WTCA/TPI BCSI
- Rigid A-shape design virtually eliminates sagging between trusses spaced 16"-24" on center
- Can be sheathed over after installation, no need to remove bracing
- Dimpled nailing grid allows installation with standard pneumatic fasteners
- 160' of bracing in an easy-to-handle carton

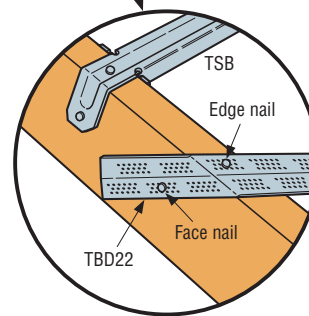
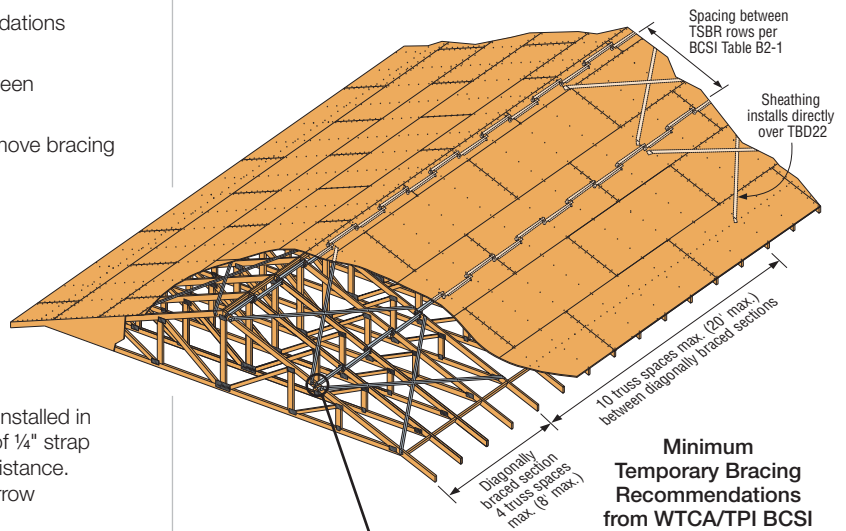
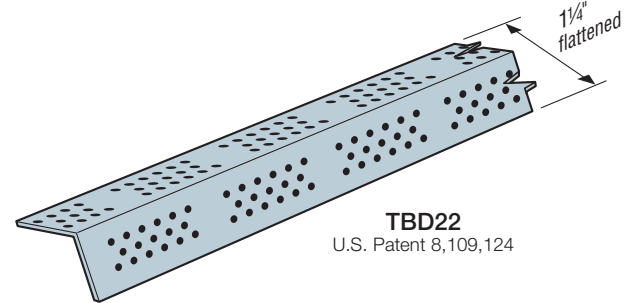
Material: 22 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- Strap does not have holes for fasteners. Nails shall be installed in the dimpled areas and placed to maintain a minimum of 1/4" strap edge distance and a minimum of 1/2" center to center distance. Nails should be installed in the center of the lumber narrow face and with a minimum edge distance of 1" on the lumber wide face.
- TBD22 straps span diagonally at approximately 45°.
- Strap shall not be slack, but tight and ready to engage in tension.
- To resist construction forces, diagonal X-bracing is required at each end and every 10 truss spaces (20' max). Refer to WTCA/TPI BCSI for additional information.
- At the end of the TBD braces trusses shall be laterally braced to resist out-of-plane forces.
- Bracing locations shown in the drawing are recommendations for temporary bracing only. Installation of TBD braces for permanent lateral bracing shall be per the Building Designer.

Codes: See p. 14 for Code Reference Key Chart



Plated Truss Connectors

Model No.	Fasteners		Allowable Tension Loads		Code Ref.
	Strap Ends	Intermediate Trusses	DF/SP	SPF/HF	
TBD22 ² (Min.)	(1) 10d x 1 1/2" in face and (1) 10d x 1 1/2" in edge	(1) 10d x 1 1/2"	430	390	170
TBD22 (Max.)	(2) 10d x 1 1/2" in face and (1) 10d x 1 1/2" in edge	(1) 10d x 1 1/2"	565	520	

1. Allowable loads have been increased for construction and wind loading with no further increase allowed.
2. Minimum nailing meets or exceeds the temporary bracing recommendations of WTCA/TPI BCSI.
3. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26-27 for other nail sizes and information.



TBD22 Dispenser Detail

TC

Truss Connector

The TC truss connector is an ideal connector for scissor trusses and can allow horizontal movement up to 1/4". The TC also attaches plated trusses to top plates or sill plates to resist uplift forces. Typically used on one or both ends of truss as determined by the Designer.

Material: 16 gauge

Finish: Galvanized

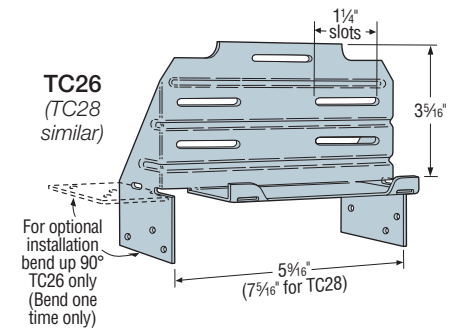
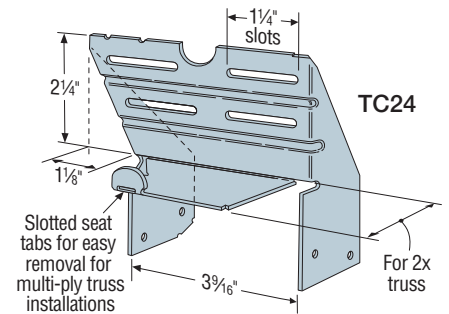
Installation:

- Use all specified fasteners; see General Notes.
- Drive 10d nails into the truss at the inside end of the slotted holes (inside end is towards the center of the truss and clinch on back side). Do not seat these nails into the truss — allow room under the nail head for movement of the truss with respect to the wall.
- After installation of roofing materials nails may be required to be fully seated into the truss. (As required by the Designer or Truss Designer.)

Optional TC Installation:

- Bend one flange up 90°. Drive specified nails into the top and face of the top plates or install Titen® screws into the top and face of masonry wall. See optional load tables and installation details.

Codes: See p. 14 for Code Reference Key Chart



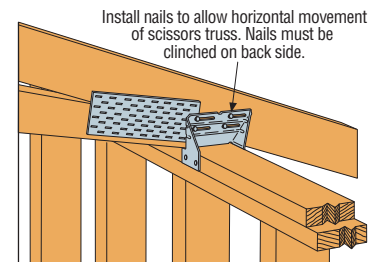
Model No.	Fasteners		DF/SP Allowable Loads	SPF/HF Allowable Loads	Code Ref.
	Truss	Plate	Uplift (160)	Uplift (160)	
TC24	(4) 10d	(4) 10d	400	345	I13, FL
TC26	(5) 10d	(6) 10d	665	570	
TC28	(5) 10d	(6) 10d	665	570	

See footnotes below.

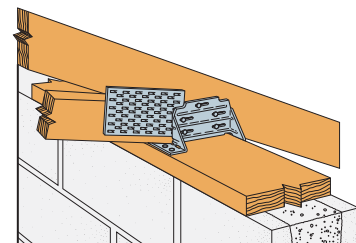
Optional TC Installation Table

Model No.	Fasteners		DF/SP Allowable Loads	SPF/HF Allowable Loads	Masonry Allowable Loads	Code Ref.
	Truss	Plate	Uplift (160)	Uplift (160)	Uplift (160)	
TC26	(5) 10d x 1 1/2"	(6) 10d x 1 1/2"	430	350	—	I13, FL
	(5) 10d	(6) 10d	450	390	—	
	(5) 10d	(6) 3/16 x 2 1/4" Titen	—	—	195	

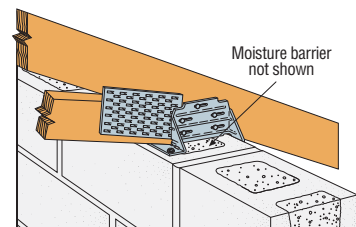
1. Loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Grout strength is 2,000 psi minimum.
3. Nail values based on single 2x truss. 10d joist nails must be clinched.
4. Optional TC26 installation with 10d nails requires minimum 3" top plate thickness.
5. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.



Typical TC24 Installation



Optional TC26 Installation for Grouted Concrete Block using a Wood Nailer (8", 10", 12" wall installation similar)



Optional TC26 Installation for Grouted Concrete Block using Titen Screws

TBE

Truss Bearing Enhancer

The TBE transfers load from the truss or girder to plates for bearing-limited conditions and provides exceptional uplift capacity. It replaces nail-on scabs that provide lower load transfer, or in some cases, an additional ply when needed for bearing. One size works with any number of girder plies.

The table lists allowable loads for TBE4 used on 2x4 and TBE6 used on 2x6 top plates. The table gives the different loads calculated for TBE with and without wood bearing. See Fastener Schedule and Alternate Installation below.

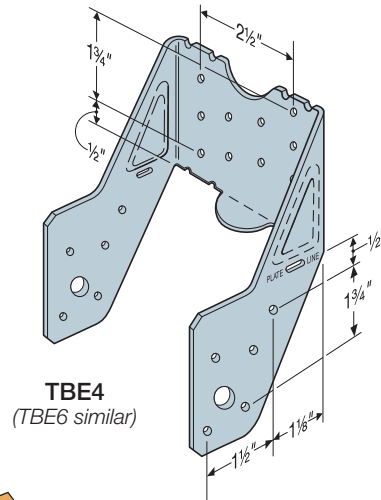
Material: 18 gauge

Finish: Galvanized. See Corrosion Information, pp. 15–18.

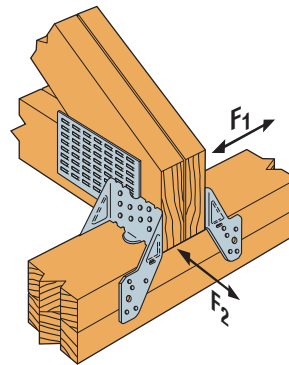
Installation:

- Use all specified fasteners; see General Notes.
- TBE must be installed in pairs.
- Top-plate size is 2x4 for TBE4, 2x6 for TBE6. Use alternate installation for TBE4 and TBE6 on larger plates or pre-sheathed walls. See alternate installation below.

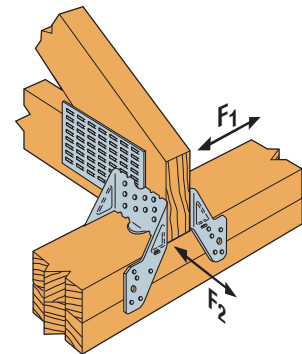
Codes: See p. 14 for Code Reference Key Chart



TBE4
(TBE6 similar)



Two TBE Installed with Two-Ply Girder Truss



Two TBE Installed with Single-Ply Truss

TBE Fastener Schedule

Model No.	Truss Plies	Fasteners per each TBE	
		Rafter	Plate
TBE4	1	(10) 10d x 1 1/2"	(10) 10d x 1 1/2"
	2 or more	(10) 10d	(10) 10d
TBE6	1	(10) 10d x 1 1/2"	(10) 10d x 1 1/2"
	2 or more	(10) 10d	(10) 10d

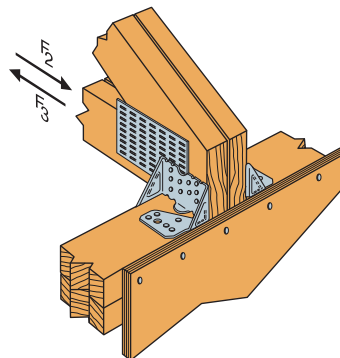
Nails: 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

Alternate Installation

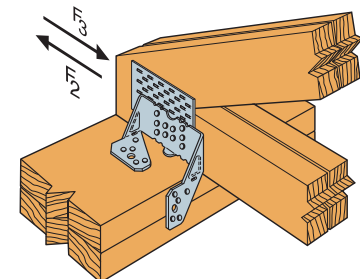
(See illustrations at right)

Model No.	Alternate Installation Allowable Loads ^{5,6} Perpendicular to Plate			
	DF/SP		SPF/HF	
	(160)		(160)	
	F2	F3	F2	F3
TBE4	1,000	300	860	260
TBE6				

1. Use full table loads for uplift and parallel-to-plate allowable loads.
2. Download capacities are 0.80 of table loads.
3. See additional footnotes on p. 267.



Pre-sheathed shearwall. Bend tab along slot and nail one leg to top of the plate.



TBE6 Installed on Double 2x8 Top Plate

Alternate Installation Allowable Down Loads are 0.80 and Allowable Uplift Loads are 1.0 of the TBE only table loads on p. 267.

Refer to Simpson Strong-Tie® technical bulletin T-C-HTIEBEAR at strongtie.com for alternate bearing enhancers.

TBE

Truss Bearing Enhancer (cont.)

Model No.	Wall Top Plate	Top Plate or Truss Wood Species ²	No. of Truss Plies	Allowable Loads ^{1,2,3}										Equivalent Bearing Length ⁷ of TBE and Top Plate (in.)				Code Ref.	
				Uplift	Download								Lateral (160)		(100)	(115)	(125)		(160)
					TBE Only				TBE and Wood Top Plate				F ₁	F ₂					
					(160)	(100)	(115)	(125)	(160)	(100)	(115)	(125)							
TBE4	2x4	Douglas Fir Larch	1	850	1,820	2,095	2,230	2,230	5,100	5,375	5,510	5,510	400	1,000	5.44	5.73	5.88	5.88	13, FL
			2	850	2,220	2,230	2,230	2,230	8,785	8,795	8,795	8,795	400	1,000	4.68	4.69	4.69	4.69	
			3	850	2,220	2,230	2,230	2,230	12,065	12,075	12,075	12,075	400	1,000	4.29	4.29	4.29	4.29	
			4	850	2,220	2,230	2,230	2,230	15,345	15,355	15,355	15,355	400	1,000	4.09	4.09	4.09	4.09	
		Southern Pine	1	850	1,820	2,095	2,230	2,230	4,785	5,060	5,195	5,195	400	1,000	5.65	5.97	6.13	6.13	
			2	850	2,220	2,230	2,230	2,230	8,155	8,165	8,165	8,165	400	1,000	4.81	4.82	4.82	4.82	
			3	850	2,220	2,230	2,230	2,230	11,120	11,130	11,130	11,130	400	1,000	4.37	4.38	4.38	4.38	
			4	850	2,220	2,230	2,230	2,230	14,085	14,095	14,095	14,095	400	1,000	4.15	4.16	4.16	4.16	
		Spruce-Pine-Fir	1	850	1,560	1,795	1,950	2,080	3,790	4,025	4,180	4,310	375	1,000	5.95	6.32	6.56	6.76	
			2	850	1,920	2,100	2,100	2,100	6,385	6,565	6,565	6,565	375	1,000	5.01	5.15	5.15	5.15	
			3	850	1,920	2,100	2,100	2,100	8,615	8,795	8,795	8,795	375	1,000	4.50	4.60	4.60	4.60	
			4	850	1,920	2,100	2,100	2,100	10,845	11,025	11,025	11,025	375	1,000	4.25	4.32	4.32	4.32	
		Hem Fir	1	850	1,560	1,795	1,950	2,080	3,685	3,920	4,075	4,205	375	1,000	6.07	6.45	6.71	6.92	
			2	850	1,920	2,100	2,100	2,100	6,175	6,355	6,355	6,355	375	1,000	5.08	5.23	5.23	5.23	
			3	850	1,920	2,100	2,100	2,100	8,300	8,480	8,480	8,480	375	1,000	4.55	4.65	4.65	4.65	
			4	850	1,920	2,100	2,100	2,100	10,425	10,605	10,605	10,605	375	1,000	4.29	4.36	4.36	4.36	
TBE6	2x6	Douglas Fir Larch	1	935	1,820	2,095	2,275	2,425	6,975	7,250	7,430	7,580	300	1,000	7.44	7.73	7.93	8.09	
			2	935	2,220	2,555	2,735	2,735	12,535	12,870	13,050	13,050	300	1,000	6.68	6.86	6.96	6.96	
			3	935	2,220	2,555	2,735	2,735	17,690	18,025	18,205	18,205	300	1,000	6.29	6.41	6.47	6.47	
			4	935	2,220	2,555	2,735	2,735	22,845	23,180	23,360	23,360	300	1,000	6.09	6.71	6.82	6.90	
		Southern Pine	1	935	1,820	2,095	2,275	2,425	6,480	6,755	6,935	7,085	300	1,000	7.65	7.97	8.18	8.36	
			2	935	2,220	2,555	2,735	2,735	11,545	11,880	12,060	12,060	300	1,000	6.81	7.01	7.11	7.11	
			3	935	2,220	2,555	2,735	2,735	16,205	16,540	16,720	16,720	300	1,000	6.37	6.50	6.58	6.58	
			4	935	2,220	2,555	2,735	2,735	20,865	21,200	21,380	21,380	300	1,000	6.15	6.25	6.31	6.31	
		Spruce-Pine-Fir	1	935	1,560	1,795	1,950	2,080	5,065	5,300	5,455	5,585	300	965	7.95	8.32	8.55	8.76	
			2	935	1,920	2,210	2,400	2,560	8,935	9,225	9,415	9,575	300	965	7.01	7.23	7.38	7.51	
			3	935	1,920	2,210	2,400	2,560	12,440	12,730	12,920	13,080	300	965	6.50	6.66	6.75	6.84	
			4	935	1,920	2,210	2,400	2,560	15,945	16,235	16,425	16,585	300	965	6.25	6.37	6.44	6.50	
		Hem Fir	1	935	1,560	1,795	1,950	2,080	4,900	5,135	5,290	5,420	300	965	8.07	8.45	8.70	8.92	
			2	935	1,920	2,210	2,400	2,560	8,605	8,895	9,085	9,245	300	965	7.08	7.32	7.48	7.61	
			3	935	1,920	2,210	2,400	2,560	11,945	12,235	12,485	12,645	300	965	6.55	7.32	7.48	7.61	
			4	935	1,920	2,210	2,400	2,560	15,285	15,575	15,765	15,925	300	965	6.29	6.41	6.49	6.55	

1. Loads are for a pair of TBEs.
2. When truss chord wood species is different than the wall top plate wood species, choose the tabulated allowable loads based on the species with the lower tabulated download capacity.
3. Uplift and lateral loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
4. Allowable loads are determined only by nail shear calculations or tests of the metal connectors based on the lowest of 0.125" of deflection or the ultimate load with a 3 times factor of safety. The attached wood members must be designed to withstand the loads imposed by the nails.
5. Perpendicular-to-Plate loads are reduced for Alternate Installation.
6. Parallel-to-Plate loads are not reduced for Alternate Installation.
7. Equivalent Top-Plate-Bearing Width is the actual top plate width (TBE4 = 3½", TBE6 = 5½") plus the enhanced bearing width provided by the TBE.

HTC

Heavy Truss Clip

For alignment control between a roof truss and nonbearing walls; the 2½" slot permits vertical truss chord movement when loads are applied.

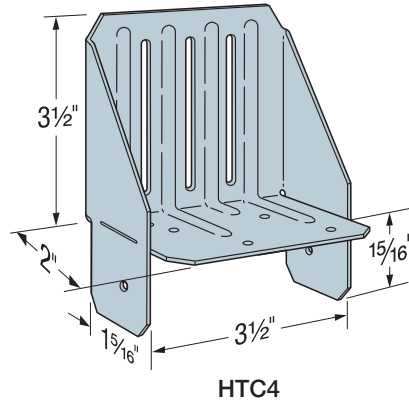
Material: 18 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- The HTC has a 2½" slot to accommodate truss movement
- This connector has high lateral capacity
- The S/HTC is available for steel truss applications

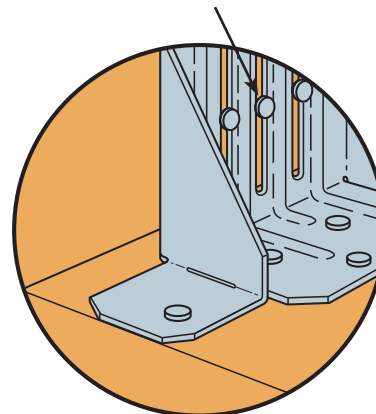
Codes: See p. 14 for Code Reference Key Chart



Model No.	Dimensions	Fasteners			Allowable Loads ¹ (160)				Code Ref.
		Top Plate	Base	Slot	Without Gap ²		With 1¼" Gap ³		
					F ₁	F ₂	F ₁	F ₂	
HTC4	2x4 Plate	(6) 10d	(3) 10d	390	305	85	280	IP6, L26, FL	
	2x6 Plate	(6) 10d	(3) 10d	485	280	155	280		

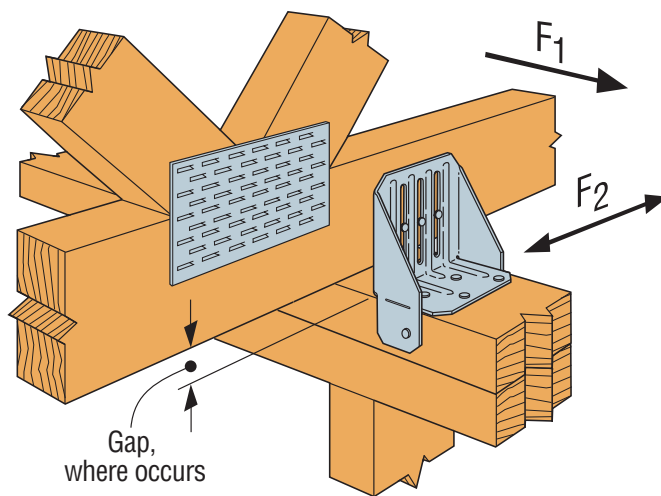
1. Loads may not be increased for short-term loading.
2. Truss or rafter must be bearing on top plate to achieve the allowable loads under "Without Gap."
3. When installed with maximum 1¼" space between rafter or truss and top plate use loads under "With 1¼" Gap." Where loads are not required, space is not limited to 1¼".
4. **Nails:** 10d = 0.148" dia. x 3" long.
See pp. 26–27 for other nail sizes and information.

Nails should not be driven completely flush against the connector, to allow vertical truss movement.



Allow 1/16" gap between nail head and truss clip to help prevent squeaking.

Typical HTC4 Installation on a 2x6 or Larger Plate



Typical HTC4 Installation on a 2x4 Plate

STC/STCT/DTC

Roof Truss Clips

For alignment control between a roof truss and nonbearing walls; the 1½" slot permits vertical truss chord movement when loads are applied.

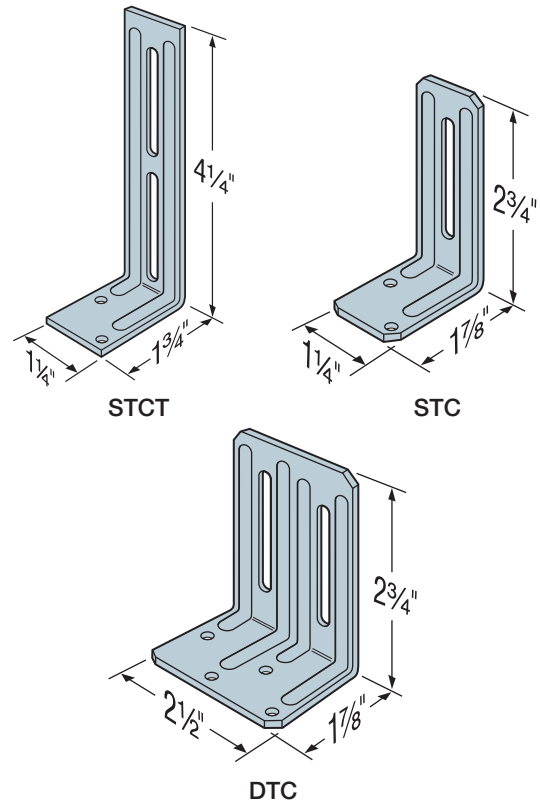
Material: 18 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- Use STC or DTC depending on required loads. STC, installed with Drywall Stop (DS), helps prevent fasteners tearing through the ceiling **drywall** (see illustration).
- Use STCT where truss or rafter is separated from the top plate of the nonbearing wall.
- Install slot nails in the middle of the slot.
- Products not intended for floor applications due to the frequency of floor joist deflections and potential for squeaks.

Codes: See p. 14 for Code Reference Key Chart

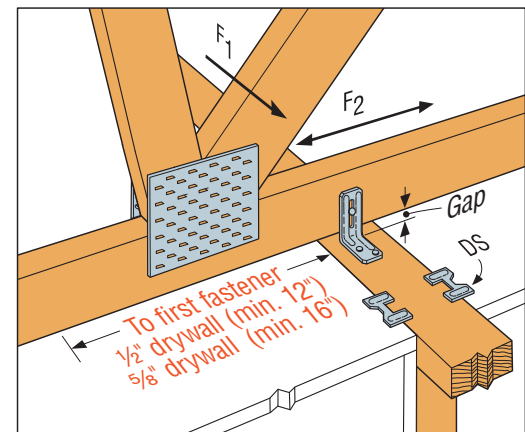


Model No.	Fasteners		Allowable Loads ¹ (160)						Code Ref.
	Base	Slot	Without Gap ²		¼" Max. Gap		¼" < Gap ≤ ½"		
			F ₁	F ₂	F ₁	F ₂	F ₁	F ₂	
STC	(2) 8d	(1) 8d	85	55	35	35	30	40	170
STCT	(2) 8d	(1) 8d	—	—	—	—	—	—	
DTC	(4) 8d	(2) 8d	125	210	85	135	55	70	

1. Loads may not be increased for short-term loading.
2. Truss or rafter must be bearing on top plate to achieve the allowable loads under "Without Gap."
3. Clips are required on both sides of the truss to achieve F₁ loads in both directions (stagger parts to avoid nail interferences).
4. **Nails:** 8d = 0.131" dia. x 2½" long.
See pp. 26–27 for other nail sizes and information.

Nails should not be driven completely flush against the connector, to allow vertical truss movement.

Allow ¼" gap between nail head and truss clip to help prevent squeaking.



Typical STC Installation with DS

VTCR

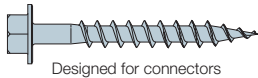
Single-Sided Valley Truss Clip



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 VTCR is single-sided valley truss clip that provides a positive connection between the valley truss and the supporting framing below. Installed on top of the roof sheathing, it eliminates the need to add a support wedge under the valley truss or to bevel the bottom chord to match the roof pitch.

- Single-sided for new construction or retrofit applications — can be installed after the valley truss is set in place
- Accommodates pitches from 0/12 to 12/12
- Can be installed on either beveled or non-beveled bottom chords
- Installs with nails or Simpson Strong-Tie® Strong-Drive® SD Connector screws

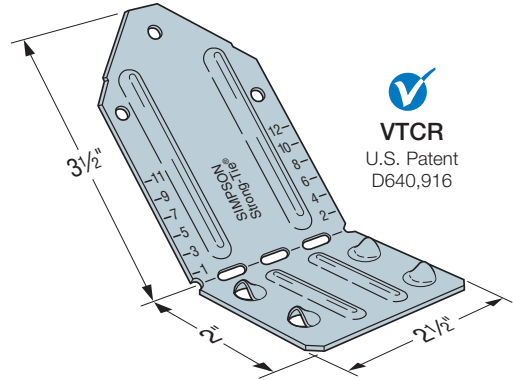


Material: 18 gauge **Finish:** Galvanized

Installation:

- The dome holes assist in installing the fasteners into the supporting framing at approximately 45°

Codes: See p. 14 for Code Reference Key Chart

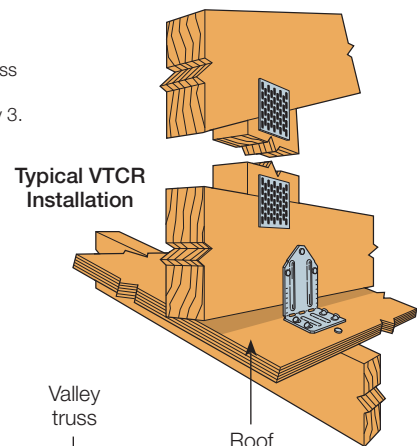


VTCR
U.S. Patent
D640,916

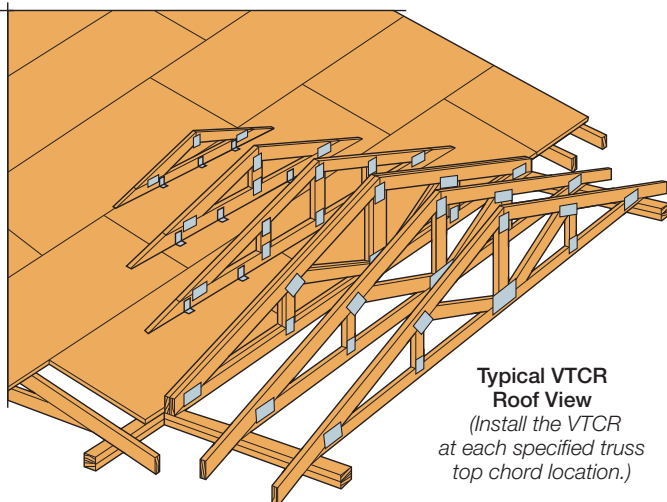
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Fasteners		Supporting Roof Pitch	DF/SP Allowable Loads		SPF/HF Allowable Loads		Code Ref.
	Supporting Framing	Valley Truss		Uplift ³ (160)	Download ⁵ (100/115/125/160)	Uplift ³ (160)	Download ⁶ (100/115/125/160)	
VTCR	(4) 10d	(3) 10d x 1 1/2"	< 4/12	370	790	320	655	I13, FL
			4/12 to 12/12	370	790	320	655	
	(4) SD #9 x 2 1/2"	(3) SD #9 x 1 1/2"	< 4/12	390	790	335	655	
			4/12 to 12/12	500	790	430	655	

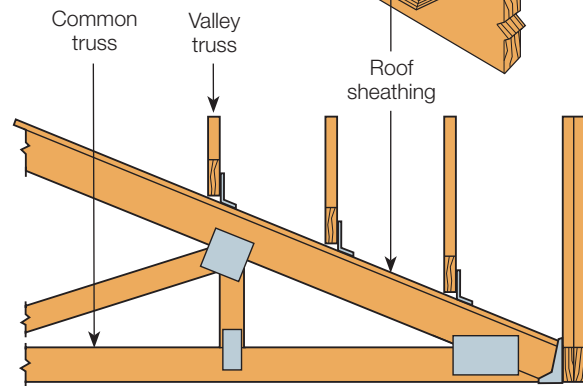
1. Uplift loads have been increased 60% for wind or earthquake loading with no further increase allowed.
2. Loads are based on installation over 7/16" or 1/2" sheathing. For installation over 1/2" or 5/8" sheathing, allowable uplift loads are 285 lb. (DF/SP) and 245 lb. (SPF/HF) when installed with nails, or 370 lb. (DF/SP) and 320 lb. (SPF/HF) when installed with screws.
3. When attached directly to the supporting framing with either screws or nails, the allowable uplift for pitches less than 4/12 is 240 lb. (DF/SP) and 205 lb. (SPF/HF). For pitches 4/12 to 12/12, use the tabulated uplift loads.
4. Allowable uplift loads are based on the lower of the test loads at 3/16" deflection or the ultimate load divided by 3.
5. Southern pine allowable download is 750 lb.
6. Hem fir allowable download is 625 lb.
7. When the valley truss and supporting framing are of different species, use the lower tabulated values.
8. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.
9. **Screws:** SD #9 x 1 1/2" (model SD9112) = 0.131" dia. x 1 1/2" long, SD #9 x 2 1/2" (model SD9212) = 0.131" dia. x 2 1/2" long.



Typical VTCR Installation



Typical VTCR Roof View
(Install the VTCR at each specified truss top chord location.)



Typical VTCR Side View

GBC

Gable Brace Connector



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.

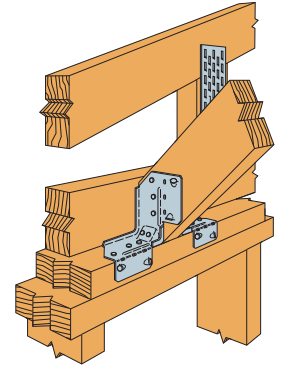
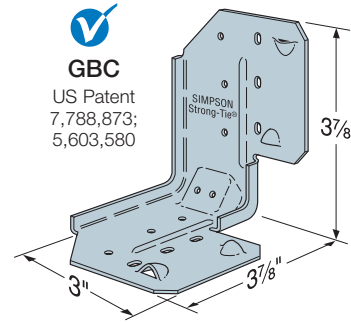
The GBC provides a proven, tested connection for the anchorage of building stability bracing to the top of the gable end wall. With allowable bracing installation angles between 40° to 60°, the GBC offers greater flexibility in a connector rated for both tension and compression loads.

Material: 16 gauge **Finish:** Galvanized

Installation:

- Use all specified fasteners; see General Notes
- The GBC must be installed in pairs to achieve full load capacity

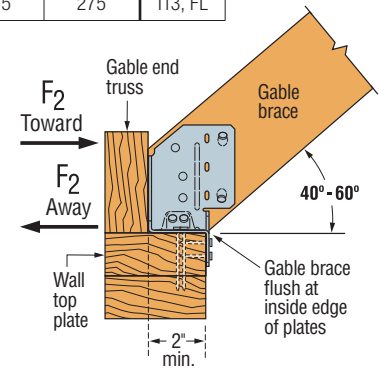
Codes: See p. 14 for Code Reference Key Chart



Typical GBC Installation

Model No.	Qty Req'd	Fasteners per Connector		DF/SP Allowable Loads (160) Perpendicular to Endwall (F ₂)				SPF/HF Allowable Loads (160) Perpendicular to Endwall (F ₂)				Code Ref.
				Toward GBC		Away from GBC		Toward Anchors		Away from Anchors		
		Gable Brace	Top Plates	Gable Brace Angle		Gable Brace Angle		Gable Brace Angle		Gable Brace Angle		
GBC	2	(5) 8d x 1 1/2"	(7) 8d	40°-45°	46°-60°	40°-45°	46°-60°	40°-45°	46°-60°	40°-45°	46°-60°	113, FL
				635	570	425	325	535	480	355	275	

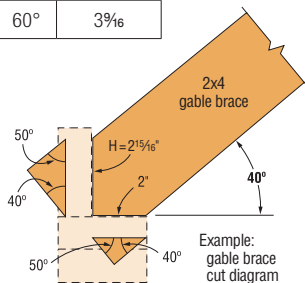
1. For 1 3/4" x 3 1/2" (or larger) LVL gable brace, the allowable load at 40° to 45° is 635 lb. towards anchors, 515 lb. away from anchors.
2. Loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
3. Use a minimum 2x4 gable brace. Larger members may be used.
4. **Nails:** 8d = 0.131" dia. x 2 1/2" long, 8d x 1 1/2" = 0.131" dia. x 1 1/2" long. See pp. 26-27 for other nail sizes and information.



Typical Sloped Installation

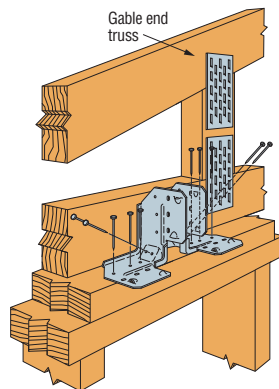
GBC Installation Sequence

Slope	H Dimension
40°	2 1/16"
50°	3 1/16"
60°	3 3/16"



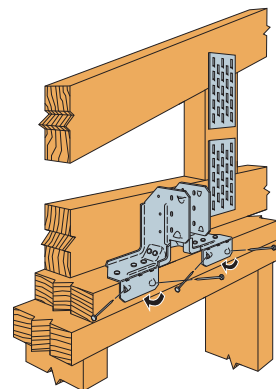
Step 1

Double angle cut the gable brace to sit flat on the wall double top plate and flush against the gable end truss for 2x4 top plate. The double angle cuts should form a 90° angle on the end of the gable brace.



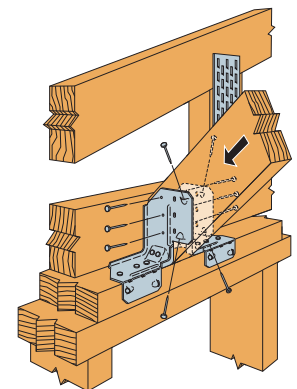
Step 2

Set each GBC on top of the double top plate so that the bend line slots are flush with the inside edge of the double top plate. Install fasteners into the top of the double top plate.



Step 3

Bend GBC legs (one time only) over the inside of the double top plate and install fasteners.



Step 4

Install fasteners into the gable brace.
Note: Attach the other end of the gable brace to blocking at the roof diaphragm as directed by the Designer.

CHC

Component Hoist Clip

The CHC component hoist clip provides a tested, load-rated solution for the safe lifting and placement of assembled wood components. The CHC is load-rated with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws for easy installation and removal, and superior shear and withdrawal strength during lifting.

Features:

- Attaches easily to wood members using Strong-Drive SDS Heavy-Duty Connector screws (sold separately)
- May be used alone or in pairs for increased load
- Tested in multiple load directions for versatility

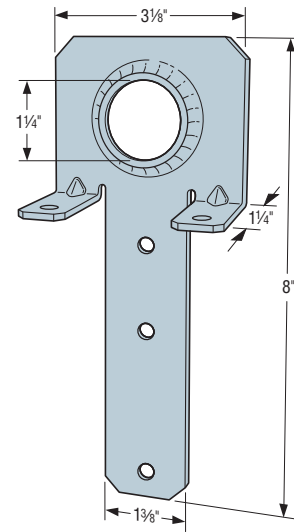
Material: 12 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- Fasteners require full penetration into the framing members
- Use one time only
- Lifting devices should be connected to the CHC with a closed-loop attachment of sufficient strength to carry the allowable load

Codes: See p. 14 for Code Reference Key Chart



CHC
U.S. Patent 8,720,129

Plated Truss Connectors

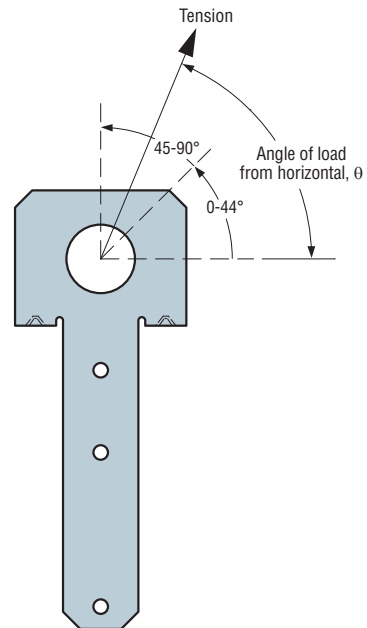
Single-Part Allowable Loads

Model No.	Fasteners ⁴		Angle from Horizontal, θ	Allowable Tension DF/SP/SPF/HF (125)	Code Ref.
	Top	Face			
CHC	(2) 1/4" x 3" SDS	(3) 1/4" x 3" SDS	0-44	610	170
			45-90	975	

1. Allowable loads are based on the lowest ultimate test load of three test specimens, or the average of six specimens, divided by five.
2. No load duration increase allowed.
3. Allowable loads are based on installation over sheathing on stud walls with double 2x top plates and max. 5/8" sheathing.
4. Fasteners require full penetration into the framing members.
5. All lifting devices and spreader bars that are used in conjunction with the CHC shall be of sufficient strength to carry the required load. Spreader bars must also have sufficient rigidity to resist bending of the lifted component.

Allowable Loads for Two Parts

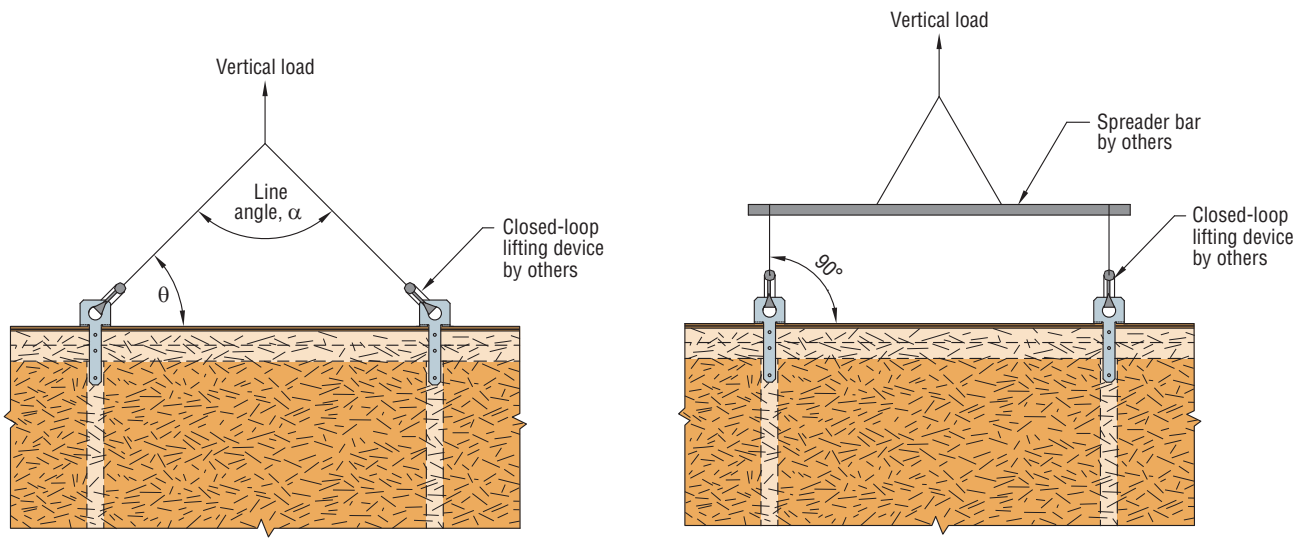
Model No.	Type of Connection	Angle from Horizontal, θ	Line Angle, α	Total Allowable Vertical Load DF/SP/SPF/HF (125)	Code Ref.
CHC	1	30	120	610	170
		45	90	1,380	
		60	60	1,690	
	2	90	—	1,950	



CHC with Tension Load Applied

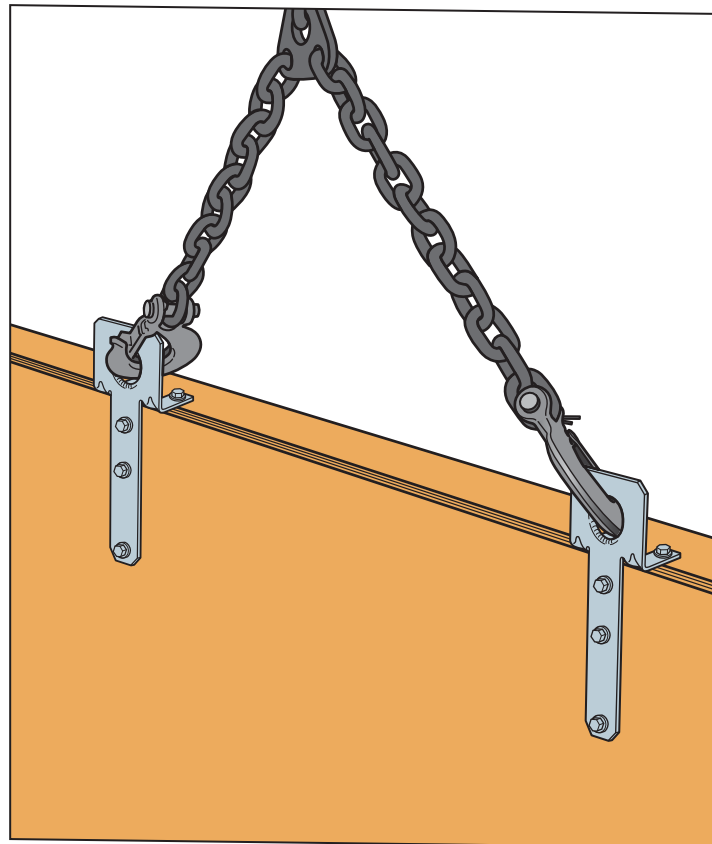
CHC

Component Hoist Clip (cont.)



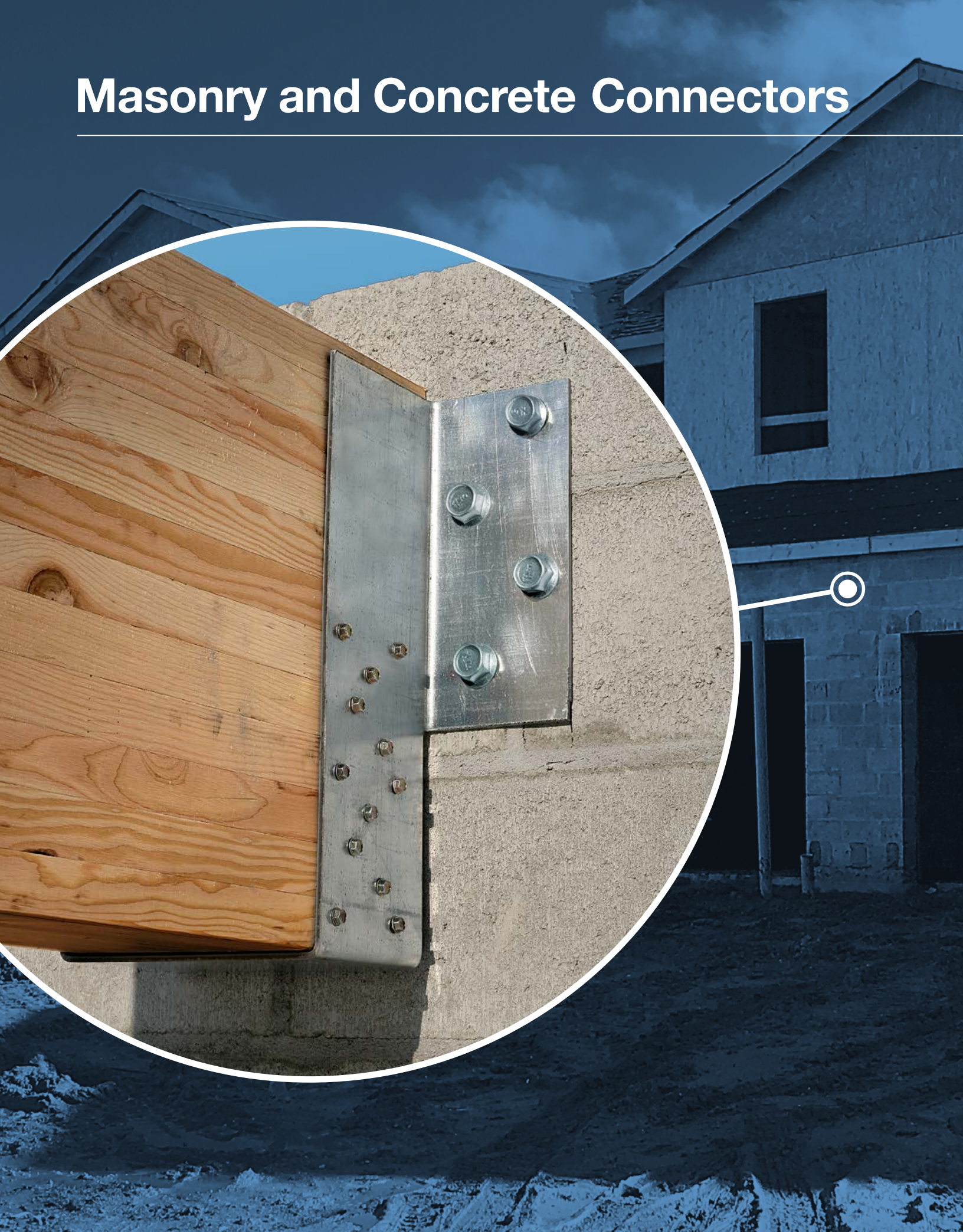
1 Typical CHC Installation with Angular Loading

2 Typical CHC Installation with Spreader Bar



Typical CHC Installation Using Two Parts

Masonry and Concrete Connectors



Titen®

Concrete and Masonry Screws

Titen® screws are 3/16"- and 1/4"-diameter masonry screws for attaching various components to concrete and masonry. Titen® screws are commonly used in applications such as attaching electrical boxes, light fixtures or window frames into concrete or masonry base materials. The Titen® 2 screw features an improved thread design that undercuts the base material increasing holding power while installing more efficiently and making it easier to drive without binding, snapping or stripping.

Available in hex and phillips head. Use with appropriately-sized Titen drill bits included with each box.

Material: Titen and Titen 2 — heat-treated carbon steel

Coating: Titen and Titen 2 — zinc plated with baked-on ceramic coating;

Codes: FL 2355.1

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



Titen®
Hex Head

Titen® 2 Allowable Loads in Normal-Weight Concrete

Anchor Diameter (in.)	Drill Bit Diameter (in.)	Embedment Depth (in.)	Critical Edge Distance (in.)	Minimum Spacing (in.)	Allowable Load				Code Ref.
					$f'_c \geq 4,000$ psi		$f'_c \geq 2,500$ psi		
					Tension	Shear	Tension	Shear	
3/16	5/32	1	3	1	225	225	180	180	IP8
3/16	5/32	1 1/4	3	1	330	250	260	200	
3/16	5/32	1 1/2	3	1	450	275	355	215	
3/16	5/32	1 3/4	3	1	575	300	455	235	
1/4	3/16	1	3	2	250	400	200	315	
1/4	3/16	1 1/4	3	2	400	425	315	335	
1/4	3/16	1 1/2	3	2	550	455	435	360	
1/4	3/16	1 3/4	3	2	700	500	555	395	

Titen® 2 Allowable Loads in GFCMU

Anchor Diameter (in.)	Drill Bit Diameter (in.)	Embedment Depth (in.)	Minimum Edge Distance (in.)	Minimum Spacing (in.)	Allowable Load ($f'_m \geq 1,500$ psi)				Code Ref.
					UngROUTED CMU		GFCMU		
					Tension	Shear	Tension	Shear	
3/16	5/32	1 1/4	3 3/8	3	150	170	—	—	IP9
3/16	5/32	2	3 3/8	3	—	—	345	225	
3/16	5/32	2	1 1/2	3	—	—	315	240	
1/4	3/16	1 1/4	3 3/8	4	155	165	—	—	
1/4	3/16	2	3 3/8	4	—	—	275	310	
1/4	3/16	2	1 1/2	4	—	—	270	275	

Titen® Screw Anchors Allowable Loads for Concrete and GFCMU

Titen Diameter (in.)	Drill Bit Diameter (in.)	Embed. Depth (in.)	Critical Spacing (in.)	Critical Edge Dist. (in.)	Allowable Loads				Code Ref.
					Concrete ($f'_c \geq 2,000$ psi)		GFCMU ($f'_m \geq 1,500$ psi)		
					Tension	Shear	Tension	Shear	
3/16	5/32	1	2 1/4	1 1/8	125	255	110	205	FL
3/16	5/32	1 1/2	2 1/4	1 1/8	305	400	—	—	
1/4	3/16	1	3	1 1/2	145	225	150	250	
1/4	3/16	1 1/2	3	1 1/2	365	400	—	—	

- The allowable loads listed are based on a safety factor of 4.0 for concrete and 5.0 for GFCMU.
- Allowable loads may not be increased for short-term loading due to wind or seismic forces.
- The attached member or element may govern the allowable load. The Designer shall verify allowable load.
- Refer to strongtie.com for additional information on the Titen and Titen 2 screws.
- Maximum anchor embedment is 1 1/2" unless noted otherwise.
- Minimum concrete thickness is 1.5 x embedment for Titen and 3/4" for Titen 2.



Titen® 2
Hex Head

WMU

GFCMU Hanger

The WMU is designed for use on standard 8"-grouted masonry block wall construction.

Material: 12-gauge top flange and stirrup

Finish: Simpson Strong-Tie® gray paint; hot-dip galvanized available; specify HDG

Installation:

- Use all specified fasteners; see General Notes.
- **Minimum f'_m is 1,500 psi.**
- **End vertical must be minimum double 2x.**
- **Mid-Wall Installation:**
Installed between blocks with two 16d duplex nails cast into grout with a minimum of one grouted course above and below the top flange and one #5 vertical rebar minimum 24" long in each adjacent cell.
- **Top-of-Wall Installation:**
Install on top of wall to a grouted beam with Titen® masonry screws.
- Refer to technical bulletin T-C-SLOPEJST at strongtie.com for information regarding load reductions on selected hangers which can be used without modification to support joists which have shallow slopes ($\frac{3}{4}$:12).

Options:

- See Hanger Options information on pp. 121–123.

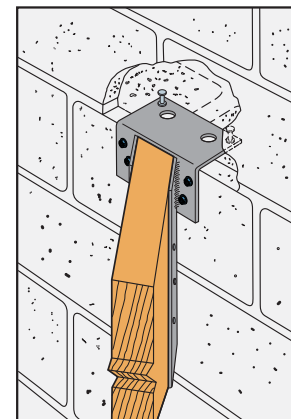
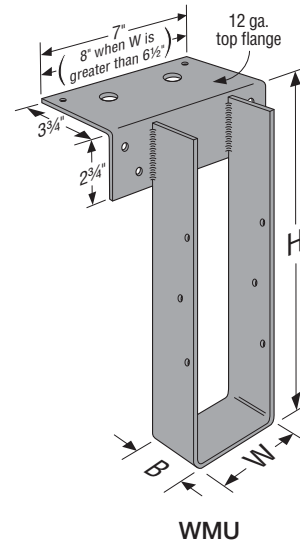
Hanger Height

- For hanger heights exceeding the joist height, the allowable load is 0.50 of the table load.

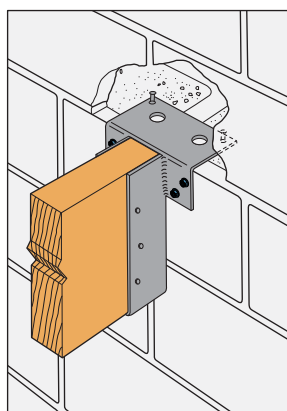
Offset Top Flange

- WMU top flange may be offset left or right for placement at the end of a header. The allowable download is 0.50 of the table roof load.

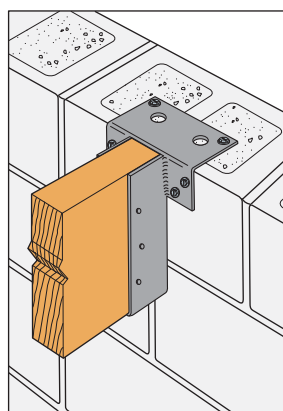
Codes: See p. 14 for Code Reference Key Chart



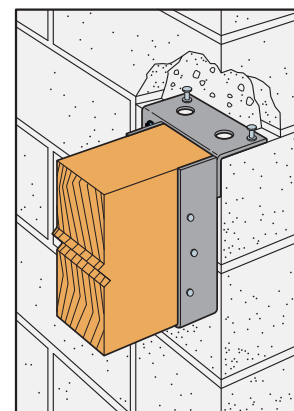
Typical WMU Sloped Down,
Skewed Right Block Wall
Installation



WMU Mid-Wall
Installation



WMU Top-of-Wall
Installation



Typical WMU
Top Flange Offset Left

GFCMU Hanger (cont.)

Joist Size	Model No.	Dimensions (in.)			Joist Fasteners	Face Fasteners Titen® 2	Mid-Wall Installation			Top-of-Wall Installation			Code Ref.
		B	W	H 9 to 28			Top Fasteners	GFCMU Allowable Loads		Top Fasteners Titen® 2	GFCMU Allowable Loads		
								Uplift (160)	Download (100/115/125)		Uplift (160)	Download (100/115/125)	
2x	WMU1.56X	5	1 $\frac{1}{16}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	3,380	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	170
1-ply truss	WMU1.62X	5	1 $\frac{5}{16}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	3,380	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
LVL	WMU1.81X	4	1 $\frac{3}{16}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	3,380	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
2" I-joist	WMU2.06X	4	2 $\frac{1}{16}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
2 $\frac{1}{16}$ " I-joist	WMU2.12X	4	2 $\frac{1}{8}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
2 $\frac{1}{4}$ " I-joist	WMU2.31X	4	2 $\frac{5}{16}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
2 $\frac{5}{16}$ " I-joist	WMU2.37X	3	2 $\frac{3}{8}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
3x	WMU2.56X	3	2 $\frac{9}{16}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
Double 2x	WMU3.12X	3	3 $\frac{1}{8}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
3 $\frac{1}{8}$ " glulam	WMU3.25X	3	3 $\frac{1}{4}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
4x	WMU3.56X	3	3 $\frac{9}{16}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
Double 3x	WMU5.12X	3	5 $\frac{1}{8}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
5 $\frac{1}{8}$ " glulam	WMU5.25X	3	5 $\frac{1}{4}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
6x	WMU5.50X	3	5 $\frac{1}{2}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	
Double 4x	WMU7.12X	3	7 $\frac{1}{8}$	Specify	(6) 10d x 1 $\frac{1}{2}$ "	(4) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	(2) 16d duplex	625	4,175	(2) $\frac{1}{4}$ " x 1 $\frac{3}{4}$ "	545	3,380	

1. Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. See figures for top-of-wall and mid-wall installation. Minimum $f_m = 1,500$ psi.
3. Products shall be installed such that Titen® screws are not exposed to weather.
4. For hanger heights that exceed the joist height, the allowable download is 0.50 of the table load.
5. **Fasteners:** 16d duplex = 0.162" dia. x 3 $\frac{1}{2}$ " long, 10d x 1 $\frac{1}{2}$ " = 0.148" dia. x 1 $\frac{1}{2}$ " long. TTN2-25134H = $\frac{1}{4}$ " x 1 $\frac{3}{4}$ " Titen 2; TTN25134H = Titen $\frac{1}{4}$ " x 1 $\frac{3}{4}$ " may also be used at full table loads. See pp. 26–27 for other nail sizes and information.

GH

Girder Hanger

A girder-to-foundation wall connection.

Material: 12 gauge

Finish: Simpson Strong-Tie® gray paint, hot-dip galvanized, specify HDG; see Corrosion Information, pp. 15–18

Installation:

- Use all specified fasteners; see General Notes.
- Insert four 16d commons into girder.
- H = girder height – mudsill thickness. Measurement is top of steel to top of steel.
- 1½" clearance hole accommodates rebar or anchor. This is not required.

Options:

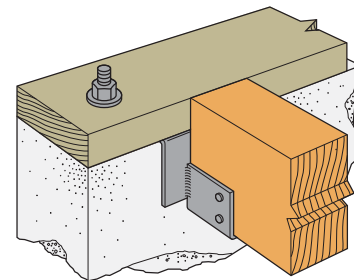
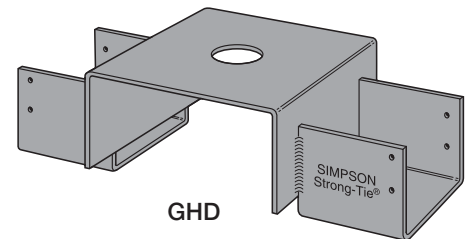
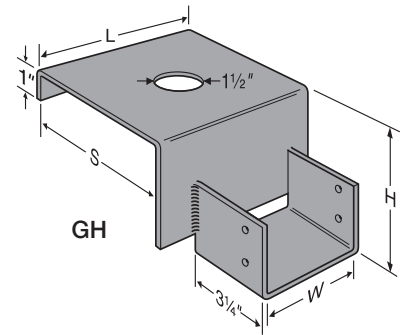
- GH hangers may be skewed to a maximum of 45°; bevel cut required.
The allowable loads are 100% of the table load.
- Specify GHD for saddle-style hangers. GHD may not be skewed.

Codes: See p. 14 for Code Reference Key Chart

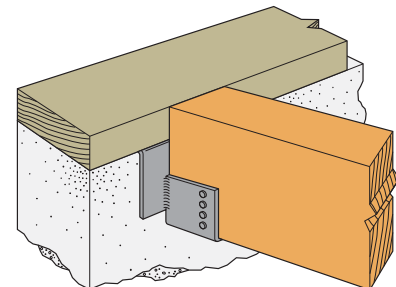
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Girder	Dimensions (in.)					Fasteners	Allowable Downloads	Code Ref.
		W	L	H 2x Plate	H 3x Plate	S			
GH46-6	4x6	3 ³ / ₁₆	6	3 ⁷ / ₈	2 ⁷ / ₈	6 ¹ / ₁₆	(4) 16d	2,000	I20, FL
GH46-8	4x6	3 ³ / ₁₆	6	3 ⁷ / ₈	2 ⁷ / ₈	8 ¹ / ₁₆	(4) 16d	2,000	
GH48-6	4x8	3 ³ / ₁₆	6	5 ⁵ / ₈	4 ⁵ / ₈	6 ¹ / ₁₆	(4) 16d	2,000	
GH48-8	4x8	3 ³ / ₁₆	6	5 ⁵ / ₈	4 ⁵ / ₈	8 ¹ / ₁₆	(4) 16d	2,000	
GH410-6	4x10	3 ³ / ₁₆	6	7 ⁵ / ₈	6 ⁵ / ₈	6 ¹ / ₁₆	(4) 16d	2,000	170
GH410-8	4x10	3 ³ / ₁₆	6	7 ⁵ / ₈	6 ⁵ / ₈	8 ¹ / ₁₆	(4) 16d	2,000	
GH66-6	6x6	5 ¹ / ₂	8	3 ⁷ / ₈	2 ⁷ / ₈	6 ¹ / ₁₆	(4) 16d	4,000	
GH66-8	6x6	5 ¹ / ₂	8	3 ⁷ / ₈	2 ⁷ / ₈	8 ¹ / ₁₆	(4) 16d	4,000	
GH68-6	6x8	5 ¹ / ₂	8	5 ⁵ / ₈	4 ⁵ / ₈	6 ¹ / ₁₆	(4) 16d	4,000	
GH68-8	6x8	5 ¹ / ₂	8	5 ⁵ / ₈	4 ⁵ / ₈	8 ¹ / ₁₆	(4) 16d	4,000	
GH610-6	6x10	5 ¹ / ₂	8	7 ⁵ / ₈	6 ⁵ / ₈	6 ¹ / ₁₆	(4) 16d	4,000	
GH610-8	6x10	5 ¹ / ₂	8	7 ⁵ / ₈	6 ⁵ / ₈	8 ¹ / ₁₆	(4) 16d	4,000	

1. Loads may not be increased for short-term loading.
2. A mudsill on top of the GH is required to achieve the table loads.
3. Models listed are for a 2x plate, specify "H" dimension when ordering for use with a 3x plate.
4. Uplift loads do not apply for this hanger.
5. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 26–27 for other nail sizes and information.



Typical GH Installation



Typical GH Installation Skewed Right

HU/HUC/HSUR/L

Hangers

HU/HUC hangers may be installed on a masonry/concrete wall as described below. Additionally, HU hangers with one flange concealed may be installed similarly.

HU and HUC products are heavy-duty face-mount joist hangers made from 14-gauge galvanized steel.

- The HUC is a concealed flange (face flanges turned in) version of the HU.
- HU is available with both flanges concealed, provided the W dimension is $2\frac{5}{16}$ " or greater, at 100% of the table load. Specify HUC.
- HU is available with one flange concealed when the W dimension is less than $2\frac{5}{16}$ " at 100% of the table load. Specify as an 'X' version and specify flange to conceal.
- For any HU or HUC shown in this catalog, the user may substitute all face nails with $\frac{1}{4}$ " x $1\frac{3}{4}$ " Titen® 2 screws (Model TTN2-25134H). Follow all installation instructions and use the loads from this catalog.

Material: 14 gauge

Finish: Galvanized; ZMAX® and stainless steel available

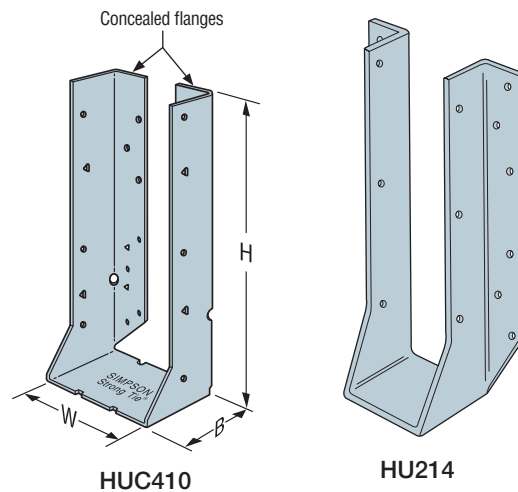
Installation:

- Attach the hangers to concrete or GFCMU walls using hex-head Titen® 2 screws. Titen screws for GFCMU ($\frac{1}{4}$ " x $2\frac{3}{4}$ " – Model TTN2-25234H) and for concrete ($\frac{1}{4}$ " x $1\frac{3}{4}$ " – Model TTN2-25134H) are not provided with the hangers.
- Drill the $\frac{3}{16}$ "-diameter hole to the specified embedment depth plus $\frac{1}{2}$ ".
- Alternatively, drill the $\frac{3}{16}$ "-diameter hole to the specified embedment depth and blow it clean using compressed air.
- Caution: Oversized-diameter holes in the base material will reduce or eliminate the mechanical interlock of the threads with the base material and will reduce the anchor's load capacity.
- Titen Installation Tool Kits are available. They include a $\frac{3}{16}$ " drill bit and hex-head driver bit (Model TTNT01-RC); a $\frac{3}{16}$ " x $4\frac{1}{2}$ " drill bit is also available (Model MDB18412).
- A minimum end and edge distance of $1\frac{1}{2}$ " is required.

Options:

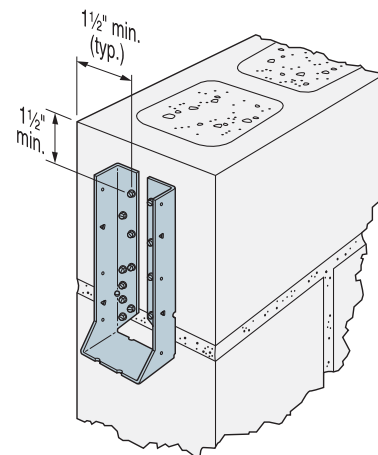
- For skewed hangers use 75% of table uplift load. If hanger width is greater than $3\frac{5}{16}$ ", then use 80% of table download; otherwise use 100% of table download.

Codes: See p. 14 for Code Reference Key Chart

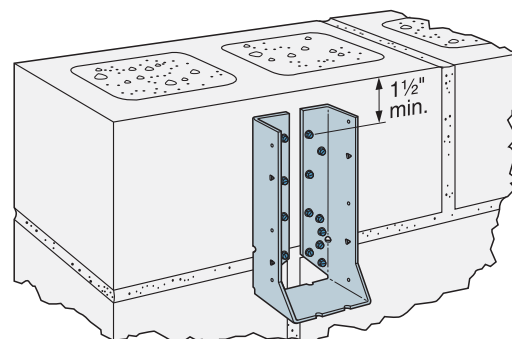


HUC410

HU214



HUC410 Installed on
Masonry Block End Wall



HUC410 Installed on
Masonry Block End Wall

HU/HUC/HSUR/L

Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.		Fasteners			Allowable Loads (DF/SP)				Code Ref.
					GFCMU		Concrete		
Standard	Concealed	GFCMU Titen® 2	Concrete Titen® 2	Joist	Uplift (160)	Down (100/125)	Uplift (160)	Down (100/125)	
HU26	HU26X	(4) ¼" x 1 ¾"	(4) ¼" x 1 ¾"	(2) 10d x 1 ½"	335	1,000	335	1,545	
HU28	HU28X	(6) ¼" x 1 ¾"	(6) ¼" x 1 ¾"	(4) 10d x 1 ½"	545	1,500	760	2,400	
HU210	HU210X	(8) ¼" x 1 ¾"	(8) ¼" x 1 ¾"	(4) 10d x 1 ½"	545	2,000	760	2,415	
HU46 (Min.)	HUC46	(8) ¼" x 1 ¾"	(8) ¼" x 1 ¾"	(4) 10d common	760	2,000	760	3,200	
HU46 (Max.)	HUC46	(12) ¼" x 1 ¾"	(12) ¼" x 1 ¾"	(6) 10d common	1,135	3,000	1,135	3,950	
HU26-2 (Min.)	HUC26-2	(8) ¼" x 1 ¾"	(8) ¼" x 1 ¾"	(4) 10d common	760	2,000	760	3,200	
HU26-2 (Max.)	HUC26-2	(12) ¼" x 1 ¾"	(12) ¼" x 1 ¾"	(6) 10d common	1,135	3,000	1,135	3,950	
HU48 (Min.)	HUC48	(10) ¼" x 1 ¾"	(10) ¼" x 1 ¾"	(4) 10d common	760	2,500	760	3,725	
HU48 (Max.)	HUC48	(14) ¼" x 1 ¾"	(14) ¼" x 1 ¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU28-2 (Min.)	HUC28-2	(10) ¼" x 1 ¾"	(10) ¼" x 1 ¾"	(4) 10d common	760	2,500	760	3,725	
HU28-2 (Max.)	HUC28-2	(14) ¼" x 1 ¾"	(14) ¼" x 1 ¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU410 (Min.)	HUC410	(14) ¼" x 1 ¾"	(14) ¼" x 1 ¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU410 (Max.)	HUC410	(18) ¼" x 1 ¾"	(18) ¼" x 1 ¾"	(10) 10d common	1,800	4,500	1,800	4,920	
HU210-2 (Min.)	HUC210-2	(14) ¼" x 1 ¾"	(14) ¼" x 1 ¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU210-2 (Max.)	HUC210-2	(18) ¼" x 1 ¾"	(18) ¼" x 1 ¾"	(10) 10d common	1,800	4,500	1,800	5,085	
HU28X Skew 45°	(Not available)	(6) ¼" x 1 ¾"	(6) ¼" x 1 ¾"	(4) 10d x 1 ½"	670	1,500	670	2,400	
HSUL/R26-2	HSUL/RC26-2	(12) ¼" x 1 ¾"	(12) ¼" x 1 ¾"	(4) 16d x 2 ½"	900	3,000	900	3,135	
HU24-2	HUC24-2	(4) ¼" x 2 ¾"	(4) ¼" x 1 ¾"	(2) 10d common	380	1,000	380	1,545	
HU212	HU212X	(10) ¼" x 2 ¾"	(10) ¼" x 1 ¾"	(6) 10d x 1 ½"	1,135	2,500	1,135	2,665	
HU214	HU214X	(12) ¼" x 2 ¾"	(12) ¼" x 1 ¾"	(6) 10d x 1 ½"	1,135	2,665	1,135	2,665	
HU26-2 (Min.)	HUC26-2 (Min.)	(8) ¼" x 2 ¾"	(8) ¼" x 1 ¾"	(4) 10d common	760	2,000	760	3,200	
HU26-2 (Max.)	HUC26-2 (Max.)	(12) ¼" x 2 ¾"	(12) ¼" x 1 ¾"	(6) 10d common	1,135	3,000	1,135	3,950	170
HU26-3 (Min.)	HUC26-3 (Min.)	(8) ¼" x 2 ¾"	(8) ¼" x 1 ¾"	(4) 10d common	760	2,000	760	3,200	
HU26-3 (Max.)	HUC26-3 (Max.)	(12) ¼" x 2 ¾"	(12) ¼" x 1 ¾"	(6) 10d common	1,135	3,000	1,135	3,950	
HU28-2 (Min.)	HUC28-2 (Min.)	(10) ¼" x 2 ¾"	(10) ¼" x 1 ¾"	(4) 10d common	760	2,500	760	3,725	
HU28-2 (Max.)	HUC28-2 (Max.)	(14) ¼" x 2 ¾"	(14) ¼" x 1 ¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU210-2 (Min.)	HUC210-2 (Min.)	(14) ¼" x 2 ¾"	(14) ¼" x 1 ¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU210-2 (Max.)	HUC210-2 (Max.)	(18) ¼" x 2 ¾"	(18) ¼" x 1 ¾"	(10) 10d common	1,800	4,500	1,800	5,085	
HU210-3 (Min.)	HUC210-3 (Min.)	(14) ¼" x 2 ¾"	(14) ¼" x 1 ¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU210-3 (Max.)	HUC210-3 (Max.)	(18) ¼" x 2 ¾"	(18) ¼" x 1 ¾"	(10) 10d common	1,800	4,500	1,800	5,085	
HU212-2 (Min.)	HUC212-2 (Min.)	(16) ¼" x 2 ¾"	(16) ¼" x 1 ¾"	(6) 10d common	1,135	4,000	1,135	4,920	
HU212-2 (Max.)	HUC212-2 (Max.)	(22) ¼" x 2 ¾"	(22) ¼" x 1 ¾"	(10) 10d common	1,350	5,085	1,350	5,085	
HU212-3 (Min.)	HUC212-3 (Min.)	(16) ¼" x 2 ¾"	(16) ¼" x 1 ¾"	(6) 10d common	1,135	4,000	1,135	4,920	
HU212-3 (Max.)	HUC212-3 (Max.)	(22) ¼" x 2 ¾"	(22) ¼" x 1 ¾"	(10) 10d common	1,800	5,085	1,800	5,085	
HU214-2 (Min.)	HUC214-2 (Min.)	(18) ¼" x 2 ¾"	(18) ¼" x 1 ¾"	(8) 10d common	1,515	4,500	1,515	5,085	
HU214-2 (Max.)	HUC214-2 (Max.)	(24) ¼" x 2 ¾"	(24) ¼" x 1 ¾"	(12) 10d common	2,015	5,085	2,015	5,085	
HU214-3 (Min.)	HUC214-3 (Min.)	(18) ¼" x 2 ¾"	(18) ¼" x 1 ¾"	(8) 10d common	1,515	4,500	1,515	5,085	
HU214-3 (Max.)	HUC214-3 (Max.)	(24) ¼" x 2 ¾"	(24) ¼" x 1 ¾"	(12) 10d common	2,015	5,085	2,015	5,085	
HU216	HU216X	(18) ¼" x 2 ¾"	(18) ¼" x 1 ¾"	(8) 10d x 1 ½"	1,515	2,920	1,515	2,920	
HU216-2 (Min.)	HUC216-2 (Min.)	(20) ¼" x 2 ¾"	(20) ¼" x 1 ¾"	(8) 10d common	1,515	4,920	1,515	4,920	
HU216-2 (Max.)	HUC216-2 (Max.)	(26) ¼" x 2 ¾"	(26) ¼" x 1 ¾"	(12) 10d common	2,015	5,085	2,015	5,085	
HU216-3 (Min.)	HUC216-3 (Min.)	(20) ¼" x 2 ¾"	(20) ¼" x 1 ¾"	(8) 10d common	1,515	4,920	1,515	4,920	
HU216-3 (Max.)	HUC216-3 (Max.)	(26) ¼" x 2 ¾"	(26) ¼" x 1 ¾"	(12) 10d common	2,015	5,085	2,015	5,085	

Masonry and
Concrete Connectors

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1. Uplift loads have been increased for earthquake or wind duration with no further increase is allowed; **reduce when other loads govern.**

2. Minimum $f_c = 2,500$ psi and minimum $f_m = 1,500$ psi.

3. When only one flange is concealed specify right or left concealed flange.

4. Models with "X" are not stock items.

5. Products shall be installed such that Titen® screws are not exposed to weather.

Fasteners: 16d common = 0.162" dia. x 3 ½" long; 16d x 2 ½" = 0.162" dia. x 2 ½" long; 10d common = 0.148" dia. x 3" long; 10d x 1 ½" = 0.148" dia. x 1 ½" long. TTN2-25134H = ¼" x 1 ¾" Titen 2; TTN2-25234H = ¼" x 2 ¾" Titen 2; TTN25134H = Titen ¼" x 1 ¾" and TTN25234H = Titen ¼" x 2 ¾" may also be used at full table loads. See pp. 26–27 for other nail sizes and information.

HU/HUC/HSUR/L

Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.		Fasteners			Allowable Loads (DF/SP)				Code Ref.
Standard	Concealed	GFCMU Titen® 2	Concrete Titen® 2	Joist	GFCMU		Concrete		
					Uplift (160)	Down (100/125)	Uplift (160)	Down (100/125)	
HU44	HUC44	(4) ¼" x 2¾"	(4) ¼" x 1¾"	(2) 10d common	380	1,000	380	1,545	170
HU46 (Min.)	HUC46 (Min.)	(8) ¼" x 2¾"	(8) ¼" x 1¾"	(4) 10d common	760	2,000	760	3,200	
HU46 (Max.)	HUC46 (Max.)	(12) ¼" x 2¾"	(12) ¼" x 1¾"	(6) 10d common	1,135	3,000	1,135	3,950	
HU48 (Min.)	HUC48 (Min.)	(10) ¼" x 2¾"	(10) ¼" x 1¾"	(4) 10d common	760	2,500	760	3,725	
HU48 (Max.)	HUC48 (Max.)	(14) ¼" x 2¾"	(14) ¼" x 1¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU410 (Min.)	HUC410 (Min.)	(14) ¼" x 2¾"	(14) ¼" x 1¾"	(6) 10d common	1,135	3,500	1,135	4,920	
HU410 (Max.)	HUC410 (Max.)	(18) ¼" x 2¾"	(18) ¼" x 1¾"	(10) 10d common	1,800	4,500	1,800	4,920	
HU412 (Min.)	HUC412 (Min.)	(16) ¼" x 2¾"	(16) ¼" x 1¾"	(6) 10d common	1,135	4,000	1,135	4,920	
HU412 (Max.)	HUC412 (Max.)	(22) ¼" x 2¾"	(22) ¼" x 1¾"	(10) 10d common	1,800	5,085	1,800	5,085	
HU414 (Min.)	HUC414 (Min.)	(18) ¼" x 2¾"	(18) ¼" x 1¾"	(8) 10d common	1,515	4,500	1,515	5,085	
HU414 (Max.)	HUC414 (Max.)	(24) ¼" x 2¾"	(24) ¼" x 1¾"	(12) 10d common	2,015	5,085	2,015	5,085	
HU416 (Min.)	HUC416 (Min.)	(20) ¼" x 2¾"	(20) ¼" x 1¾"	(8) 10d common	1,515	4,920	1,515	4,920	
HU416 (Max.)	HUC416 (Max.)	(26) ¼" x 2¾"	(26) ¼" x 1¾"	(12) 10d common	2,015	5,085	2,015	5,085	
HU66 (Min.)	HUC66 (Min.)	(8) ¼" x 2¾"	(8) ¼" x 1¾"	(4) 16d common	900	2,000	900	3,200	
HU66 (Max.)	HUC66 (Max.)	(12) ¼" x 2¾"	(12) ¼" x 1¾"	(6) 16d common	1,345	3,000	1,345	3,950	
HU68 (Min.)	HUC68 (Min.)	(10) ¼" x 2¾"	(10) ¼" x 1¾"	(4) 16d common	900	2,500	900	3,725	
HU68 (Max.)	HUC68 (Max.)	(14) ¼" x 2¾"	(14) ¼" x 1¾"	(6) 16d common	1,345	3,500	1,345	4,920	
HU610 (Min.)	HUC610 (Min.)	(14) ¼" x 2¾"	(14) ¼" x 1¾"	(6) 16d common	1,345	3,500	1,345	4,920	
HU610 (Max.)	HUC610 (Max.)	(18) ¼" x 2¾"	(18) ¼" x 1¾"	(8) 16d common	1,795	4,500	1,795	5,085	
HU612 (Min.)	HUC612 (Min.)	(16) ¼" x 2¾"	(16) ¼" x 1¾"	(6) 16d common	1,345	4,000	1,345	4,920	
HU612 (Max.)	HUC612 (Max.)	(22) ¼" x 2¾"	(22) ¼" x 1¾"	(8) 16d common	1,795	4,920	1,795	4,920	
HU614 (Min.)	HUC614 (Min.)	(18) ¼" x 2¾"	(18) ¼" x 1¾"	(8) 16d common	1,795	4,500	1,795	5,085	
HU614 (Max.)	HUC614 (Max.)	(24) ¼" x 2¾"	(24) ¼" x 1¾"	(12) 16d common	2,015	5,085	2,015	5,085	
HU616 (Min.)	HUC616 (Min.)	(20) ¼" x 2¾"	(20) ¼" x 1¾"	(8) 16d common	1,795	4,920	1,795	4,920	
HU616 (Max.)	HUC616 (Max.)	(26) ¼" x 2¾"	(26) ¼" x 1¾"	(12) 16d common	2,015	5,085	2,015	5,085	
HU7 (Min.)	(Not available)	(12) ¼" x 1¾"	(12) ¼" x 1¾"	(4) 10d x 1½"	545	2,980	760	2,980	
HU7 (Max.)	(Not available)	(16) ¼" x 1¾"	(16) ¼" x 1¾"	(8) 10d x 1½"	1,085	3,485	1,085	3,485	
HU9 (Min.)	(Not available)	(18) ¼" x 1¾"	(18) ¼" x 1¾"	(6) 10d x 1½"	1,135	3,230	1,135	3,230	
HU9 (Max.)	(Not available)	(24) ¼" x 1¾"	(24) ¼" x 1¾"	(10) 10d x 1½"	1,445	3,735	1,445	3,735	
HU11 (Min.)	(Not available)	(22) ¼" x 1¾"	(22) ¼" x 1¾"	(6) 10d x 1½"	1,135	3,230	1,135	3,230	
HU11 (Max.)	(Not available)	(30) ¼" x 1¾"	(30) ¼" x 1¾"	(10) 10d x 1½"	1,445	3,735	1,445	3,735	
HU14 (Min.)	(Not available)	(28) ¼" x 1¾"	(28) ¼" x 1¾"	(8) 10d x 1½"	1,515	3,485	1,515	3,485	
HU14 (Max.)	(Not available)	(36) ¼" x 1¾"	(36) ¼" x 1¾"	(14) 10d x 1½"	2,015	4,245	2,015	4,245	
HU3.25/10	(Not available)	(22) ¼" x 1¾"	(22) ¼" x 1¾"	(10) 10d common	1,895	5,085	1,895	5,085	
HU3.25/12	(Not available)	(24) ¼" x 1¾"	(24) ¼" x 1¾"	(12) 10d common	2,015	5,085	2,015	5,085	
HU410-2 (Min.)	HUC410-2 (Min.)	(14) ¼" x 1¾"	(14) ¼" x 1¾"	(6) 16d common	1,345	3,500	1,345	4,920	
HU410-2 (Max.)	HUC410-2 (Max.)	(18) ¼" x 1¾"	(18) ¼" x 1¾"	(8) 16d common	1,795	4,500	1,795	5,085	
HU412-2 (Min.)	HUC412-2 (Min.)	(16) ¼" x 1¾"	(16) ¼" x 1¾"	(6) 16d common	1,345	4,000	1,345	4,920	
HU412-2 (Max.)	HUC412-2 (Max.)	(22) ¼" x 1¾"	(22) ¼" x 1¾"	(10) 16d common	1,800	4,920	1,800	4,920	
HU414-2 (Min.)	HUC414-2 (Min.)	(20) ¼" x 1¾"	(20) ¼" x 1¾"	(8) 16d common	1,795	4,920	1,795	4,920	
HU414-2 (Max.)	HUC414-2 (Max.)	(26) ¼" x 1¾"	(26) ¼" x 1¾"	(12) 16d common	2,015	5,085	2,015	5,085	

1. Uplift loads have been increased for earthquake or wind duration with no further increase is allowed; reduce when other loads govern.

2. Minimum $f'_c = 2,500$ psi and minimum $f'_m = 1,500$ psi.

3. When only one flange is concealed specify right or left concealed flange.

4. Models with "X" are not stock items.

5. Products shall be installed such that Titen® screws are not exposed to weather.

Fasteners: 16d common = 0.162" dia. x 3½" long; 16d x 2½" = 0.162" dia. x 2½" long; 10d common = 0.148" dia. x 3" long;

10d x 1½" = 0.148" dia. x 1½" long. TTN2-25134H = ¼" x 1¾" Titen 2; TTN2-25234H = ¼" x 2¾" Titen 2; TTN25134H = Titen ¼" x 1¾" and TTN25234H = Titen ¼" x 2¾" may also be used at full table loads. See pp. 26–27 for other nail sizes and information.

LGUM/HGUM

High-Capacity Beam/Girder Hangers for Concrete and GFCMU

High-capacity beam or girder hangers for concrete or masonry applications. Installation is made easier using Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws (provided) into the wood member and Titen HD® anchors (provided) into the masonry.

Material: See table

Finish: Galvanized

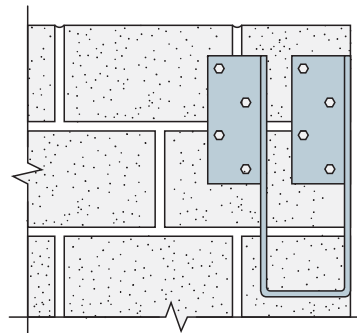
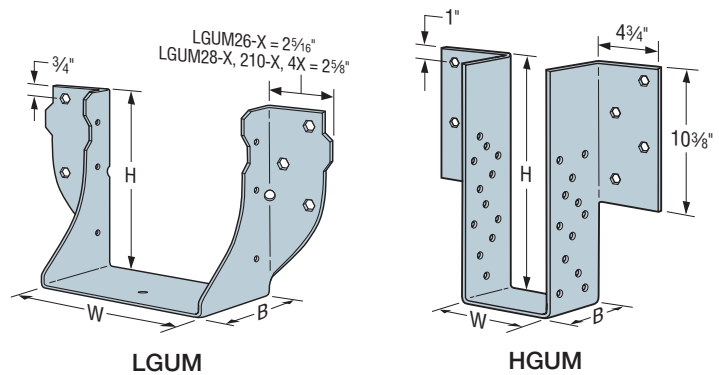
Installation:

- Use all specified fasteners (included).
- Attach hanger to a concrete or grout-filled CMU wall using Titen HD anchors. Note the following:
 - Drill holes using drill bits equal in diameter to the specified Titen HD anchor.
 - Holes shall be drilled $\frac{1}{2}$ " deeper than the specified Titen HD length (i.e. $4\frac{1}{2}$ " for a 4" long Titen HD anchor)
 - Caution: Oversized holes in the base material will reduce or eliminate the mechanical interlock of the threads with the base material and will reduce the anchor's load capacity.
- Titen HD is not recommended for exposed exterior applications.
- Provide moisture barrier between beam and wall per jurisdictional requirements.

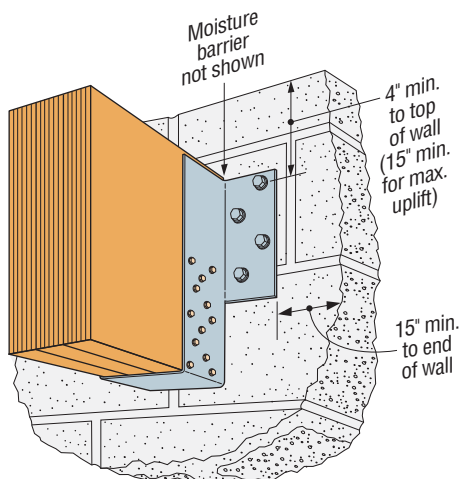
Options:

- For HGUM only — other seat widths available. Order as "X" version.
- HGUM available with one flange concealed. See p. 284 for reduced load at end of wall and outside corner.
- LGUM/HGUM available in skews up to 45° . See Hanger Options, pp. 122–123.

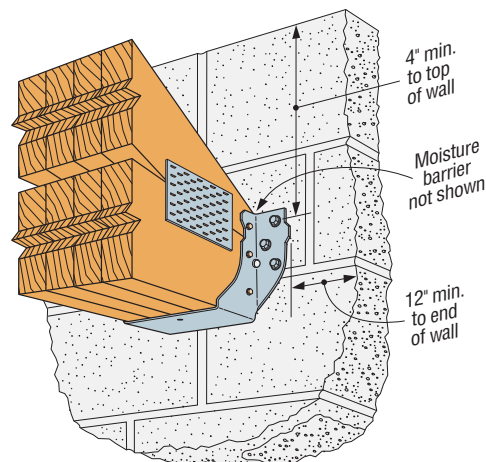
Codes: See p. 14 for Code Reference Key Chart



HGUM with Right Flange Concealed
 (See p. 284 for reduction factors)



Typical HGUM Installation



Typical LGUM Installation

LGUM/HGUM

High-Capacity Beam/Girder Hangers for Concrete and GFCMU (cont.)

Model No.	Ga.	Dimensions (in.)			Fasteners		Allowable Loads				Code Ref.
		W	H	B	GFCMU and Concrete	Joist	Uplift (160)		Download (DF, SP, LVL, PSL, LSL)		
					Titen HD Anchors	Strong-Drive SDS Screws	4" Min. to Top of Wall	15" Min. to Top of Wall	GFCMU	Concrete	
Double 2x Sizes											
LGUM26-2-SDS	12	3 ⁵ / ₁₆	5 ⁷ / ₁₆	4	(4) 3/8" x 4"	(4) 1/4" x 2 1/2"	1,430	1,430	5,595		FL
LGUM28-2-SDS	12	3 ⁵ / ₁₆	7 ³ / ₁₆	4	(6) 3/8" x 4"	(6) 1/4" x 2 1/2"	2,435	2,435	8,250		
LGUM210-2-SDS	12	3 ⁵ / ₁₆	9 ⁹ / ₁₆	4	(8) 3/8" x 4"	(8) 1/4" x 2 1/2"	3,575	3,575	9,575		
Triple 2x Sizes											
LGUM26-3-SDS	12	4 ¹⁵ / ₁₆	5 1/2	4	(4) 3/8" x 4"	(4) 1/4" x 2 1/2"	1,430	1,430	5,610		
LGUM28-3-SDS	12	4 ¹⁵ / ₁₆	7 1/4	4	(6) 3/8" x 4"	(6) 1/4" x 2 1/2"	2,435	2,435	8,290		
LGUM210-3-SDS	12	4 ¹⁵ / ₁₆	9 1/4	4	(8) 3/8" x 4"	(8) 1/4" x 2 1/2"	3,575	3,575	9,715		
Quadruple 2x Sizes											
LGUM26-4-SDS	12	6 ³ / ₁₆	5 ⁷ / ₁₆	4	(4) 3/8" x 4"	(4) 1/4" x 2 1/2"	1,430	1,430	5,625		
LGUM28-4-SDS	12	6 ³ / ₁₆	7 ³ / ₁₆	4	(6) 3/8" x 4"	(6) 1/4" x 2 1/2"	2,435	2,435	8,335		
LGUM210-4-SDS	12	6 ³ / ₁₆	9 ³ / ₁₆	4	(8) 3/8" x 4"	(8) 1/4" x 2 1/2"	3,575	3,575	9,860		
4x Sizes											
LGUM46-SDS	12	3 ⁵ / ₁₆	4 ⁷ / ₁₆	4	(4) 3/8" x 4"	(4) 1/4" x 2 1/2"	1,430	1,430	5,600		
LGUM48-SDS	12	3 ⁵ / ₁₆	6 ⁷ / ₁₆	4	(6) 3/8" x 4"	(6) 1/4" x 2 1/2"	2,435	2,435	8,260		
LGUM410-SDS	12	3 ⁵ / ₁₆	8 ⁷ / ₁₆	4	(8) 3/8" x 4"	(8) 1/4" x 2 1/2"	3,575	3,575	9,620		
Engineered Wood and Structural Composite Lumber Sizes (Heavy Duty)											
HGUM5.25-SDS	7	5 1/4	11 to 30	5 1/4	(8) 5/8" x 5"	(24) 1/4" x 2 1/2"	4,230	6,180	14,965	16,015	
HGUM5.50-SDS	7	5 1/2		5 1/4	(8) 5/8" x 5"	(24) 1/4" x 2 1/2"	4,230	6,180	14,940	16,015	
HGUM7.00-SDS	7	7		5 1/4	(8) 5/8" x 5"	(24) 1/4" x 2 1/2"	4,230	6,180	14,770	16,015	
HGUM7.25-SDS	7	7 1/4		5 1/4	(8) 5/8" x 5"	(24) 1/4" x 2 1/2"	4,230	6,180	14,740	16,015	
HGUM9.00-SDS	7	9		5 1/4	(8) 5/8" x 5"	(24) 1/4" x 2 1/2"	4,230	6,180	14,545	16,015	

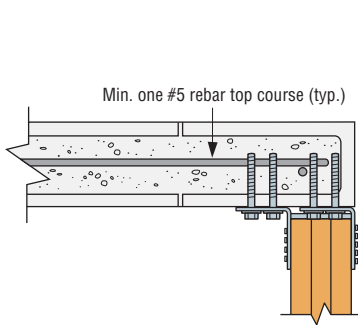
- Uplift loads have been increased for wind or earthquake loading with no further increase allowed; **reduce when other loads govern.**
- HGUM uplift loads for concrete applications are 5,840 lb. with a 4" min. distance to top of wall and 6,960 lb. with a 15" min. distance to top of wall.
- Minimum $f_m = 1,500$ psi and $f_c = 2,500$ psi.
- LGUM must be installed on minimum 6" thick wall and HGUM on minimum 8" thick wall. (Nominal values for GFCMU)
- Titen HD anchors may be installed into the head or bed joints.
- Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Sections 7.5.3.4 and 8.9.2 are met (pre-drilling required through the plate using a maximum of 3/32" bit).

LGUM/HGUM

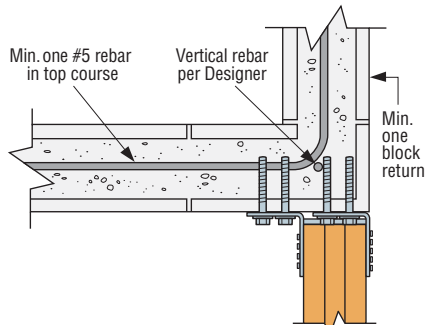
High-Capacity Beam/Girder Hangers for Concrete and GFCMU (cont.)

Concealed Flange – Allowable Loads with One Flange Concealed

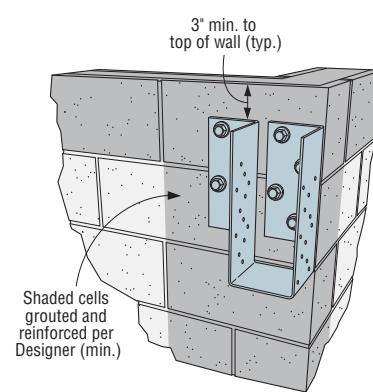
Model No.	W (in.)	H (in.)	Fasteners		End of Wall				Outside Corner	
			GFCMU and Concrete	Joist	GFCMU Wall DF/SP/SCL Beam		Concrete Wall DF/SP/SCL Beam		GFCMU and Concrete Wall DF/SP/SCL Beam	
			Titen HD® Anchors	SDS Screws	Uplift (160)	Download	Uplift (160)	Download	Uplift (160)	Download
HGUM	5¼ to 9	11 to 30	(8) ⅝" x 5"	(24) ¼" x 2½"	1,285	5,750	3,150	7,025	3,150	7,555



Typical Concealed Flange HGUM Installation at End of Wall



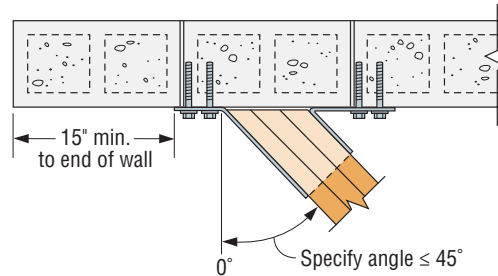
Typical Concealed Flange HGUM Right Installation at Outside Corner



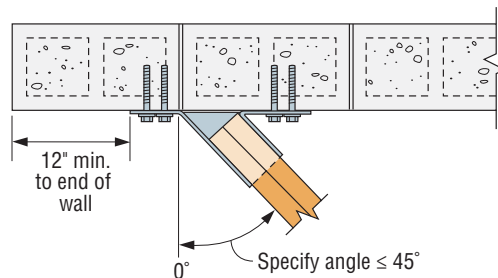
Typical Concealed Flange HGUM Installation at Outside Corner (Concealed right shown)

LGUM/HGUM Allowable Loads for Skewed (L/R) Applications

Model No.	Fasteners		Allowable Loads GFCMU and Concrete (DFL, SP, LVL, PSL, LSL)	
	GFCMU and Concrete	Joist	Uplift (160)	Download (100/115/125)
	Titen HD® Anchors	SDS Screws		
LGUM26-2X	(4) ⅝" x 4"	(4) ¼" x 2½"	565	1,965
LGUM26-3X				
LGUM26-4X				
LGUM46X				
LGUM28-2X	(6) ⅝" x 4"	(6) ¼" x 2½"	1,085	3,080
LGUM28-3X				
LGUM28-4X				
LGUM48X				
LGUM210-2X	(8) ⅝" x 4"	(8) ¼" x 2½"	1,605	4,190
LGUM210-3X				
LGUM210-4X				
LGUM410X				
HGUM5.25X	(8) ⅝" x 5"	(8) ¼" x 2½"	1,430	6,455
HGUM5.50X				
HGUM7.00X	(8) ⅝" x 5"	(8) ¼" x 2½"	1,440	5,820
HGUM7.25X				
HGUM9.00X				



Top View HGUM Skewed Right Bevel Cut



Top View LGUM Skewed Right Square Cut

MBHA

Concrete and Masonry Hanger

The MBHA is a single-piece, non-welded connector available for solid sawn, truss and engineered wood products.

Material: 10 gauge

Finish: Galvanized

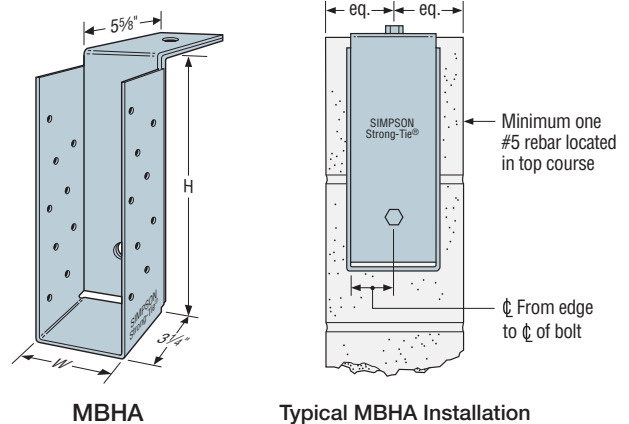
Installation:

- Use all specified fasteners; see General Notes

Options:

- Seat can be skewed at 45° only. The maximum allowable download is 3,495 lb. and 1,585 lb. uplift for height 7 1/4". For all other models, use the table listed download and uplift of 2,390 lb. Order MBHAR for skew right and MBHAL for skew left.

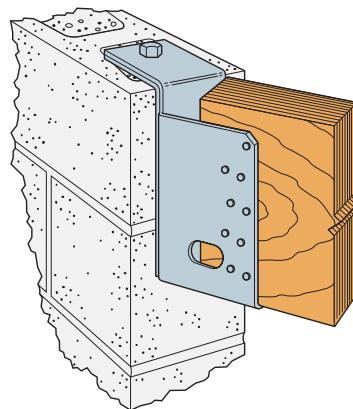
Codes: See p. 14 for Code Reference Key Chart



Model No.	C	Dimensions (in.)	
		W	H
MBHA3.12/9.25	1 1/16	3 1/8	9 1/4
MBHA3.12/11.25	1 1/16	3 1/8	11 1/4
MBHA3.56/7.25	1 3/4	3 9/16	7 1/4
MBHA3.56/9.25	1 3/4	3 9/16	9 1/4
MBHA3.56/11.25	1 3/4	3 9/16	11 1/4
MBHA3.56/11.88	1 3/4	3 9/16	11 7/8
MBHA3.56/14	1 3/4	3 9/16	14
MBHA3.56/16	1 3/4	3 9/16	16
MBHA3.56/18	1 3/4	3 9/16	18
MBHA5.50/7.25	2 3/4	5 1/2	7 1/4
MBHA5.50/9.25	2 3/4	5 1/2	9 1/4
MBHA5.50/11.25	2 3/4	5 1/2	11 1/4
MBHA5.50/11.88	2 3/4	5 1/2	11 7/8
MBHA5.50/14	2 3/4	5 1/2	14
MBHA5.50/16	2 3/4	5 1/2	16
MBHA5.50/18	2 3/4	5 1/2	18

Model No.	Fasteners ¹			Solid Concrete Allowable Loads DF/SP		Grout-Filled CMU Allowable Loads DF/SP		Code Ref.
	Header		Joist	Uplift ⁷ (160)	Maximum Down Load	Uplift ⁷ (160)	Maximum Down Load	
	Top	Face						
MBHA	(1) ATR 3/4 ⁴	(1) ATR 3/4 ⁴	(18) 10d	3,775	6,050	3,475	5,330	I20, L16, FL
MBHA models with H = 7 1/4"	(1) ATR 3/4 ⁴	(1) ATR 3/4 ⁵	(18) 10d	1,885	4,380	1,885	4,380	

1. ATR is all-threaded rod grade A307 or better.
2. Minimum $f_c = 2,500$ psi and minimum $f_m = 1,500$ psi.
3. Uplift loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
4. Loads are based on installation using Simpson Strong-Tie® SET-XP® adhesive 6 3/4" minimum embedment required. Refer to the Simpson Strong-Tie® Anchoring and Fastening Systems for Concrete and Masonry catalog (form C-A-2016) at strongtie.com.
5. MBHA hangers with height of 7 1/4" require a 3 1/2" minimum embedment of the face bolt using SET-XP adhesive.
6. Alternate anchorage to be designed by others.
7. Uplift loads are for Southern Pine. For Doug Fir use 3,515 lb.
8. Table allowable loads were determined using test ultimate/3 or fastener calculation values.
9. Nails: 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.



Typical MBHA Skewed Right Installation

MBHU

Masonry Beam Hanger

The MBHU beam hanger provides a face-mounted solution for connecting beams to masonry or concrete walls. A non-welded, one-piece connector, the MBHU is suitable for solid sawn and engineered wood beams as well as trusses. Installation is simplified because the Titen HD® heavy-duty screw anchor and Strong-Drive® SDS Heavy-Duty Connector screws are included with the hanger. Since the Titen HD anchor is installed after the wall is built, locating the anchor in the right spot is easier than with cast-in-place bolts.

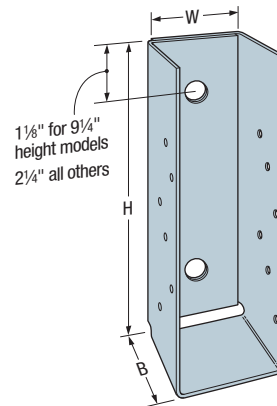
Material: 10 gauge

Finish: Galvanized

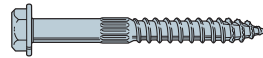
Installation:

- Use all specified fasteners (included).
- Attach hanger to a concrete or grout-filled CMU wall using Titen HD anchors. Note the following:
 - Drill holes using drill bits equal in diameter to the specified Titen HD anchor.
 - Holes shall be drilled $\frac{1}{2}$ " deeper than the specified Titen HD length (i.e. $5\frac{1}{2}$ " for a 5" long Titen HD anchor).
 - Caution: Oversized holes in the base material will reduce or eliminate the mechanical interlock of the threads with the base material and will reduce the anchor's load capacity.
- Titen HD is not recommended for exposed exterior applications.
- Provide moisture barrier between beam and wall per jurisdictional requirements.

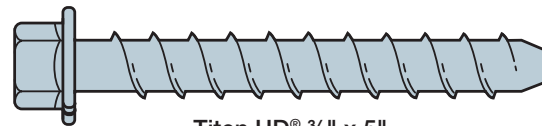
Codes: See p. 14 for Code Reference Key Chart



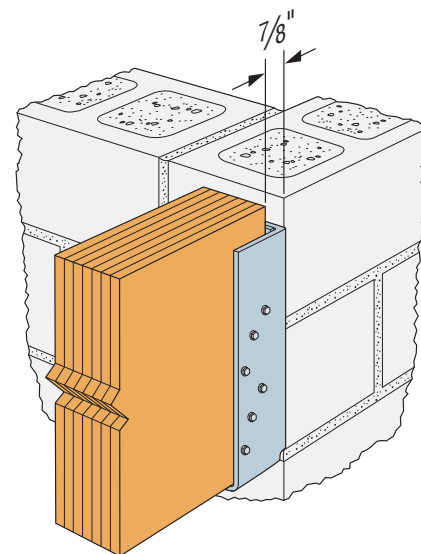
MBHU



$\frac{1}{4}$ " x $2\frac{1}{2}$ " Strong-Drive® SDS Heavy-Duty Connector Screw



Titen HD® $\frac{3}{4}$ " x 5" Screw Anchor



Typical MBHU Installation

Model No.	Dimensions (in.)	
	Width (W)	Height (H)
MBHU3.56/9.25KT	$3\frac{9}{16}$	$9\frac{1}{4}$
MBHU3.56/11.25KT	$3\frac{9}{16}$	$11\frac{1}{4}$
MBHU3.56/11.88KT	$3\frac{9}{16}$	$11\frac{7}{8}$
MBHU3.56/14KT	$3\frac{9}{16}$	14
MBHU3.56/16KT	$3\frac{9}{16}$	16
MBHU3.56/18KT	$3\frac{9}{16}$	18
MBHU5.50/9.25KT	$5\frac{1}{2}$	$9\frac{1}{4}$
MBHU5.50/11.25KT	$5\frac{1}{2}$	$11\frac{1}{4}$
MBHU5.50/11.88KT	$5\frac{1}{2}$	$11\frac{7}{8}$
MBHU5.50/14KT	$5\frac{1}{2}$	14
MBHU5.50/16KT	$5\frac{1}{2}$	16
MBHU5.50/18KT	$5\frac{1}{2}$	18

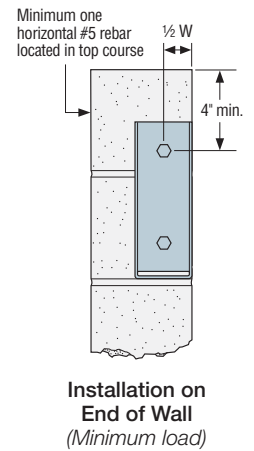
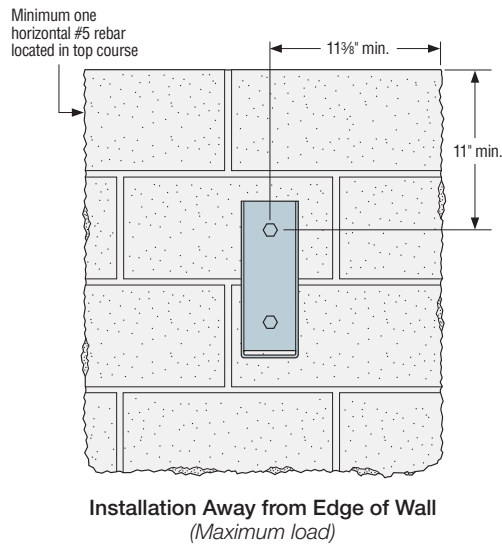
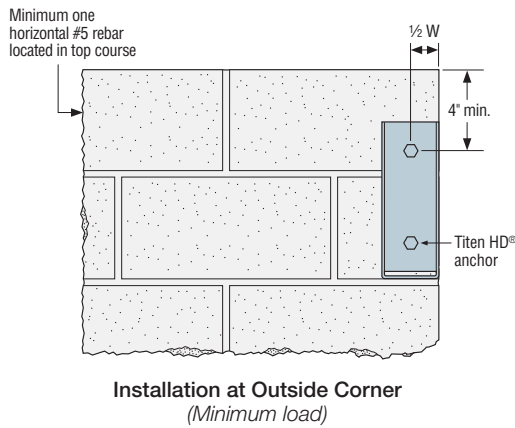
1. Each MBHU hanger includes (2) $\frac{3}{4}$ " x 5" Titen HD® anchors and (12) $\frac{1}{4}$ " x $2\frac{1}{2}$ " Strong-Drive® SDS Heavy-Duty Connector screws.

MBHU

Masonry Beam Hanger (cont.)

Series Model No.	Ga.	Dimensions (in.)			Fasteners		Allowable Loads End of Wall / Outside Corner DF/SP				Allowable Loads Away from Edge DF/SP		Code Ref.
		W	H	B	GFCMU and Concrete Titen HD® Anchors	Joist Strong-Drive SDS Screws	GFCMU		Concrete		GFCMU and Concrete		
							Uplift	Download	Uplift	Download	Uplift	Download	
							(160)	(100/115/125)	(160)	(100/115/125)	(160)	(100/115/125)	
MBHU3.56	10	3 ³ / ₁₆	9 ¹ / ₄ to <14	3 ¹ / ₂	(2) 3/4" x 5"	(12) 1/4" x 2 1/2"	1,720	2,440	2,715	4,190	2,210	4,005	FL
			14 to 18				1,720	2,440	2,715	4,190	3,345	6,065	
MBHU5.50	10	5 ¹ / ₂	9 ¹ / ₄ to <14	3 ¹ / ₂	(2) 3/4" x 5"	(12) 1/4" x 2 1/2"	1,720	2,440	2,715	4,190	2,210	4,005	
			14 to 18				2,240 ⁷	3,260 ⁷	3,485	6,970	3,345	6,065	

- Uplift loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- Minimum $f'_c = 2,500$ psi and minimum $f_m = 1,500$ psi.
- Structural composite lumber (SCL) shall have a minimum specific gravity of 0.5.
- Allowable loads only apply to installation on 8" nominal grouted CMU walls, with minimum one horizontal #5 rebar located in the top course.
- Products shall be installed such that the Titen HD® anchors are not exposed to the weather.
- Allowable loads are based upon the tested ultimate load with a safety factor of 3.
- Where noted in table, loads listed are for end-of-wall condition. For outside corner condition, uplift is 2,365 lb. and download is 3,640 lb.



H/LTA2

Seismic and Hurricane Ties / Lateral Truss Anchor

The Hurricane Tie series features various configurations of wind and seismic ties for trusses and rafters.

The H10S provides a high-capacity connection from truss/rafter to wall. Also suitable for wood-to-wood applications (see pp. 314–316).

The HM9 is designed to retrofit roof truss/rafters for block construction. The HM9 hurricane tie provides high uplift and lateral capacity using Simpson Strong-Tie® Titen® 2 concrete and masonry screws.

The presloped 5/12 seat of the H16 provides for a tight fit and reduced deflection. The strap length provides for various truss heights up to a maximum of 13 1/2". Minimum heel height for H16 series is 4".

The LTA2 is an embedded truss anchor for grout-filled CMU and concrete walls that develops high loads with shallow embedment. Designed for 2x4 minimum truss chords, the LTA2 resists uplift and lateral loads parallel and perpendicular to the wall with a minimum heel height requirement.

Material: H Ties — see table; LTA2 — 18 gauge

Finish: Galvanized; see Corrosion Information, pp. 15–18

Installation:

- Use all specified fasteners; see General Notes.

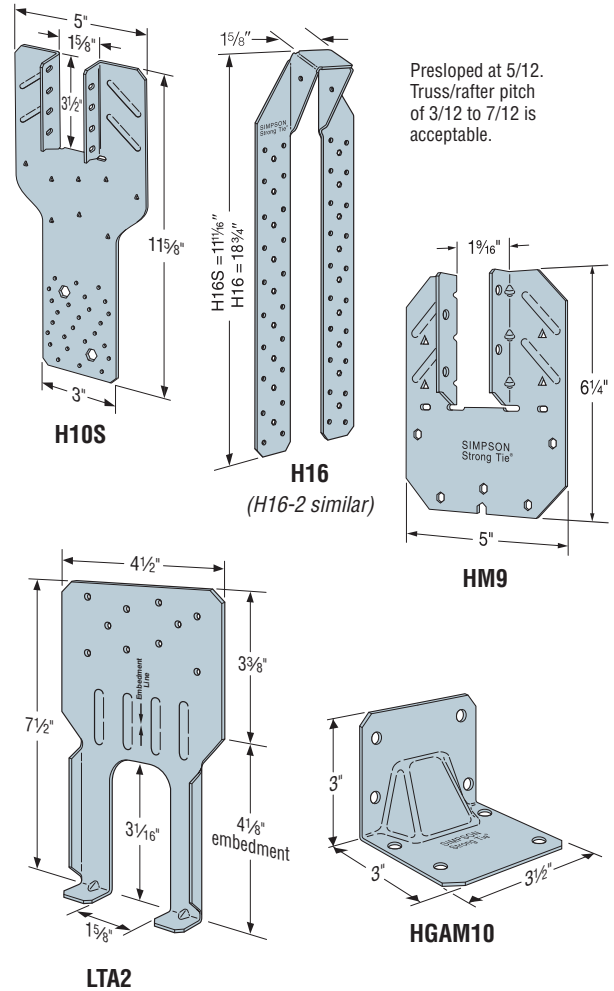
H Ties:

- Connectors attached using hex head Simpson Strong-Tie® Titen® screws.
- Attach to grouted concrete block with a minimum one #5 rebar horizontal in the course.
- Hurricane ties do not replace solid blocking.

LTA2:

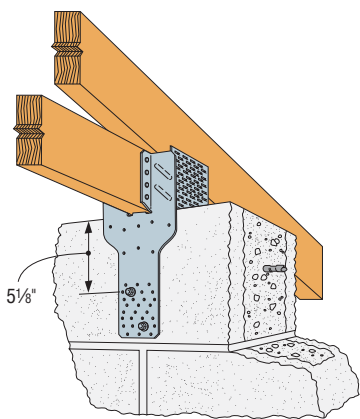
- Whether in grout-filled CMU or concrete, the LTA2 must be embedded to the depth of the embedment line stamped on the part.
- A minimum of one horizontal #5 rebar is required at top of concrete or in the top course of grout-filled CMU.
- For parallel-to-wall applications, install the LTA2 with flanges facing the center of the wall. Minimum edge distance of 1 1/2" required.

Codes: See p. 14 for Code Reference Key Chart

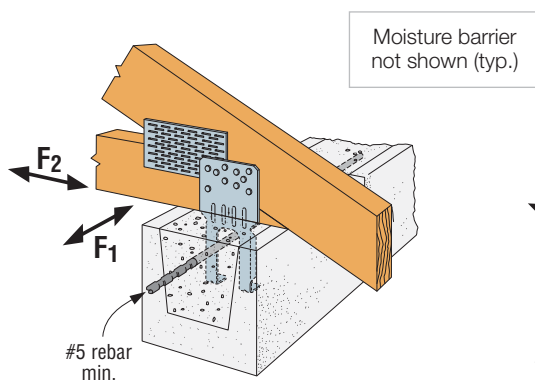


Presloped at 5/12. Truss/rafter pitch of 3/12 to 7/12 is acceptable.

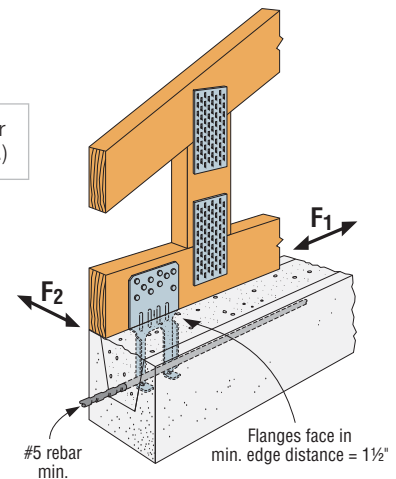
Masonry and Concrete Connectors



Typical H10S Installation



LTA2 Perpendicular-to-Wall Installation



LTA2 Parallel-to-Wall Installation

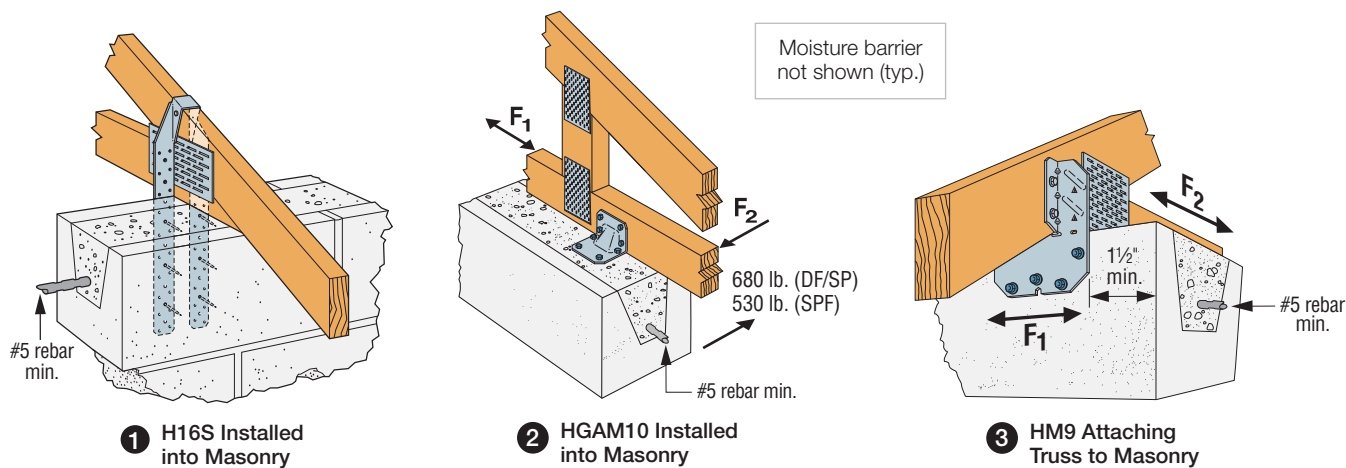
H/LTA2

Seismic and Hurricane Ties / Lateral Truss Anchor (cont.)

Model No.	Ga.	W (in.)	L (in.)	Fasteners			DF/SP Allowable Loads ^{1,2}			SPF/HF Allowable Loads ^{1,2}			Code Ref.
				To Rafters/Truss	To GFCMU	To Concrete	Uplift ⁴	Lateral (160)		Uplift ⁴	Lateral (160)		
							(160)	F ₁	F ₂	(160)	F ₁	F ₂	
HM9KT ³	18	1 ⁵ / ₁₆	6 ¹ / ₄	(4) SDS 1/4" x 1 1/2"	(5) 1/4" x 2 1/4" Titen [®] 2	(5) 1/4" x 1 3/4" Titen [®] 2	805	670	200	805	670	200	FL
HGAM10KTA ³	14	—	—	(4) SDS 1/4" x 1 1/2"	(4) 1/4" x 2 3/4" Titen [®] 2	(4) 1/4" x 1 3/4" Titen [®] 2	850	1,005	1,105 ⁷	610	725	795 ⁷	
H10S	18	1 ⁵ / ₁₆	11 ⁵ / ₁₆	(8) 8d x 1 1/2"	(2) 3/8" x 4" Titen HD [®]	(2) 3/8" x 4" Titen HD [®]	1,065	—	—	915	—	—	IP1, FL
LTA2 Perpendicular-to-Wall Installation	18	—	—	(10) 10d x 1 1/2"	Embed	Embed	1,210 ⁸	415	875	1,015	415	735	FL
LTA2 Parallel-to-Wall Installation	18	—	—	(10) 10d x 1 1/2"	Embed	Embed	1,210 ⁸	950	220	1,015	800	220	
H16	18	1 ⁵ / ₈	18 ³ / ₄	(2) 10d x 1 1/2"	(6) 1/4" x 2 1/4" Titen [®] 2	(6) 1/4" x 1 3/4" Titen [®] 2	1,470	—	—	1,265	—	—	FL
H16S	18	1 ⁵ / ₈	11 ¹ / ₁₆	(2) 10d x 1 1/2"	(6) 1/4" x 2 1/4" Titen [®] 2	(6) 1/4" x 1 3/4" Titen [®] 2	1,470	—	—	1,265	—	—	
H16-2	18	3 ¹ / ₄	18 ³ / ₄	(2) 10d x 1 1/2"	(6) 1/4" x 2 1/4" Titen [®] 2	(6) 1/4" x 1 3/4" Titen [®] 2	1,470	—	—	1,265	—	—	
H16-2S	18	3 ¹ / ₄	11 ¹ / ₁₆	(2) 10d x 1 1/2"	(6) 1/4" x 2 1/4" Titen [®] 2	(6) 1/4" x 1 3/4" Titen [®] 2	1,470	—	—	1,265	—	—	

1. Loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
2. Allowable loads are for one anchor. A minimum rafter thickness of 2 1/2" must be used when framing anchors are installed on each side of the joist and on the same side of the plate.
3. Minimum $f'_c = 2,500$ psi and minimum $f'_m = 1,500$ psi.
4. The HM9KT and HGAM10KTA are kits with (20) HM9 and (10) HGAM10 connectors packaged with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws and 2 1/4" and 2 3/4" Titen[®] 2 screws, respectively. (1 3/4" Titen 2 screws for concrete installations sold separately.)
5. See p. 275 for Titen 2 screw information.

6. Products shall be installed such that the Titen 2 screws and Titen HD[®] anchors are not exposed to the weather.
 7. HGAM10 F₂ loads are for forces into the connector. See illustration 2 for loads away from the connector.
 8. LTA2 allowable uplift on SP is 1,425 lb. for perpendicular to wall installation and 1,390 lb. for parallel to wall installation.
- Fasteners:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long; 8d x 1 1/2" = 0.131" dia. x 1 1/2" long; TTN2-25214H = 1/4" x 2 1/4" Titen 2; TTN2-25234H = 1/4" x 2 3/4" Titen 2. TTN25214H = Titen 1/4" x 2 1/4" and TTN25234H = Titen 1/4" x 2 3/4" may also be used at full table loads. See pp. 26–27 for other nail sizes and information.



META/HETA/HHETA/HETAL/DETAL/TSS/TBP8

Embedded Truss Anchors and Truss Seat Snap-In

The embedded truss anchor series provides an engineered method to properly attach roof trusses to concrete and masonry walls. The products are designed with staggered nail patterns for greater uplift resistance. Information regarding the use of two anchors on single- and multi-ply trusses is included.

Simpson Strong-Tie provides two different moisture barrier plates between the concrete/masonry and truss. The TSS is a preassembled, companion product of the META. The TBP8 seat plate also provides a moisture barrier installed prior to truss placement. The seat plate is installed with prongs, instead of fasteners.

The DETAL20 is a high-capacity embedded truss anchor for attachment of single-ply trusses to concrete and masonry walls. It combines dual embedded anchors with a structural moisture-barrier seat that is partially embedded in the concrete or grout. This seat serves to protect the truss and also provides additional lateral and uplift capacity. The embedded anchors are pre-attached to the moisture barrier through slots that allow for a slight amount of adjustability, providing flexibility during installation to avoid rebar. The moisture-barrier seat includes tabs at each end for optional attachment to the form board in concrete tie-beam applications.

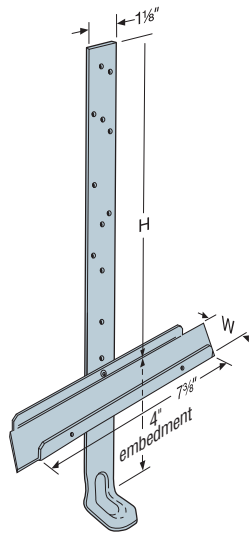
Material: HHETA — 14 gauge; HETA — 16 gauge; HETAL — strap 16 gauge, truss seat 18 gauge; META — 18 gauge; TSS/TBP8 — 22 gauge; DETAL — 16 gauge (Barrier — 18 gauge)

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

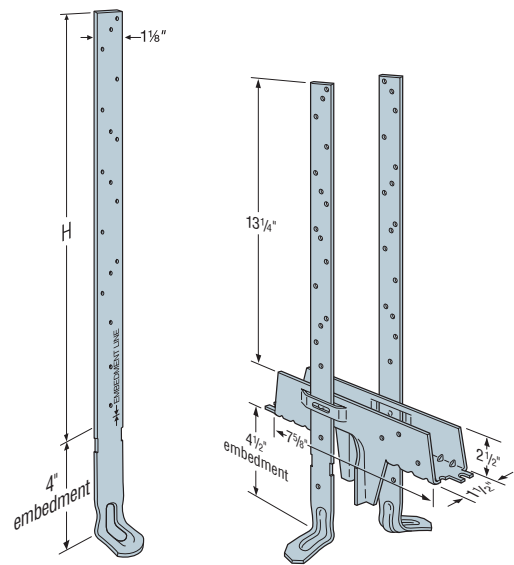
- Use all specified fasteners; see General Notes.
- The META, HETA and HHETA are embedded 4" into a 6" min. concrete beam or 8" nominal grouted block wall; HETAL is embedded 5½"; DETAL is embedded 4½".
- The DETAL20 is installed centered and flush on top of an 8" masonry bond beam or concrete tie beam. The moisture barrier seat bears on masonry face shell or concrete tie beam form boards; the two flanges embed into grout or concrete. The two embedded anchors shall be installed vertically into grout or concrete.
- The TSS moisture barrier may be preattached to the truss using 6d commons.
- For mislocated truss anchors which are greater than ¼" but less than 1½" from the face of the truss, a shim must be provided. Shim design by Truss Engineer. When gap is greater than 1½", install new anchors.
- In double embedded anchor installations, do not install fasteners where the straps overlap when wrapped over the truss heel.

Codes: See p. 14 for Code Reference Key Chart



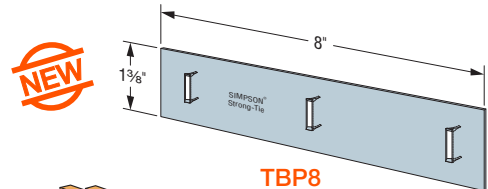
META with TSS

Model No.	W (in.)
TSS2	1¾
TSS2-2	3½
TSS4	3½

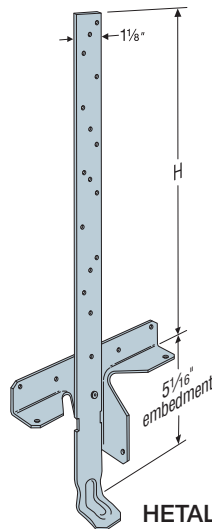


HETA20
(HHETA similar)

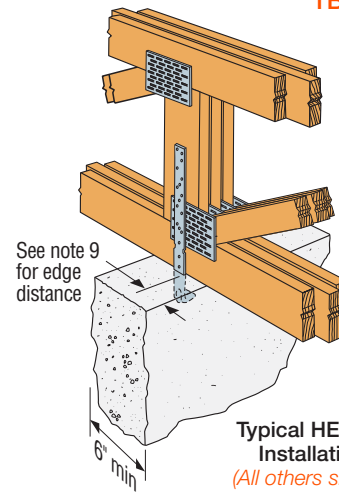
DETAL20
U.S. Patent 7,987,636



TBP8

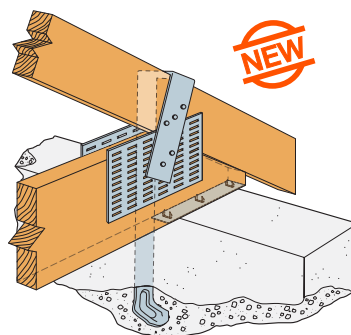


HETAL

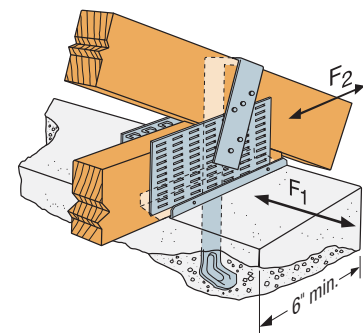


Typical HETA20 Installation
(All others similar)

Moisture barrier not shown (typ.)



Typical META Installed with TBP8



Typical META Installed with TSS

META/HETA/HHETA/HETAL/DETAL/TSS/TBP8

Embedded Truss Anchors and Truss Seat Snap-In (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

Single Embedded Anchor Installation

Model No.	H (in.)	SP Uplift Load 160 Load Duration Increase				Lateral Loads (160)		Code Ref.
		10d x 1½"		16d		F ₁	F ₂	
		Quantity	Load	Quantity	Load			
META12	8	7	1,420	6	1,450	340	795	FL
META16	12	8	1,450	6	1,450	340	795	
META18	14	8	1,450	6	1,450	340	795	
META20 ⁶	16	8	1,450	6	1,450	340	795	
META22	18	8	1,450	6	1,450	340	795	
META24	20	8	1,450	6	1,450	340	795	
META40	36	8	1,450	6	1,450	340	795	
HETA12	8	7	1,455	7	1,730	340	795	
HETA16	12	9	1,810	8	1,810	340	795	
SS HETA20 ⁶	16	9	1,810	8	1,810	340	795	
HETA24	20	9	1,810	8	1,810	340	795	
HETA40	36	9	1,810	8	1,810	340	795	
HHETA16	12	11	2,235	9	2,235	340 ⁷	815	
HHETA20 ⁶	16	11	2,235	9	2,235	340 ⁷	815	
HHETA24	20	11	2,235	9	2,235	340 ⁷	815	
HHETA40	36	11	2,235	9	2,235	340 ⁷	815	
HETAL12	7	10 ⁴	1,040	10 ⁴	1,235	415 ⁵	1,100	
HETAL16	11	14 ⁴	1,810	13 ⁴	1,810	415 ⁵	1,100	
HETAL20	15	14 ⁴	1,810	13 ⁴	1,810	415 ⁵	1,100	

- Loads have been increased for wind or seismic loading. Reduce where other loads govern.
- Minimum $f_c = 2,500$ psi. Minimum $f_m = 1,500$ psi.
- For simultaneous loads in more than one direction, the connector must be evaluated as described in Note e, p. 22 under Instructions to the Designer.
- Five nails must be installed into the truss seat of the HETAL.
- Parallel-to-wall load towards face of HETAL is 1,975 lb.
- It is acceptable to use a reduced number of fasteners provided that there is a reduction in uplift load capacity. See example on p. 305. Lateral loads do not apply when fewer than 7 fasteners are used with the HETA and HHETA anchors or less than (6) 16d or (7) 10d x 1½" fasteners are used with the META anchor.
- The HHETA allowable F₁ load can be increased to 435 lb. if the strap is wrapped over the truss and a minimum of 12 nails are installed.
- Minimum spacing for multiple anchor installation is 2 times the embedment depth for full load. See Double Embedded Anchor Installation table below for loads on closer spaced anchors.
- Minimum edge distance for HETA/META is 1½" for concrete and 2" for masonry. **Where edge distance is between 1½" and 2" for masonry, the maximum uplift load is 1,005 lb.**
- Calculate the connector value for a reduced number of nails as follows:

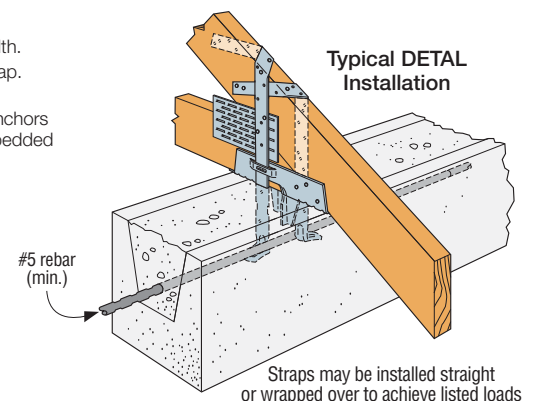
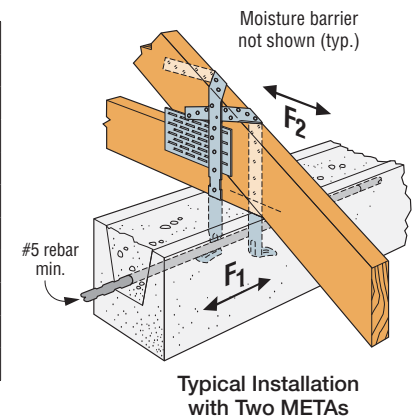
$$\text{Allowable Load} = \frac{\text{No. of Nails Used}}{\text{No. of Nails in Table}} \times \text{Table Load}$$

Nails: 16d = 0.162" dia. x 3½" long,
 10d x 1½" = 0.148" dia. x 1½" long.
 See pp. 26–27 for other nail sizes and information.

Double Embedded Anchor Installation

Model No.	Qty.	Application	SP Uplift Capacity (160)				Lateral Loads (160) ⁶		Code Ref.
			1-Ply		2- or 3-Ply		F ₁	F ₂	
			Fasteners ⁵	Load	Fasteners ⁵	Load			
DETAL20	1	GFCMU	(18) 10d x 1½"	2,480	—	—	2,000 ⁹	1,370	FL
		Concrete	(18) 10d x 1½"	2,480	—	—	2,000	1,505	
META	2	GFCMU	(10) 10d x 1½"	1,985	(14) 16d	1,900	1,285 ⁷	1,160	
		Concrete	(10) 10d x 1½"	1,985	(14) 16d	2,575	1,285 ⁷	1,160	
HETA	2	GFCMU	(10) 10d x 1½"	2,035	(12) 16d	2,500	1,350 ⁷	1,520	
		Concrete	(10) 10d x 1½"	2,035	(12) 16d	2,700	1,350 ⁷	1,520	
HHETA	2	GFCMU	(10) 10d x 1½"	2,035	(12) 16d	2,500	1,350 ⁷	1,520	
		Concrete	(10) 10d x 1½"	2,035	(14) 16d ⁸	3,365	1,350 ⁷	1,520	

- Loads include a 60% load duration increase on the fasteners for wind or seismic loading.
- Minimum $f_c = 2,500$ psi. Minimum $f_m = 1,500$ psi.
- For simultaneous loads in more than one direction, the connector must be evaluated as described in Note e, p. 22 under General Instructions for the Designer.
- Install with spoons facing outward and straps spaced no more than ½" wider than the truss width.
- The DETAL20 requires (6) 10d x 1½" nails in the truss seat and (6) 10d x 1½" nails into each strap. For all other models, install half of the required fasteners in each strap.
- Lateral loads for META, HETA and HHETA anchors apply only to 2- or 3-ply applications with anchors spaced a minimum of 3" apart. For single-ply applications use lateral loads from the Single Embedded Anchor Installation table. DETAL lateral loads apply for single-ply application.
- F₁ lateral loads listed may cause an additional 1/16" deflection beyond the standard 1/8" limit where the straps are installed not wrapped over the heel as shown.
- Two HHETA anchors may be installed in a concrete tie beam on a 2- or 3-ply truss with two fewer nails for an allowable uplift load of 3,050 lb.
- Noted F₁ lateral loads for the DETAL20 may cause an additional 1/32" deflection beyond the standard 1/8" limit.
- Single-ply trusses may use either 10d x 1½" or 16d nails with allowable loads limited to the single-ply column. 2- or 3-ply trusses shall use 16d nails.
- Nails:** 16d = 0.162" dia. x 3½" long, 10d x 1½" = 0.148" dia. x 1½" long.
 See pp. 26–27 for other nail sizes and information.



MSTAM/MSTCM

Strap Ties

MSTAM and MSTCM models are designed for wood to masonry applications.

The MSTC series has countersunk nail slots for a lower nailing profile.

Finish: Galvanized. Some products are available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes
- Attaches to grouted concrete block and wood framing
- Minimum end and edge distance for Titen® screws is 1 1/2"

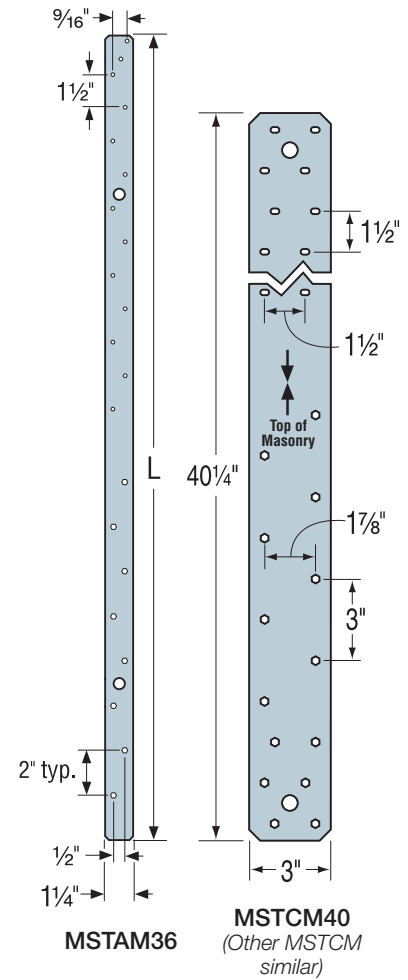
Codes: See p. 14 for Code Reference Key Chart

These products are available with additional corrosion protection. For more information, see p. 18.

Masonry and Concrete Applications

Model No.	Ga.	Dim. (in.)		Fasteners (Total)			Concrete		Masonry		Code Ref.
		W	L	Nails	GFCMU Titen® 2	Concrete Titen® 2	DF/SP	SPF/HF	DF/SP	SPF/HF	
MSTAM24	18	1 1/4	24	(9) 10d	(5) 1/4" x 2 1/4"	(5) 1/4" x 1 3/4"	1,500	1,460	1,250	1,250	FL
MSTAM36	16	1 1/4	36	(13) 10d	(8) 1/4" x 2 1/4"	(8) 1/4" x 1 3/4"	1,870	1,870	1,870	1,870	
MSTCM40	16	3	40 1/4	(26) 16d sinkers	(14) 1/4" x 2 1/4"	(14) 1/4" x 1 3/4"	4,220	4,220	4,220	4,220	
MSTCM60	16	3	59 1/2	(26) 16d sinkers	(14) 1/4" x 2 1/4"	(14) 1/4" x 1 3/4"	4,220	4,220	4,220	4,220	

1. Loads include a 60% load duration increase on the fasteners for wind or earthquake loading.
2. Minimum edge distance 1 1/2" using Titen® screws.
3. Minimum f_m = 1,500 psi and f_c = 2,500 psi.
4. Products shall be installed such that the Titen screws are not exposed to the weather.
5. See p. 275 for Titen screw information.
6. **Fasteners:** 16d sinker = 0.148" dia. x 3 1/4" long, 10d = 0.148" dia. x 3" long.
 TTN2-25134H = 1/4" x 1 3/4" Titen 2; TTN2-25214H = 1/4" x 2 1/4" Titen 2.
 TTN25134H = Titen 1/4" x 1 3/4" and TTN25214H = Titen 1/4" x 2 1/4" may also be used at full table loads. See pp. 26–27 for other nail sizes and information.

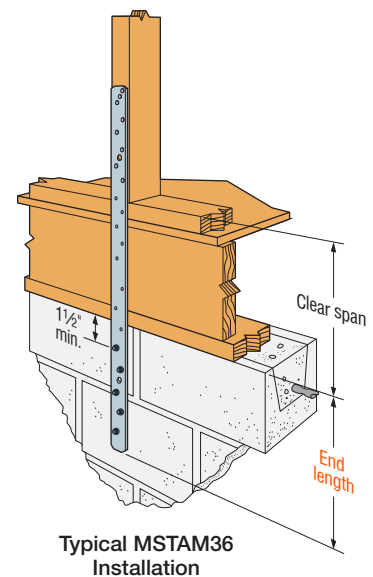


MSTAM36 **MSTCM40**
(Other MSTCM similar)

Floor-to-Floor Clear Span Table

Model No.	End Length (in.)	Clear Span (in.)	Fasteners (Total)			Allowable Tension/Uplift Loads		Code Ref.
			Nails	GFCMU Titen® 2	Concrete Titen® 2	DF/SP	SPF/HF	
MSTAM36	8 3/4	16 or 18	(7) 10d	(4) 1/4" x 2 1/4"	(4) 1/4" x 1 3/4"	1,400	1,210	FL
MSTCM40	17 1/2	16 or 18	(14) 16d sinkers	(10) 1/4" x 2 1/4"	(10) 1/4" x 1 3/4"	2,800	2,420	
MSTCM60	17 1/2	22 1/4	(26) 16d sinkers	(14) 1/4" x 2 1/4"	(14) 1/4" x 1 3/4"	4,220	4,220	
MSTCM60	17 1/2	26 1/4	(20) 16d sinkers	(14) 1/4" x 2 1/4"	(14) 1/4" x 1 3/4"	3,840	3,320	

See notes above.



Typical MSTAM36 Installation

MTSM/HTSM

Twist Straps

The MTSM and HTSM offer high strength truss-to-masonry connections.

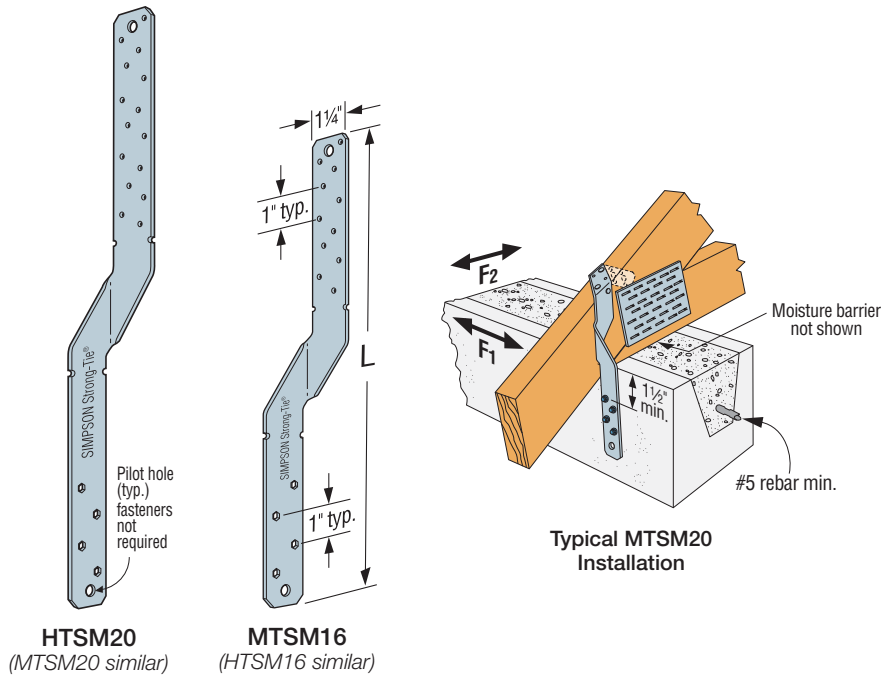
Material: MTSM — 16 gauge;
HTSM — 14 gauge

Finish: Galvanized; see Corrosion Information, pp. 15–18

Installation:

- Use all specified fasteners; see General Notes
- Installs with hex-head Titen® screws
- Attach to either side of grouted concrete block with a minimum one #5 rebar horizontal

Codes: See p. 14 for Code Reference Key Chart



Model No.	L (in.)	Fasteners ²			DF/SP Allowable Uplift Loads ¹	SPF/HF Allowable Uplift Loads ¹	Allowable Lateral Loads (DF/SP/SPF/HF)		Code Ref.
		Truss	GFCMU Titen® 2	Concrete Titen® 2	10d x 1 1/2"	10d x 1 1/2"	F1	F2	
MTSM16	16	(7) 10d x 1 1/2"	(4) 1/4" x 2 1/4"	(4) 1/4" x 1 3/4"	(160)	(160)	(160)	(160)	FL
MTSM20	20	(7) 10d x 1 1/2"	(4) 1/4" x 2 1/4"	(4) 1/4" x 1 3/4"	875	755	120 ⁸	90 ⁸	
HTSM16	16	(8) 10d x 1 1/2"	(4) 1/4" x 2 1/4"	(4) 1/4" x 1 3/4"	1,175	1,010			
HTSM20	20	(10) 10d x 1 1/2"	(4) 1/4" x 2 1/4"	(4) 1/4" x 1 3/4"	1,175	1,010			

1. Loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Twist straps do not have to be wrapped over the truss to achieve the allowable load.
3. Minimum edge distance for Titen® screw is 1 1/2".
4. See p. 275 for Titen screw information.
5. Products shall be installed such that the Titen screws are not exposed to the weather.
6. Minimum $f'_m = 1,500$ psi and $f'_c = 2,500$ psi.
7. Lateral loads apply when on the wall side Titen screws are installed into the first four hexagonal holes from the bend line and on the truss/rafter the first seven nail holes near the bend line are filled. Any other fasteners required can be installed in any open hole.
8. **Fasteners:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. TTN2-25134H = 1/4" x 1 3/4" Titen 2; TTN2-25214H = 1/4" x 2 1/4" Titen 2. TTN25134H = Titen 1/4" x 1 3/4" and TTN25214H = Titen 1/4" x 2 1/4" may also be used at full table loads. See pp. 26–27 for other nail sizes and information.

FGTR/LGT/VGT

Retrofit Girder Tiedowns

The LGT, VGT and FGTR products are moderate to high load capacity girder tie-downs for new or retrofit applications.

LGT connectors provide a low-profile connection to the wall for easy installation of drywall. Simple to install and can be installed on the inside or outside of the wall.

The Variable Girder Tiedown (VGT) is a higher capacity alternative to the LGT and MGT for girder trusses. It attaches with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws to the side of truss and features a predeflected crescent washer that allows it to accommodate top chord pitches up to $\frac{1}{2}$. The VGT is also available with one flange concealed for attachment to trusses with no tail.

The Face Mount Girder Tie-Down (FGTR) is a non-pitch specific girder tiedown that offers the highest uplift capacity for retrofit applications. The FGTRHL/R is designed for corner hip applications.

Material: VGT — 7 gauge; LGT2 — 14 gauge; LGT3/LGT4 — 12 gauge; FGTR — Straps: 7 gauge, Plate: 3 gauge

Finish: VGT, LGT — Galvanized; FGTR — Powder Coated

Installation:

- Use all specified fasteners; see General Notes.
- Connectors attached using Titen® screws shall have hex heads.
- To achieve the loads listed in the table below, the product shall be attached to a grouted and reinforced block wall or a reinforced concrete wall designed by others to transfer the high concentrated uplift loads to the foundation.
- Strong-Drive SDS screws included with LGT3, LGT4, VGT Series and FGTR Series.

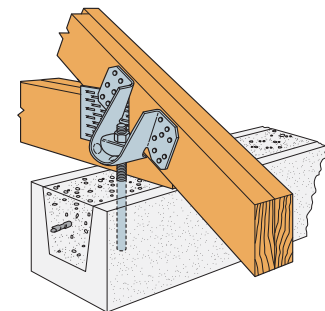
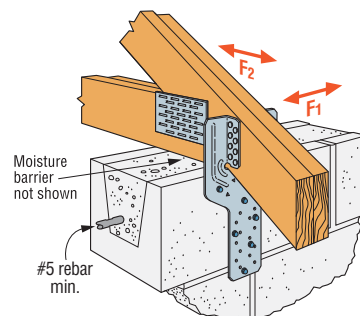
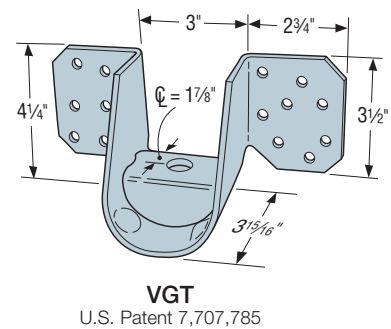
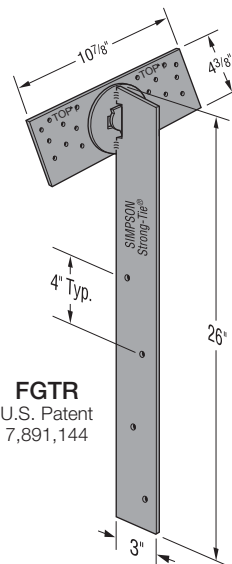
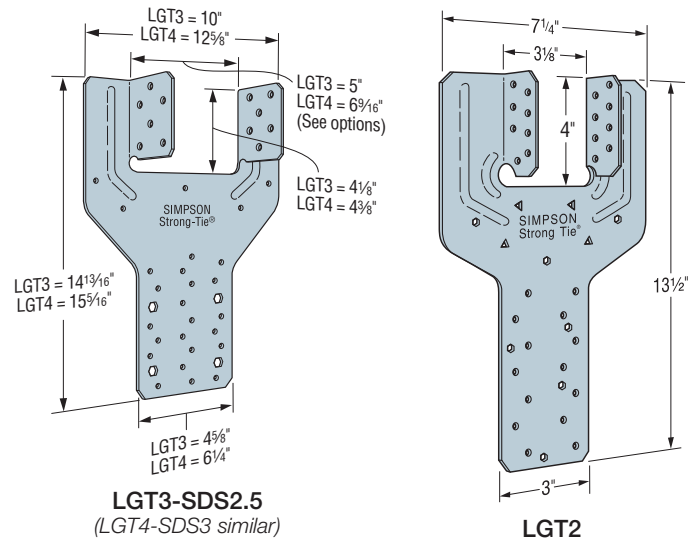
VGT/FGTR:

- Screw holes are configured to allow for double installation on a two-ply (minimum) truss.
- The product can be installed in a single application or in pairs to achieve a higher uplift capacity.
- Can be installed on roof pitches up to 8/12 or on a bottom chord designed to transfer the loads.
- FGTR — Only 2 of the 4 holes provided on each strap are required to be filled to achieve the catalog loads. The first Titen HD® anchor $\frac{1}{2}$ " x 5" (THD) shall be installed a minimum of 4" from the top of the wall. Fasteners shall not be installed in adjacent holes.
- VGT — When installed on trusses with no overhangs, specify VGTR/L.
- VGT — Install washer component (provided) so that top of washer is horizontal as well as parallel with top of wall.

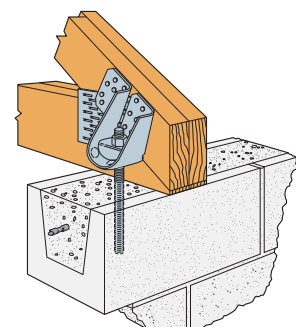
Options:

- LGT3 is available with reduced widths of $W = 4\frac{1}{16}$ " — order as LGT3N-SDS2.5.

Codes: See p. 14 for Code Reference Key Chart



Typical VGT Installation



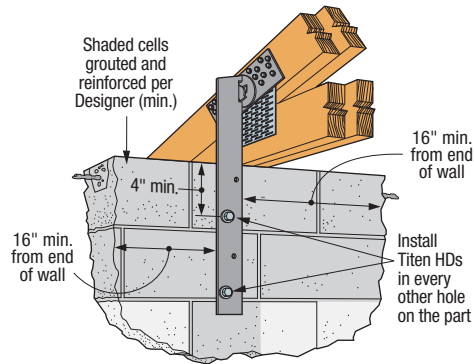
Typical VGTR Installation

FGTR/LGT/VGT

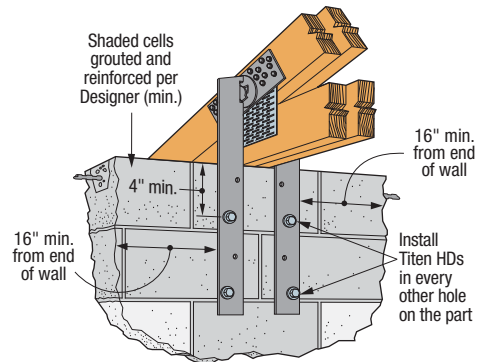
Retrofit Girder Tiedowns (cont.)

Model No.	Qty.	No. of Plies	Fasteners		Allowable Uplift Load (160)		Code Ref.
			Girder	Concrete and GFCMU	DF/SP	SPF/HF	
LGT2	1	2 ply	(16) 16d Sinker	(7) 1/4" x 2 1/4" Titen® 2	2,150	1,850	FL
LGT3-SDS2.5	1	3 ply	(12) 1/4" x 2 1/2" SDS	(4) 3/8" x 5" Titen HD	3,285	2,365	
LGT4-SDS3	1	4 ply	(16) 1/4" x 3" SDS	(4) 3/8" x 5" Titen HD	3,285	2,365	
VGT	1	2 ply min.	(16) 1/4" x 3" SDS	(1) 5/8"	4,940	3,555	
	2	2 ply min.	(32) 1/4" x 3" SDS	(2) 5/8"	7,185	5,175	
		3 ply min.	(32) 1/4" x 3" SDS	(2) 5/8"	8,890	6,400	
VGT/L/R	1	2 ply min.	(16) 1/4" x 3" SDS	(1) 5/8"	2,225	1,600	
	2		(32) 1/4" x 3" SDS	(2) 5/8"	5,545	3,990	
FGTR	1	2 ply min.	(18) 1/4" x 3" SDS	(2) 1/2" x 5" Titen HD	5,000	3,600	
	2		(36) 1/4" x 3" SDS	(4) 1/2" x 5" Titen HD	9,400	6,770	
FGTRHL/R	1	2 ply min.	(18) 1/4" x 3" SDS	(2) 1/2" x 5" Titen HD	3,850	2,770	

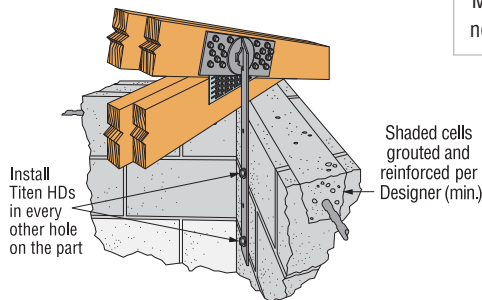
- Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- To achieve the loads listed for the VGT single and double connector options, anchorage into a 8" wide concrete tie-beam or grouted and reinforced CMU tie-beam can be made using Simpson Strong-Tie® SET-XP® anchoring adhesive with a minimum embedment depth of 12", a minimum end distance of 12" and centered in the 8" member. Vertical reinforcement may be required to transfer the loads per Designer.
- Minimum $f_c = 2,500$ psi and minimum $f_m = 1,500$ psi.
- FGTR — Minimum edge distance for Titen HD® anchor is 4".
- FGTR — Titen HD anchors should be spaced in every other hole on the part.
- FGTR — The Titen HD anchors and SDS Heavy-Duty Connector screws are provided with the part.
- LGT2 — F_1 load = 700 lb., F_2 load = 170 lb.
- See p. 275 for Titen® screw information.
- Table allowable loads were determined using tested lowest ultimate/3 or fastener calculation values.
- Products shall be installed such that the Titen screws and Titen HD anchors are not exposed to the weather.
- For concrete wall applications use 1/4" x 1 1/4" Titen screws.
- Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2007 Sections 7.5.3.4 and 8.9.2 are met (pre-drilling required through the plate using a maximum of 5/32" bit).
- Nails:** 16d sinker = 0.148" dia. x 3 1/4" long.
See pp. 26–27 for other nail sizes and information.



Typical FGTR Single Installation



Typical FGTR Double Installation



FGTRHL Installation
(FGTRHR similar)

MGT/HGT

Girder Tiedowns

The MGT and HGT series are girder tie downs for moderate to high load applications that are typically installed prior to roof sheathing. The MGT wraps over the heel and is anchored on one side of the truss. The HGT straddles the heel and anchors on both sides of the truss. The HGT is field adjustable, making it suitable for trusses with top chord slopes up to 8/12. The HGT is available in sizes for 2-, 3- and 4-ply widths.

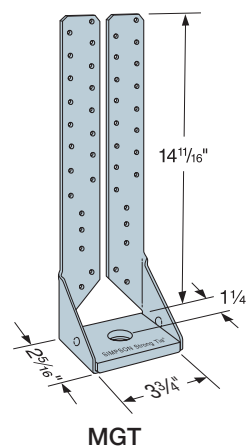
Material: MGT — 12 gauge; HGT — 7 gauge

Finish: MGT — Galvanized; HGT — Simpson Strong-Tie® gray paint

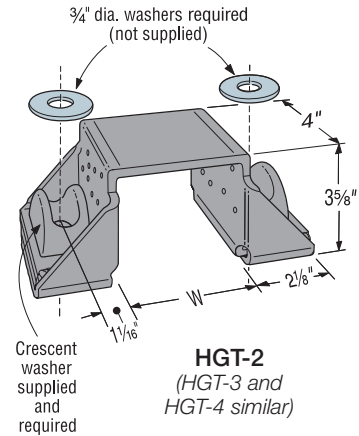
Installation:

- Use all specified fasteners; see General Notes
- When the HGT-3 is used with a 2-ply girder or beam, shimming is required and must be fastened to act as one unit
- Attach to grouted concrete block with a minimum one #5 rebar horizontal in the top lintel block
- **MGT — Install a minimum of (6) 10d nails into the face of roof member that is on same side as MGT base**
- See pp. 328–329 for wood applications

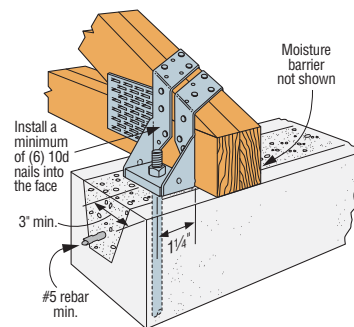
Codes: See p. 14 for Code Reference Key Chart



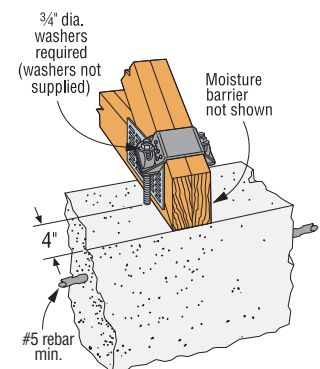
MGT



HGT-2
(HGT-3 and HGT-4 similar)



Typical MGT Installation



Typical HGT-2 Installation into Concrete

Model No.	W (in.)	O.C. Dimension Between Anchors (in.)	Fasteners		DF/SP Allowable Uplift Loads (160)	SPF/HF Allowable Uplift Loads (160)	Code Ref.
			Concrete and GFCMU	Girder			
MGT	3 3/4	—	(1) 5/8	(22) 10d	3,965	3,330	FL
HGT-2	3 5/8	5 3/4	(2) 3/4	(16) 10d	10,980	8,910	I20, FL, I17, L10, L16
HGT-3	4 15/16	7 3/8	(2) 3/4	(16) 10d	10,530	9,490	
HGT-4	6 1/8	9	(2) 3/4	(16) 10d	9,250	9,250	

1. Attached members must be designed to resist applied loads.
2. Minimum $f_m = 1,500$ psi and $f_c = 2,500$ psi.
3. To achieve the loads listed for the MGT and HGT, anchorage into a 8" wide concrete tie-beam or grouted and reinforced CMU tie-beam can be made using Simpson Strong-Tie® SET-XP® anchoring adhesive with a minimum embedment depth of 12". Vertical reinforcement may be required to transfer the loads per Designer.
4. Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
5. The MGT can be installed with straps vertical for full table load provided all specified nails are installed to either a solid header or minimum double 2x6 web.
6. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

CCQM/CCTQM/ECCLQM/CCCQM/ECCLQMD

Column Caps for GFCMU and Concrete Piers

The CCQM/CCTQM/CCCQM/ECCLQM embedded column caps are designed for use in raised pier foundations and applications where heavy timbers rest on concrete or concrete block columns. The heavy-gauge beam seats and unique SSTB-style anchor bolts provide the high uplift and lateral resistance needed to help resist high wind events. The ECCLQMD is a variation that incorporates an additional seat to support a third member at the corner connection. The CCCQM is a variation that incorporates a stirrup on each side for intermediate support beams perpendicular to the main channel.

Framing is fastened with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws (included) that install with no pre-drilling and feature a corrosion-resistant double barrier coating.

CCQM — Intended for use along a floor support beam and non-corner locations

CCTQM — Also for use along a floor support beam and non-corner locations with a side stirrup that accommodates intermediate support beams coming at 90 degrees

CCCQM — For use along a floor support beam with a stirrup on each side of the main channel that accommodates intermediate support beams coming at 90 degrees

ECCLQM-KT — Intended for use at the corners with MSTQM straps to make the connection from the ECCLQM to the wall framing above

ECCL/RQMD-KT — Ideal for applications where a member is needed off the corner of the structure, such as a deck joist/beam

Material: Column caps — 7 gauge;
strap (MSTQM) — 12 gauge

Finish: Column caps — Hot-dip galvanized or Simpson Strong-Tie® gray paint; strap (MSTQM) — galvanized (ZMAX®)

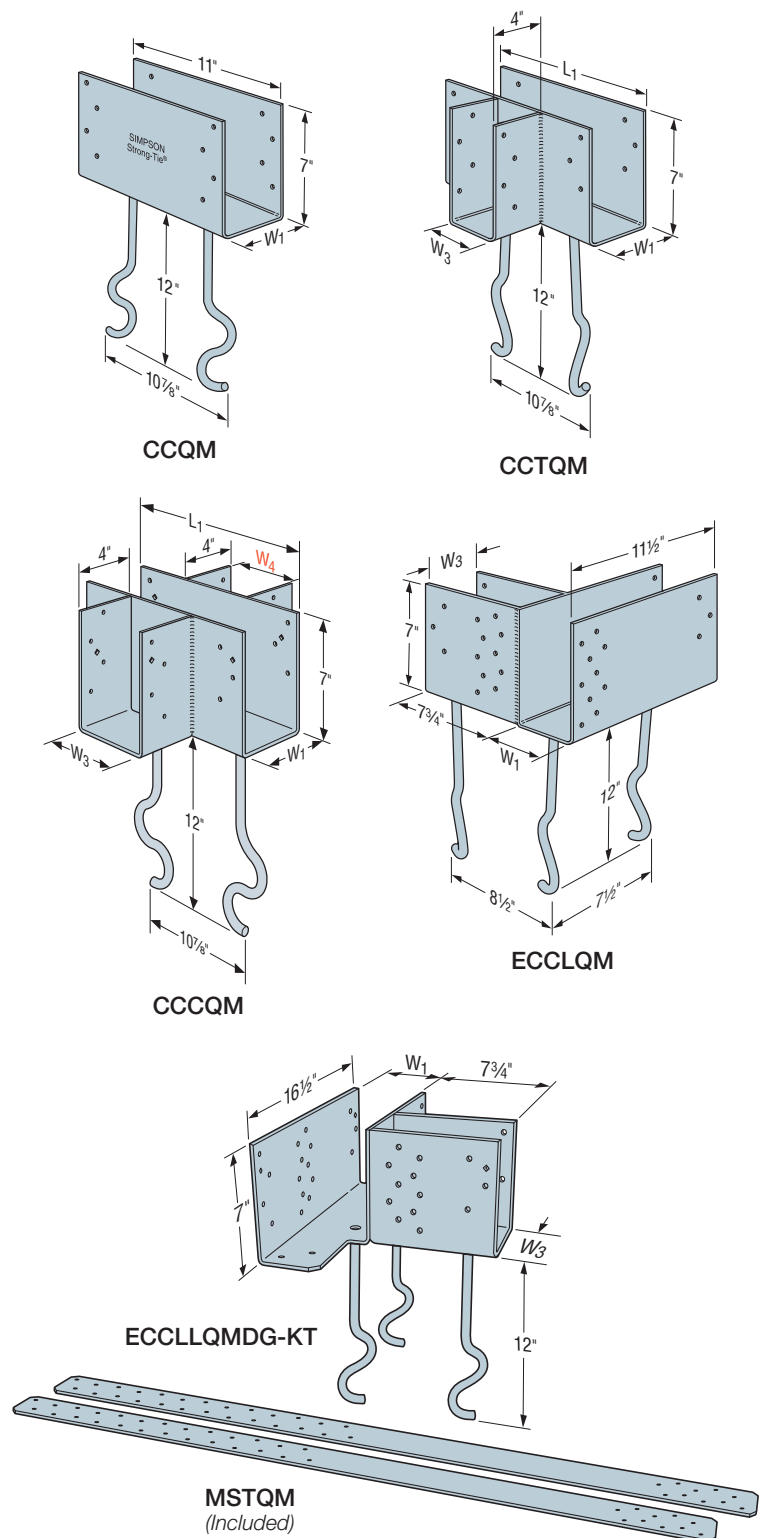
Installation:

- Use all specified fasteners; see General Notes
- Reference [T-C-CCQM-WS](#) special order worksheet at strongtie.com for ordering assistance

Options:

- For variable widths on side stirrups specify W_3 or W_4 ($3\frac{1}{4}"$ to $7\frac{1}{8}"$) and add an "X" to the end of the core model name. Example: CCTQM5.50X-SDSG, $W_3 = 3\frac{5}{8}"$.

Codes: See p. 14 for Code Reference Key Chart

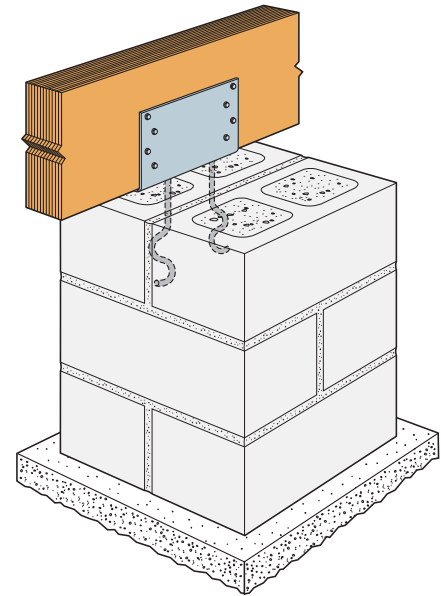


CCQM/CCTQM/ECCLQM/CCCQM/ECCLQMD

Column Caps for GFCMU and Concrete Piers (cont.)

Dimensions

Model No.	Main Channel Width (W1) (in.)	Side Stirrup Width (W3 and W4) (in.)	Main Channel Length (L1) (in.)	Side Stirrup Length (L2) (in.)
CCQM3.62-SDSHDG	3 $\frac{5}{8}$	—	11	—
CCQM4.62-SDSHDG	4 $\frac{5}{8}$	—	11	—
CCQM5.50-SDSHDG	5 $\frac{1}{2}$	—	11	—
CCTQM3.62-SDSG	3 $\frac{5}{8}$	3 $\frac{5}{8}$	11 $\frac{1}{2}$	4
CCTQM4.62-SDSG	4 $\frac{5}{8}$	4 $\frac{5}{8}$	13 $\frac{1}{2}$	4
CCTQM5.50-SDSG	5 $\frac{1}{2}$	5 $\frac{1}{2}$	13 $\frac{1}{2}$	4
CCCQM3.62-SDSG	3 $\frac{5}{8}$	3 $\frac{5}{8}$	11 $\frac{1}{2}$	4
CCCQM4.62-SDSG	4 $\frac{5}{8}$	4 $\frac{5}{8}$	13 $\frac{1}{2}$	4
CCCQM5.50-SDSG	5 $\frac{1}{2}$	5 $\frac{1}{2}$	13 $\frac{1}{2}$	4
ECCLQM3.62G-KT	3 $\frac{5}{8}$	3 $\frac{5}{8}$	11 $\frac{1}{2}$	7 $\frac{3}{4}$
ECCLQM4.62G-KT	4 $\frac{5}{8}$	4 $\frac{5}{8}$	11 $\frac{1}{2}$	7 $\frac{3}{4}$
ECCLQM5.50G-KT	5 $\frac{1}{2}$	5 $\frac{1}{2}$	11 $\frac{1}{2}$	7 $\frac{3}{4}$
ECCLQMD3.62G-KT	3 $\frac{5}{8}$	3 $\frac{5}{8}$	16 $\frac{1}{2}$	7 $\frac{3}{4}$
ECCLRQMD3.62G-KT	3 $\frac{5}{8}$	3 $\frac{5}{8}$	16 $\frac{1}{2}$	7 $\frac{3}{4}$
ECCLQMD4.62G-KT	4 $\frac{5}{8}$	4 $\frac{5}{8}$	16 $\frac{1}{2}$	7 $\frac{3}{4}$
ECCLRQMD4.62G-KT	4 $\frac{5}{8}$	4 $\frac{5}{8}$	16 $\frac{1}{2}$	7 $\frac{3}{4}$
ECCLQMD5.50G-KT	5 $\frac{1}{2}$	5 $\frac{1}{2}$	16 $\frac{1}{2}$	7 $\frac{3}{4}$
ECCLRQMD5.50G-KT	5 $\frac{1}{2}$	5 $\frac{1}{2}$	16 $\frac{1}{2}$	7 $\frac{3}{4}$



Typical CCQM Installation

1. The MSTQM strap is a component of the ECCLQM kits. It is 12 ga. (0.101"); 3" wide and 48" long.

These products are available with additional corrosion protection. For more information, see p. 18.

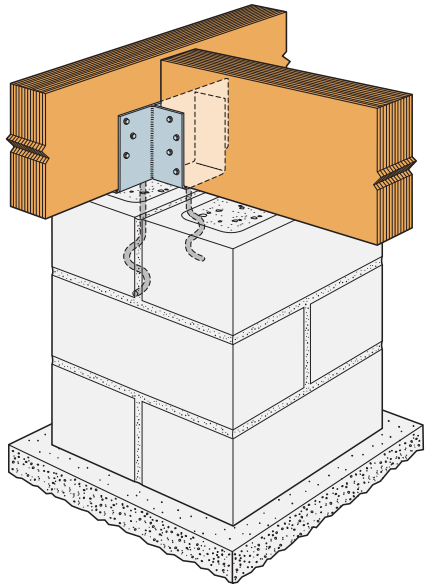
Model No.	No. of 1/4" x 2 1/2" SDS Screws			16" Square Grout-Filled CMU Pier ^{3,6}				16" Square CMU Shell Filled with 3,000 psi Concrete ^{3,7}				Deck Joist Connection		Code Ref.
				Uplift (160)			Lateral (160)	Uplift (160)			Lateral (160)	Download	Uplift	
	Main Beam	Side Beam	Deck Beam	Main Beam	Side Beam	Total		Main Beam	Side Beam	Total				
CCQM-SDSHDG	12	—	—	6,750	—	6,750	2,460	6,855	—	6,855	2,770	—	—	FL
CCTQM-SDSG	12	8	—	6,750	5,375	6,750	2,460	6,855	5,375	6,855	2,770	—	—	
CCCQM-SDSG	12	8	—	6,750	5,375	6,750	2,460	6,855	5,375	6,855	2,770	—	—	
ECCLQMG-KT ⁸	16	16	—	6,240	6,240	7,340	2,220	6,240	6,240	8,260	2,680	—	—	
ECCLQMDG-KT ⁸	16	16	6	6,240	6,240	7,340	2,220	6,240	6,240	8,260	2,680	5,475	2,010	

- The allowable loads have been increased for wind or earthquake loading with no further increase allowed.
- Total uplift load and lateral load is based on tested anchor failure in the pier.
- Allowable loads are based on either a 16" square grout-filled CMU pier with f'_m of 1,500 psi or a 16" square CMU shell filled with 3,000 psi concrete. A minimum of (4) #7 vertical rebars are required. The Designer shall design and detail the GFCMU/concrete pier to resist all forces including uplift, shear and moment.
- Pier height per Designer.
- Side beam and main beam uplift loads assume DF members and are not additive.

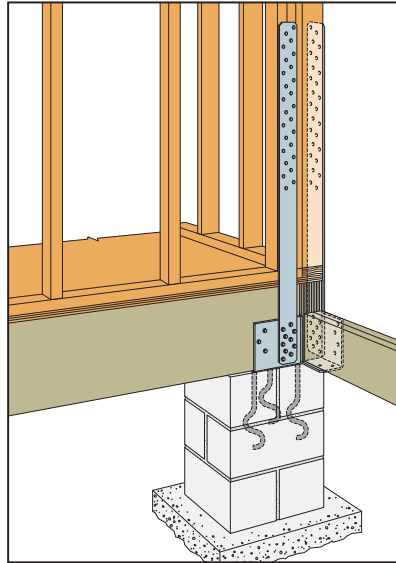
- The allowable loads listed for grout-filled CMU apply to solid concrete piers of 2,500 psi concrete a minimum of 16" square.
- The allowable loads listed for CMU shell-filled with 3,000 psi concrete apply to solid concrete piers of 3,000 psi concrete a minimum of 12" square.
- The ECCLQM-KT is a kit packaged with (2) MSTQM straps and (32) Strong-Drive® 1/4" x 2 1/2" SDS Heavy-Duty Connector screws. One strap may be installed on each face of the ECCLQM (as shown), using the Strong-Drive SDS Heavy-Duty Connector screws into the beams and (26) 16d x 2 1/2" nails (not provided) into the wall framing. The MSTQM strap's allowable tension load is 6,240 lb. **If straps are not installed, table uplift applies to beam only.**
- Any side stirrup not fully supported by grout- or concrete-filled CMU has an allowable down load of 7,000 lb.

CCQM/CCTQM/ECCLQM/CCCQM/ECCLQMD

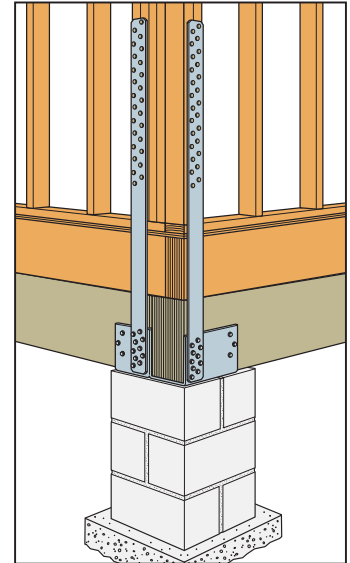
Column Caps for GFCMU and Concrete Piers (cont.)



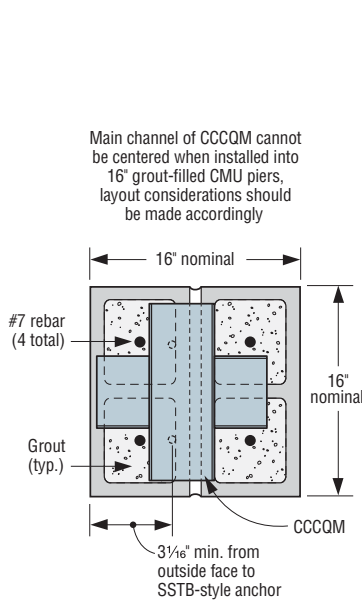
Typical CCTQM Installation



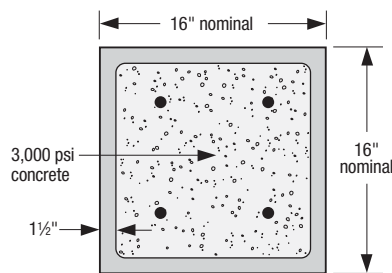
Typical ECCLQMD-KT Installation



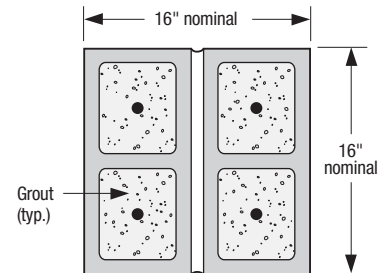
Typical ECCLQM Installation



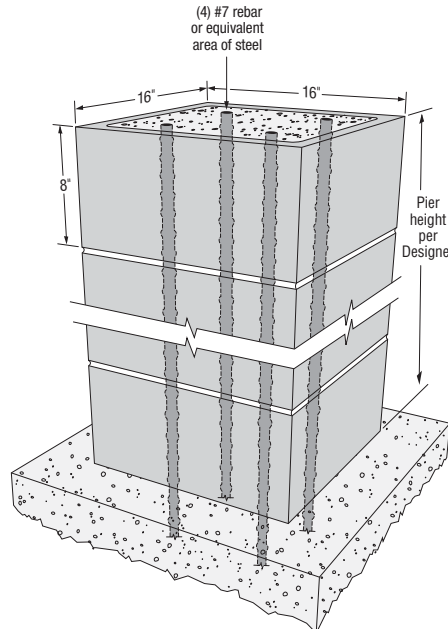
CCCQM Installed on 16" Square Grout-Filled CMU (Plan view)



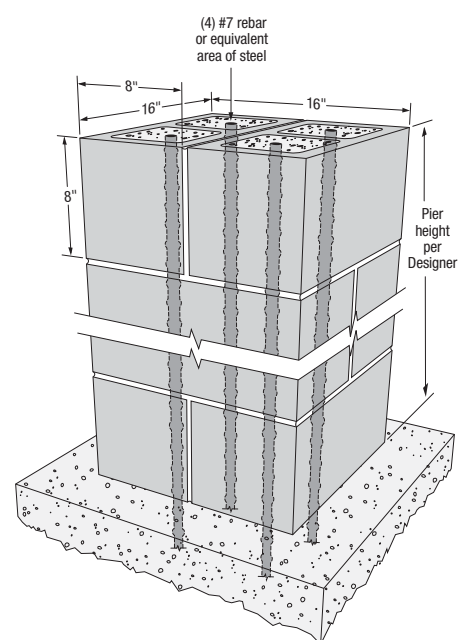
16" Square CMU Pilaster Filled with 3,000 psi Concrete (Plan view)



16" Square Grout-Filled CMU (Plan view)

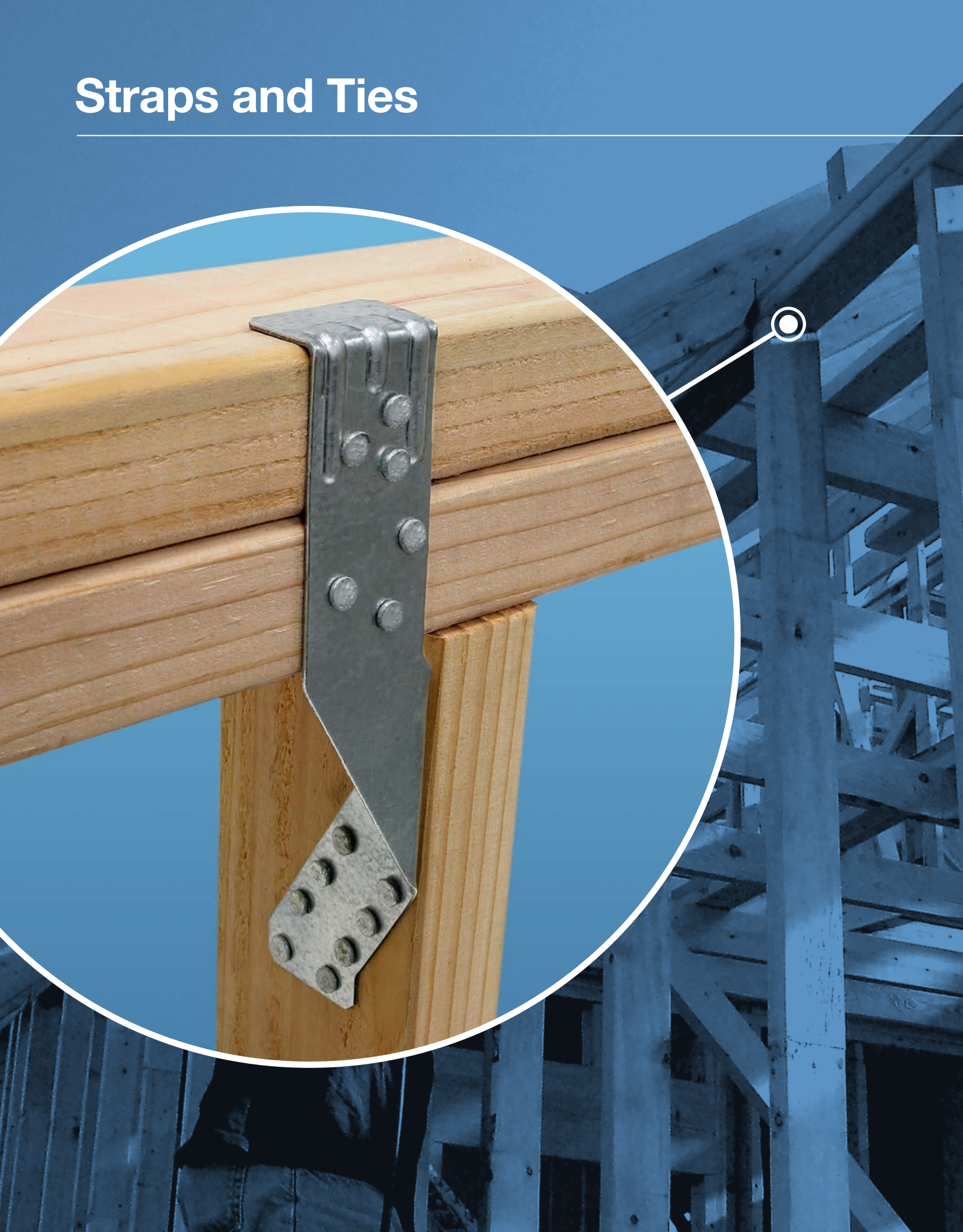


16" Square CMU Pilaster Filled with 3,000 psi Concrete



16" Square Grout-Filled CMU

Straps and Ties



HRS/ST/HST/HTP/LSTA/LSTI/MST/MSTA/MSTC/MSTI

Strap Ties

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

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

LSTA and **MSTA** — Designed for use on the edge of 2x members, with a nailing pattern that reduces the potential for splitting.

LSTI — Light straps that are suitable where pneumatic-nailing is necessary through diaphragm decking and wood chord open web trusses.

MST — High-capacity strap that can be installed with either nails or bolts. Suitable for double 2x member connections or greater.

MSTC — 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.

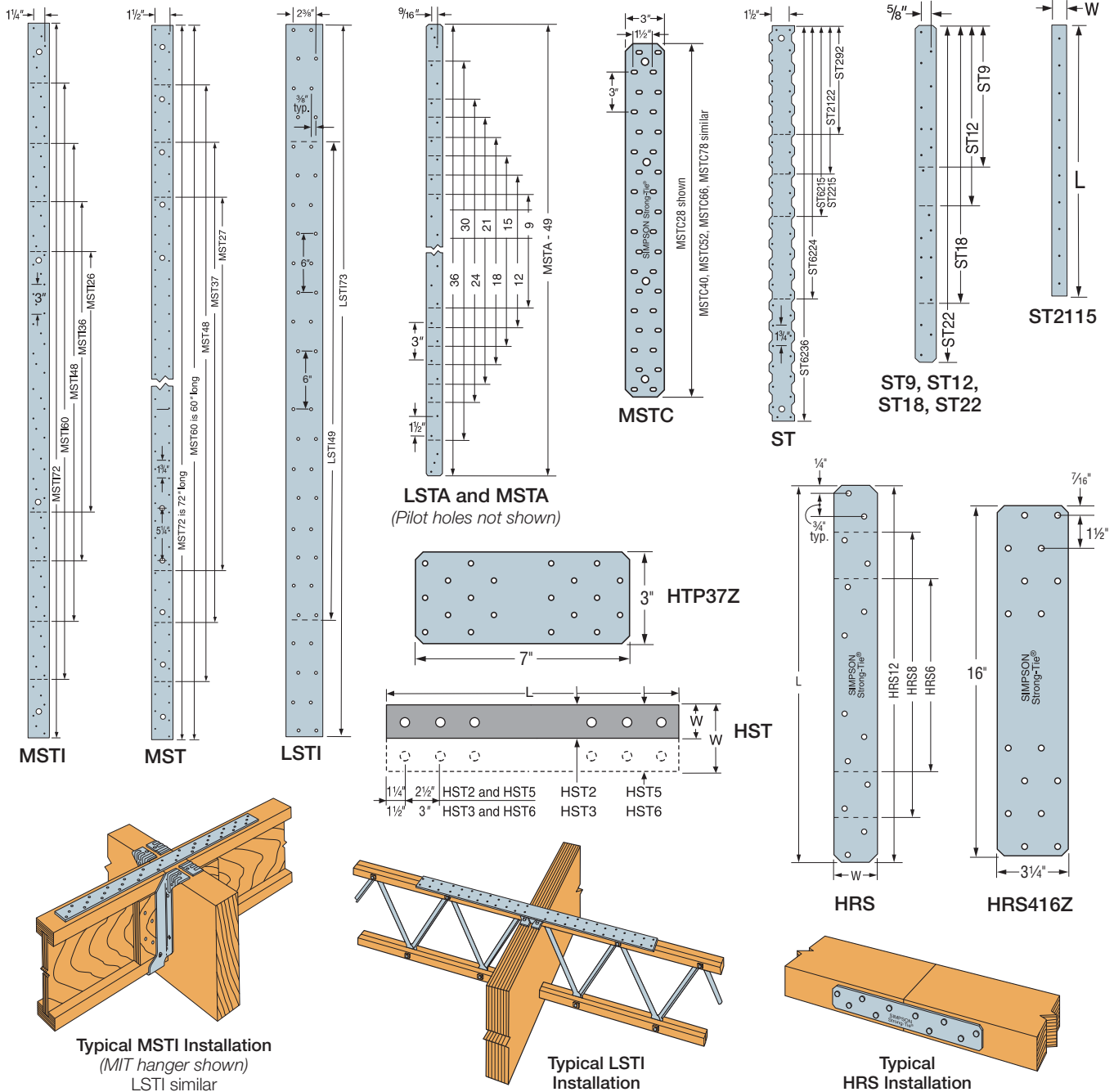
Finish: HST3 and HST6 — Simpson Strong-Tie® gray paint; all others—galvanized. Some products are available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation: Use all specified fasteners; see General Notes

Options: Special sizes can be made to order; contact Simpson Strong-Tie

Codes: See p. 14 for Code Reference Key Chart

MSTC and RPS meet code requirements for reinforcing cut members (16 gauge) at top plate and RPS at sill plate. International Residential Code® — 2012/2015 R602.6.1 International Building Code® — 2012/2015 2308.9.8 (For RPS, refer to p. 358.)



HRS/ST/HST/HTP/LSTA/LSTI/MST/MSTA/MSTC/MSTI

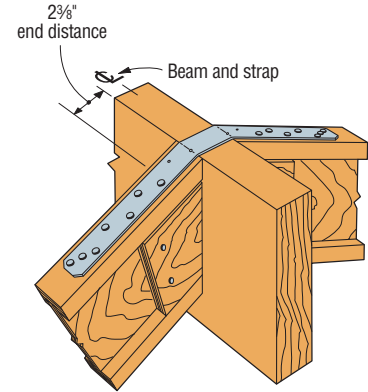
Strap Ties (cont.)

Codes: See p. 14 for Code Reference Key Chart

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Ga.	Dimensions (in.)		Fasteners (Total)	Allowable Tension Loads (DF/SP)	Allowable Tension Loads (SPF/HF)	Code Ref.	
		W	L		(160)	(160)		
LSTA9	20	1¼	9	(8) 10d	740	635	I4, L3, L5, FL	
LSTA12		1¼	12	(10) 10d	925	795		
LSTA15		1¼	15	(12) 10d	1,110	950		
LSTA18		1¼	18	(14) 10d	1,235	1,110		
LSTA21		1¼	21	(16) 10d	1,235	1,235		
LSTA24		1¼	24	(18) 10d	1,235	1,235		
ST292		2½	9½	(12) 16d	1,265	1,120		
ST2122		2½	12½	(16) 16d	1,530	1,505		
ST2115		¾	16½	(10) 16d	660	660		
ST2215		2½	16½	(20) 16d	1,875	1,875		
LSTA30	18	1¼	30	(22) 10d	1,640	1,640	I4, L3, L5, FL	
LSTA36		1¼	36	(24) 10d	1,640	1,640		
LSTI49		3¾	49	(32) 10d x 1½"	2,975	2,555		
LSTI73		3¾	73	(48) 10d x 1½"	4,205	3,830		
MSTA9		1¼	9	(8) 10d	750	645		
SS MSTA12		1¼	12	(10) 10d	940	810		
MSTA15		1¼	15	(12) 10d	1,130	970		
SS MSTA18		1¼	18	(14) 10d	1,315	1,130		
MSTA21		1¼	21	(16) 10d	1,505	1,290		
SS MSTA24		1¼	24	(18) 10d	1,640	1,455		
MSTA30	16	1¼	30	(22) 10d	2,050	1,820	I4, L3, L5, FL	
SS MSTA36		1¼	36	(26) 10d	2,050	2,050		
MSTA49		1¼	49	(26) 10d	2,020	2,020		
ST6215		2½	16½	(20) 16d	2,095	1,900		
ST6224		2½	23½	(28) 16d	2,540	2,540		
ST9		1¼	9	(8) 16d	885	760		
ST12		1¼	11½	(10) 16d	1,105	950		
ST18		1¼	17¾	(14) 16d	1,420	1,330		
ST22		1¼	21½	(18) 16d	1,420	1,420		
MSTC28		3	28¼	(36) 16d sinkers	3,455	2,980		
MSTC40	3	40¼	(52) 16d sinkers	4,745	4,305			
MSTC52	3	52¼	(62) 16d sinkers	4,745	4,745			
HTP37Z	3	7	(20) 10d x 1½"	1,850	1,600	L5		
MSTC66	14	3	65¾	(76) 16d sinkers	5,860	5,860	I4, L3, L5, FL	
MSTC78		3	77¾	(76) 16d sinkers	5,860	5,860		
ST6236		2½	33½	(40) 16d	3,845	3,845		
HRS6	12	1⅝	6	(6) 10d	605	525	I4, L3, L5, FL	
HRS8		1⅝	8	(10) 10d	1,010	880		
HRS12		1⅝	12	(14) 10d	1,415	1,230		
MSTI26		2½	26	(26) 10d x 1½"	2,745	2,325		
MSTI36		2½	36	(36) 10d x 1½"	3,800	3,220		
MSTI48		2½	48	(48) 10d x 1½"	5,065	4,290		
MSTI60		2½	60	(60) 10d x 1½"	5,080	5,080		
MSTI72		2½	72	(72) 10d x 1½"	5,080	5,080		
HRS416Z		3¼	16	(16) ¼" x 1½" SDS	2,835	2,305		170



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

1. Allowable loads have been increased for wind or seismic loading with no further increase allowed; reduce where other loads govern.
 2. See p. 27 for allowable nail substitutions and load reductions. When nailing strap over wood structural panels, use 2½" long fastener, minimum.
 3. Use half of the nails in each member being connected to achieve the listed loads.
 4. Tension loads apply for uplift when installed vertically.
- Nails:** 16d = 0.162" dia. x 3½" long,
16d sinker = 0.148" dia. x 3¼" long,
10d = 0.148" dia. x 3" long;
10d x 1½" = 0.148" dia. x 1½" long.
See pp. 26–27 for other nail sizes and information.

PS/PSQ

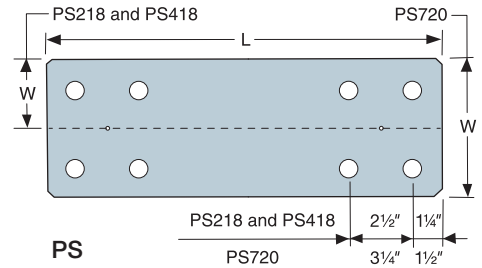
Strap Ties

PS/PSQ pile straps are ideal for attaching girders to piles, bringing strength to the connection when the wood members are notched. The new PSQ installs faster and easier with the patented Strong-Drive® SDWH Timber-Hex HDG screws and offers higher loads.

Finish: HDG

Material: See table

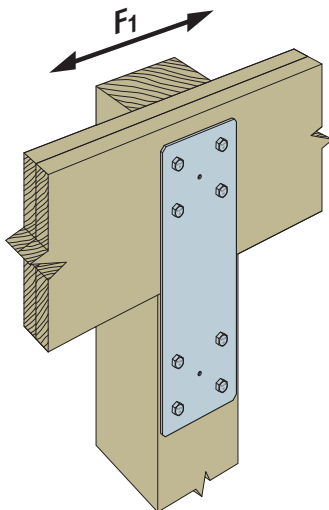
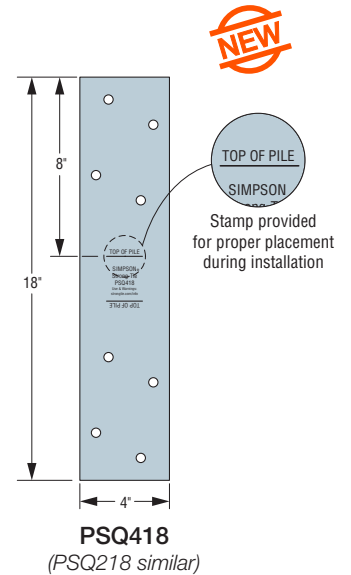
Codes: See p. 14 for Code Reference Key Chart



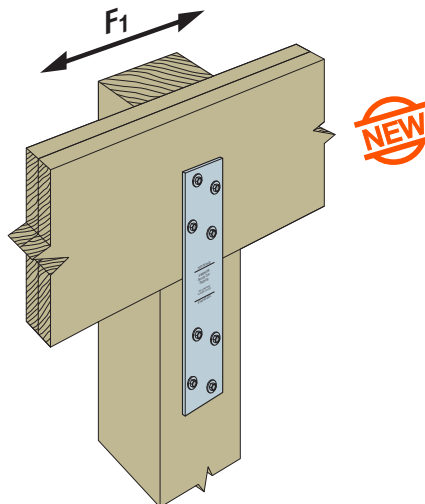
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Ga.	Dimensions (in.)		Fasteners (Total)	Allowable Tension Loads (DF/SP)	Allowable Tension Loads (SPF/HF)	Code Ref.
		W	L		(160)	(160)	
PS218	7	2	18	(4) 3/4" MB	1,740	1,385	180
PS418		4	18	(4) 3/4" MB	1,740	1,385	
PS720		6 3/4	20	(8) 1/2" MB	3,075	2,645	
PSQ218		2	18	(8) SDWH27400G	2,815	2,420	170
PSQ418		4	18	(8) SDWH27400G	3,045	2,620	

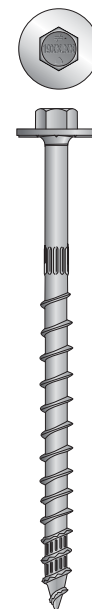
- Allowable loads have been increased for wind or seismic loading with no further increase allowed; reduce where other loads govern.
- Use half of the fasteners in each member being connected to achieve the listed loads.
- Tension loads apply for uplift when installed vertically.
- Posts and beams may consist of multiple members provided they are connected independently of the strap fasteners.
- PSQ loads are per part (not pair). F₁ loads on DF/SP for PSQ218 and PSQ418 are 750 lb. and 780 lb., respectively. SPF/HF F₁ loads are 645 lb. and 670 lb.
- PS loads are per part (not pair). Loads are based on perpendicular-to-grain loading in the beam and parallel-to-grain loading in the post and assume a minimum member thickness of 3 1/2". PS straps must be positioned such that bolt end and edge distances meet NDS minimum requirements.
- Screws:** SDWH27400G = 0.27" dia. x 4" long Strong-Drive® SDWH Timber-Hex HDG screw.



Typical PS720 Installation



Typical PSQ Installation



SDWH27400G

HST/MST/MSTC/MSTA

Strap Ties

Codes: See p. 14 for Code Reference Key Chart

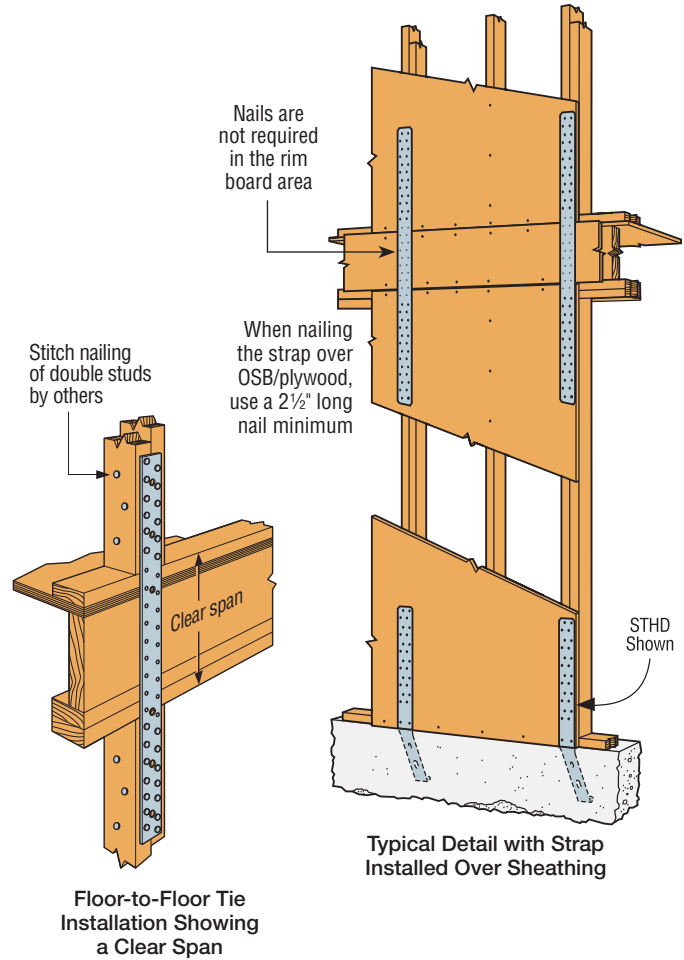
These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Floor-to-Floor Clear Span Table

Model No.	Clear Span (in.)	Fasteners (Total)	Allowable Tension Loads (DF/SP)	Allowable Tension Loads (SPF/HF)
			(160)	(160)
MSTA49	18	(26) 10d	2,020	2,020
	16	(26) 10d	2,020	2,020
MSTC28	18	(12) 16d sinkers	1,155	995
	16	(16) 16d sinkers	1,540	1,325
MSTC40	24	(20) 16d sinkers	2,310	1,985
	18	(28) 16d sinkers	2,695	2,320
	16	(32) 16d sinkers	3,080	2,650
MSTC52	24	(36) 16d sinkers	3,465	2,980
	18	(44) 16d sinkers	4,235	3,645
	16	(48) 16d sinkers	4,620	3,975
MSTC66	30	(48) 16d sinkers	4,780	4,120
	24	(54) 16d sinkers	5,380	4,640
	18	(64) 16d sinkers	5,860	5,495
	16	(68) 16d sinkers	5,860	5,840
MSTC78	30	(64) 16d sinkers	5,860	5,495
	24	(72) 16d sinkers	5,860	5,860
	18	(76) 16d sinkers	5,860	5,860
MST37	24	(14) 16d	1,725	1,495
	18	(20) 16d	2,465	2,135
	16	(22) 16d	2,710	2,345
MST48	24	(26) 16d	3,215	2,780
	18	(32) 16d	3,960	3,425
	16	(34) 16d	4,205	3,640
MST60	30	(34) 16d	4,605	3,995
	24	(40) 16d	5,240	4,700
	18	(46) 16d	6,235	5,405
MST72	30	(48) 16d	6,505	5,640
	24	(54) 16d	6,730	6,345
	18	(62) 16d	6,730	6,475

See footnotes below.



Model No.	Ga.	Dimensions (in.)		Fasteners (Total)			Allowable Tension Loads (DF/SP)		Allowable Tension Loads (SPF/HF)		Code Ref.
		W	L	Nails	Bolts		Nails (160)	Bolts (160)	Nails (160)	Bolts (160)	
					Qty.	Dia.					
MST27	12	2 1/16	27	(30) 16d	4	1/2	3,700	2,165	3,200	2,000	I4, L3, FL
MST37		2 1/16	37 1/2	(42) 16d	6	1/2	5,080	3,025	4,480	2,805	
MST48		2 1/16	48	(50) 16d	8	1/2	5,310	3,675	5,190	3,410	
MST60	10	2 1/16	60	(68) 16d	10	1/2	6,730	4,485	6,475	4,175	
MST72		2 1/16	72	(68) 16d	10	1/2	6,730	4,485	6,475	4,175	
HST2	7	2 1/2	21 1/4	—	6	5/8	—	5,220	—	4,835	
HST5		5	21 1/4	—	12	5/8	—	10,650	—	9,870	
HST3		3	3	25 1/2	—	6	3/4	—	7,680	—	
HST6	6		25 1/2	—	12	3/4	—	15,470	—	13,320	

- Allowable loads have been increased for wind or seismic loading with no further increase allowed; reduce where other loads govern.
- Install bolts or nails as specified by Designer. Bolt and nail values may not be combined.
- Allowable bolt loads are based on parallel-to-grain loading and these minimum member thicknesses: MST – 2 1/2"; HST2 and HST5 – 4"; HST3 and HST6 – 4 1/2".
- Splitting may be a problem with installations on lumber smaller than 3 1/2"; either fill every nail hole with 10d x 1 1/2" nails or fill every other hole with 16d common nails. Reduce the allowable load based upon the size and quantity of fasteners used.
- Use half of the required nails in each member being connected to achieve the listed loads.
- When installing strap over wood structural panel sheathing, use 2 1/2" long nail minimum.
- Tension loads apply for uplift as well when installed vertically.
- Nails:** 16d = 0.162" dia. x 3 1/2" long, 16d sinker = 0.148" dia. x 3 3/4" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

CS/CMST

Coiled Straps

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

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

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

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

Codes: See p. 14 for Code Reference Key Chart

- These products are available with additional corrosion protection. For more information, see p. 18.
- ▲ These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Total L	Ga.	DF/SP		SPF/HF		Allowable Tension Loads (160)	Code Ref.
			Fasteners	End Length	Fasteners	End Length		
CMST12	40'	12	(74) 16d	33"	(84) 16d	38"	9,215	I4, L3, FL
			(86) 10d	39"	(98) 10d	44"	9,215	
CMST14	52½'	14	(56) 16d	26"	(66) 16d	30"	6,490	
			(66) 10d	30"	(76) 10d	34"	6,490	
CMSTC16	54'	16	(50) 16d sinker	20"	(58) 16d sinker	25"	4,585	
CS14	100'	14	(26) 10d	15"	(30) 10d	16"	2,490	
			(30) 8d	16"	(36) 8d	19"	2,490	
CS16	150'	16	(20) 10d	11"	(22) 10d	13"	1,705	
			(22) 8d	13"	(26) 8d	14"	1,705	
CS18	200'	18	(16) 10d	9"	(18) 10d	11"	1,370	
			(18) 8d	11"	(22) 8d	12"	1,370	
CS20	250'	20	(12) 10d	6"	(14) 10d	9"	1,030	
			(14) 8d	9"	(16) 8d	9"	1,030	
CS22	300'	22	(10) 10d	7"	(12) 10d	7"	845	
			(12) 8d	7"	(14) 8d	8"	845	

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

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

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

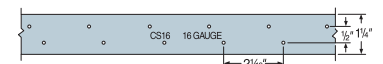
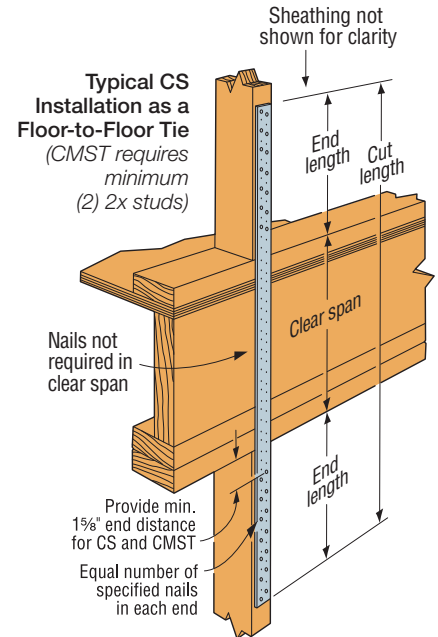
$$\text{Allowable Load} = \frac{40 \text{ Nails (Used)}}{50 \text{ Nails (Table)}} \times 4,585 \text{ lb.} = 3,668 \text{ lb.}$$

4. Tension loads apply for uplift when installed vertically.
5. **Nails:** 16d = 0.162" dia. x 3½" long, 16d sinker = 0.148" dia. x 3¼" long, 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

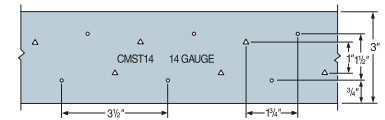
Not Sure How Much Coil Strap You Need?

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

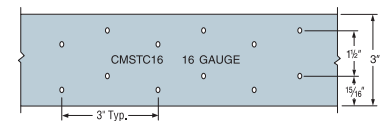
For more information or to access, go to strongtie.com/software.



CS16 Hole Pattern
(All other CS straps similar)

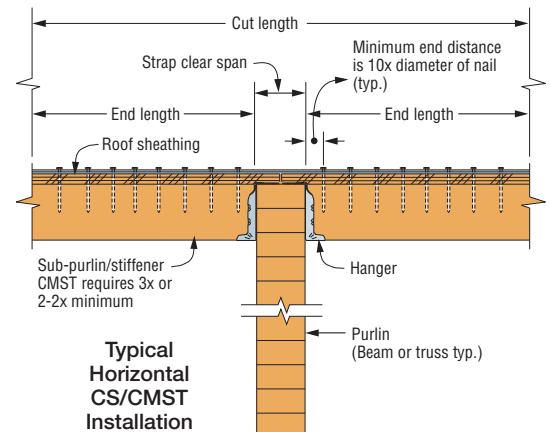


CMST14 Hole Pattern
(CMST12 similar)



CMSTC16 Hole Pattern

Gauge stamped on part for easy identification



Typical Horizontal CS/CMST Installation

MSTD

Marriage Strap

The MSTD marriage strap provides an overlapping, in-line splice between an HTT tension tie and a CMSTC16 coiled strap for panelized-roof applications where the roof member adjacent to the wall is too short to develop the required load into the roof diaphragm. The MSTD provides continuity of load without the need to splice the CMSTC16 alongside the HTT which requires additional blocking. Use MSTD4 with HTT4 and MSTD5 with HTT5.

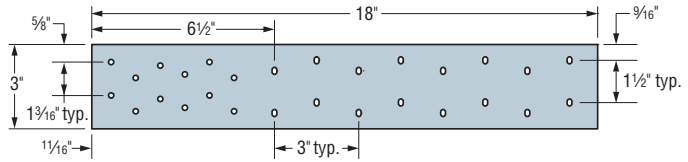
Material: 16 gauge

Finish: Galvanized (G90)

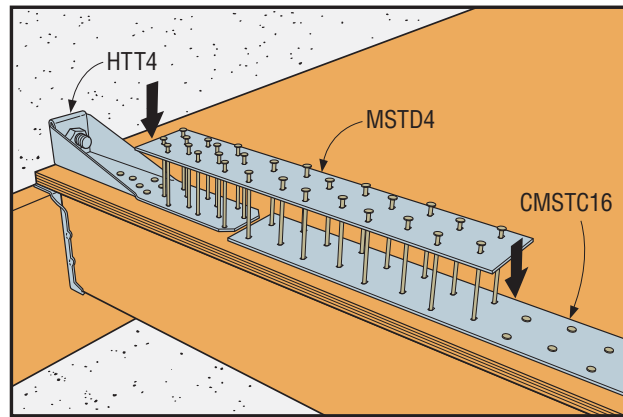
Installation:

- Use all specified fasteners; see General Notes
- The CMSTC and HTT must be spliced end-to-end without any gap
- Suitable for use with both 10d and 16d sinker nailing options for the HTT and CMSTC as specified per the Designer
- To install:
 - Position HTT over the framing (do not install fasteners yet)
 - Align CMSTC16 with the end of the HTT
 - Position MSTD over the two connectors so that nail holes align correctly
 - Install specified fasteners, filling all nail holes

Codes: See p. 14 for Code Reference Key Chart



MSTD4
(MSTD5 similar)



Typical MSTD4 Installation

Model No.	Total L (in.)	Tension Tie	Fasteners		Allowable Tension Loads	Code Ref.
			CMSTC16	HTT		
MSTD4	18	HTT4	(16) 16d sinker	(12) 16d sinker	3,100	160
MSTD5	27	HTT5	(24) 16d sinker	(18) 16d sinker	4,545	

1. Install on minimum 4x4 blocking.
2. 10d common nails may be substituted at 100% of table load.
3. Allowable tension loads include a load duration increase on the fasteners for wind or earthquake with no further increase allowed.
4. **Nails:** 10d common = 0.148" dia. x 3" long, 16d sinker = 0.148" dia. x 3 1/4" long. See pp. 26–27 for other nail sizes and information.

TS

Twist Straps

Twist straps provide a tension connection between two wood members. An equal number of right- and left-hand units are supplied in each carton.

Material: 16 gauge

Finish: Galvanized; see Corrosion Information, pp. 15–18

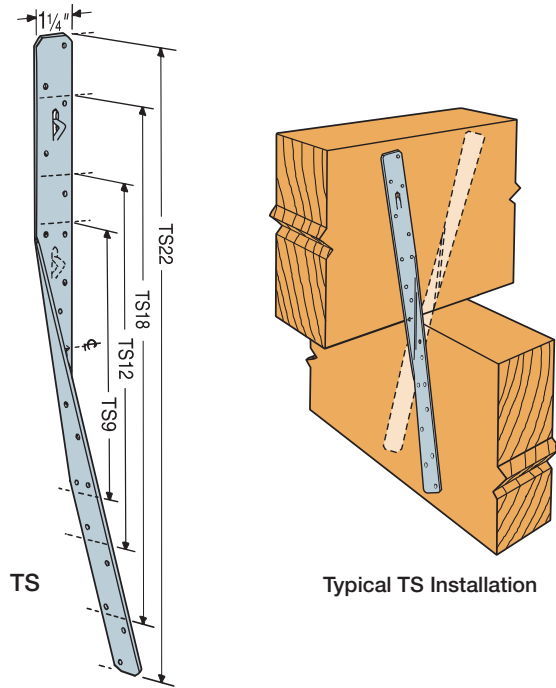
Installation:

- Use all specified fasteners; see General Notes.
- Loads are for a single TS strap. TS should be installed in pairs to reduce eccentricity.

Codes: See p. 14 for Code Reference Key Chart

Model No.	L (in.)	Fasteners (Total)	Allowable Loads (160)	Code Ref.
TS9	9	(8) 16d	530	170
TS12	11¾	(10) 16d	665	
TS18	17¾	(14) 16d	930	
TS22	21¾	(18) 16d	1,215	

1. Install half of the fasteners on each end of the strap to achieve full loads.
2. Loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
3. 16d sinkers (0.148" dia. x 3¼") may be substituted for the specified 16d commons at 0.84 of the table loads.
4. **Nails:** 16d = 0.162" dia. x 3½" long, See pp. 26–27 for other nail sizes and information.



SA

Strap Connector

A seismic tie for horizontal ties across intervening members.

Finish: Galvanized

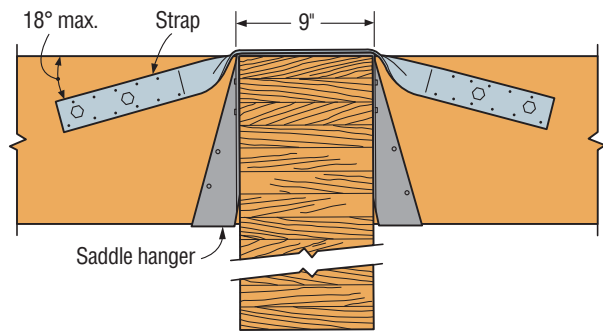
Installation:

- Use all specified fasteners; see General Notes
- May not be suitable for floor diaphragms which protrude above beams
- SA36 can be field-bent for other intermediate beam widths

Codes: See p. 14 for Code Reference Key Chart

Model No.	Strap Section	L (in.)	Fasteners (Total)			Allowable Horizontal Loads		Code Ref.
			Nails	Bolts		Nails (160)	Bolts (160)	
				Qty.	Dia.			
SA36	12 ga. x 2¼"	36	(22) 16d	4	½"	1,900	1,900	I15, L7

1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Allowable loads assume a restrained member of 3½" min. thickness with bolts in single shear.
3. Bolt and nail values may not be combined.
4. **Nails:** 16d = 0.162" dia. x 3½" long, See pp. 26–27 for other nail sizes and information.



Typical SA Installation with Saddle Hanger

Strong-Drive® SDWF

Floor-to-Floor Screw

The Simpson Strong-Tie® Strong-Drive® SDWF Floor-to-Floor screw is designed to simplify the floor-to-floor, wind-uplift restraint connection while providing superior performance over the life of the structure. The unique design of the Strong-Drive SDWF Floor-to-Floor screw enables it to attach upper and lower walls together from the top, spanning the floor system and providing an easy-to-install connection within the continuous uplift load path of the structure.

The innovative TUW take-up washer plays a key role in the long-term performance of the Strong-Drive SDWF Floor-to-Floor screw when installed between the screw and the sole plate of the upper floor. As the structure settles because of shrinkage and construction loading, the threaded portion under the head of the screw ratchets up through the tabs of the TUW, which is fastened with Strong-Drive SD Connector screws. The interlock between the tabs of the take-up washer and the threads under the head of the Strong-Drive SDWF Floor-to-Floor screw prevent the screw from sliding back under load, providing a simple yet reliable means of shrinkage compensation up to ¼" per story.

Material: SDWF — carbon steel, TUW — 10 gauge

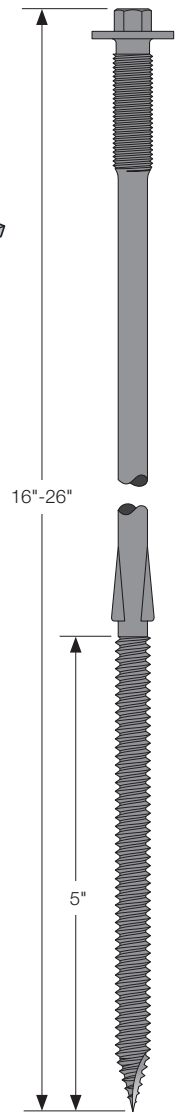
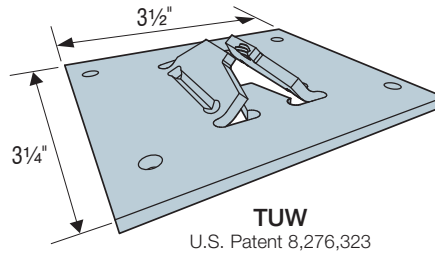
Finish: SDWF — E-Coat™; TUW — Galvanized

Installation:

- Use all specified fasteners; see General Notes
- Refer to flier F-F-SDWFTUW, L-F-SDWFALHT, the Simpson Strong-Tie *Fastening Systems* catalog or visit strongtie.com

Kit Contains: (25) Strong-Drive SDWF Floor-to-Floor screws, (25) TUW take-up washers, (100) #9 x 2½" Strong-Drive SD Connector screws, ⅜" hex driver bit (DBHEX516) and screw depth guide.

Codes: See p. 14 for Code Reference Key Chart

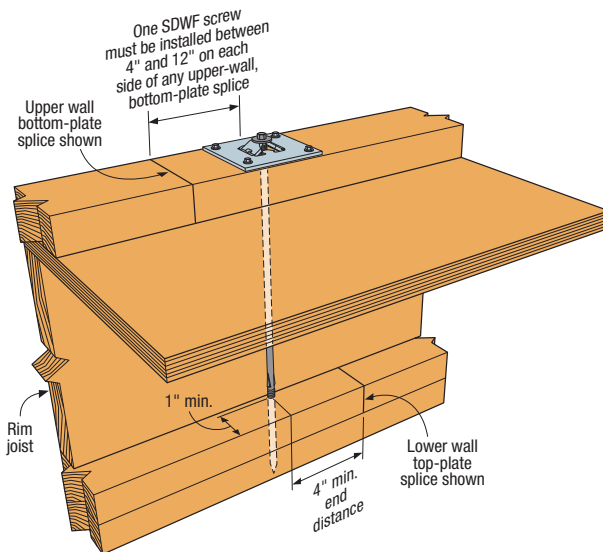


Strong-Drive® SDWF
U.S. Patent 8,276,323

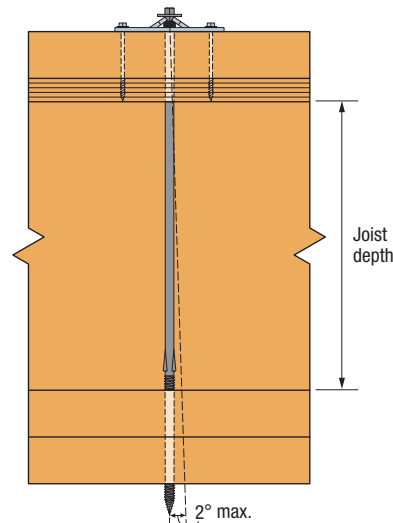
Product Information and Withdrawal Loads

Model No	Size (in.)	Thread Length (in.)	Allowable Joist Depth Below (in.)				Allowable Withdrawal per Thread Penetration (lb./in.) (100)			Code Ref.
			Single Bottom Plate		Double Bottom Plate		SP	DF	SPF	
			Min.	Max.	Min.	Max.				
SDWF2716-TUW	0.27 x 16	5	8½	10½	6¾	9	295	250	180	I24, I26, FL, L24
SDWF2720-TUW	0.27 x 20	5	12½	14½	10%	13				
SDWF2724-TUW	0.27 x 24	5	16½	18½	14%	17				
SDWF2726-TUW	0.27 x 26	5	18½	20½	16%	19				

1. Allowable loads may be increased for load duration up to $C_D = 1.6$.
2. Joist depth listed based on the ¾" subfloor and 3" of thread penetration into double top plates.



Typical Strong-Drive® SDWF Floor-to-Floor and TUW Installation



Typical Strong-Drive® SDWF Floor-to-Floor Angle Limit Installation

Strong-Drive® SDWF

Floor-to-Floor Screw (cont.)

Uniform Uplift Loads

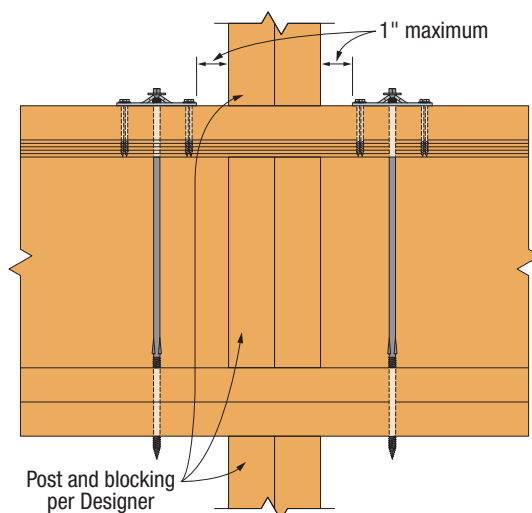
Maximum Strong-Drive SDWF Floor-to-Floor Screw Spacing (in.) Along Wall Bottom Plate for Wind Uplift											
Bottom Plate	Interstory Unit Wind Uplift Lb. per Lineal Foot (plf)										
	100 plf	150 plf	200 plf	250 plf	300 plf	350 plf	400 plf	450 plf	500 plf	550 plf	600 plf
Single 2x4											
SP	46	40	36	34	30	28	26	24	24	22	22
DF	48	42	38	34	32	30	30	26	24	22	20
SPF	46	40	36	34	32	30	26	22	20	18	16
Single 2x6											
SP	56	48	44	40	38	36	34	34	32	30	28
DF	56	48	44	40	38	34	30	26	24	22	20
SPF	52	46	42	38	34	30	26	22	20	18	16

1. Spacing listed based on lesser of: single bottom plate bending allowable load, single bottom plate deflection limited to spacing/240 and ¼" max., screw allowable withdrawal load, and take-up washer allowable load.
2. Withdrawal load is based on a $C_D = 1.6$ and minimum 3" penetration into lower wall double top plates.
3. Stud-to-plate connections are required to complete the load path. These connections shall not exceed the lesser of 48" o.c. or Strong-Drive® SDWF Floor-to-Floor spacing.
4. Spacing values listed for SP lumber consider new base values adopted by AWC on June 1, 2013.

Concentrated Uplift Loads

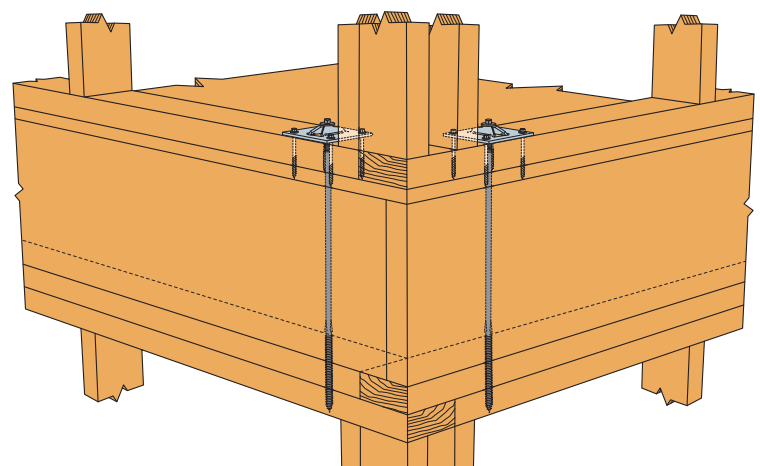
Model No.	Single Strong-Drive SDWF-TUW				Double Strong-Drive SDWF-TUW			
	Allowable Tension Load (160)			Deflection at Highest Allowable Load (in.)	Allowable Tension Load (160)			Deflection at Highest Allowable Load (in.)
	SP	DF	SPF		SP	DF	SPF	
SDWF2716-TUW	1,410	1,200	865	0.095	2,270	2,125	1,730	0.142
SDWF2720-TUW								
SDWF2724-TUW								
SDWF2726-TUW								

1. Allowable loads listed include a wood load duration factor of $C_D = 1.6$ for wind or earthquake loading with no further increase allowed.
2. Single and double Strong-Drive SDWF-TUW applications listed are for concentrated **wind** uplift restraint conditions (i.e. end of header, at girders).



Double Strong-Drive SDWF-TUW Concentrated Load Restraint Detail at Continuous Wall
(Single Strong-Drive SDWF-TUW similar)

Note: Stud-to-plate connections are required to complete the load path and are the responsibility of the Designer.
Consider the Strong-Drive® SDWC screw on p. 319.



Perspective View of Corner Conditions with Double Strong-Drive SDWF-TUW
(Single Strong-Drive SDWF-TUW similar)

LFTA

Floor Tie Anchors

Designed for use as a floor-to-floor tension tie, the LFTA Light Floor Tie Anchor is for nailed installations.

Material: See table

Finish: LFTA — Galvanized

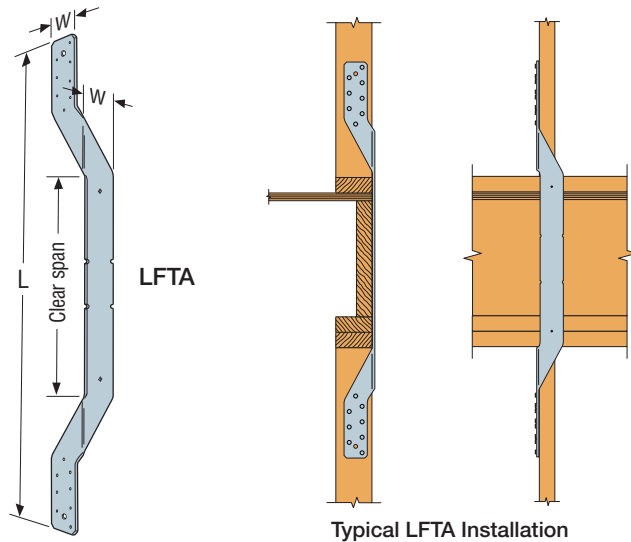
Installation:

- Use all specified fasteners; see General Notes
- Nail holes between floors allow preattachment to the joist during installation; these nails are not required

Options:

- The standard model's clear span of 17" will accommodate up to a 12" joist.

Codes: See p. 14 for Code Reference Key Chart



Model No.	Ga.	Dimensions (in.)			Fasteners (Total)		Allowable Uplift Loads ¹ (160)	Code Ref.
		W	Clear Span	L	Qty.	Dia. (in.)		
LFTA	16	2¼	17	38%	(16) 10d	—	1,205	I17, L6, FL

1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Reduce the allowable load for the LFTA according to the code when nails penetrate wood less than 1¾".
3. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

HCSTR

Hinge Connector Straps

Use Hinge Connector Straps for retrofit applications to strap horizontal wood members together where a hinge connector interferes.

All bolt holes shall be 1/32" (minimum) and 1/16" (maximum) larger than the bolt diameter (2015 NDS 11.1.3.2).

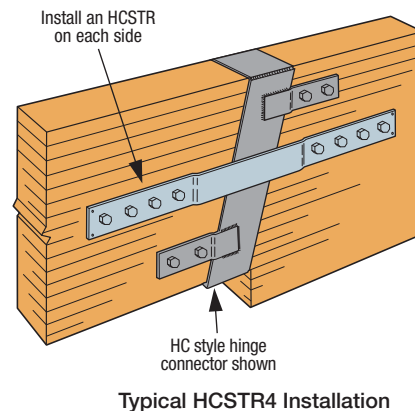
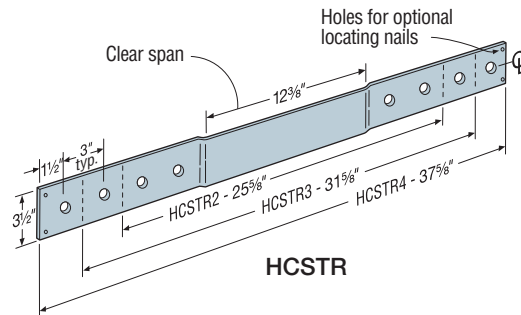
Material: HCSTR2, HCSTR3 — 7 gauge; HCSTR4 — 3 gauge

Finish: HCSTR4 — Simpson Strong-Tie® gray paint; all others — Galvanized

Options:

- Contact Simpson Strong-Tie for longer lengths. For use with Simpson Strong-Tie hinge connectors.

Codes: See p. 14 for Code Reference Key Chart



Typical HCSTR4 Installation

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Fasteners (Total)		Allowable Loads (160)	Code Ref.
	Qty.	Dia.		
HCSTR2	4	¾"	9,725	170
HCSTR3	6	¾"	14,170	
HCSTR4	8	¾"	18,770	

1. Allowable loads are for straps used in pairs and include a 60% increase for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Allowable loads assume a carrying member of 5½" minimum thickness with bolts in double shear.
3. Designed for HC style hinge connectors; contact Simpson Strong-Tie for lengths for HCA and HC3A (only) style hinge connectors.

MSTC48B3/MSTC66B3

Pre-Bent Straps

The MSTC48B3 and MSTC66B3 are pre-bent straps designed to transfer tension load from an upper-story shearwall to a beam on the story below.

Material: 14 gauge

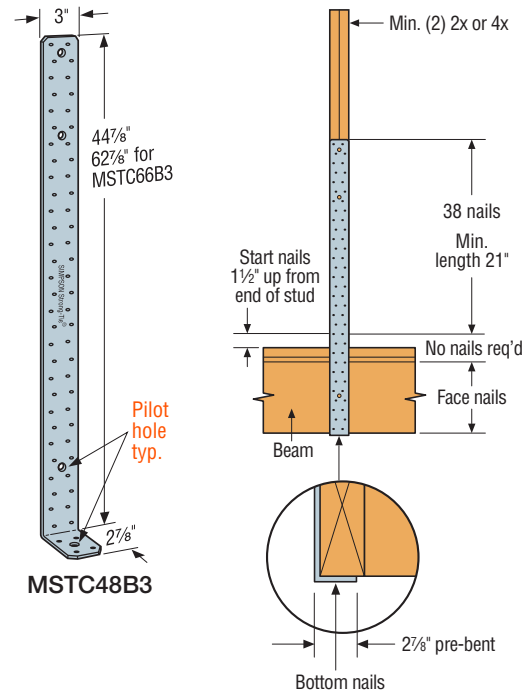
Finish: Galvanized; contact Simpson Strong-Tie

Codes: See p. 14 for Code Reference Key Chart

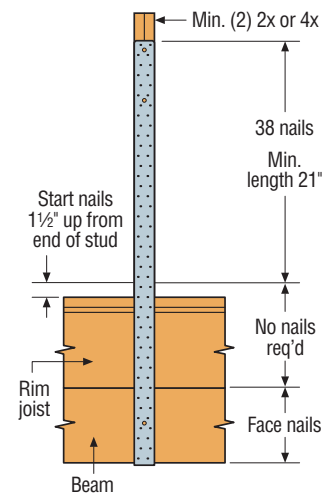
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Min. Wood Beam Dimension (in.)		Fasteners			Allowable Tension Loads		Code Ref.
	Width (min.)	Depth (min.)	Beam		Studs/Post	DF/SP	SPF/HF	
			Face	Bottom		(160)	(160)	
MSTC48B3	3	9¼	(12) 10d	(4) 10d	(20) 10d	3,975	3,420	I4, FL, L3
MSTC66B3	3½	11¼	(14) 10d			4,505	3,875	

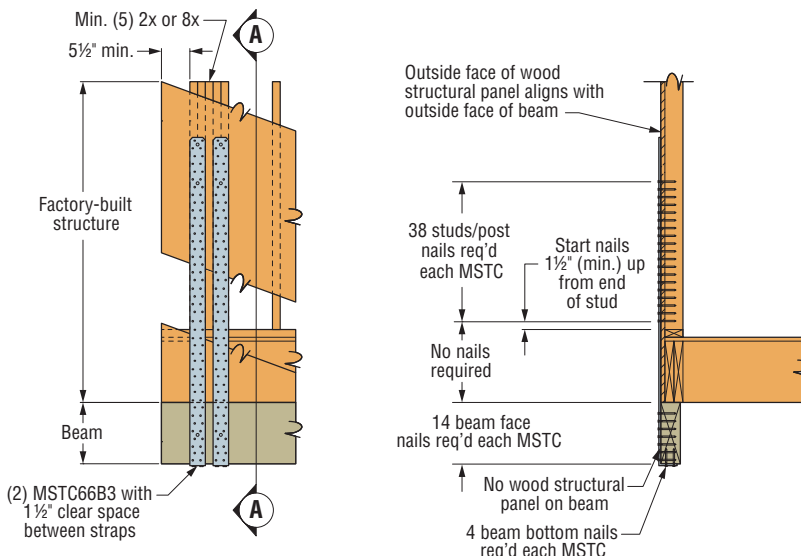
- Using fewer than 20 nails in the studs/post will reduce the capacity of the connection. To calculate a reduced capacity use 199 lb. per nail for DF/SP or 172 lb. per nail for HF/SPF. Minimum length of extent of reduced nails may not be less than a 21" as is shown in graphic.
- Nails in studs/post shall be installed symmetrically. Nails may be installed over the entire length of the strap over the studs/post.
- The minimum 3" wide beam may be made up by double 2x members.
- MSTC48B3 and MSTC66B3 installed over wood structural panel sheathing up to ½" thick achieve 0.85 of table loads.
- PSL beam may be used in lieu of standard dimension lumber beam with no load reductions.
- Multiply allowable loads by 1.85 to attain an allowable load for installations where two straps have been installed with a 1½" clear space between straps.
- Structural composite lumber columns have sides that either show the wide face or the edges of the lumber strands/veneers known as the narrow face. Values in the tables reflect installation into the wide face. See technical bulletin T-C-SCLCLM at strongtie.com for load reductions due to narrow face installations.
- Nails:** 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.



MSTC48B3
Installation with
No Rim Board



MSTC66B3 Installation
with Rim Board



(2) MSTC66B3
Installation

Section A-A

T and L

Strap Ties

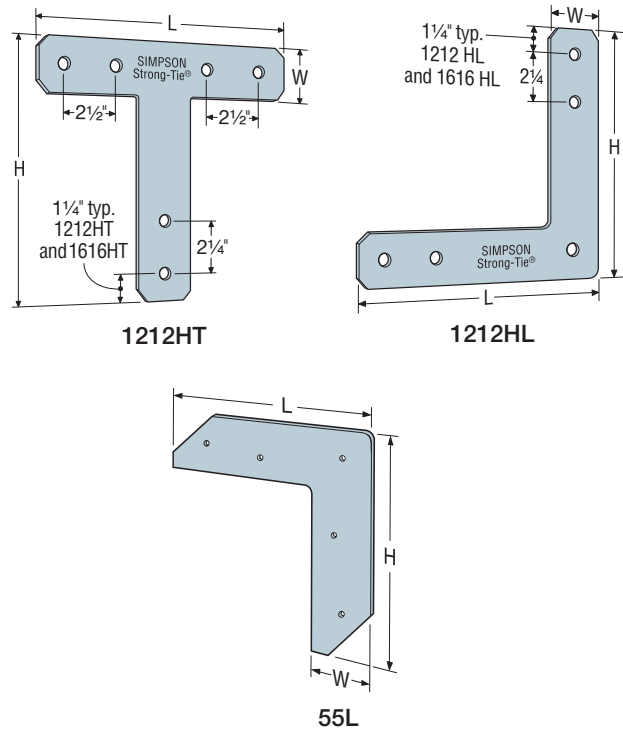
T and L Strap Ties are versatile utility straps. See Architectural Products Group for aesthetically pleasing options with black powder-coated paint.

Finish: Galvanized; see Corrosion Information, pp. 15–18

Codes: See p. 14 for Code Reference Key Chart

Model No.	Ga.	Dimensions (in.)			Fasteners			Code Ref.
		L	H	W	Nails	Bolts		
						Qty.	Dia.	
55L	16	4¾	4¾	1¼	(5) 10d	—	—	180
66L	14	6	6	1½	(10) 16d	3	¾"	
88L	14	8	8	2	(12) 16d	3	½"	
1212L	14	12	12	2	(14) 16d	3	½"	
66T	14	6	5	1½	(8) 16d	3	¾"	
128T	14	12	8	2	(12) 16d	3	½"	
1212T	14	12	12	2	(12) 16d	3	½"	

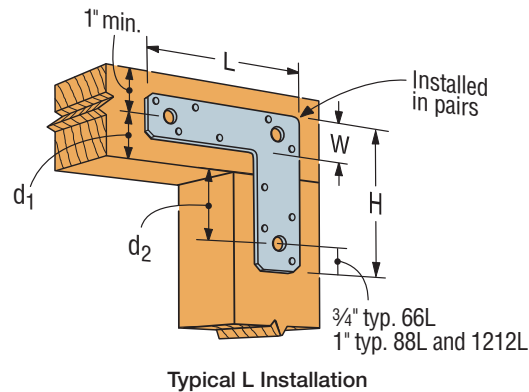
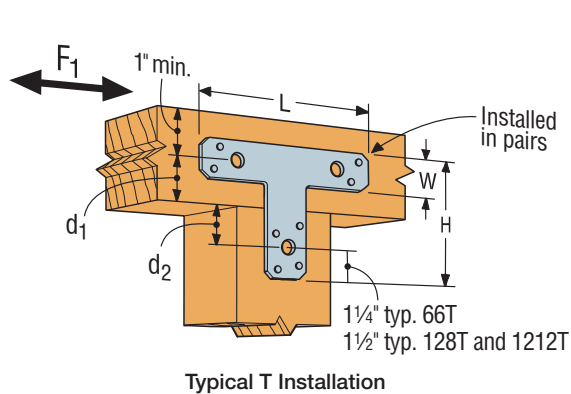
- These connectors are not load-rated; may be installed with nails or bolts.
- Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Ga.	Dimensions (in.)			Minimum Bolt End and Edge Distances (in.)		Bolts		Allowable Loads ^{1,2}		Code Ref.
		W	H	L	d ₁	d ₂	Qty.	Dia.	Tension/Uplift	F ₁	
									(100/160)	(100/160)	
1212HL	7	2½	12	12	2½	4¾	5	⅝"	1,535	565	170
1616HL	7	2½	16	16	2½	4¾	5	⅝"	1,535	565	
1212HT	7	2½	12	12	2½	4¾	6	⅝"	2,585	815	
1616HT	7	2½	16	16	2½	4¾	6	⅝"	2,585	815	

- 1212HL, 1616HL, 1212HT and 1616HT are to be installed in pairs with machine bolts in double shear. A single part with machine bolts in single shear is not load-rated.
- Allowable loads are based on a minimum member thickness of 3½".
- 1212HT, 1616HT loads assume a continuous beam.



HSLQ

Heavy Shear Transfer Angle

The HSLQ heavy shear transfer angle is designed to transfer lateral loads from wood solid sawn joists or blocking into a wood solid sawn element such as a moment frame nailer. The angle offers versatility by allowing up to a 2" gap between the structural members and easy installation with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws that are included with the HSLQ. The HSLQ is manufactured with a gap indication notch to make proper installation easy.

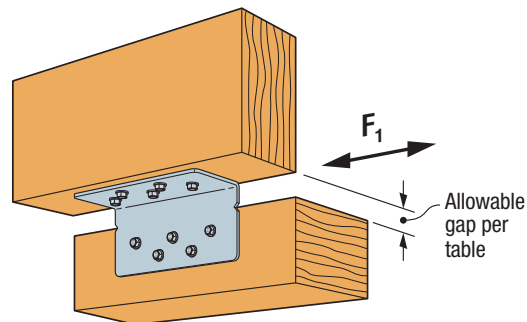
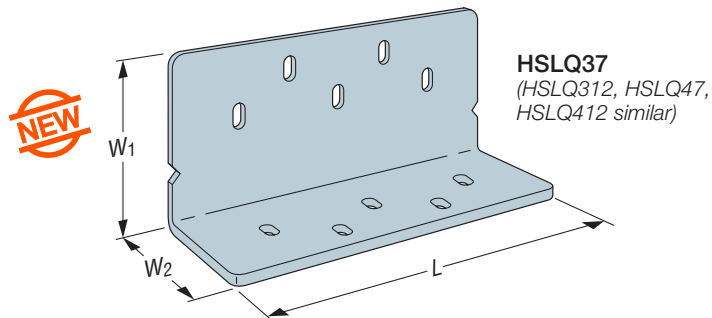
Material: 12 gauge

Finish: Galvanized, available in HDG

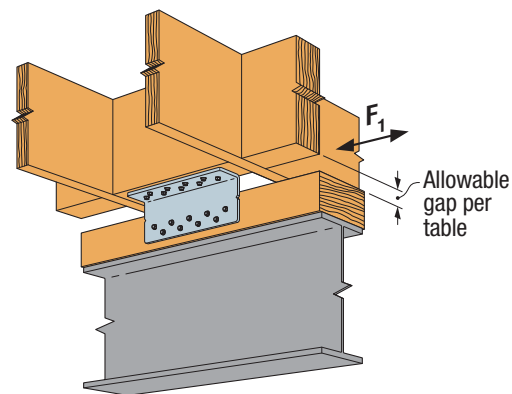
Installation:

- Use all specified fasteners: see General Notes.
- Use long leg with notch indicator.
(Notch indicates maximum allowed gap.)
- Minimum 4x8 wood members are required.
- Add filler shims where required in order not to load the angle in any direction other than lateral, as indicated.

Codes: See p. 14 for Code Reference Key Chart



Typical HSLQ37 Installation



Typical HSLQ412 Installation

Model No.	Allowable Gap	Dimensions (in.)			Fasteners
		W ₁	W ₂	L	
HSLQ37-SDS2.5	0" – 1"	3¼	2¾	7¼	(10) ¼" x 2½" SDS
HSLQ312-SDS2.5	0" – 1"	3¼	2¾	11¾	(18) ¼" x 2½" SDS
HSLQ47-SDS2.5	1" – 2"	4¼	2¾	7¼	(10) ¼" x 2½" SDS
HSLQ412-SDS2.5	1" – 2"	4¼	2¾	11¾	(18) ¼" x 2½" SDS

Model No.	Allowable Gap	Allowable Loads DF/SP (100/115/125/160)	Allowable Loads SPF/HF (100/115/125/160)	Code Ref.
		Lateral (F ₁)	Lateral (F ₁)	
HSLQ37-SDS2.5	0" – 1"	1,340	1,150	160
HSLQ312-SDS2.5	0" – 1"	2,900	2,495	
HSLQ47-SDS2.5	1" – 2"	1,015	870	
HSLQ412-SDS2.5	1" – 2"	2,290	1,970	

1. Tables loads are for one angle.
2. Loads are applicable to installation on either the narrow or the wide face of member.
3. Minimum 4x8 wood members are required.
4. SPF/HF values are based on DF/SP with reduction factor of 0.86.
5. HSLQ is used for in-plane lateral load transfer only. Designer to provide for frame out-of-plane stability as required.

H/TSP

Seismic and Hurricane Ties

Simpson Strong-Tie® hurricane ties provide a positive connection between truss/rafter and the wall of the structure to resist wind and seismic forces.

Material: See table

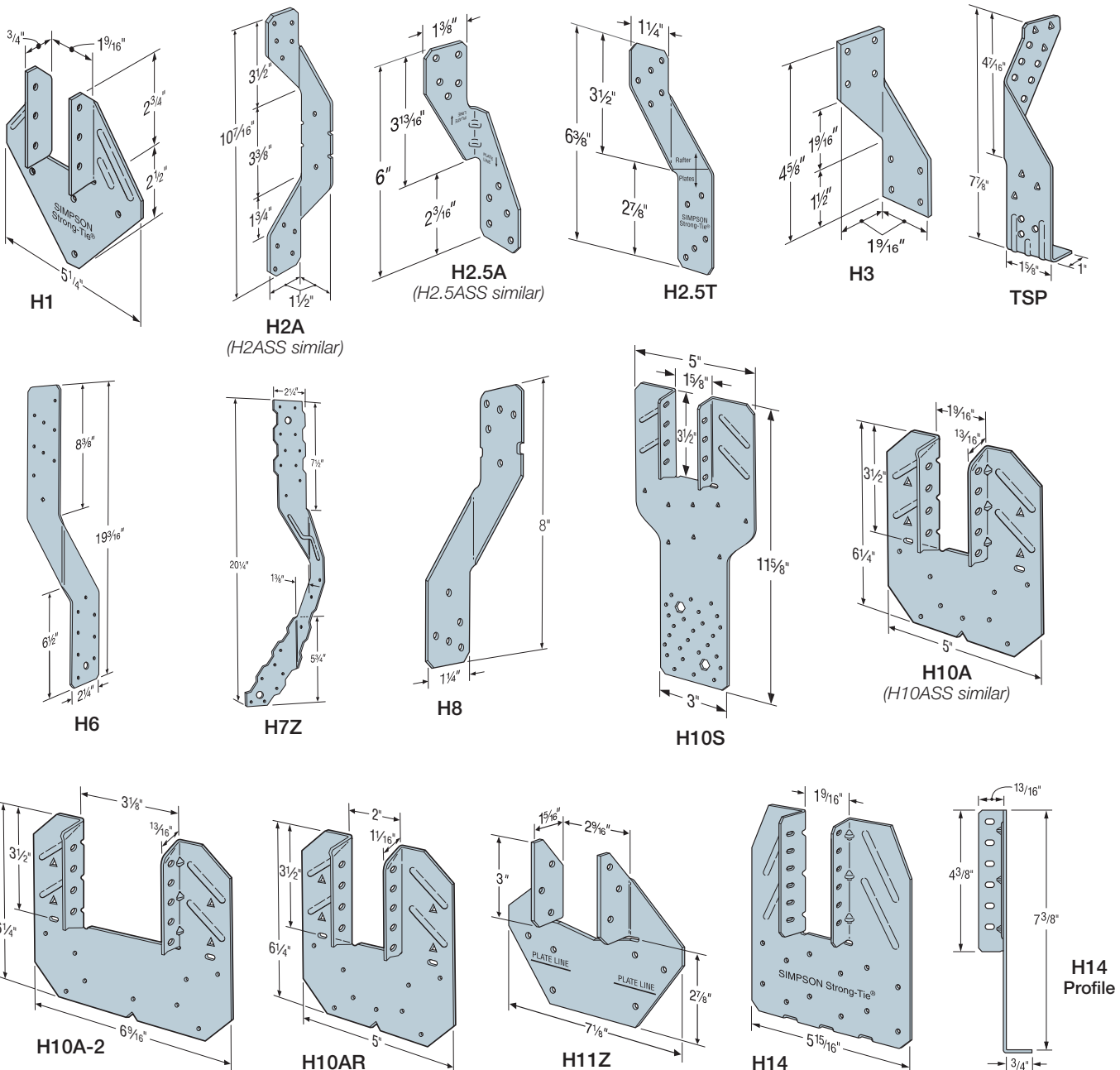
Finish: Galvanized. H7Z and H11Z — ZMAX® coating. Some models available in stainless steel or ZMAX; see Corrosion Information, pp. 15–18 or visit strongtie.com.

Installation:

- Use all specified fasteners; see General Notes.
- H1 can be installed with flanges facing inward (reverse of H1 installation drawing; number 1).

- H2.5T, H3 and H6 ties are shipped in equal quantities of right and left versions (right versions shown).
- Hurricane ties do not replace solid blocking.
- When installing ties on plated trusses (on the side opposite the truss plate) do not fasten through the truss plate from behind. This can force the truss plate off of the truss and compromise truss performance.
- H10A optional nailing to connect shear blocking, use 8d nails. Slots allow maximum field bending up to a pitch of 6:12; use H10A sloped loads for field bent installation.

Codes: See p. 14 for Code Reference Key Chart



H/TSP

Seismic and Hurricane Ties (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

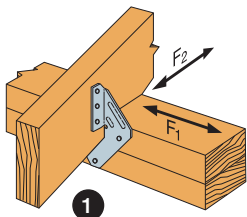
Model No.	Ga.	Fasteners			DF/SP Allowable Loads			Uplift with 8d x 1½" Nails (160)	SPF/HF Allowable Loads			Uplift with 8d x 1½" Nails (160)	Code Ref.
		To Rafters/Truss	To Plates	To Studs	Uplift (160)	Lateral (160)			Uplift (160)	Lateral (160)			
						F ₁	F ₂			F ₁	F ₂		
H1	18	(6) 8d x 1½"	(4) 8d	—	585	485	165	455	400	415	140	370	I17, L5, L6, FL
H2A	18	(5) 8d x 1½"	(2) 8d x 1½"	(5) 8d x 1½"	575	130	55	—	495	130	55	—	IP1, L18, FL
SS H2ASS	18	(5) SS8D	(2) SS8D	(5) SS8D	400	130	55	400	345	130	55	345	170
H2.5A	18	(5) 8d	(5) 8d	—	600	110	110	575	535	110	110	495	I17, L5, L6, FL
SS H2.5ASS	18	(5) SS8D	(5) SS8D	—	440	75	70	365	380	75	70	310	170
H2.5T	18	(5) 8d	(5) 8d	—	545	135	145	425	545	135	145	425	IP1, L18, FL
SS H3	18	(4) 8d	(4) 8d	—	455	125	160	415	320	105	140	290	I17, L6, FL
H6	16	—	(8) 8d	(8) 8d	950	—	—	—	820	—	—	—	I17, FL
H7Z	16	(4) 8d	(2) 8d x 1½"	(8) 8d	985	400	—	—	845	345	—	—	
SS H8	18	(5) 10d x 1½"	(5) 10d x 1½"	—	795	95	90	630	565	95	90	510	L5, L10, L18, FL
H10A Sloped	18	(9) 10d x 1½"	(9) 10d x 1½"	—	855	590	285	—	760	505	285	—	I17, L5, L18, FL
H10A	18	(9) 10d x 1½"	(9) 10d x 1½"	—	1,140 ⁷	590	285	—	1,015	505	285	—	
SS H10ASS	18	(9) SSN10	(9) SSN10	—	970	565	170	—	835	485	170	—	170
H10AR	18	(9) 10d x 1½"	(9) 10d x 1½"	—	1,050	490	285	—	905	420	285	—	
H10S ^{9,10}	18	(8) 8d x 1½"	(8) 8d x 1½" ¹⁰	(8) 8d	1,010	660	215	550	870	570	185	475	IP1, L18, FL
H10A-2	18	(9) 10d x 1½"	(9) 10d x 1½"	—	1,245	815	260	—	1,070	700	225	—	L18, FL
H11Z	18	(6) 16d x 2½"	(6) 16d x 2½"	—	830	525	760	—	715	450	655	—	170
H14	18	1 (12) 8d x 1½"	(13) 8d	—	1,350 ⁷	725	285	—	1,050	480	245	—	IP1, L18, FL
		2 (12) 8d x 1½"	(15) 8d	—	1,465	670	230	—	1,050	480	245	—	
TSP	16	(9) 10d x 1½"	(6) 10d x 1½"	—	740	310	190	—	635	265	160	—	FL
		(9) 10d x 1½"	(6) 10d	—	890	310	190	—	765	265	160	—	

1. Loads have been increased for wind or earthquake loading with no further increase allowed: reduce where other loads govern.
2. Allowable loads are for one anchor. A minimum rafter thickness of 2½" must be used when framing anchors are used on each side of the joist and on the same side of the plate (exception: connectors installed such that nails on opposite side don't interfere).
3. Allowable DF/SP uplift load for stud to bottom plate installation (see detail 15) is 390 lb. (H2.5A); 265 lb. (H2.5ASS); and 310 lb. (H8). For SPF/HF values multiply these values by 0.86.
4. Allowable loads in the F₁ direction are not intended to replace diaphragm boundary members or cross-grain bending of the truss or rafter members.
5. When cross-grain bending or cross-grain tension cannot be avoided in the members, mechanical reinforcement to resist such forces may be considered.
6. Hurricane Ties are shown on the outside of the wall for clarity and assume a minimum overhang of 3½". Installation on the inside of the wall is acceptable (see General Instructions for the Installer notes s on p. 21). For uplift continuous load path, connections in the same area (i.e. truss to plate connector and plate to stud connector) must be on the same side of the wall. See technical bulletin T-C-HTIECONPATH at strongtie.com for more information.

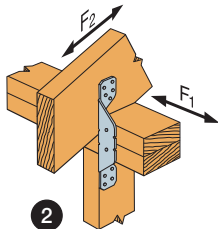
7. Southern Pine allowable uplift loads for H10A = 1,340 lb. and for the H14 = 1,465 lb.
8. Refer to Simpson Strong-Tie® technical bulletin T-C-HTIEBEARING at strongtie.com for allowable bearing enhancement loads.
9. H10S can have the stud offset a maximum of 1" from rafter (center to center) for a reduced uplift of 890 lb. (DF/SP) and 765 lb. (SPF).
10. H10S nails to plates are optional for uplift but required for lateral loads.
11. Some load values for the stainless-steel connectors shown here are lower than those for the carbon-steel versions. Ongoing test programs have shown this to also be the case with other stainless-steel connectors in the product line that are installed with nails. Visit strongtie.com/corrosion for updated information.
12. The allowable loads of stainless-steel connectors match carbon-steel connectors when installed with Simpson Strong-Tie® stainless-steel, SCNR ring-shank nails. For more information, refer to engineering letter L-F-SSNAILS at strongtie.com.
13. Allowable DF/SP/SPF uplift load for the H2.5A fastened to a 2x4 truss bottom chord and double top plates using (5) 8d x 1½" nails into the top plates and (3) 8d x 1½" nails into the lowest three flange holes into the truss bottom chord is 260 lb. (160).
14. **Nails:** 16d x 2½" = 0.162" dia. x 2½" long, 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long, 8d = 0.131" dia. x 2½" long, 8d x 1½" = 0.131" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.
15. **Screws:** Strong-Drive® SD #9 x 1½" (model SD9112) = 0.131" dia. x 1½" long (for the models marked with the orange flag only). Full table loads apply.

H/TSP

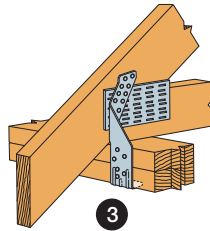
Seismic and Hurricane Ties (cont.)



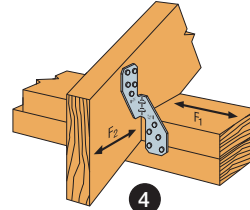
1 H1 Installation



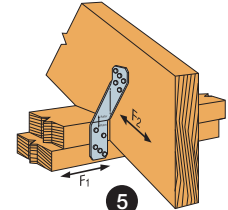
2 H2A Installation



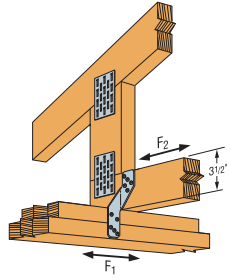
3 TSP Installation



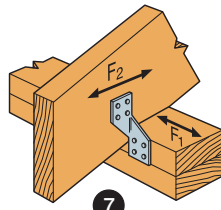
4 H2.5A Installation
(Nails into both top plates)



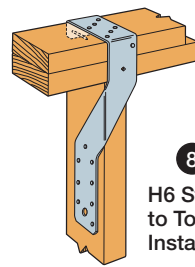
5 H2.5T Installation
(Nails into both top plates)



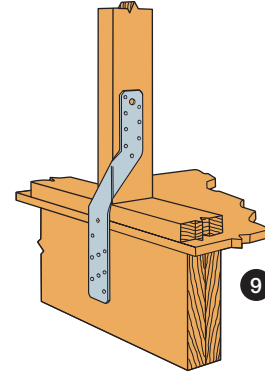
6 H2.5T Installation



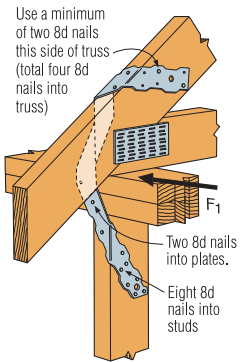
7 H3 Installation
(Nails into upper top plate)



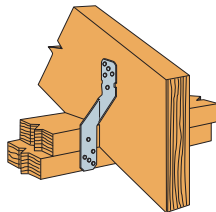
8 H6 Stud to Top Plate Installation



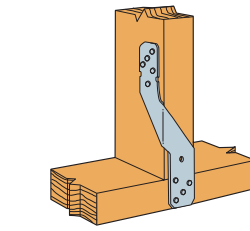
9 H6 Stud to Rim Board Installation



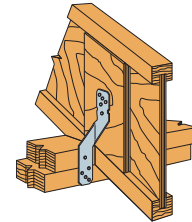
10 H7Z Installation



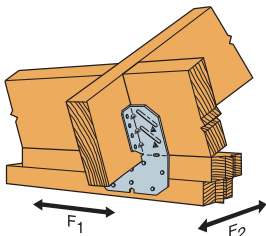
11 H8 Attaching Rafter to Double Top Plates



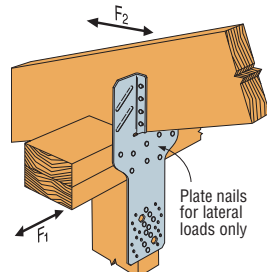
12 H8 attaching Stud to Sill
(4-8d into plate, 5-8d into stud, refer to footnote 3 for loads)



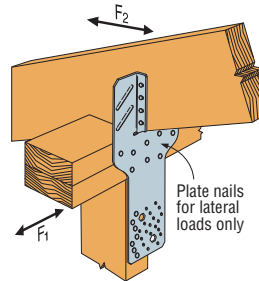
13 H8 attaching I-Joist to Double Top Plates



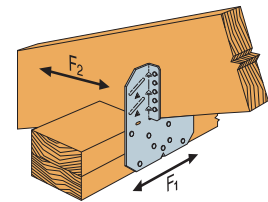
14 H10A Field-Bent Installation



15 H10S Installation

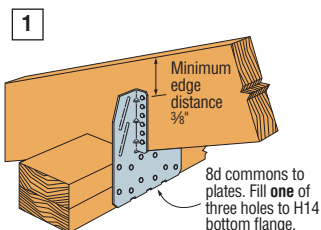


16 H10S Installation with Stud Offset

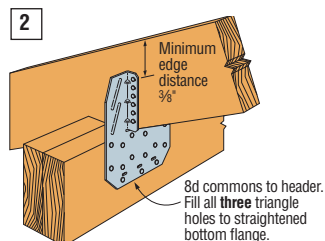


17 H10A Installation

H10A optional nailing connects shear blocking to rafter. Use 8d common nails. Slot allows maximum field-bending up to a pitch of 6/12, use 75% of the table uplift load; bend one time only.

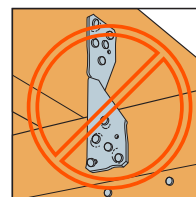


18 H14 Installation to Double Top Plates



19 H14 Installation to Double 2x Header

Avoid a Misinstallation



Do not make new holes or overdrive nails.

H/TSP

Seismic and Hurricane Ties (cont.)

Considerations for Hurricane Tie Selection

1. What is the uplift load?
2. What is the parallel-to-plate load?
3. What is the perpendicular-to-plate load?
4. What is the species of wood used for the rafter and the top plates?
(Select the load table based on the lowest performing species of wood.)
5. Will the hurricane tie be nailed into both top plates or the upper top plate only?
6. What load or loads will the hurricane tie be taking?

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

Option 1: Unity Equation

For all connectors use the following equation:

$$\frac{\text{Design Uplift/Allowable Uplift} + \text{Design Lateral Parallel to Plate}}{\text{Allowable Lateral Parallel to Plate}} + \frac{\text{Design Lateral Perpendicular to Plate}}{\text{Allowable Lateral Perpendicular to Plate}} < 1.0.$$

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

Option 2: 75% Rule

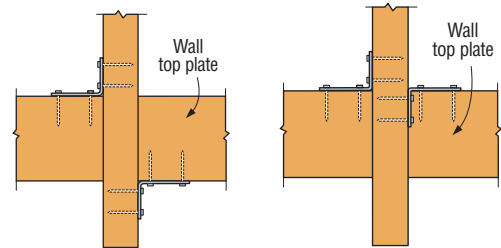
As an alternate, certain roof to wall connectors (embedded truss anchors, pp. 290–291, seismic and hurricane ties, pp. 314–318, and twist straps, pp. 326–327) can be evaluated using the following: The design load in each direction shall not exceed the published allowable load in that direction multiplied by 0.75.

7. Select hurricane tie based on performance, application, installed cost and ease of installation.

Some Hurricane Tie Installations Achieve Twice the Load (Top View)

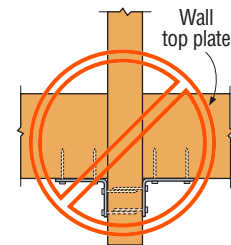
(H10A, H10A-2, H10S and H14 not included)

Both connectors shall be same model.



Install diagonally across from each other for minimum 2x truss.

Products can be on the same side of the wall provided they are configured as shown.



Nailing into both sides of a single ply 2x truss may cause the wood to split.

H

Seismic and Hurricane Ties

The hurricane tie series features various configurations of wind and seismic ties for trusses and rafters. The H16 series has a presloped seat of 5/12 for double trusses.

The presloped 5/12 seat of the H16 provides for a tight fit and reduced deflection. The strap length provides for various truss height up to a maximum of 13½" (H16 series). Minimum heel height for H16 series is 4".

The HGA10 attaches to gable trusses and provides good lateral wind resistance. The HS24 attaches the bottom chord of a truss or rafter at pitches from 0/12 to 4/12 to double 2x4 top plates. Double-shear nailing allows for higher lateral resistance.

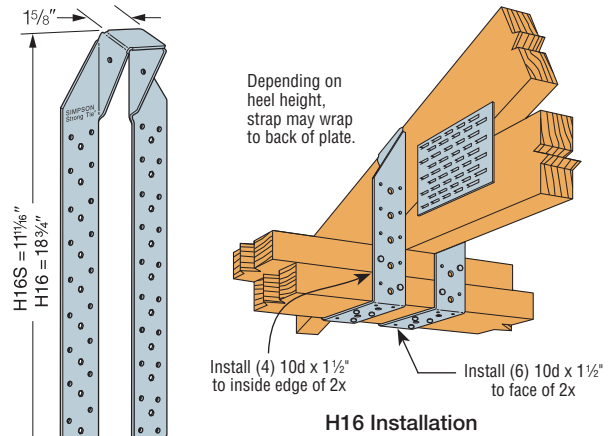
Material: See table

Finish: Galvanized; see Corrosion Information, pp. 15–18

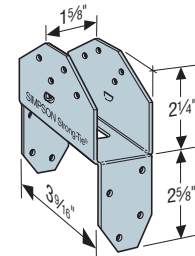
Installation:

- Use all specified fasteners; see General Notes.
- HGA10KT: sold as a kit with (10) HGA10 connectors. Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws are included.
- **Additional screws sold separately to install with all SDS25112 screws.**
- HS24 requires slant nailing only when bottom chord of truss or rafter has no slope.

Codes: See p. 14 for Code Reference Key Chart



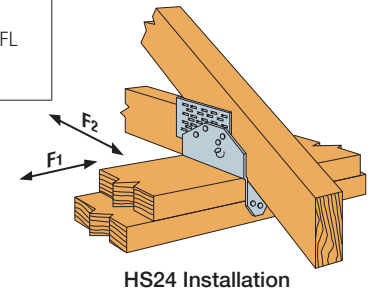
H16 and H16S
Presloped at 5/12.
Truss/rafter pitch of 3/12 to 7/12 is acceptable.



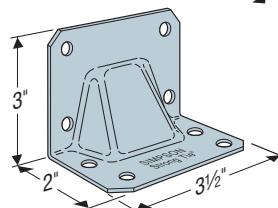
HS24
U.S. Patents
5,603,580

Model No.	Ga.	Fasteners			DF/SP Allowable Loads ¹				SPF/HF Allowable Loads ¹				Code Ref.
		To Rafters/Truss	To Plates	To Studs	Uplift (160)	Lateral (160)			Uplift (160)	Lateral (160)			
						F ₁	F ₂	F ₃		F ₁	F ₂	F ₃	
HGA10KT	14	(4) ¼" x 1½" SDS	(4) ¼" x 3" SDS	—	695	1,165	940	780	500	840	675	495	FL, L18
HGA10	14	(4) ¼" x 1½" SDS	(4) ¼" x 1½" SDS	—	605	500	720	—	435	360	520	—	FL
HS24	18	(8) 8d x 1½" and (2) 8d slant	(8) 8d	—	605 ³	645 ³	1,025 ³	—	520 ³	555 ³	880 ³	—	I17, FL, L6
H16	18	(2) 10d x 1½"	(10) 10d x 1½"	—	1,470	—	—	—	1,265	—	—	—	FL
H16S	18	(2) 10d x 1½"	(10) 10d x 1½"	—	1,470	—	—	—	1,265	—	—	—	
H16-2	18	(2) 10d x 1½"	(10) 10d x 1½"	—	1,470	—	—	—	1,265	—	—	—	
H16-2S	18	(2) 10d x 1½"	(10) 10d x 1½"	—	1,470	—	—	—	1,265	—	—	—	

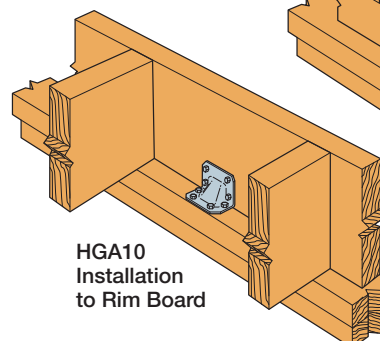
1. Loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. When cross-grain bending or cross-grain tension cannot be avoided, mechanical reinforcement to resist such forces should be considered.
3. HS24 DF/SP allowable loads without slant nailing are 605 lb. (uplift), 590 lb. (F₁), 640 lb. (F₂). For SPF/HF loads multiply these values by 0.86.
4. For H16-2S, S = short.
5. Allowable loads in the F₁ direction are not intended to replace diaphragm boundary members or prevent cross-grain bending of the truss or rafter members. Additional shear transfer elements shall be considered where there may be effects of cross-grain bending or tension.
6. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long, 8d = 0.131" dia. x 2½" long, 8d x 1½" = 0.131" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.



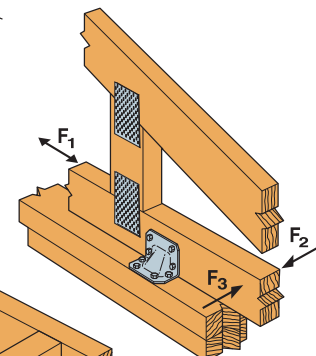
HS24 Installation



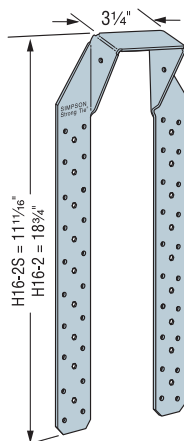
HGA10



HGA10 Installation to Rim Board

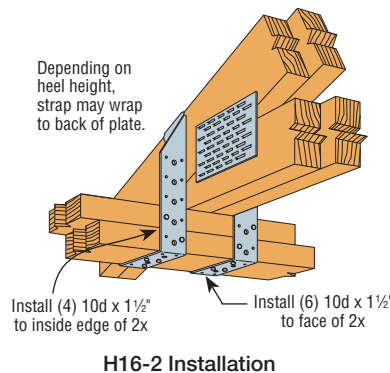


HGA10 Installation to Double Top Plates



H16-2S and H16-2S

Presloped at 5/12. Pitch of 3/12 to 7/12 is acceptable.



H16-2 Installation

Strong-Drive® SDWC

Truss Screws

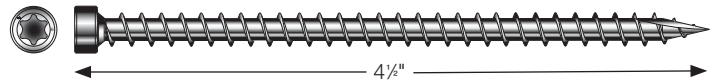
The Strong-Drive SDWC Truss Screw is tested in accordance with ICC-ES AC233 (screw) and AC13 (wall assembly and roof-to-wall assembly) for uplift and lateral loads between wall plates and vertical wall framing and between the top plate and the roof rafters or trusses. Strong-Drive SDWC15450 (not SDWC15600) is recognized for use in chemically-treated wood as described in the evaluation report.

Material: Carbon steel

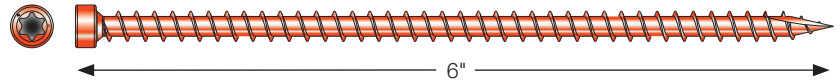
Finish: SDWC15450 – E-Coat™; SDWC15600 – Clear Zinc Coating (with Orange indicator)

Installation: • See General Notes

Codes: See p. 14 for Code Reference Key Chart



Strong-Drive SDWC15450



Strong-Drive SDWC15600

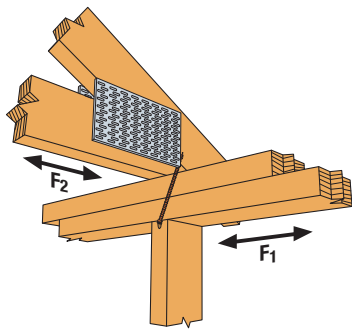
Strong-Drive® SDWC TRUSS Screw Allowable Roof-to-Wall Connection Loads – DF, SP, SPF, HF

Model No.	Minor Diameter (in.)	Length (in.)	Thread Length (in.)	Allowable Loads (lb.)						Code Ref.
				DF/SP			SPF/HF			
				Uplift	F ₁	F ₂	Uplift	F ₁	F ₂	
SDWC15600	0.152	6	5/4	615	130	225	485	115	192	IP5, FL, L25

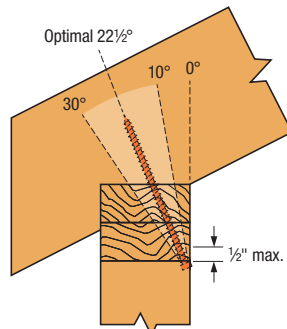
1. Loads have been increased for wind and earthquake ($C_D = 1.6$); no further increases allowed. Reduce when other loads govern.
2. Allowable loads are for a Strong-Drive SDWC Truss screw installed per the 'Recommended' or 'Optional' installation instructions. The Strong-Drive SDWC Truss screw is to be installed through a double 2x top plate into a minimum 2x4 truss or rafter.
3. A Strong-Drive SDWC Truss screw may be used in each ply of a 2- or 3-ply rafter or truss. The allowable uplift load for each screw shall be multiplied by 0.90, but may be limited by the capacity of the plate or the connection between the top plate to the framing below. Strong-Drive SDWC Truss screws in multi-ply

4. Screws are shown installed on the interior side of the wall. Installations on the exterior side of the wall are acceptable when the rafter or truss overhangs the top plates a minimum of 3 1/2".
5. For uplift continuous load path, plate-to-stud connections should be made using the SDWC screw shown on pp. 322–323.
6. When the screw is loaded simultaneously in more than one direction, the allowable load must be evaluated using the following unity equation: $(\text{Design Uplift} \div \text{Allowable Uplift}) + (\text{Design } F_1 \div \text{Allowable } F_1) + (\text{Design } F_2 \div \text{Allowable } F_2) \leq 1.0$.
7. Table loads do not apply to trusses with end-grain bearing.
8. Top plate-to-stud and top-plate splice fastened per applicable building code.

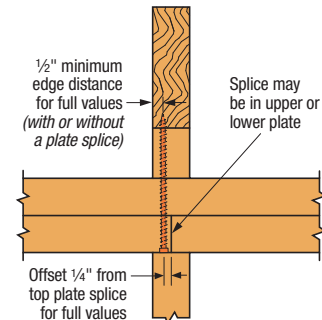
Typical Roof-to-Wall Connection



Typical Strong-Drive® SDWC Installation – Truss Aligned with Stud
(Offset truss similar)

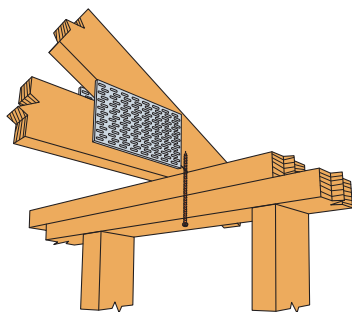


Installation Angle Limit

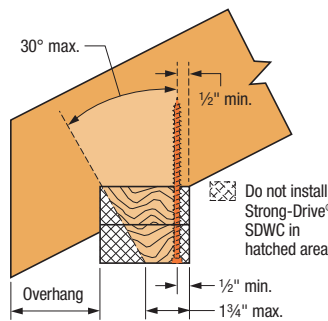


Min. Edge Distance for Top Plate Splice

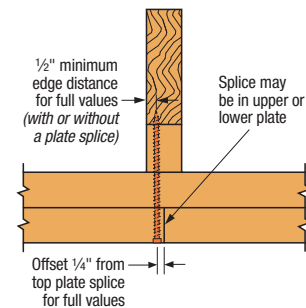
Optional Roof-to-Wall Connection



Optional Strong-Drive® SDWC Installation – Truss Offset from Stud



Allowable Installation Range
(Truss offset from stud only)



Min. Edge Distance for Top Plate Splice

Strong-Drive® SDWC

Truss Screws (cont.)

SDWC Truss/Rafter-to-Top Plate Connections Utilizing Two-Screw Configurations

Allowable loads for the SDWC Truss screws when installed from the underside of the top plate and from the face of the truss/rafter using a two-screw configuration per the detail configurations shown on following page.

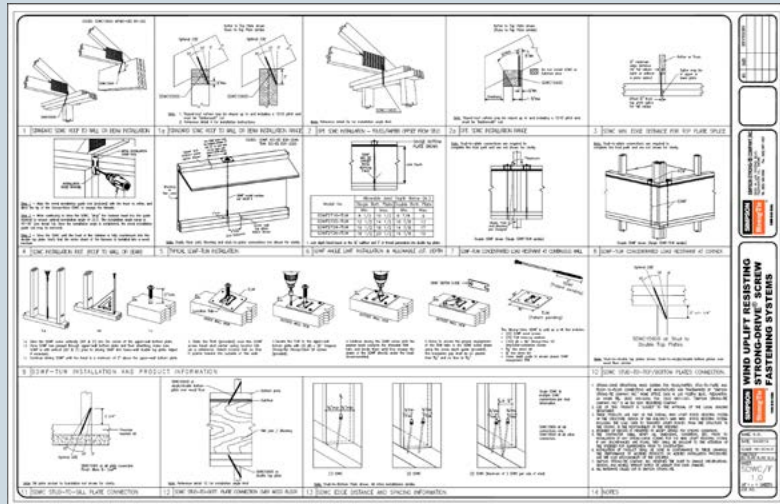
SDWC – Allowable Loads for Truss/Rafter-to-Top Plate Two-Screw Connections

Model No.	Minor Diameter (in.)	Length (in.)	Thread Length (in.)	Quantity Required	Allowable Loads (lb.)						Configuration
					DF/SP			SPF/HF			
					Uplift	F ₁	F ₂	Uplift	F ₁	F ₂	
SDWC15600	0.152	6	5¾	2	1,200	685	995	1,045	495	670	A
					1,195	680	925	1,195	405	680	B
					905	535	790	850	330	595	C
					1,115	645	920	960	385	610	D

1. Loads have been increased for wind and earthquake loading ($C_D = 1.6$) with no further increase allowed; reduce where other loads govern.
2. For Uplift Connection Load Path, the designer shall verify complete continuity of the uplift load path.
3. When cross-grain tension cannot be avoided, supplemental reinforcement shall be considered by the Designer.
4. The SDWC screws shall not interfere with other fasteners or truss plates. Where truss plates must be penetrated for Configuration D, a Truss Designer approval is required in accordance with ANSI/TPI 1-2007/2014, Section 7.5.3.4 and 8.9.2. To pre-drill through truss plate, use a 1/8" drill bit.
5. The metal installation guide provided with the screw is angled at 22.5° and can be used for Configurations C and D; proper installation angles for all configurations are the responsibility of the installer.
6. SDWC screws must be offset min. 1/4" from top plate splices for full values.
7. Loads assume minimum overhang of 3 1/2".
8. When a screw is loaded simultaneously in more than one direction, the allowable load must be evaluated using the unity equation: $(\text{Design Uplift} \div \text{Allowable Uplift}) + (\text{Design } F_1 \div \text{Allowable } F_1) + (\text{Design } F_2 \div \text{Allowable } F_2) \leq 1.0$. The three terms in the unity equation represent the possible generated force directions. The number of terms that must be considered for simultaneous loading is the sole discretion of the Designer and depends on the method of calculating wind forces and the utilization of the screws within the structural system.

SDWC and SDWF Detail Sheet

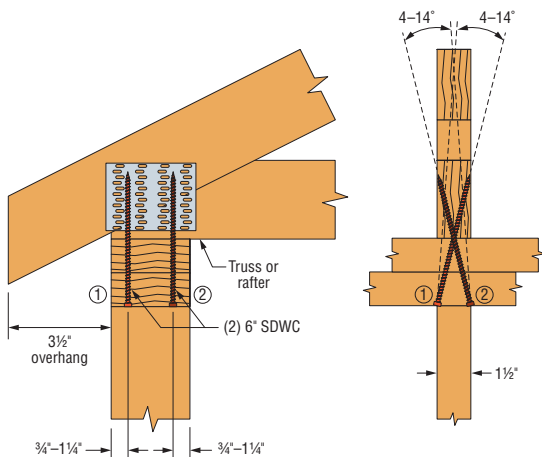
When used together as a system with anchor bolts at the foundation, the SDWC and SDWF screws are a reliable, safe and economical solution for creating a continuous load path and resisting wind uplift. To learn more, visit strongtie.com/sdwc.



Strong-Drive® SDWC

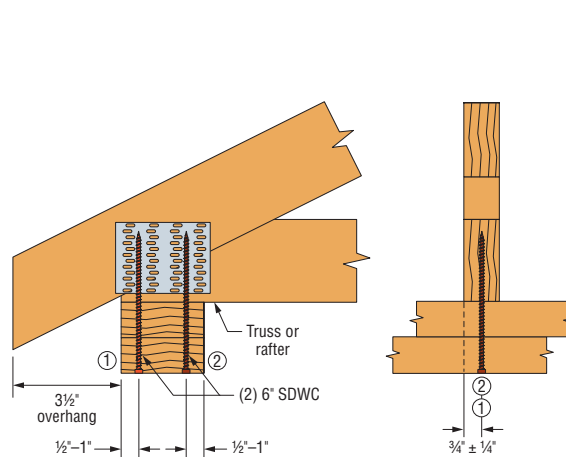
Truss Screws (cont.)

Typical Roof-to-Wall Connection Utilizing Two-Screw Configurations



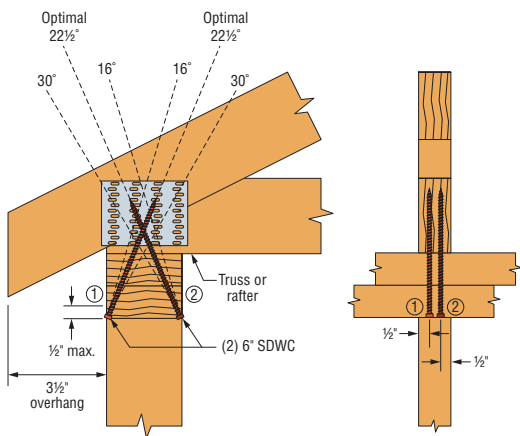
Configuration A:
Truss Aligned with Stud
Install through Top Plate into Truss/Rafter

Both screws installed at a 4°-14° angle, offset 3/4"-1 1/4" from opposite edges of the top plate.



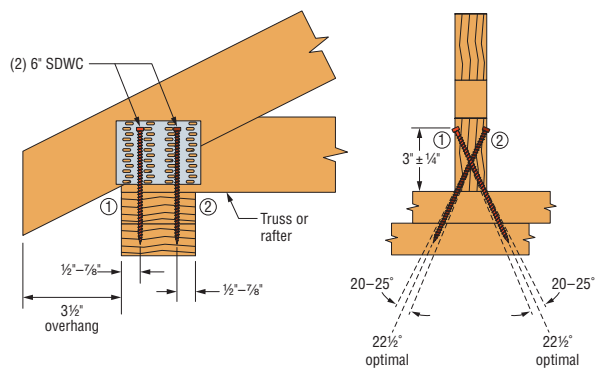
Configuration B:
Truss Offset from Stud
Install through Top Plate into Truss/Rafter

Both screws installed vertically ±5° into the center of the truss/rafter from the underside of the top plate, 1/2"-1" from opposite edges of the top plate.



Configuration C:
Install through Top Plate into Truss/Rafter

Both screws installed at a 16°-30° angle, offset 1/2" from the opposite edges of truss/rafter. Use metal installation guide included in screw kits for optimal 22.5° installation.



Configuration D:
Install Truss/Rafter to Top Plate

Both screws installed at a 20°-25° angle with a 1/2"-7/8" offset from the opposite edges of top plate 3" ± 1/4" above top plate. Use metal installation guide included in screw kits for optimal 22.5° installation. To pre-drill through truss plates, use a 1/8" drill bit.

Strong-Drive® SDWC

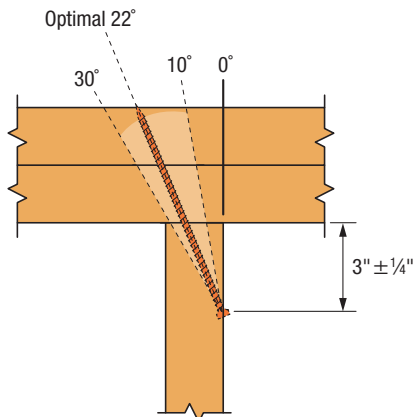
Truss Screws (cont.)

Strong-Drive® SDWC Allowable Wide Face Stud-to-Plate Connection Loads – DFL, SP, SPF, HF

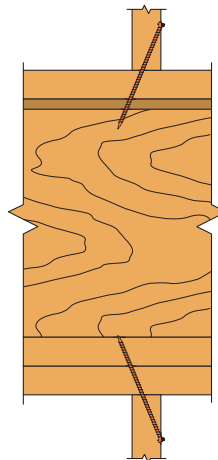
Model No.	No. of Screws Installed	Minor Diameter (in.)	Length (in.)	Thread Length (in.)	Plate Thickness (in.)	Allowable Loads (160) (lb.)				Code Ref.
						DF/SP		SPF/HF		
						Uplift	F ₂	Uplift	F ₂	
SDWC15450	1	0.152	4½	4¼	1½	360	215	310	153	IP5, FL
	2					690	390	595	280	
	3					1,035	585	895	420	
SDWC15600	1	0.152	6	5¾	1½	450	189	310	153	
	2					865	345	595	280	
	3					1,295	515	895	420	
SDWC15600	1	0.152	6	5¾	(2) 1½	590	177	510	152	
	2					1,135	320	980	275	
	3					1,700	485	1,470	415	

1. Loads have been increased 60% for wind or earthquake loading ($C_D = 1.6$) with no further increases allowed; reduce where other loads govern.
2. Allowable loads are for Strong-Drive SDWC installed per the installation instructions.
3. The Strong-Drive SDWC15450 is to be installed through the face of 2x stud into a single 2x bottom plate over a concrete/masonry foundation.
4. The Strong-Drive SDWC15600 is to be installed through the face of 2x stud into a single 2x bottom plate over a wood floor system.
5. The Strong-Drive SDWC15600 is to be installed through the face of 2x stud into a double 2x top or bottom plate.
6. Double-top plates shall be fastened together as required by applicable Code.
7. When the screw is loaded simultaneously in more than one direction, the allowable load must be evaluated using the following unity equation: $(\text{Design Uplift} \div \text{Allowable Uplift}) + (\text{Design } F_2 \div \text{Allowable } F_2) \leq 1.0$.

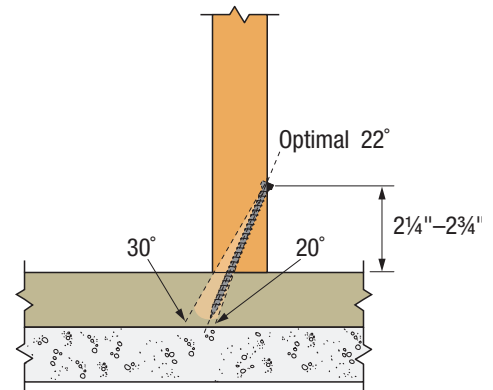
Stud-to-Plate Connections



Stud-to-Top Plate Connection
(This application requires Strong-Drive SDWC15600)



Stud-to-Bottom Plate Connection Over Wood Floor
(Strong-Drive SDWC15600 shown. See pp. 308–309 for Strong-Drive SDWF-TUW floor-to-floor Connections.)



Stud-to-Bottom Plate Connection Over Concrete/Masonry Foundation
(This application requires Strong-Drive SDWC15450)



Strong-Drive SDWC15450-KT and SDWC15600-KT contains:

- (50) Strong-Drive® SDWC Truss screws
- (1) Matched-tolerance driver bit (Part no. BIT30T-2-RC3; also sold separately)
- (1) Metal installation guide tool
 - SDWC-GUIDE (for SDWC15600 only; also sold separately) or
 - SDWC-GUIDE275 (for SDWC15450 only; also sold separately)

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

- (500) Strong-Drive® SDWC Truss screws
- (2) Matched-tolerance driver bits (Part no. BIT30T-2-RC3; also sold separately)
- (2) Metal installation guide tools
 - SDWC-GUIDE (for SDWC15600 only; also sold separately) or
 - SDWC-GUIDE275 (for SDWC15450 only; also sold separately)

Strong-Drive® SDWC

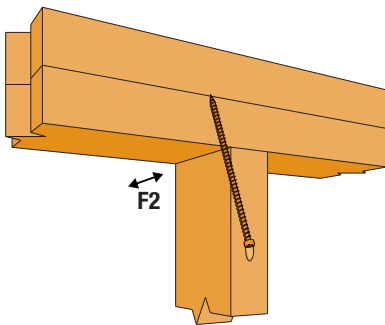
Truss Screws (cont.)

Strong-Drive® SDWC Allowable Narrow Face Stud-to-Plate Connection Loads – DFL, SP, SPF, HF

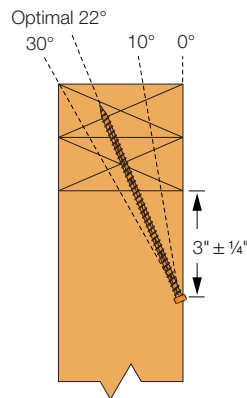
Type of Connection	Model No.	Qty. Required	Minor Diameter (in.)	Length (in.)	Thread Length (in.)	Plate Size	(Allowable Loads (lb.))			
							DF/SP		SPF/HF	
							Uplift	F ₂	Uplift	F ₂
1	SDWC15600 ¹	1	0.152	6	5 ¾	(2) 2x	590	170	510	145
2	SDWC15600 ²	1	0.152	6	5 ¾	2x	450	155	310	135
3	SDWC15450 ³	1	0.152	4 ½	4 ¼	2x	295	150	255	130

1. Loads have been increased for wind and earthquake ($C_D = 1.6$); no further increase is allowed; reduce when other loads govern.
2. The SDWC15600 is to be installed through the narrow face of 2x stud into a single 2x bottom plate over a wood floor system.
3. The SDWC15450 is to be installed through the narrow face of 2x stud into a single 2x bottom plate over a concrete/masonry foundation.
4. Double-top plates shall be fastened together as required by applicable Code.
5. The F₂ direction is perpendicular to the wall. When the screw is loaded simultaneously in more than one direction, the allowable load must be evaluated using the following equation:

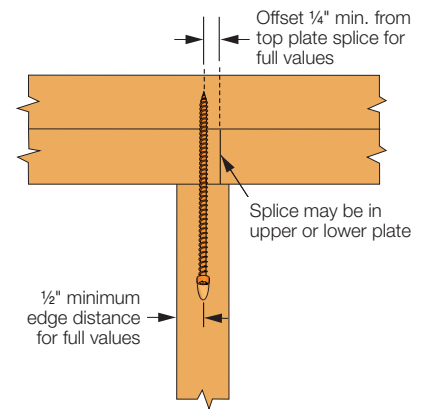
- (Design Uplift ÷ Allowable Uplift) + (Design F₂ ÷ Allowable F₂) ≤ 1.0
6. One SDWC screw per stud maximum when installed in the narrow face of the stud. Where the SDWC screws are installed on multiple adjacent studs, the minimum spacing between screws must be 1 ½".
7. For uplift Continuous Load Path, connections in the same area (i.e. truss to plate connector and plate to stud connector) must be on the same side of the wall.



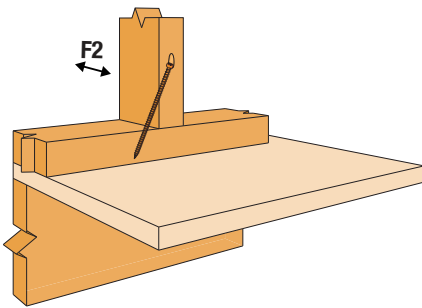
1 Narrow Face of Stud-to-Top Plate Connection
(This application requires SDWC15600)



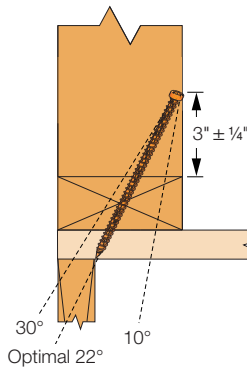
Installation Angle Range



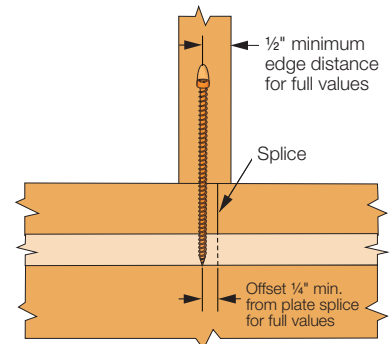
Minimum Edge Distance and Splice Offset Requirements



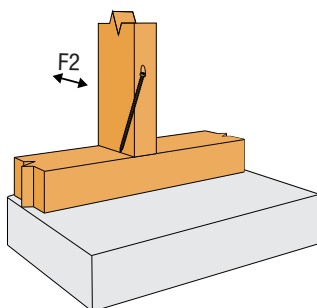
2 Narrow Face of Stud-to-Bottom Plate Connection over Wood Floor
(SDWC15600 shown)



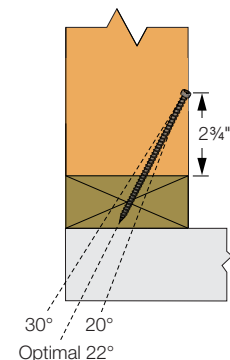
Installation Angle Range



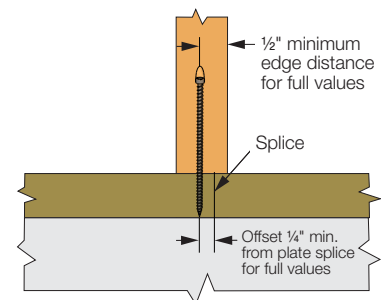
Minimum Edge Distance and Splice Offset Requirements



3 Narrow Face of Stud-to-Bottom Plate Connection over Masonry/Concrete Foundation
(This application requires SDWC15450)



Installation Angle Range



Minimum Edge Distance and Splice Offset Requirements

DSP/SSP/SP/SPH/RSP4/TSP

Stud Plate Ties



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 stud plate tie series offers general solutions for connecting the stud to the top and bottom plates. All models can be used to make a connection to either the top or bottom plate, and several are suitable for double top plates and studs.

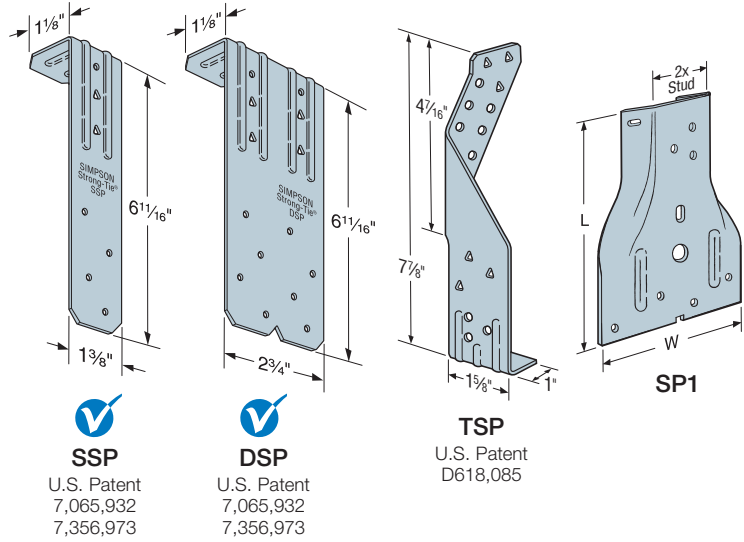
Material: DSP/SSP/SPH — 18 gauge; TSP — 16 gauge; all others — 20 gauge

Finish: Galvanized. Some products available in ZMAX® coating. See Corrosion Information, pp. 15–18.

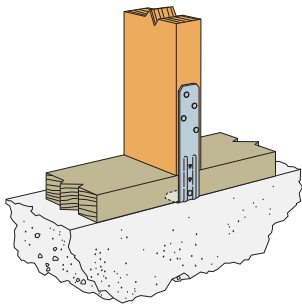
Installation:

- Use all specified fasteners; see General Notes.
- TSP/DSP/SSP — Sill-plate installation: fill all round holes.
- TSP/DSP/SSP — Top-plate installation: fill all round and triangle holes
- SP1/SP2 — One of the 10d common stud nails is driven at a 45° angle through the stud into the plate.

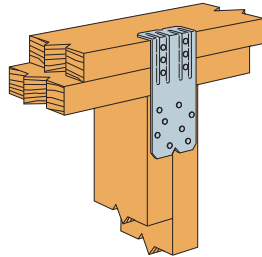
Codes: See p. 14 for Code Reference Key Chart



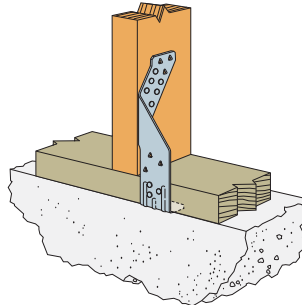
Straps and Ties



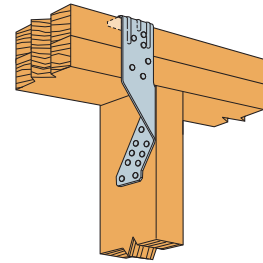
Typical SSP Installed to Sill Plate
(DSP similar for double stud)



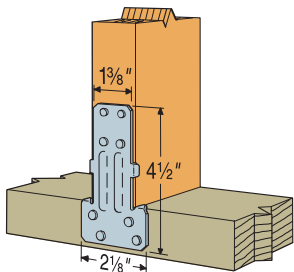
Typical DSP Installed to Top Plate
(SSP similar for single stud)



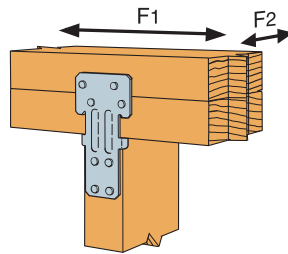
Typical TSP Installed to Sill Plate



Typical TSP Installed to Top Plate



(1) Typical RSP4 Stud to Single Bottom Plate

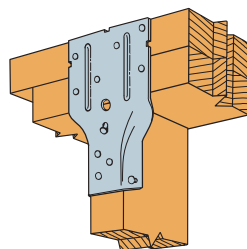
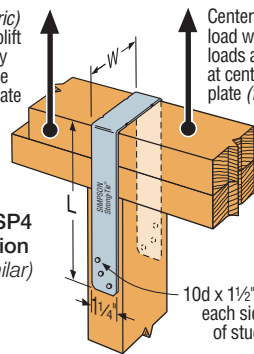


(2) Typical RSP4 Stud to Double Top Plate
(See footnote 4)

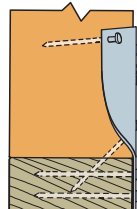
Side (*eccentric*) load when uplift loads are only applied to one face of top plate (footnote 8)

Center (*concentric*) load when uplift loads are applied at centerline of top plate (footnote 9)

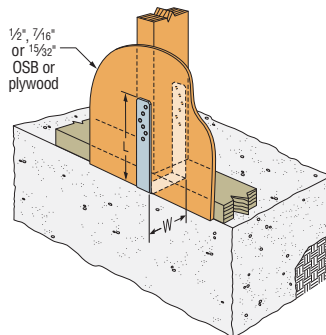
Typical SP4 Installation
(SPH similar)



Typical SP2 Installation



SP1 Nailing Profile



Typical SPH4R Installed on Bottom of 2x Stud Wall
(Sill plate anchorage not shown)

DSP/SSP/SP/SPH/RSP4/TSP

Stud Plate Ties (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Dimensions (in.)		Fasteners			Allowable Uplift Loads (160)			Code Ref.
	W	L	Studs	Double Top Plate	Single Sill Plate	Single Sill Plate ⁶			
						DF/SP/SPF	DF/SP	SPF/HF	
SSP	1 $\frac{1}{8}$	6 $\frac{1}{16}$	(4) 10d x 1 $\frac{1}{2}$ "	(3) 10d x 1 $\frac{1}{2}$ "	—	350	—	—	I17, L18, FL
				—	(1) 10d x 1 $\frac{1}{2}$ "	—	420	325	
			(4) 10d	(3) 10d	—	435	—	—	
				—	(1) 10d	—	455	420	
DSP	2 $\frac{3}{4}$	6 $\frac{1}{16}$	(8) 10d x 1 $\frac{1}{2}$ "	(6) 10d x 1 $\frac{1}{2}$ "	—	775	—	—	
				—	(2) 10d x 1 $\frac{1}{2}$ "	—	660	545	
			(8) 10d	(6) 10d	—	825	—	—	
				—	(2) 10d	—	825	600	
TSP	1 $\frac{1}{2}$	7 $\frac{7}{8}$	(6) 10d x 1 $\frac{1}{2}$ "	—	(3) 10d x 1 $\frac{1}{2}$ "	—	470 ⁵	425	FL
				(6) 10d x 1 $\frac{1}{2}$ "	—	755 ⁴	—	—	
			(9) 10d x 1 $\frac{1}{2}$ "	(6) 10d	—	1,015 ⁴	—	—	
				—	—	—	—	—	

1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed.

2. When cross-grain bending or cross-grain tension cannot be avoided, mechanical reinforcement to resist such forces should be considered.

3. Allowable loads for DSP installed to a rim board are 660 lb. (DF/SP), 545 lb. (SPF/HF).

4. Noted values only apply to DF/SP members. For SPF values, multiply by 0.86.

5. Southern pine allowable uplift load is 585 lb.

6. Allowable load for TSP installed to DF/SP top plate and SPF/HF stud is 450 lb.

7. Nails: 10d = 0.148" dia. x 3" long, 10d x 1 $\frac{1}{2}$ " = 0.148" dia. x 1 $\frac{1}{2}$ " long.

See pp. 26–27 for other nail sizes and information.

Model No.	Dimensions (in.)		Stud	Plate Width	Fasteners		Allowable Uplift Loads				Code Ref.
	W	L			Stud1	Plate	DF/SP		SPF/HF		
							Side ⁸ (160)	Center ⁹ (160)	Side ⁸ (160)	Center ⁹ (160)	
SP1	3 $\frac{1}{2}$	5 $\frac{1}{16}$	2x	—	(6) 10d	(4) 10d	585	585	535	535	I17, FL, L6
SP2	3 $\frac{1}{2}$	6 $\frac{5}{8}$	2x	—	(6) 10d	(6) 10d	1,065	1,065	605	605	
SP4	3 $\frac{3}{16}$	7 $\frac{1}{4}$	2x	4x	(6) 10d x 1 $\frac{1}{2}$ "	—	440	885	380	760	
SP6	5 $\frac{5}{16}$	7 $\frac{3}{4}$	2x	6x	(6) 10d x 1 $\frac{1}{2}$ "	—	440	885	380	760	
SP8	7 $\frac{5}{16}$	8 $\frac{5}{16}$	2x	8x	(6) 10d x 1 $\frac{1}{2}$ "	—	440	885	380	760	
SPH4 or SPH4R	3 $\frac{3}{16}$	8 $\frac{3}{4}$	2x	4x	(10) 10d x 1 $\frac{1}{2}$ "	—	620	1,240	530	1,065	
SPH6 or SPH6R	4 $\frac{1}{16}$	8 $\frac{1}{4}$			(12) 10d x 1 $\frac{1}{2}$ "	—	680	1,360	585	1,170	
SPH8	7 $\frac{5}{16}$	8 $\frac{3}{8}$	2x	8x	(10) 10d x 1 $\frac{1}{2}$ "	—	620	1,240	530	1,065	
		(12) 10d x 1 $\frac{1}{2}$ "			—	680	1,360	585	1,170	170	
RSP4 (1)	2 $\frac{1}{8}$	4 $\frac{1}{2}$	2x	—	(4) 8d x 1 $\frac{1}{2}$ "	(4) 8d x 1 $\frac{1}{2}$ "	315	315	285	285	I17, L5, L6, FL
RSP4 (2)	2 $\frac{1}{8}$	4 $\frac{1}{2}$	2x	—	(4) 8d x 1 $\frac{1}{2}$ "	(4) 8d x 1 $\frac{1}{2}$ "	450	450	370	370	

1. SP1/SP2 — drive one stud nail at an angle through the stud into the plate to achieve the table load (see illustration).

2. Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.

3. RSP4 — see Installation details (1) and (2) for reference.

4. RSP4 — F₂ is 250 lb. (installation 1) and 250 lb. (installation 2). F₁ load is 210 lb. for both installations.

5. Maximum load for SPH in Southern Yellow Pine is 1,490 lb. for center loading and 745 lb. for side loading.

6. When cross-grain bending or cross-grain tension cannot be avoided, mechanical reinforcement to resist such forces should be considered.

7. For retrofit application see technical bulletin T-C-STRAPS at strongtie.com.

8. Use Side (eccentric) load when uplift loads are applied to only one face of the top plate.

9. Use Center (concentric) loads when uplift loads are applied at the centerline of the top plate, or where equal loads are applied to both sides of the top plate. Center loads should also be used for stud-to-bottom plate loads.

10. Nails: 10d = 0.148" dia. x 3" long, 10d x 1 $\frac{1}{2}$ " = 0.148" dia. x 1 $\frac{1}{2}$ " long, 8d x 1 $\frac{1}{2}$ " = 0.131" dia. x 1 $\frac{1}{2}$ " long. See pp. 26–27 for other nail sizes and information.

LTS/MTS/HTS

Twist Straps

Twist straps provide a tension connection between two wood members. They resist uplift at the heel of a truss economically. LTS/ MTS have a 2"-bend section and HTS has a 3¾"-bend section that eliminates interference at the transition points between the two members.

Material: LTS — 18 gauge; MTS — 16 gauge; HTS — 14 gauge

Finish: Galvanized. Some products available in stainless steel and ZMAX® coating; see Corrosion Information, pp. 15–18.

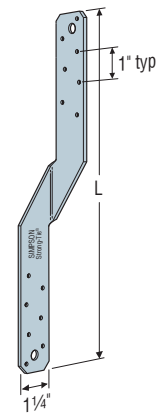
Installation:

- Use all specified fasteners; see General Notes.
- LTS, MTS and HTS are available with the bend reversed. Specify "-REV" after the model number, such as MTS16-REV.

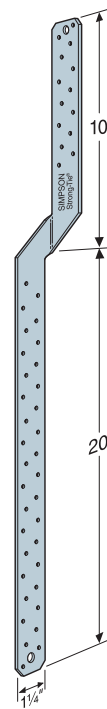
Codes: See p. 14 for Code Reference Key Chart

These products are available with additional corrosion protection. For more information, see p. 18.

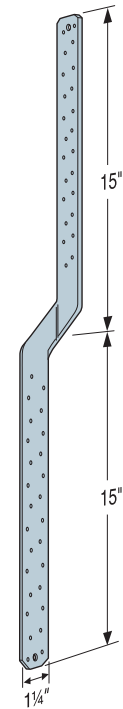
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.



LTS12
(MTS and HTS similar)

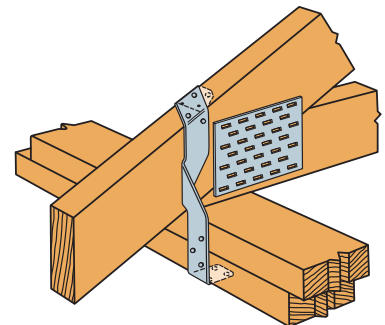


MTS30
(HTS30 similar)



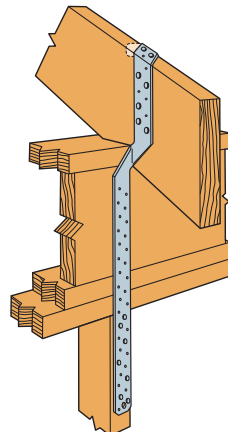
HTS30C
(MTS30C similar)

Model No.	L	Fasteners		DF/SP Allowable Uplift Loads		SPF/HF Allowable Uplift Loads		Code Ref.
		10d	10d x 1 1/2"	10d	10d x 1 1/2"	10d	10d x 1 1/2"	
		(160)	(160)	(160)	(160)	(160)	(160)	
SS LTS12	12	(12) 10d	(12) 10d x 1 1/2"	775	720	665	620	I17, L6, FL
LTS16	16	(12) 10d	(12) 10d x 1 1/2"	775	720	665	620	
SS LTS18	18	(12) 10d	(12) 10d x 1 1/2"	775	720	665	620	
LTS20	20	(12) 10d	(12) 10d x 1 1/2"	775	720	665	620	I17, L5, L6, FL
MTS12	12	(14) 10d	(14) 10d x 1 1/2"	1,000	1,000	860	860	
MTS16	16	(14) 10d	(14) 10d x 1 1/2"	1,000	1,000	860	860	
MTS18	18	(14) 10d	(14) 10d x 1 1/2"	1,000	1,000	860	860	I17, L6, FL
SS MTS20	20	(14) 10d	(14) 10d x 1 1/2"	1,000	1,000	860	860	I17, L5, L6, FL
MTS30	30	(14) 10d	(14) 10d x 1 1/2"	1,000	1,000	860	860	I17, L6, FL
MTS24C	24	(14) 10d	(14) 10d x 1 1/2"	1,000	1,000	860	860	FL
MTS30C	30	(14) 10d	(14) 10d x 1 1/2"	1,000	1,000	860	860	
HTS16	16	(16) 10d	(16) 10d x 1 1/2"	1,260	1,150	1,085	990	
HTS20	20	(20) 10d	(24) 10d x 1 1/2"	1,450	1,450	1,245	1,245	I17, L6, FL
HTS24	24	(20) 10d	(24) 10d x 1 1/2"	1,450	1,450	1,245	1,245	
HTS30	30	(20) 10d	(24) 10d x 1 1/2"	1,450	1,450	1,245	1,245	
HTS30C	30	(20) 10d	(24) 10d x 1 1/2"	1,450	1,450	1,245	1,245	

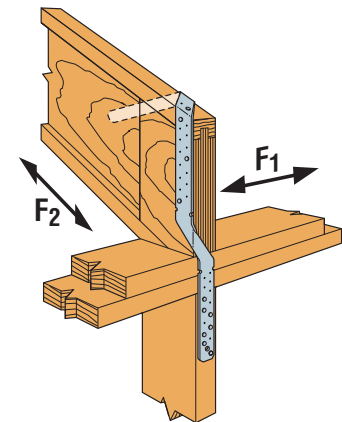


MTS Installation as a Truss-to-Top Plate Tie

1. Loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. LTS12 thru LTS20, MTS16 through MTS30, HTS24 through HTS30C (except HTS30) have additional nail holes.
3. Install half of the fasteners on each end of strap to achieve full loads.
4. All straps except the MTS30 and HTS30 have the twist in the center of the strap.
5. Twist straps do not have to be wrapped over the truss to achieve the load.
6. May be installed on the inside face of the stud.
7. Allowable lateral loads are $F_1 = 75$ lb. and $F_2 = 125$ lb. when the following installation requirements are met. The first seven nail holes each side of the bend must be filled with 10d x 1 1/2" minimum nails. All additional fasteners may be installed in any remaining strap holes.
8. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.



Typical MTS30 Installation



MTS30 Installation with I-Joist Rafter

HTSQ

Twist Strap

The HTSQ twist straps provide a tension connection between two wood members and are designed to resist uplift for decks, boardwalks and beams economically. The HTSQ is quicker, easier and more economical to install when compared to bolted straps. HTSQ provides a strong connection with fewer fasteners than nailed HTS straps when incorporating Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws. Strong-Drive SDS screws with a double-barrier coating finish are included with HTSQ straps in a ZMAX® coating. For stainless-steel HTSQ straps, stainless-steel SDS Heavy-Duty Connector screws are provided.

Features:

- Quicker and more consistent installation than bolts
- Better fastener withdrawal resistance than nails
- Corrosion resistance finish options

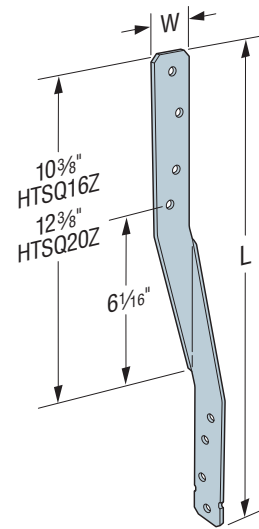
Material: 14 gauge

Finish: ZMAX coating or stainless steel

Installation:

- Use all specified fasteners; see General Notes

Codes: See p. 14 for Code Reference Key Chart

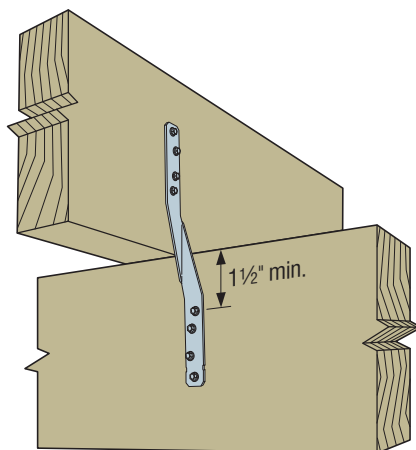


HTSQ16Z
(Others similar)

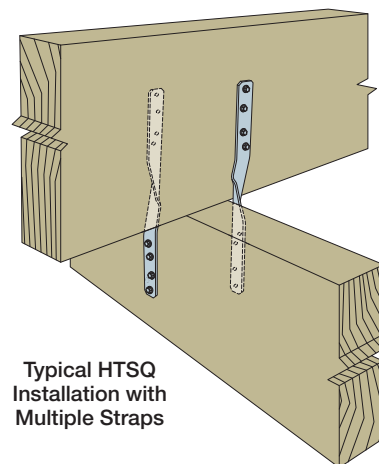
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Dimensions (in.)		Fasteners	Allowable Uplift Loads				Code Ref.
	W	L		DF/SP		SPF/HF		
				(100)	(160)	(100)	(160)	
SS HTSQ16ZKT or HTSQ16SS-SDS	1 1/4	16	(8) 1/4" x 1 1/2" SDS	1,000	1,145	720	800	170
SS HTSQ20ZKT or HTSQ20SS-SDS	1 1/4	20						

1. Uplift (160) loads have been increased for wind or earthquake loading with no further increase allowed.
2. Tabulated loads are for a single connector. Multiple connectors may be used when the fasteners do not interfere.
3. Install four fasteners in each member to achieve full loads. HTSQ20 has (2) extra holes per side to allow for installation flexibility.



Typical HTSQ16Z Installation



Typical HTSQ Installation with Multiple Straps

LGT/MGT/VGT/HGT

Girder Tiedowns

The LGT, MGT, VGT and HGT are girder tiedowns for moderate- to high-load capacity applications. The LGT and VGT are also suitable for retrofit applications.

LGT connectors provide a low-profile connection to the studs for easy installation of drywall. Simple to install and can be installed on the inside or outside of the wall. LGT connectors also provide exceptional bearing enhancement for heavy download applications.

The Variable Girder Tiedown (VGT) is a higher capacity alternative to the LGT and MGT for girder trusses. It attaches with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws to the side of truss and features a predeflected crescent washer that allows it to accommodate top chord pitches up to 8/12. The VGT is also available with one flange concealed for attachment to trusses with no tail.

The HGT offers the highest uplift capacity for girders and can be installed on trusses and beams with top chord slopes up to 1/2.

Material: HGT, VGT — 7 gauge, LGT — 14 gauge, MGT, LGT3, LGT4 — 12 gauge

Finish: HGT — Simpson Strong-Tie® gray paint; LGT, MGT, VGT — Galvanized

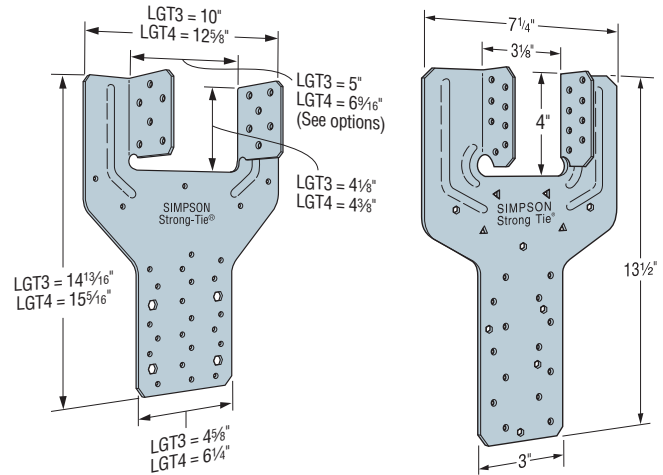
Installation:

- When the HGT-3 is used with a 2-ply girder or beam, shimming is required. Fasten to act as one unit
- Before installing fasteners, ensure LGT3-SDS2.5 makes complete contact with bottom of truss
- Strong-Drive SDS Heavy-Duty Connector screws included with LGT3, LGT4 and VGT series
- VGT — Can be installed on roof pitches up to 8/12 or on a bottom chord designed to transfer the load
- VGT — Screw holes are configured to allow for double installation on a two-ply (minimum) truss
- VGT — When installed on trusses with no overhangs, specify VGTR/L
- VGT — Install washer component (provided) so that top of washer is horizontal as well as parallel with top-of-wall top plate
- LGT3-SDS2.5 — The four large hexagon holes are intended for GFCMU and concrete applications
- **MGT — Install a minimum of (6) 10d nails into the face of roof member that is on same side as MGT base**
- See pp. 294–296 for masonry applications

Options:

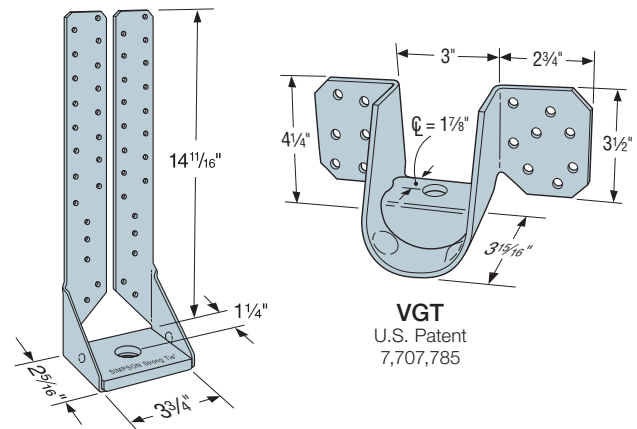
- LGT3 and LGT4 are available with reduced widths of $W = 4\frac{3}{4}$ " and $W = 6\frac{5}{16}$ " — order as LGT3N-SDS2.5 and LGT4N-SDS3

Codes: See p. 14 for Code Reference Key Chart



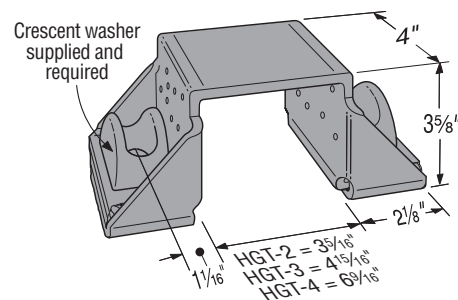
LGT3-SDS2.5
(LGT4-SDS3 similar)

LGT2



MGT

VGT
U.S. Patent
7,707,785



HGT-2
(HGT-3, HGT-4 similar)

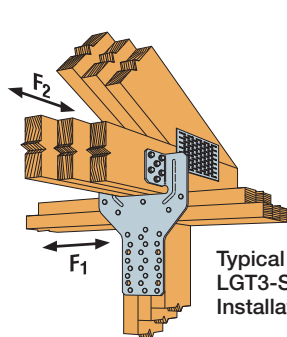
LGT/MGT/VGT/HGT

Girder Tiedowns (cont.)

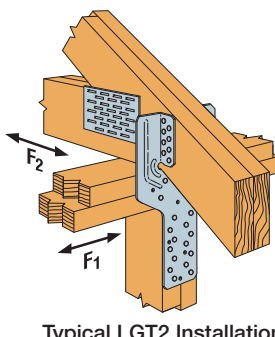
These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Qty.	No. of Plies	O.C. Dim. Between Anchors	Fasteners		DF/SP Allowable Loads			SPF/HF Allowable			Code Ref.
				Nails or Anchor Diameter	Girder	Uplift (160)	F ₁ (160)	F ₂ (160)	Uplift (160)	F ₁ (160)	F ₂ (160)	
LGT2	1	2 ply	—	(14) 16d sinkers	(16) 16d sinkers	2,050	700	170	1,785	700	170	FL
LGT3-SDS2.5	1	3 ply	—	(26) 16d sinkers	(12) ¼" x 2½" SDS	3,685	795	410	2,655	795	410	
LGT4-SDS3	1	4 ply	—	(30) 16d sinkers	(16) ¼" x 3" SDS	4,060	2,000	675	2,925	2,000	675	
MGT	1	2 ply min.	—	(1) ½"	(22) 10d	3,965	775	525	3,330	775	525	
VGT	1	2 ply min.	—	(1) ½"	(16) ¼" x 3" SDS	4,940	1,185	590	3,555	1,185	590	
	2	2 ply min.	—	(2) ½"	(32) ¼" x 3" SDS	7,185	1,185	590	5,175	1,185	590	
	2	3 ply min.	—	(2) ½"	(32) ¼" x 3" SDS	8,890	1,185	590	6,400	1,185	590	
VGTR/L	1	2 ply min.	—	(1) ½"	(16) ¼" x 3" SDS	2,225	650	630	1,600	650	630	
	2	2 ply min.	—	(2) ½"	(32) ¼" x 3" SDS	5,545	650	630	3,990	650	630	
HGT-2	1	2 ply	5¾"	(2) ½"	(16) 10d	10,980	—	—	6,485	—	—	
HGT-3	1	3 ply	7¾"	(2) ½"	(16) 10d	10,530	—	—	9,035	—	—	
HGT-4	1	4 ply	9"	(2) ½"	(16) 10d	9,250	—	—	9,250	—	—	

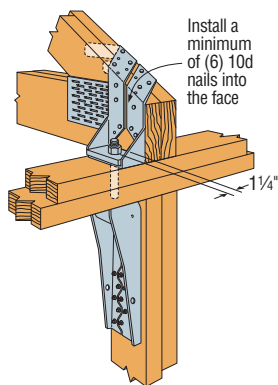
- Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
- LGT2 — F₂ load requires installation of (4) 16d sinkers in optional nail holes.
- LGT4 — F₂ load requires installation of (7) 16d sinkers in optional nail holes.
- LGT4 — Uplift for DF/SP girder and SPF studs is 3,860 lb.
- MGT can be installed with straps vertical for full table load provided all specified nails are installed to either a solid header or minimum double 2x6 web.
- LGT connectors can provide bearing enhancement loads for truss download reactions. The DF/SP allowable load shall be 2,060 lb. for LGT2 and 4,100 lb. for LGT3 and LGT4 (for SPF/HF values use a 0.68 multiplier). For more information refer to technical bulletin T-C-HTIEBEARING at strongtie.com.
- Girder tiedowns installed on the outside of the wall require a 3½" overhang to achieve table loads.
- Simpson Strong-Tie® Strong-Drive® screws are permitted to be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014 Sections 7.5.3.4 and 8.9.2 are met (pre-drilling required through the plate using a maximum of ⅝" bit).
- Nails: 16d sinker = 0.148" dia. x 3¼" long, 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.



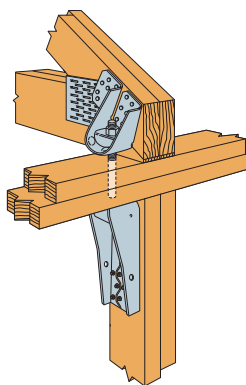
Typical LGT3-SDS2.5 Installation



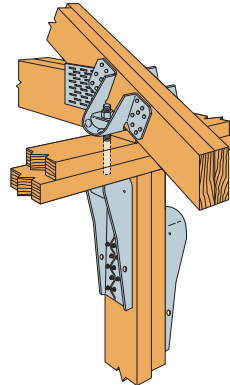
Typical LGT2 Installation



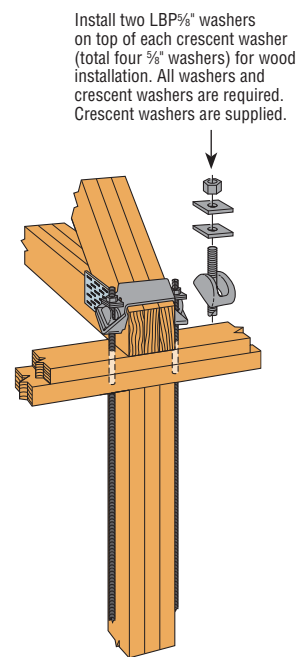
Typical MGT Installation with HDU4



Typical VGTR Single Installation with HDU2



Typical VGT Double Installation with HDU4's



Typical HGT-3 Installation with Full-Height Threaded Rod

LTP4/LTP5/A34/A35

Framing Angles and Plates

The larger LTP5 spans subfloor at the top of the blocking or rim board. The embossments enhance performance.

The LTP4 Lateral Tie Plate transfers shear forces for top plate-to-rim board or blocking connections. Nail holes are spaced to prevent wood splitting for single and double top plate applications. May be installed over plywood sheathing.

The A35 angle's exclusive bending slot allows instant, accurate field bends for all two- and three-way ties. Balanced, completely reversible design permits the A35 to secure a great variety of connections.

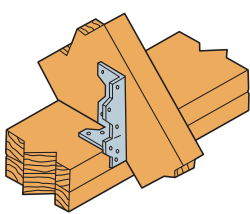
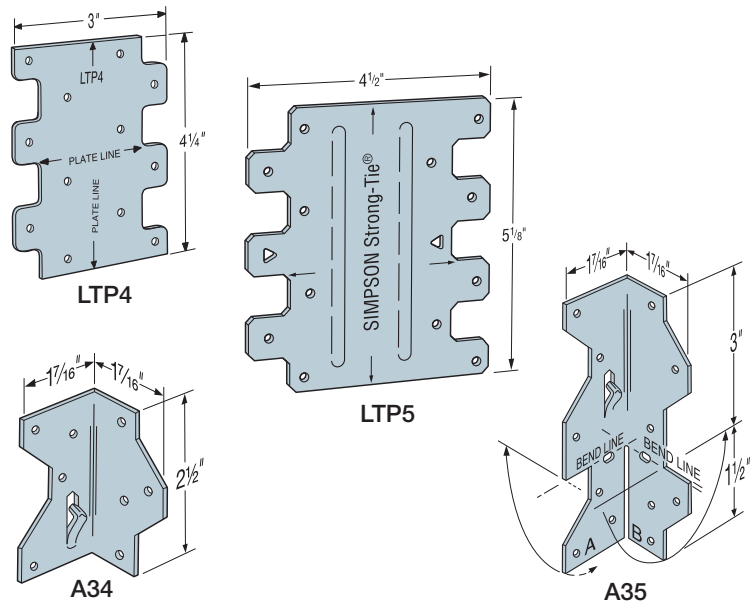
Material: LTP4/LTP5 — 20 gauge; all others — 18 gauge

Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 15–18.

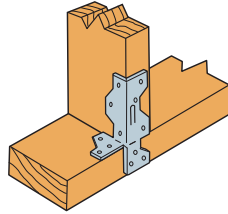
Installation:

- Use all specified fasteners; see General Notes
- A35 — Bend one time only

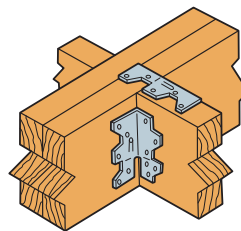
Codes: See p. 14 for Code Reference Key Chart



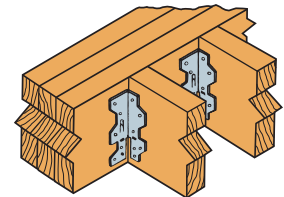
Joists to Plate with A Leg Inside



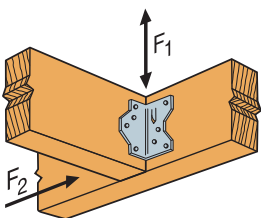
Studs to Plate with B Leg Outside



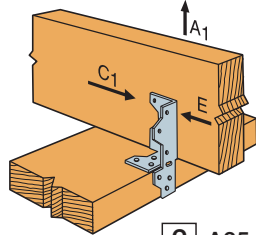
Joists to Beams



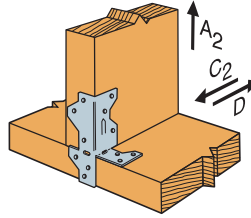
Ceiling Joists to Beam



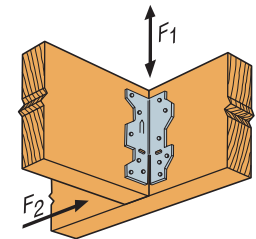
1 A34



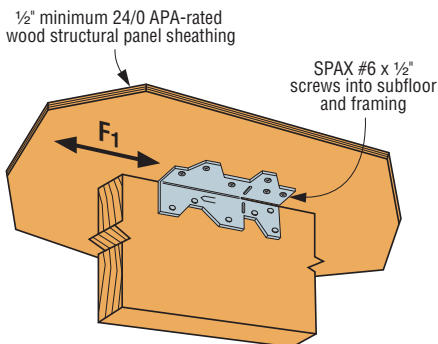
2 A35



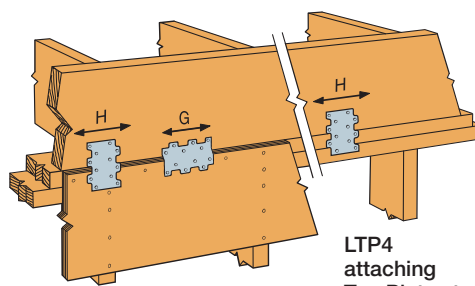
3 A35



4 A35

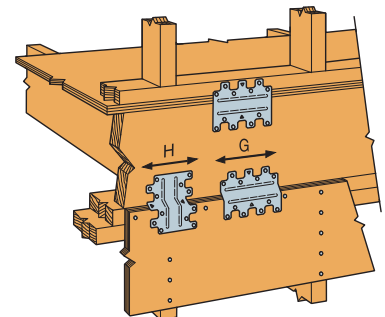


5 A35



6 LTP4 Installed over Wood Structural Panel Sheathing

LTP4 attaching Top Plates to Rim Board



7 LTP5 Installed over Wood Structural Panel Sheathing

LTP4/LTP5/A34/A35

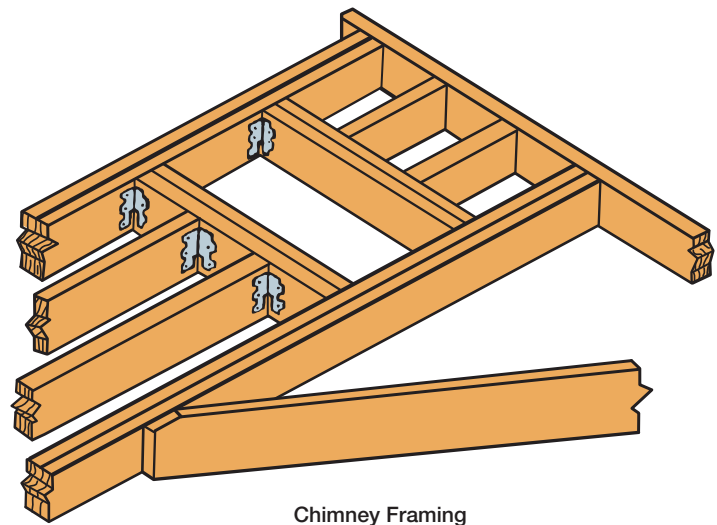
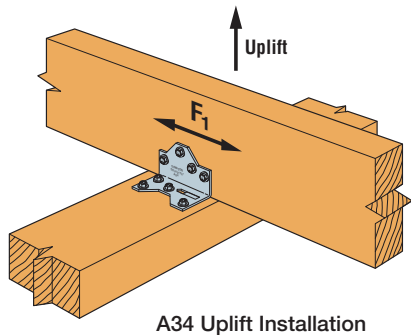
Framing Angles and Plates (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Type of Connection	Fasteners	Direction of Load	DF/SP Allowable Loads			SPF/HF Allowable Loads			Code Ref.	
				Floor (100)	Roof (125)	(160)	Floor (100)	Roof (125)	(160)		
SS A34	1	(8) 8d x 1½"	F ₁	395	485	515	340	415	445	IP1, L5, L18, FL	
			F ₂ ⁶	395	455	455	340	390	390		
	1	(8) #9 x 1½" SD	F ₁	395	485	515	340	415	445	I27, L5, FL	
			F ₂	395	455	455	340	390	390		
			Uplift	240	240	240	170	170	170		
SS A35	2	(9) 8d x 1½"	A ₁ , E	295	365	395	255	315	340	IP1, L5, L18, FL	
			C ₁	210	210	210	180	180	180		
	3	(12) 8d x 1½"	A ₂	295	365	380	255	315	325		
			C ₂	295	365	370	255	315	320		
	4	(12) 8d x 1½"	D	230	230	230	200	200	200		
			F ₁	595	695	695	510	600	600		
				F ₂ ⁶	595	670	670	510	575		575
				F ₁	420	420	420	360	360		360
LTP4	6	(12) 8d x 1½"	G	580	670	670	500	570	575	IP1, L5, L18, FL	
			H	580	600	600	500	515	515		
LTP5	7	(12) 8d x 1½"	G	580	620	620	500	535	535	IP1, L18, FL	
			H	545	545	545	470	470	470		

1. Allowable loads are for one angle. When angles are installed on each side of the joist, the minimum joist thickness is 3".
2. Some illustrations show connections that could cause cross-grain tension or bending of the wood during loading if not reinforced sufficiently. In this case, mechanical reinforcement should be considered.
3. LTP4 can be installed over ¾" wood structural panel sheathing with 8d x 1½" nails and achieve 0.72 of the listed load, or over ½" and achieve 0.64 of the listed load. 8d commons will achieve 100% load.
4. LTP4 satisfies the IRC continuously sheathed portal frame (CS-PF) framing anchor requirements when installed over raised wood floor framing per Figure R602.10.6.4.
5. The LTP5 may be installed over wood structural panel sheathing up to ½" thick using 8d x 1½" nails with no reduction in load.
6. Connectors are required on both sides to achieve F₂ loads in both directions.
7. **Fasteners:** 8d x 1½" = 0.131" dia. x 1½" long; SPAX #6 x ½" = 0.138" dia. x ½" long. See pp. 26–27 for other nail sizes and information.



RBC

Roof Boundary Clip

The RBC Roof Boundary Clip is designed to aid installation and transfer shear loads between the roof diaphragm and wall. The locator tabs make proper location of the clip easy. The RBC can be used on wood or masonry walls and will handle roof pitches from 1/12 to 12/12.

Material: 20 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- Field bend to desired angle — one time only
- See flier F-C-RBC at strongtie.com for more information on installation and code requirements

Codes: See p. 14 for Code Reference Key Chart

The RBC installed to blocking resists rotation and lateral displacement of rafter or truss.

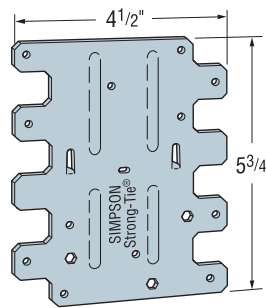
Code references:

- IRC 2012/2015, R802.8 Lateral Support
- IBC 2012/2015, 2308.10.6 Blocking

Blocking allows proper edge nailing of sheathing.

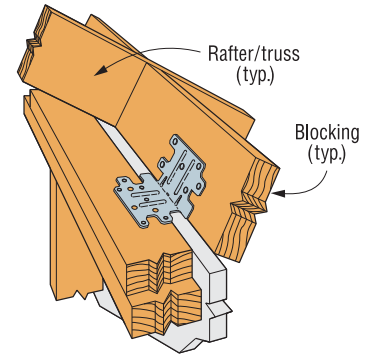
Code references:

- IRC 2012/2015, Table R602.3(1), footnote i
- IBC 2012/2015, 2305.1.4 Shear Panel Connections

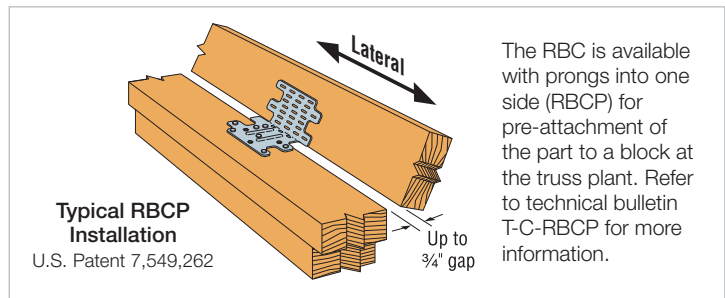


RBC

U.S. Patent 7,293,390



Typical RBC Installation Over 1" Foamboard⁵



Typical RBC Installation

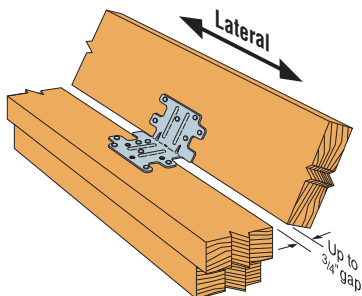
U.S. Patent 7,549,262

The RBC is available with prongs into one side (RBCP) for pre-attachment of the part to a block at the truss plant. Refer to technical bulletin T-C-RBCP for more information.

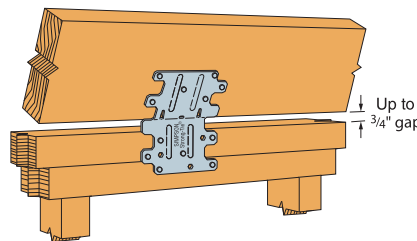
Model No.	Type of Connection	Bending Angle	Fasteners		DF/SP Allowable Loads	SPF/HF Allowable Loads	Code Ref.
			To Wall	To Blocking	Lateral (160)	Lateral (160)	
RBC	1	45° to 90°	(6) 10d x 1 1/2"	(6) 10d x 1 1/2"	445	380	IP1, L18, FL
	2	< 30°	(6) 10d x 1 1/2"	(6) 10d x 1 1/2"	435	375	
		30° to 45°	(6) 10d x 1 1/2"	(6) 10d x 1 1/2"	480	415	
	3	0° to 45°	(3) 1/4" x 2 1/4" Titen ⁴	(6) 10d x 1 1/2"	350	350	

1. Allowable loads are for one anchor attached to blocking minimum 1 1/2" thick.
2. RBC can be installed with up to 3/4" gap and achieve 100% of the listed load.
3. Allowable loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
4. When attaching to concrete use (3) 1/4" x 1 3/4" Titen[®] screws TTN2-25134H.
5. RBC installed over 1" foamboard has a load of 395 lb. (160) in a parallel to wall (F1) load direction for Douglas Fir. For SPF, the load is 340 lb.
6. RBC may be installed over 1/2" structural sheathing using 10d x 1 1/2" nails with no load reduction.
7. **Fasteners:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. TTN2-25134H = 1/4" x 1 3/4" Titen 2; TTN2-25214H = 1/4" x 2 1/4" Titen 2. TTN25134H = Titen 1/4" x 1 3/4" and TTN25214H = Titen 1/4" x 2 1/4" may also be used at full table loads. See pp. 26-27 for other nail sizes and information.

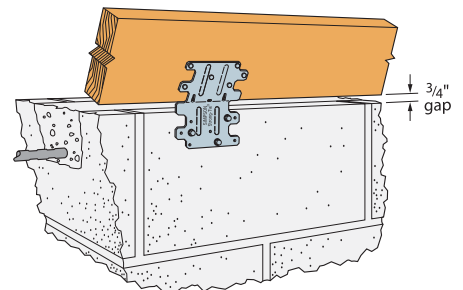
Straps and Ties



1 Typical RBC Installation



2 Typical RBC Installation



3 Typical RBC Installation to CMU Block

A

Angle

Our line of angles provides a way to make a wide range of 90° connections.

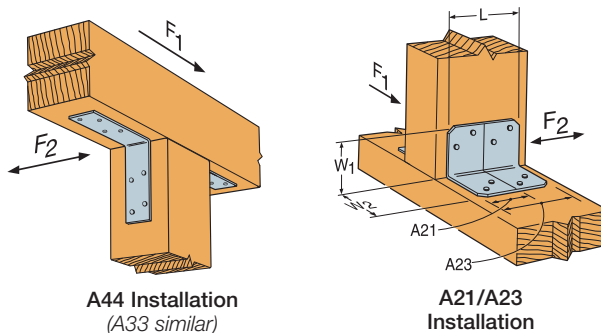
Material: A21 and A23 — 18 ga.;
all other A angles — 12 ga.

Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes

Codes: See p. 14 for Code Reference Key Chart

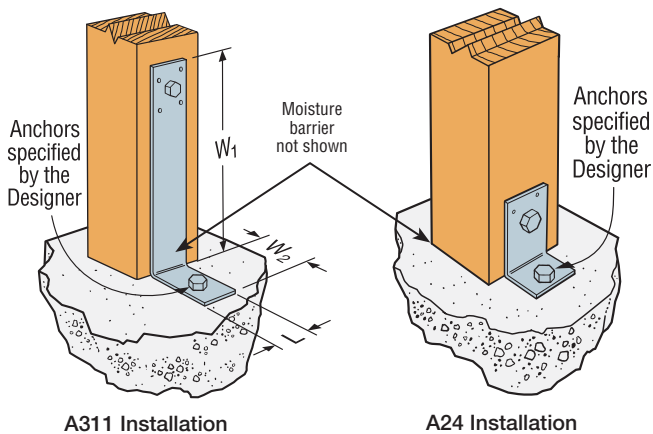


These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Dimensions (in.)			Fasteners				Allowable Loads DF/SP (160)		Code Ref.
	W ₁	W ₂	L	Base		Post		F ₁ ³	F ₂	
				Bolts	Nails	Bolts	Nails			
A21	2	1½	1¾	—	(2) 10d x 1½"	—	(2) 10d x 1½"	365	175	IP1, L5, L18, FL
A23	2	1½	2¾	—	(4) 10d x 1½"	—	(4) 10d x 1½"	715	565	
A33	3	3	1½	—	(4) 10d	—	(4) 10d	800	330	
A44	4⅞	4⅞	1½	—	(4) 10d	—	(4) 10d	800	295	
A66	5⅞	5⅞	1½	(2) ⅝	(3) 10d	(2) ⅝	(3) 10d	—	—	180
A88	8	8	2	(3) ⅝	(4) 10d	(3) ⅝	(4) 10d	—	—	
A24	3⅞	2	2½	(1) ½	—	(1) ½	(2) 10d	—	—	
A311	11	3⅞	2	(1) ½	—	(1) ½	(4) 10d	—	—	

1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. For SPF/HF lumber use 0.86 of table loads.
3. Connectors are required on both sides to achieve F₁ loads in both directions.
4. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long, 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.



Z

Clip

The Z clip secures 2x4 flat blocking between joists or trusses to support sheathing.

Material: See table

Finish: Galvanized

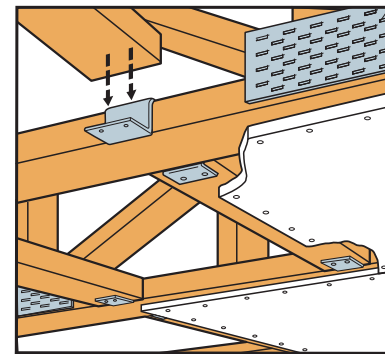
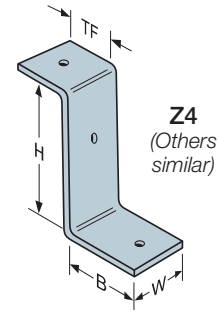
Installation:

- Use all specified fasteners; see General Notes.
- Z clips do not provide lateral stability. Do not walk on stiffeners or apply load until diaphragm is installed and nailed to stiffeners.

Codes: See p. 14 for Code Reference Key Chart

Model No.	Ga.	Dimensions (in.)				Fasteners ¹ (Total)	Allowable Download (100)	Code Ref.
		W	H	B	TF			
Z2	20	2 ⁵ / ₁₆	1 ¹ / ₂	1 ³ / ₈	1 ³ / ₈	(4) 10d x 1 ¹ / ₂ "	470	IP1, L18
Z4	12	1 ¹ / ₂	3 ¹ / ₂	2 ¹ / ₈	1 ³ / ₄	(2) 16d	465	IP1, L18, FL
Z28	28	2 ⁵ / ₁₆	1 ¹ / ₂	1 ³ / ₈	1 ³ / ₈	10d x 1 ¹ / ₂ " ¹	—	170
Z38	28	2 ⁵ / ₁₆	2 ¹ / ₂	1 ³ / ₈	1 ³ / ₈	10d x 1 ¹ / ₂ " ¹	—	
Z44	12	2 ¹ / ₂	3 ¹ / ₂	2	1 ³ / ₈	(4) 16d	865	IP1, L18, FL

1. Z28 and Z38 do not have nail holes. Fastener quantity and type shall be per Designer.
2. Allowable loads may not be increased.
3. Z4 loads apply with a nail into the top and a nail into the seat.
4. **Nails:** 16d = 0.162" dia. x 3¹/₂" long, 10d x 1¹/₂" = 0.148" dia. x 1¹/₂" long. See pp. 26–27 for other nail sizes and information.



Typical Z2 Installation

HL

Heavy Angle and Gusset

Versatile angle gussets and heavy angles promote standardization and construction economy, and are compatible with Simpson Strong-Tie® structural hardware.

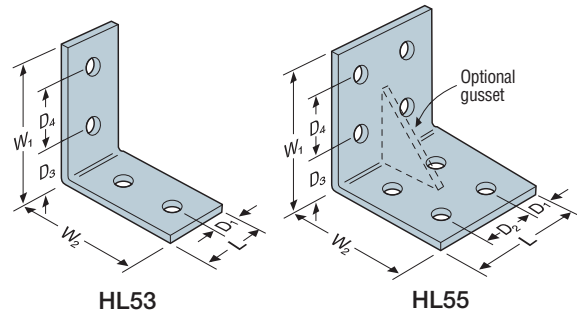
Finish: 7 ga. Models — Galvanized; 3 ga. Models — Simpson Strong-Tie® gray paint. May be ordered HDG; contact Simpson Strong-Tie.

Options:

- Gussets may be added to HL models when L ≥ 5" (specify G after model number, as in HL46G).

Codes: See p. 14 for Code Reference Key Chart

These products are available with additional corrosion protection. For more information, see p. 18.

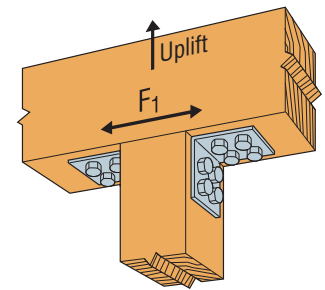


HL53

HL55

Model No.	Ga.	Dimensions (in.)							Bolts (Total)		Allowable Loads		Code Ref.
		W ₁ and W ₂	L	D ₁	D ₂	D ₃	D ₄	Qty.	Dia.	Uplift	F ₁		
Single Row Angles													170
HL33	7	3 ³ / ₄	2 ¹ / ₂	1 ¹ / ₄	—	2	—	2	1/2	910	1,580		
HL35	7	3 ³ / ₄	5	1 ¹ / ₄	2 ¹ / ₂	2	—	4	1/2	910	1,580		
HL37	7	3 ³ / ₄	7 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₂	2	—	6	1/2	910	1,580		
HL43	3	4 ¹ / ₄	3	1 ¹ / ₂	—	2 ³ / ₄	—	2	3/4	1,555	1,580		
HL46	3	4 ¹ / ₄	6	1 ¹ / ₂	3	2 ³ / ₄	—	4	3/4	1,555	2,025		
HL49	3	4 ¹ / ₄	9	1 ¹ / ₂	3	2 ³ / ₄	—	6	3/4	1,555	2,025		
Double Row Angles													170
HL53	7	5 ³ / ₄	2 ¹ / ₂	1 ¹ / ₄	—	2	2 ¹ / ₂	4	1/2	910	1,580		
HL55	7	5 ³ / ₄	5	1 ¹ / ₄	2 ¹ / ₂	2	2 ¹ / ₂	8	1/2	910	1,580		
HL57	7	5 ³ / ₄	7 ¹ / ₂	1 ¹ / ₄	2 ¹ / ₂	2	2 ¹ / ₂	12	1/2	910	1,580		
HL73	3	7 ¹ / ₄	3	1 ¹ / ₂	—	2 ³ / ₄	3	4	3/4	1,555	2,025		
HL76	3	7 ¹ / ₄	6	1 ¹ / ₂	3	2 ³ / ₄	3	8	3/4	2,115	3,800		
HL79	3	7 ¹ / ₄	9	1 ¹ / ₂	3	2 ³ / ₄	3	12	3/4	2,115	3,800		

1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Use 0.85 times table load for Hem Fir.
3. Parts should be centered on the face of the member to which they are attached.
4. Wood members for the '3' and '5' series must have a minimum width and thickness of 3¹/₂" for table loads to apply.
5. Wood members for the '4' and '7' series must have a minimum width and thickness of 5¹/₈" for table loads to apply.
6. Parts must be used in pairs.
7. Lag screws of equal diameter (minimum 5" long) may be substituted for machine bolts into beam with no reduction in load.



Typical HL55 Installation

L/LS/GA

Reinforcing and Skewable Angles

L — Staggered nail pattern reduces the possibility for splitting.

LS — Field-adjustable 0° to 135° angles. The GA gusset angles' embossed bend section provides added strength.

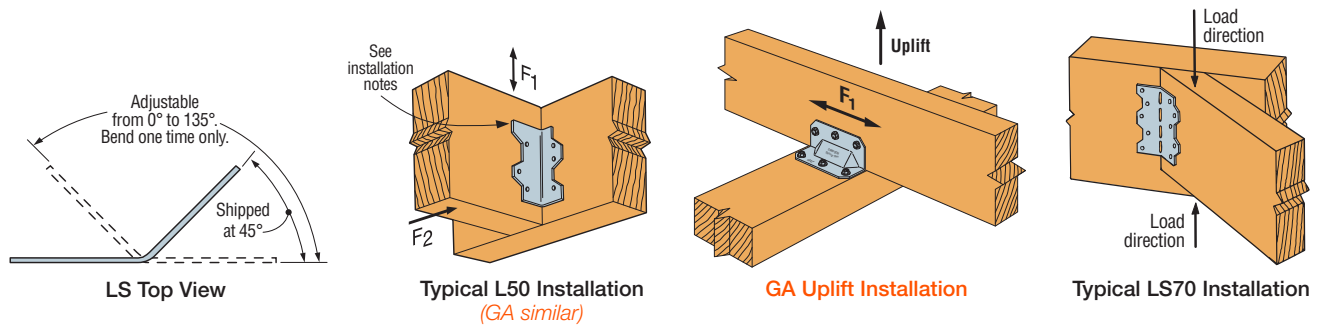
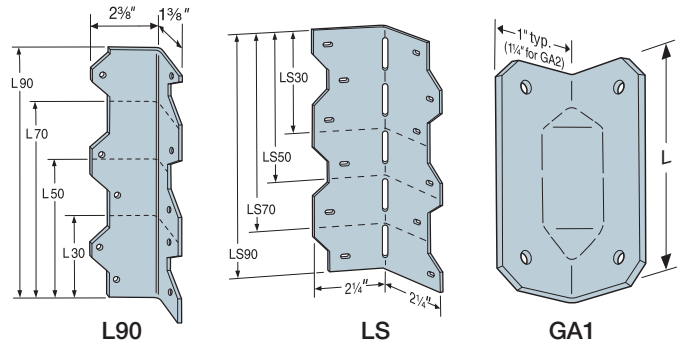
Material: L — 16 gauge; GA and LS — 18 gauge

Finish: Galvanized. Some products available in stainless steel or ZMAX® coating. See Corrosion Information, pp. 15–18.

Installation:

- Use all specified fasteners; see General Notes
- LS — Field skewable; bend one time only
- Joist must be constrained against rotation (for example, with solid blocking) when using a single LS per connection
- Nail the L angle's wider leg into the joist to ensure table loads and allow correct nailing

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Fasteners	L (in.)	Load Direction	DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
				Floor (100)	Snow (115)	Roof (125)	Wind/ Seismic (160)	Floor (100)	Snow (115)	Roof (125)	Wind/ Seismic (160)	
GA1	(4) 10d x 1 1/2"	2 3/4	F ₁ , F ₂	235	270	290	330	200	230	250	285	IP1, L5, L18, FL
	(4) SD #9 x 1 1/2"		F ₁	340	375	375	375	225	260	280	325	
	(4) SD #9 x 1 1/2"		F ₂	340	390	430	435	225	260	280	360	
GA2	(6) 10d x 1 1/2"	3 1/4	F ₁ , F ₂	355	405	435	550	305	350	375	475	IP1, L5, L18, FL
	(6) SD #9 x 1 1/2"		F ₁	515	590	640	645	335	385	420	540	
	(6) SD #9 x 1 1/2"		F ₂	515	590	640	820	335	385	420	540	
L30	(4) 10d x 1 1/2"	3	F ₁ , F ₂	245	250	250	250	210	215	215	215	IP1, L5, FL
SS L50	(6) 10d x 1 1/2"	5	F ₁ , F ₂	365	415	445	555	315	355	385	475	
L70	(8) 10d x 1 1/2"	7	F ₁ , F ₂	485	550	595	740	415	475	510	635	
L90	(10) 10d x 1 1/2"	9	F ₁ , F ₂	610	690	740	925	525	595	635	795	
LS30	(6) 10d x 1 1/2"	3%	F ₁	325	325	325	325	280	280	280	280	IP1, L5, L18, FL
	(6) 10d		F ₁	355	395	395	395	305	340	340	340	
LS50	(8) 10d x 1 1/2"	4%	F ₁	475	540	565	565	410	465	485	485	
	(8) 10d		F ₁	475	540	585	730	410	465	505	630	
LS70	(10) 10d x 1 1/2"	6%	F ₁	595	640	640	640	510	550	550	550	
	(10) 10d		F ₁	595	675	730	915	510	580	630	785	
LS90	(12) 10d x 1 1/2"	7%	F ₁	715	810	845	845	615	695	725	725	
	(12) 10d		F ₁	715	810	875	1,040	615	695	755	895	

1. GA angles may be installed with 10d nails.
2. GA1 installed with SD9 screw — uplift is 425 lb. for DF and is 300 lb. for SPF.
3. GA2 installed with SD9 screw — uplift is 370 lb. for DF and is 260 lb. for SPF.
4. **Fasteners:** 10d = 0.148" dia. x 3" long; 10d x 1 1/2" = 0.148" dia. x 1 1/2" long; SD #9 x 1 1/2" = 0.131" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

Decks and Fences



SIMPSON
Strong-Tie

DTT

Deck Tension Ties

DTT tension ties are safe, cost-effective connectors designed to meet or exceed code requirements for deck construction. These versatile DTT connectors are also load rated as a holdown for light-duty shearwalls and braced-wall panel applications.

For new construction or to make an existing current deck code-compliant, the DTT1Z can be used as a tension-tie to satisfy the 2015 IRC provision for a 750 lb. lateral load connection to the house at four locations per deck. This code detail permits the lateral connection from the deck joists to be made to top plates, studs, or headers within the supporting structure, which eliminates the need to access to the floor joists inside the home. The DTT1Z is available in a kit (DTT1Z-KT) that includes (4) DTT1Z connectors, (4) Strong-Drive® SDWH Timber-Hex HDG screws and (26) SD #9 x 1½" screws.

The DTT1Z fastens to the narrow or wide face of a single 2x with Simpson Strong-Tie® Strong-Drive® SD Connector screws or nails and accepts a ¾" machine bolt, anchor bolt, or lag screw (washer required) or can be installed with the Strong-Drive SDWH Timber-Hex HDG screw with an integral washer.

The DTT2 can be used to satisfy the IRC provision for a 1,500 lb. lateral load connection at two locations per deck. Additionally, the DTT2 has been tested and evaluated in deck guardrail post applications to resist the code-specified lateral forces at the top of railing assemblies. The DTT2 is also available with longer 2½" Strong-Drive SDS Heavy-Duty Connector screws (model DTT2Z-SDS2.5) to achieve higher loads when needed. The DTT2 fastens easily to the wide face of a single or double 2x using Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws (included) and accepts a ½"-diameter machine bolt or anchor bolt.

For guard post installations using Strong-Drive SDWS Timber screws, see technical bulletin T-F-SDWSGRD.

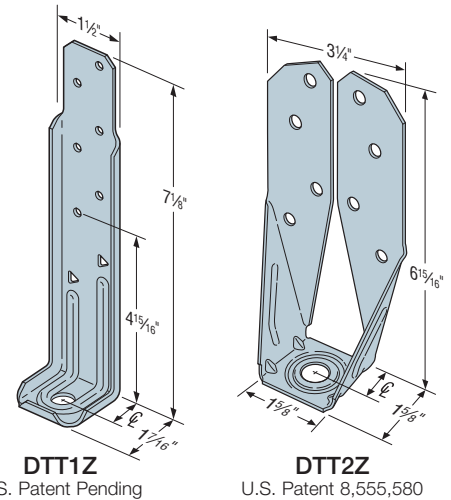
Material: 14 gauge

Finish: DTT1Z/DTT2Z — ZMAX® coating; DTT2SS — Stainless steel; see Corrosion Information, pp. 15–18

Installation:

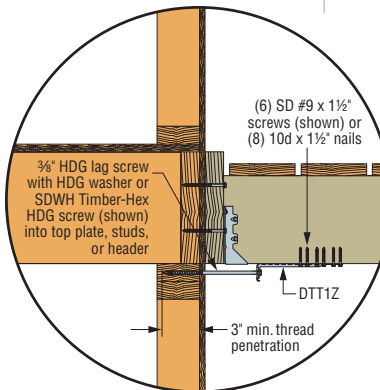
- Use all specified fasteners; see General Notes
- A standard cut washer (included for DTT2) must be installed between the nut and the seat
- Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws install best with a low-speed high-torque drill with a ¾" hex head driver (Model DB6H1.75)
- Strong-Drive SD Connector screws install with a ¼" hex head driver (Model DBHEX)
- Strong-Drive SDWH Timber-Hex HDG screws install with a ¾" hex head driver (Model DB6H1.75)

Codes: See p. 14 for Code Reference Key Chart



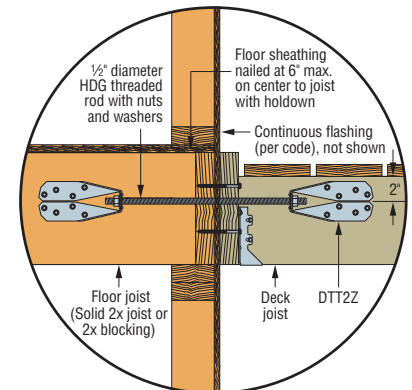
DTT1Z
U.S. Patent Pending

DTT2Z
U.S. Patent 8,555,580



Typical DTT1Z Deck-to-House Lateral Load Connection

For more information on lateral load connections, see technical bulletin T-C-DECKLAT at strongtie.com



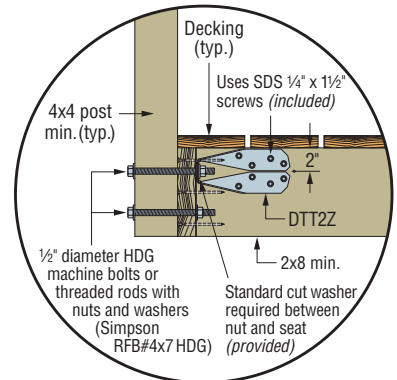
Typical DTT2Z Deck-to-House Lateral Load Connection

For more information on lateral load connections, see technical bulletin T-C-DECKLAT at strongtie.com

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	℄	Anchor Diameter	Fasteners	Min. Wood Member Thickness (in.)	Allowable Tension Loads		Code Ref.
					DF/SP	SPF/HF	
DTT1Z	¾	¾ ⁶ or SDWH ³	(6) SD #9 x 1½"	1½	840	840	IP2, FL
			(6) 10d x 1½"		910	640 ²	
			(8) 10d x 1½"		910	850	
DTT2Z/DTT2SS	1¾	½	(8) ¼" x 1½" SDS	1½	1,825	1,800	I6, L8, FL
			(8) ¼" x 2½" SDS	3	2,145	1,835	
DTT2Z-SDS2.5	1¾	½	(8) ¼" x 2½" SDS	3	2,145	2,105	



DTT2Z Installed as a Lateral Connector for a Deck Guardrail Post

For more information on guardrail post connections, see technical bulletin T-C-GRDRPST at strongtie.com

1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed.
2. DTT1Z installations with allowable loads below 750 lb. do not satisfy the 2015 IRC requirements for deck-to-house lateral load connections.
3. The Strong-Drive® SDWH Timber-Hex HDG screw with a minimum of 3" of thread penetration into dry lumber has an allowable withdrawal load (160) of 1,380 lb. into SP, 1225 lb. into DF and 1,020 lb. into SPF/HF.
4. Load values are valid if the product is flush with the end of the framing member or installed away from the end.
5. The guardrail post illustration above addresses an outward force on the guardrail. An additional DTT2Z can be added at the lower bolt to address an inward force.
6. A ¾" HDG round washer is required when using a lag screw.

Strong-Drive® SDWS/SDWH

Timber Screws

The Strong-Drive® SDWS Timber screw is designed to provide an easy-to-install, high-strength alternative to through-bolting and traditional lag screws. The Strong-Drive SDWH Timber-Hex SS screw provides a structural wood-to-wood connection, including for ledgers. As a Type 316 stainless-steel fastener, the Strong-Drive SDWH Timber-Hex SS screw offers maximum corrosion protection.

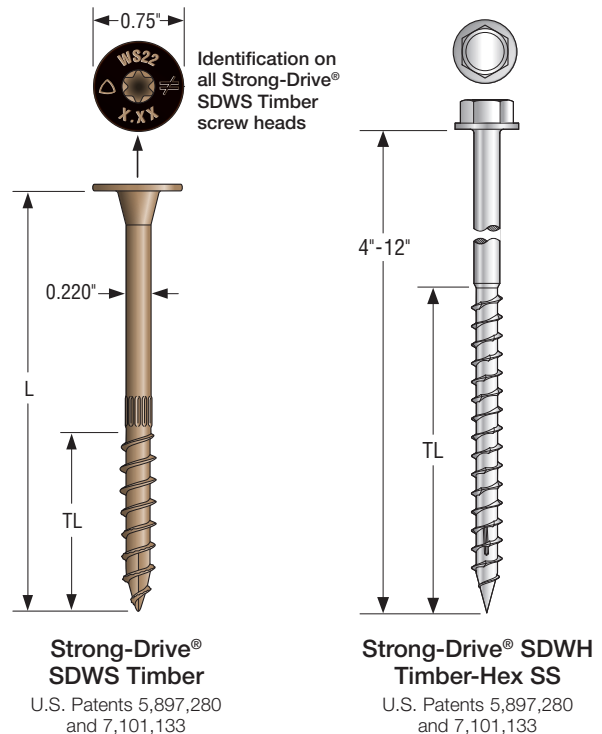
Material: Strong-Drive SDWS Timber screw — heat-treated carbon steel; Strong-Drive SDWH Timber-Hex SS screw — Type 316 stainless steel

Finish: Strong-Drive SDWS Timber screw — Double-barrier coating; Strong-Drive SDWH Timber-Hex SS — Stainless steel

Installation:

- See General Notes.
- Strong-Drive SDWS Timber screws install best with a low-speed ½" drill and a T-40 6-lobe bit. The matched bit included with the screws is recommended for best results.
- Strong-Drive SDWH Timber-Hex SS screws install best with a low-speed ½" drill and a ⅝" or ½" hex driver bit. The matched bit included with the screws is recommended for best results.
- Predrilling is typically not required. Where predrilling is necessary, use a ⅝" drill bit for Strong-Drive SDWS Timber screws and 0.188" Strong-Drive SDWH Timber-Hex SS screws. Use a ⅞" drill bit for 0.276" Strong-Drive SDWH Timber-Hex SS screws.
- **SDWS Timber screws are driven such that** screw heads that are countersunk flush to the wood surface are acceptable if the screw has not spun out.
- For additional information, visit strongtie.com/fasteners.

Codes: See p. 14 for Code Reference Key Chart



Strong-Drive® SDWS Timber Screw Product Information

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

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

Strong-Drive® SDWH Timber-Hex SS Screw Product Information

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

Strong-Drive® SDWS/SDWH

Timber Screws (cont.)

Strong-Drive® SDWS Timber Screw Allowable Shear Loads – Douglas Fir-Larch and Southern Pine

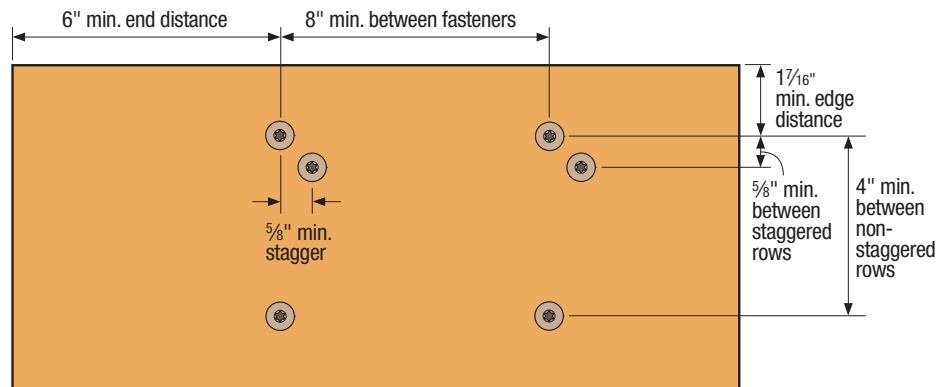
Size Dia. x L (in.)	Model No.	Thread Length TL (in.)	DF/SP Allowable Loads										Code Ref.
			Shear (100)										
			Wood Side Member Thickness (in.)										
			1.5	2	2.5	3	3.5	4	4.5	6	8		
0.220 x 3	SDWS22300DB	1½	255	—	—	—	—	—	—	—	—	—	IP4, FL, L23
0.220 x 4	SDWS22400DB	2¾	405	405	305	—	—	—	—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

See footnotes below.

Strong-Drive® SDWS Timber Screw Allowable Shear Loads – Spruce-Pine-Fir and Hem-Fir

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

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



Strong-Drive® SDWS Timber Spacing Requirements

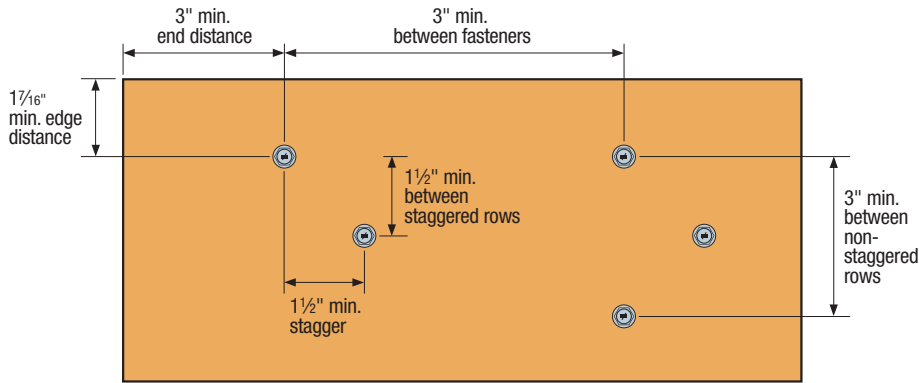
Strong-Drive® SDWS/SDWH

Timber Screws (cont.)

Strong-Drive® SDWH Timber-Hex SS Screw Allowable Shear Loads – Douglas Fir-Larch, Southern Pine, Spruce-Pine-Fir and Hem-Fir

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

- All applications are based on full penetration into the main member. Full penetration is the screw length minus the side member thickness.
- Allowable loads are shown at the load duration factor of $C_D = 1.0$. Loads may be increased for load duration per the building code up to a $C_D = 1.6$. Tabulated values must be multiplied by all applicable adjustment factors per the NDS.
- Table values based on testing in SPF lumber.
- Minimum fastener spacing requirements: 3" end distance, 1½" edge distance, 1½" between staggered rows of fasteners, 3" between non-staggered rows of fasteners and 3" between fasteners in a row.
- Design values include NDS wet service factor; no adjustment required for in-service moisture content greater than 19%.
- Allowable loads apply to perpendicular- or parallel-to-grain loading.
- Installs best with 18V high-torque cordless or ½" low speed drill. If splitting occurs predrill with ⅝" drill bit for 0.188" screws and ⅞" drill bit for 0.276" screws.
- Allowable withdrawal load for the 0.188" screw for DF/SP is 155 lb./in. and for SPF/HF is 108 lb./in. Allowable load is based on inches of thread penetration into the main member.
- Allowable withdrawal load for the 0.276" screw for DF/SP is 260 lb./in. and for SPF/HF is 160 lb./in. Allowable load is based on inches of thread penetration into the main member.
- For LRFD values, the reference connection design values shall be adjusted in accordance with NDS-12, section 10.3 (NDS-15, Section 11.3).



Strong-Drive® SDWH TIMBER-HEX SS Screw
Spacing Requirements

Strong-Drive® SDWS Timber Screw – Douglas Fir-Larch, Southern Pine, Spruce-Pine-Fir and Hem-Fir Lumber Allowable Withdrawal Loads

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

- The tabulated reference withdrawal design value, W, is in pounds per inch of the thread penetration into the side grain of the main member.
- The tabulated reference withdrawal design value, W_{Max.}, is in pounds where the entire thread length must penetrate into the side grain of the main member.
- Tabulated reference withdrawal design values, W and W_{Max.}, are shown at a $C_D = 1.0$. Loads may be increased for load duration per the building code up to a $C_D = 1.6$. Tabulated values must be multiplied by all applicable adjustment factors from the NDS as referenced in the IBC or IRC.
- Embedded thread length is that portion held in the main member including the screw tip.
- Values are based on the lesser of withdrawal from the main member or pull-through of a 1½" side member.
- For in-service moisture content greater than 19%, use $C_M = 0.7$.

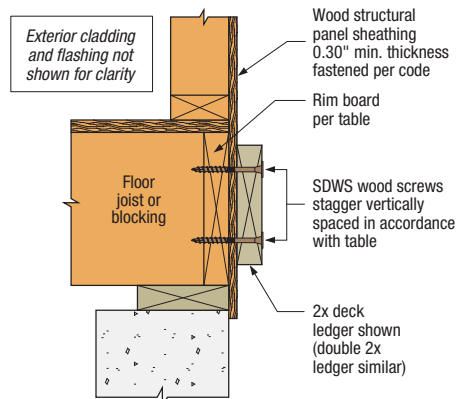
Strong-Drive® SDWS/SDWH

Timber Screws (cont.)

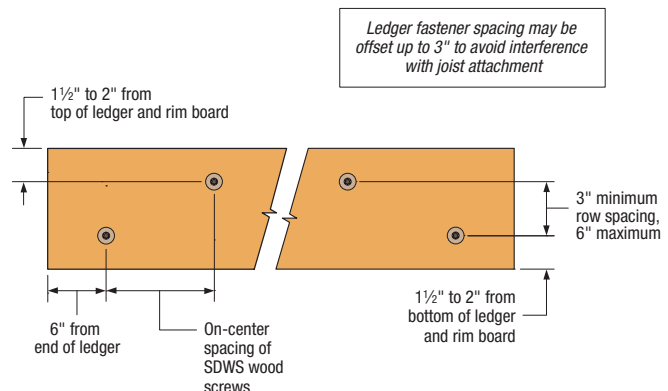
Strong-Drive® SDWS Timber Screw – IRC Compliant Spacing for a Sawn Lumber Deck Ledger to Rim Board

Loading Condition	Ledger Thickness (in.)	Screw Model No.	Rim Board Material and Minimum Size	Maximum Deck Joist Span						
				Up to 6 ft.	Up to 8 ft.	Up to 10 ft.	Up to 12 ft.	Up to 14 ft.	Up to 16 ft.	Up to 18 ft.
				Maximum On-Center Spacing of Fasteners (in.)						
40 psf Live 10 psf Dead	1½	SDWS22400DB	1" OSB	14	10	8	7	6	5	5
			1" LVL							
			1½" OSB	16	12	10	8	7	6	5
			1⅝" LVL							
			1¼" LSL							
2x SP, DF – 2x SPF, HF	22	16	13	11	9	8	7			
60 psf Live 10 psf Dead	1½	SDWS22400DB	1" OSB	10	7	6	5	4	4	3
			1" LVL							
			1½" OSB	12	9	7	6	5	4	4
			1⅝" LVL							
			1¼" LSL							
2x SP, DF – 2x SPF, HF	15	12	9	8	7	6	5			
40 psf Live 10 psf Dead	(2) 1½	SDWS22500DB	1" OSB	15	12	9	8	7	6	5
			1" LVL							
			1½" OSB	16	12	10	8	7	6	5
			1⅝" LVL							
			1¼" LSL							
2x SP, DF – 2x SPF, HF	16	12	10	8	7	6	5			
60 psf Live 10 psf Dead	(2) 1½	SDWS22500DB	1" OSB	11	8	7	6	5	4	4
			1" LVL							
			1½" OSB	12	9	7	6	5	4	4
			1⅝" LVL							
			1¼" LSL							
2x SP, DF – 2x SPF, HF	12	9	7	6	5	4	4			

- Strong-Drive® SDWS Timber screw spacing values are equivalent to 2009 IRC Table R502.2.2.1 and 2012/2015 IRC Table R507.2. The table above also provides Strong-Drive SDWS Timber screw spacing for a wider range of materials commonly used for rim boards, and an alternate loading condition as required by some jurisdictions.
- Solid sawn rim board shall be Spruce-Pine-Fir, Hem-Fir, Douglas Fir-Larch, or Southern Pine species. Ledger shall be Hem-Fir, Douglas Fir-Larch, or Southern Pine species.
- Fastener spacings are based on the lesser of single fastener ICC-ES AC233 testing of the Strong-Drive SDWS Timber screw with a safety factor of 5.0 or ICC-ES AC13 ledger assembly testing with a factor of safety of 5.0. Spacing includes NDS wet service factor adjustment.
- Multiple ledger plies shall be fastened together per code independent of the Strong-Drive SDWS Timber screws.
- Screws shall be placed at least 1½" from the top or bottom of the ledger or rim board, 6" from the end of the ledger with 3" min. between rows, 6" max. between rows and spaced per the table. See figure below.
- Structural sheathing between the ledger and rim board shall be a maximum of ½" thick and fastened per code.



Ledger-to-Rim Board Assembly
(Wood-framed lower floor acceptable, concrete wall shown for illustration purposes)



Strong-Drive® SDWS TIMBER Screw Spacing Detail

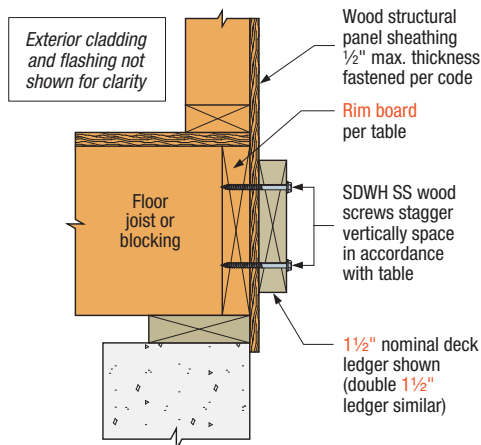
Strong-Drive® SDWS/SDWH

Timber Screws (cont.)

Strong-Drive® SDWH Timber-Hex SS Screw – IRC Compliant Spacing for a Sawn Lumber Deck Ledger to Rim Board – 0.276" Screws

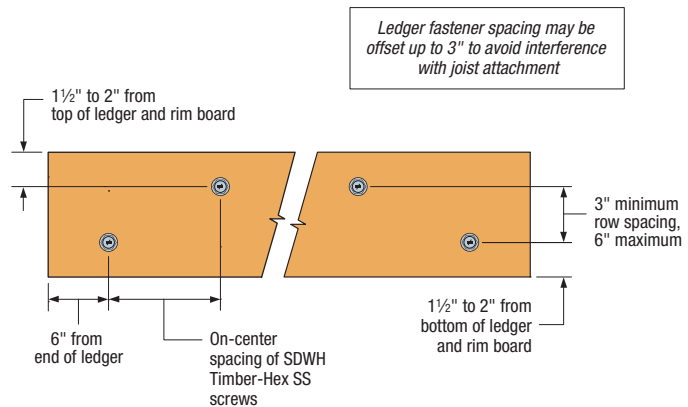
Loading Condition	Ledger Thickness (in.)	Screw Length and Model No.	Rim Board Material and Size	Maximum Deck Joist Span						
				Up to 6 ft.	Up to 8 ft.	Up to 10 ft.	Up to 12 ft.	Up to 14 ft.	Up to 16 ft.	Up to 18 ft.
				Maximum On-Center Spacing of Fasteners (in.)						
40 psf Live 10 psf Dead	1½"	4" SDWH27400SS	1" OSB	19	14	11	9	8	7	6
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
60 psf Live 10 psf Dead	1½"	4" SDWH27400SS	1" OSB	13	10	8	7	6	5	4
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
40 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	19	14	11	9	8	7	6
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
60 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	13	10	8	7	6	5	4
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
40 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	19	14	11	9	8	7	6
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
60 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	13	10	8	7	6	5	4
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
40 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	19	14	11	9	8	7	6
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
60 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	13	10	8	7	6	5	4
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
40 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	19	14	11	9	8	7	6
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
60 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	13	10	8	7	6	5	4
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
40 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	19	14	11	9	8	7	6
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
60 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	13	10	8	7	6	5	4
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
40 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	19	14	11	9	8	7	6
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										
60 psf Live 10 psf Dead	(2) 1½"	5" SDWH27500SS	1" OSB	13	10	8	7	6	5	4
			1" LVL							
			1½" OSB							
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
1¾" LVL										

See footnotes on p. 343.



Ledger-to-Rim Board Assembly

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



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

Strong-Drive® SDWS/SDWHSS

Structural Wood Screws

Strong-Drive® SDWH Timber-Hex SS Screw – IRC Compliant Spacing
for a Sawn Lumber Deck Ledger to Rim Board – 0.188" Screws

Loading Condition	Ledger Thickness (in.)	Screw Length and Model No.	Rim Board Material and Size	Maximum Deck Joist Span						
				Up to 6 ft.	Up to 8 ft.	Up to 10 ft.	Up to 12 ft.	Up to 14 ft.	Up to 16 ft.	Up to 18 ft.
				Maximum On-Center Spacing of Fasteners (in.)						
40 psf Live 10 psf Dead	1½	4" SDWH19400SS	1" OSB	14	11	8	7	6	5	5
			1" LVL							
			1½" OSB	14	11	8	7	6	5	5
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
			1¾" LVL							
2x SP, DFL, SPF, HF	14	11	8	7	6	5	5			
60 psf Live 10 psf Dead	1½	4" SDWH19400SS	1" OSB	10	8	6	5	4	4	3
			1" LVL							
			1½" OSB	10	8	6	5	4	4	3
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
			1¾" LVL							
2x SP, DFL, SPF, HF	10	8	6	5	4	4	3			
40 psf Live 10 psf Dead	(2) 1½	5" SDWH19500SS	1" OSB	14	11	8	7	5	5	5
			1" LVL							
			1½" OSB	14	11	8	7	5	5	5
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
			1¾" LVL							
2x SP, DFL, SPF, HF	14	11	8	7	5	5	5			
60 psf Live 10 psf Dead	(2) 1½	5" SDWH19500SS	1" OSB	10	8	6	5	4	4	3
			1" LVL							
			1½" OSB	10	8	6	5	4	4	3
			1⅝" LVL							
			1¼" OSB							
			1½" LVL							
			1¼" LSL							
			1¾" LVL							
2x SP, DFL, SPF, HF	10	8	6	5	4	4	3			

- Screw spacing values are equivalent to 2009 IRC Table R502.2.2.1 and 2012/2015 IRC Table R507.2. The table on the left also provides screw spacing for a wider range of materials commonly used for rim boards, and an alternate loading condition as required by some jurisdictions.
- Solid sawn rim boards shall be Spruce-Pine-Fir, Hem-Fir, Douglas Fir-Larch, or Southern Pine species. Ledger shall be Hem-Fir, Douglas Fir-Larch, or Southern Pine species.
- Fastener spacings are based on the lesser of single fastener ICC-ES AC233 testing with a safety factor of 5.0 or ledger assembly testing with a factor of safety of 5.0. Spacing includes NDS wet service factor adjustment.
- Multiple ledger plies shall be fastened together per code independent of the screws.
- Screws shall be placed at least 1⅞" from the top or bottom of the ledger or rim board, 1½" between staggered rows of fasteners, 3" from the end of the ledger with 3" min. and 6" max. between rows and spaced per the table.
- Structural sheathing between the ledger and band shall be a maximum of ½" thick and fastened per code.

LSC

Adjustable Stringer Connector

The LSC adjustable stair-stringer connector offers a versatile, concealed connection between the stair stringer and the carrying header or rim board while replacing costly framing. Field slopeable to all common stair stringer pitches, the LSC connector is suitable for either solid or notched stringers.

Features:

- Replaces additional framing and toe-nailing.
- Suitable for most installations on 2x10 or 2x12 header/rim board.
- May be installed flush with the top of the carrying member or lower on the face.
- Interchangeable for left or right applications.
- LSCZ features a ZMAX® coating for additional corrosion protection. Suitable for interior and some exterior applications. LSCSS is made from stainless steel for higher exposure environment. See strongtie.com/info for more information.

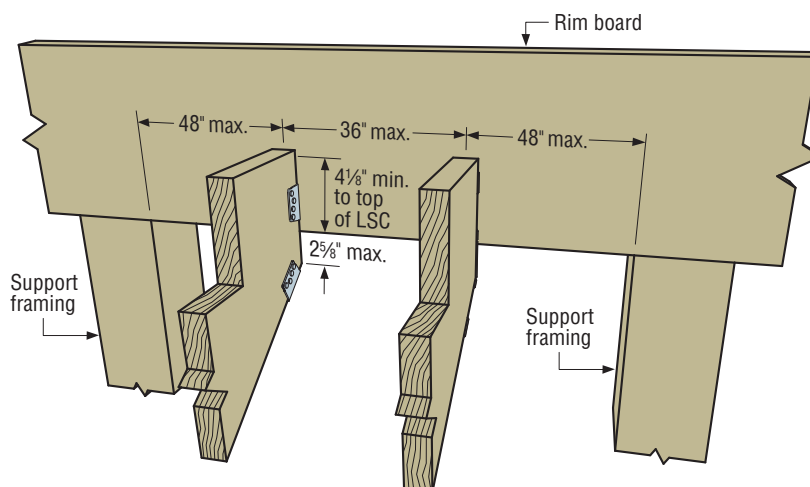
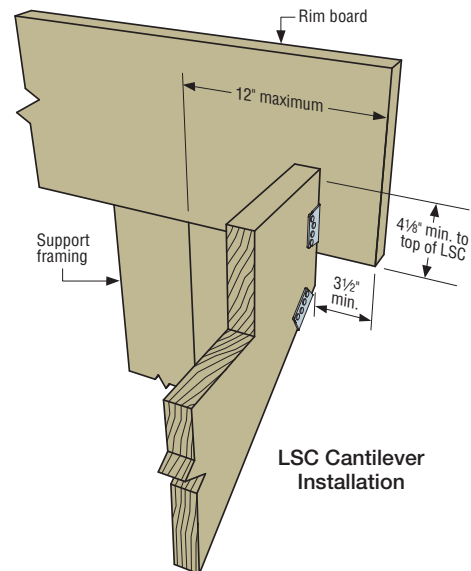
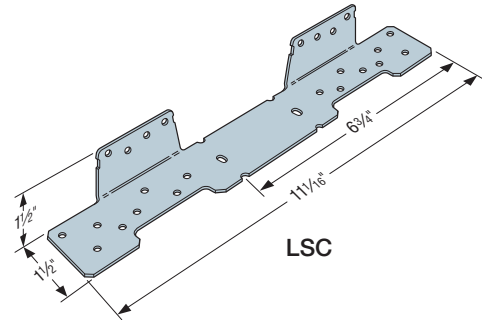
Material: 18 gauge

Finish: LSCZ — ZMAX® coating; LSCSS — Stainless steel

Installation:

- Use all specified fasteners, see table.
- Before fastening, position the stair stringer with the LSC on the carrying member to verify where the bend should be located.
- Tabs on the LSC must be positioned to the inside of the stairs.
- The fastener that is installed into the bottom edge of the stringer must go into the second-to-last hole.
- When installed on 1 $\frac{5}{16}$ " LVL or a 1 $\frac{1}{4}$ " LSL stringer, additional items that will not affect the structural performance of the LSC, but should be considered, include the following:
 - LSC stringer flange will protrude $\frac{1}{4}$ " from face of stringer. As such, it is recommended the LSC be installed with the tabs positioned to the outside of the stringer.
 - 1 $\frac{1}{2}$ " fasteners installed into 1 $\frac{1}{4}$ " LSL stringer will protrude from the opposite side.

Codes: See p. 14 for Code Reference Key Chart



Standard LSC Installation

LSC

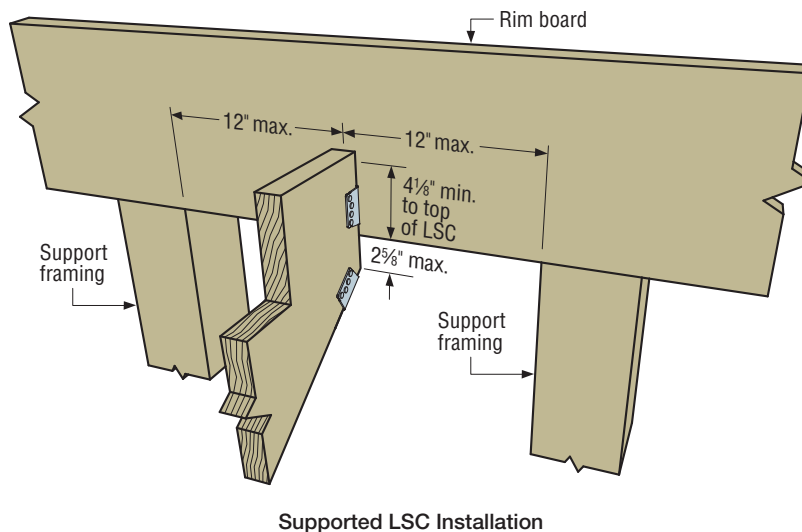
Adjustable Stringer Connector (cont.)

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Rim Board Installation	Fastener Schedule			DF/SP Allowable Loads		SPF/HF Allowable Loads		Code Ref.
		Rim Board ²	Stringer Wide Face	Stringer Narrow Face	Floor (100)	Snow (115)	Floor (100)	Snow (115)	
LSCZ LSCSS	Supported ⁴	(8) 10d x 1½"	(8) 10d x 1½"	(1) 10d x 1½"	950	1000	815	860	IP6, FL, L26
	Supported	(8) SD #9 x 1½"	(8) SD #9 x 1½"	—	865	865	670	670	
	Standard	(8) 10d x 1½"	(8) 10d x 1½"	(1) 10d x 1½"	755	755	650	650	
	Standard	(8) SD #9 x 1½"	(8) SD #9 x 1½"	(1) SD #9 x 1½"	755	755	650	650	
	Cantilever	(8) 10d x 1½"	(8) 10d x 1½"	(1) 10d x 1½"	520	520	445	445	
	Cantilever	(8) SD #9 x 1½"	(8) SD #9 x 1½"	—	545	545	445	445	

1. Stair stringer must be minimum 1⅝" LVL or minimum 1¼" LSL. Allowable loads for DF/SP species material shall apply.
2. When cross-grain tension forces cannot be avoided in the members, mechanical reinforcement to resist such forces shall be considered.
3. Simpson Strong-Tie® #9 x 1½" Strong-Drive SD Connector screws may be substituted for 10d x 1½" nails to achieve published nail values if the extra screw is installed in the narrow face of stringer.
4. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. Nails shall be hot-dip galvanized for LSCZ and stainless steel for LSCSS. See pp. 26–27 for other nail sizes and information.
5. **Screws (LSCZ only):** SD #9 x 1½" (model SD9112) = 0.131" dia. x 1½" long (see pp. 39–40).



DPTZ

Deck Post Tie

The DPTZ deck post tie products are used to attach 2x4 (DPT5Z) or 4x4 (DPT7Z) vertical posts to the side of stringers, rims or other wood members.

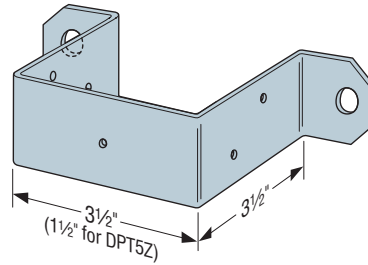
Material: 14 gauge

Finish: ZMAX® coating; see Corrosion Information, pp. 15–18

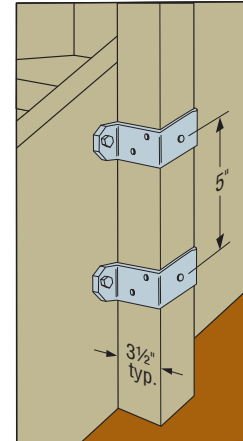
Installation:

- Use specified HDG fasteners; see General Notes
- Typically installed in pairs
- Install with two 5/8" through bolts into side member (lag screws not permitted) and (5) 10d x 1 1/2" to post for DPT5Z or (5) 10d for DPT7Z

May be installed with SD #9 x 1 1/2" Connector screws.



DPT7Z
(DPT5Z similar)



Typical DPT7Z
Stairway Installation
(DPT5Z similar)

DJT14Z

Deck Joist Tie

The DJT14Z deck joist tie is designed to attach 2x deck joists to the side of 4x or larger support posts. The DJT14Z can be installed with either nails or bolts.

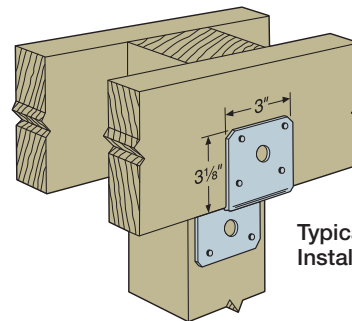
Material: 14 gauge

Finish: ZMAX® coating; see Corrosion Information, pp. 15–18

Installation:

- Use specified HDG fasteners; see General Notes
- Recommended: install on post first
- Minimum 2x4 joist and 4x4 post

Codes: See p. 14 for Code Reference Key Chart



Typical DJT14Z
Installation

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Fasteners			Allowable Loads				Code Ref.
	Nails	Bolts		Nails		Bolts		
		Qty.	Dia.	Floor (100)	Roof (125)	Floor (100)	Roof (125)	
SS DJT14Z	(8) 16d	2	5/8 MB	1,160	1,400	1,220	1,400	IP6, FL, L5, L26

1. Loads are for one DJT14Z.
2. Roof loads are 125% of floor loads. Floor loads may be adjusted for other load durations according to the code, provided they do not exceed the roof loads.
3. Install bolts or nails as specified by Designer. Bolt and nail values may not be combined.
4. Nails: 16d = 0.162" dia. x 3 1/2" long. See pp. 26–27 for other nail sizes and information.

TA

Staircase Angle

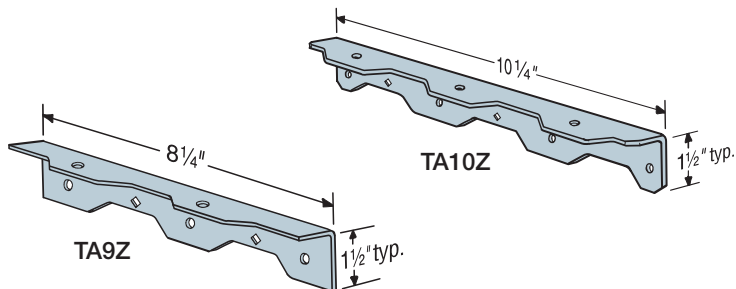
For use in structurally-sound staircase framing. The TA eliminates costly conventional notching.

Material: 12 gauge

Finish: TA9Z/TA10Z — ZMAX® coating;
TA9SS/TA10SS — stainless steel;
see Corrosion Information, pp. 15–18

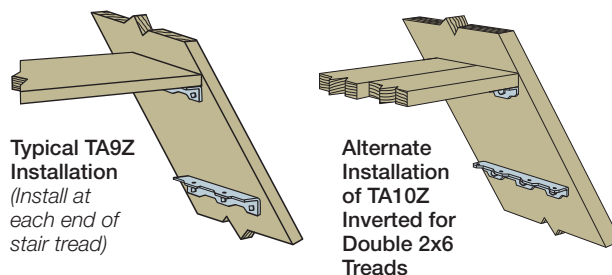
Order: May be ordered as kits with model numbers TA9ZKT and TA10ZKT. Each kit includes two ZMAX TA's and Simpson Strong-Tie® ¼"x1½" Strong-Drive® SDS Heavy-Duty Connector screws.

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Fasteners		Allowable Downloads DF/SP (100)	Code Ref.
	Stringer	Tread		
TA9Z	(2) ¼" x 1½" SDS	(3) ¼" x 1½" SDS	500	170
	(3) ¼" x 1½" SDS	(2) ¼" x 1½" SDS	750	
TA10Z	(3) ¼" x 1½" SDS	(4) ¼" x 1½" SDS	750	
TA10Z	(4) ¼" x 1½" SDS	(3) ¼" x 1½" SDS	1,000	



1. Loads may be adjusted for other load durations according to the code.
2. See pp. 39–43 for Strong-Drive® SDS Heavy-Duty Connector screw information.

ML24/ML26

Angle

The ML angle combines strength and versatility through the use of Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws. Fastener holes are staggered to minimize wood splitting and opposing hole patterns allows for back-to-back installation without fastener interference.

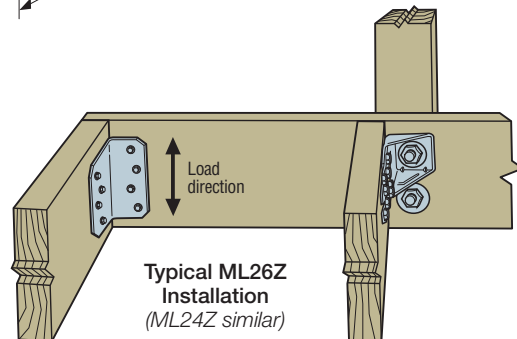
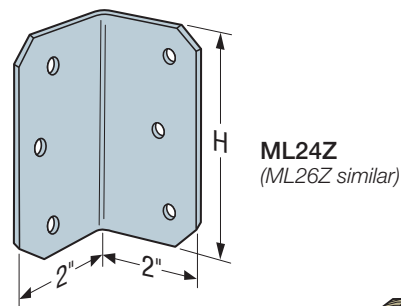
Material: 12 gauge

Finish: ML24Z/ML26Z — ZMAX® coating; ML24SS/ML26SS — stainless steel; see Corrosion Information, pp. 15–18

Installation:

- Use all specified fasteners; see General Notes
- Simpson Strong-Tie ¼" x 1½" Strong-Drive SDS Heavy-Duty Connector screws are not provided with the angle
- Use stainless-steel fasteners with stainless connectors

Codes: See p. 14 for Code Reference Key Chart



These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	H (in.)	Fasteners (Total)	DF/SP Allowable Loads				SPF/HF Allowable Loads				Code Ref.
			(100)	(115)	(125)	(160)	(100)	(115)	(125)	(160)	
ML24Z	4	(6) ¼" x 1½" SDS	515	515	515	515	440	440	440	440	FL
ML24SS	4	(6) ¼" x 1½" SDS	695	695	695	695	540	600	600	600	
ML26Z	6	(8) ¼" x 1½" SDS	1,000	1,090	1,090	1,090	720	830	900	935	
ML26SS	6	(8) ¼" x 1½" SDS	1,000	1,150	1,235	1,235	720	830	900	1,065	

KBS1Z

Knee-Brace Stabilizer

The KBS1Z knee-brace stabilizer makes a structural connection between knee bracing and columns or beams to help stabilize free-standing structures and comply with many prescriptive deck bracing requirements such as AWC's DCA6 Prescriptive Residential Wood Deck Construction Guide. Factory-formed at a 45° angle and easily installed with nails, the KBS1Z braces 2x, 4x and 6x in line post-to-beam configurations. Check with your local building department for deck bracing requirements.

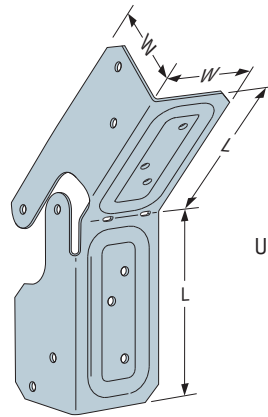
Material: 16 gauge

Finish: ZMAX® coating

Installation:

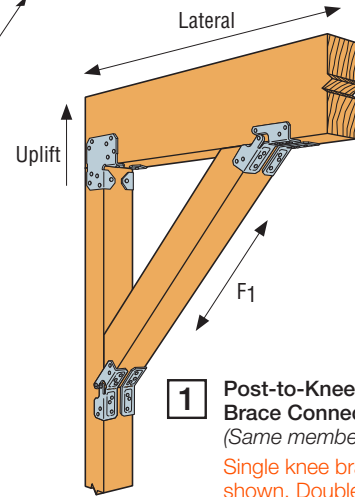
- Use all specified fasteners; see General Notes.
- For installations at an angle other than 45°, bend KBS1Z along slots to desired angle. Bend one time only.
- **Knee Brace:**
 - Cut braces at desired angle
 - Bend KBS1Z to desired angle if required
 - Install fasteners to secure in place
 - For equal-width members, install (2) KBS1Z on each end of brace (see connection type 1)
 - For 2x knee brace, install single KBS1Z on each end of brace (see connection type 2)
- **Beam-to-Post:**
 - Install in pairs; see illustrations for quantity and configuration

Codes: See p. 14 for Code Reference Key Chart



KBS1Z

U.S. Patent 9,045,895



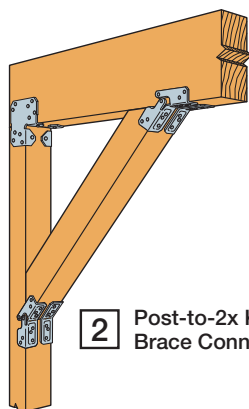
1 Post-to-Knee Brace Connection
(Same member width)
Single knee brace shown. Double knee brace installation similar.

These products are available with additional corrosion protection. For more information, see p. 18.

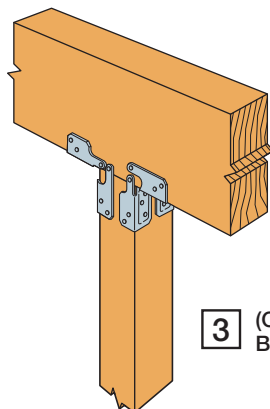
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39-40 for more information.

Model No.	Dimensions (in.)		Type of Connection	Connectors per Joint	Fasteners Each Connector	Direction of Load	Allowable Loads (160)				Code Ref.
	W	L					In-Service Moisture Content				
							≤ 19%		> 19%		
DF/SP	SPF/HF	DF/SP	SPF/HF								
KBS1Z	1½	3	1	2	(12) 8d	F ₁ – Brace angle = 45°	1,175	1010	1055	860	IP6, L26, FL
						F ₁ – Brace angle = 30° or 60° ³	835	720	835	720	
			2	1	(12) 8d x 1½"	F ₁ – Brace angle = 45°	630	540	470	385	
						F ₁ – Brace angle = 30° or 60° ³	510	440	395	330	
			3	4	(12) 8d	Uplift	1,160	1,000	1,160	1,000	
						Lateral	1,725	1,480	1,725	1,480	
			4	2	(12) 8d	Uplift	540	465	540	465	
						Lateral	485	420	430	370	
				4		Uplift	900	775	900	775	
						Lateral	1,270	1,095	1,270	1,095	

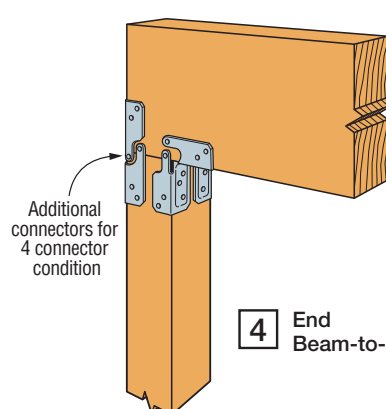
1. Allowable loads have been increased for wind or earthquake with no further increase allowed; reduce where other loads govern.
2. For braces installed at intermediate angles, allowable loads may be interpolated between loads listed for brace angle = 45° and brace angle = 30° or 60°.



2 Post-to-2x Knee Brace Connection



3 (Continuous) Beam-to-Post



4 End Beam-to-Post

PGT®

Pipe Grip Ties®

Pipe Grip Ties attach wood fence rails to metal fence posts, eliminating rotted and failed wood posts. The PGT is suitable for standard applications as well as corners and splices.

The PGTIC2Z-R is an interior corner pipe grip tie.

The PGT1.5Z-R is for 1½" pipe (1⅞" outside diameter), and the PGT2Z-R is for 2" pipe (2⅜" outside diameter).

The PGT2A is for 2" pipe (2⅜" outside diameter).

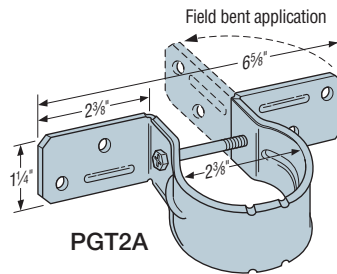
The PGT2E is for 2" pipes and features a two-piece design that provides a solid connection between fence stringer and post.

Material: PGT2A — 14 gauge;
all others — 12 gauge

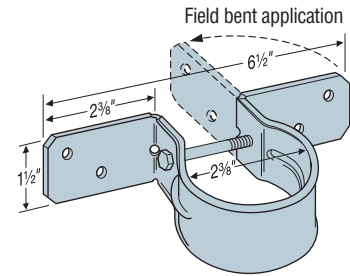
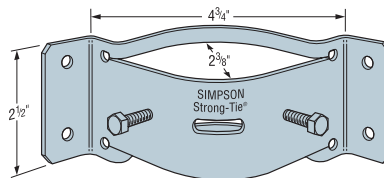
Finish: PGTA, PGT2-R, PGT2E — Galvanized;
PGTIC2Z, PGT1.5Z, PGT2Z-R — ZMAX®

Installation:

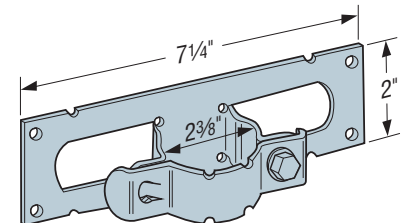
- Use all specified fasteners; see General Notes.
- PGTIC2Z-R to Post — Install two set screws (supplied) with ⅜" socket in predrilled holes.
- PGTIC2Z-R to Rails — Use Simpson Strong-Tie® ¼" x 1½" Strong-Drive® SDS Heavy-Duty Connector screws (not supplied).
- Install on vertical pipes, offsetting corners to allow for the correct rail alignment.
- Use three to four PGTs per pipe; line up to stringline.
- Fasten PGT with ¼" hex head bolt (supplied).
- PGT attaches to rails with four Simpson Strong-Tie ¼"x1½" Strong-Drive SDS Heavy-Duty Connector screws (not supplied). See p. 32 for Strong-Drive SDS Heavy-Duty Connector screw information.
- ¼" lag screws may be used. Follow the code requirements for predrilling.
- Nail or screw fence boards to rails.
- Field bend PGT flanges to fit corner and angled conditions (bend one time only).
- Fasten to rails using PGT2E with ¼" Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws or ¼" lag screws (follow code requirements for pre-drilling). See p. 32 for Strong-Drive SDS Heavy-Duty Connector screw information.
- PGT2E-R50: Sold as full carton with (50) attachment plates, (50) front straps and (55) thread-tapping screws.



PGT2A

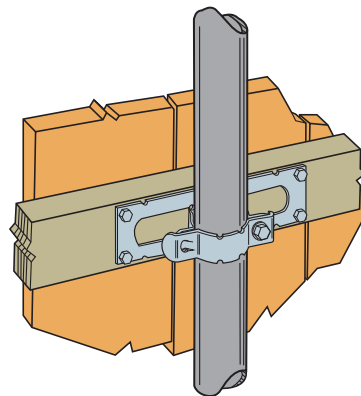
PGT2Z-R
(PGT1.5Z-R similar)

PGTIC2Z-R

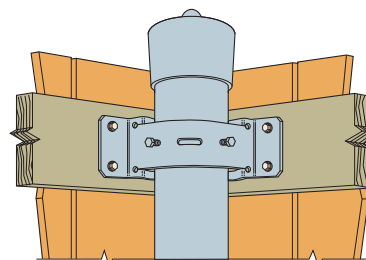
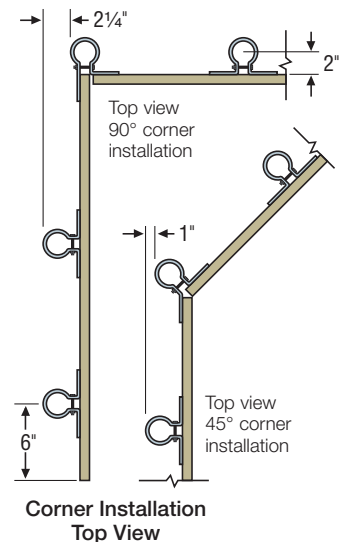
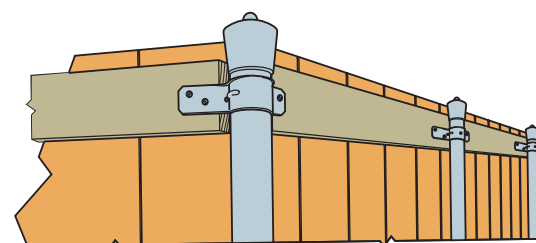


PGT2E

U.S. Patent 8,220,781



Typical PGT2E Installation

Typical PGTIC2Z-R
Fence InstallationCorner Installation
Top View

Typical PGT2Z-R Fence Installation

FB/FBR/FBFZ

Fence Rail Brackets

FB and FBR fence brackets make the connection between fence rails and posts simple and strong. Eliminates the need for toe nailing or screwing. Clean, versatile connections make planning and building fences, deck/porch railings and louvers easier and faster.

The new patent-pending FBFZ flat rail bracket offers a more concealed install look. In addition to fence-rail connections, the FBFZ can also be used for handrail attachments for porch and deck railings that are 30" or closer to ground level.

Material: See table

Finish: FB/FBR — Galvanized; FB24SS — stainless steel. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

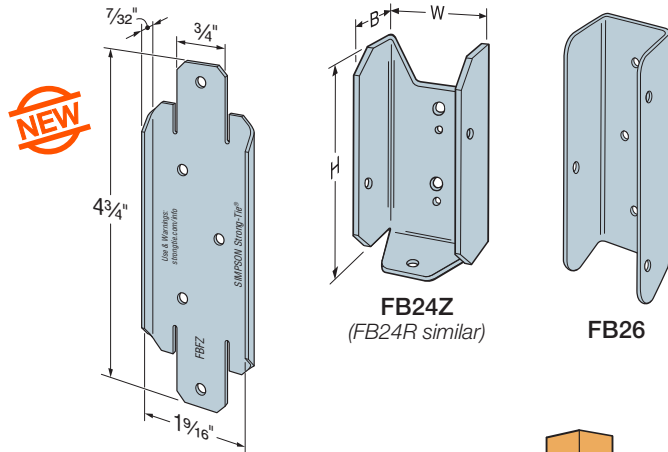
- Holes are sized for 8d x 1½", 8d commons or Simpson Strong-Tie® #9 x 1½" Strong-Drive® SD Connector screws into the supporting member
- FB24R is sized for 10d x 1½" or Simpson Strong-Tie #9 x 1½" Strong-Drive SD Connector screws
- FB26 is sized for Simpson Strong-Tie #9 x 1½" Strong-Drive SD Connector screws

Codes: See p. 14 for Code Reference Key Chart

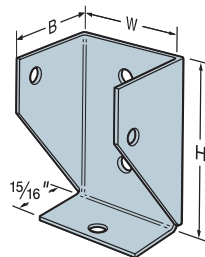
- These products are available with additional corrosion protection. For more information, see p. 18.
- These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Ga.	Member Size	Dimensions (in.)			Code Ref.
			W	H	B	
FB24Z	20	2x4	1⅞	3⅝	¾	180
FB24R	20	2x4 RGH	2	3⅝	¾	
FBR24	18	2x4	1⅞	2⅞	1½	
FB26	18	2x6	1⅞	5	1½	
FBFZ	18	2x4	1⅞	4¾	⅞	

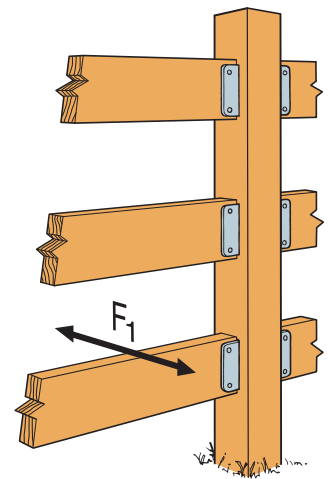
1. FB26 has an allowable load for F₁ of 365 lb.
2. FBR24: R = rail (not rough).
3. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long, 8d = 0.131" dia. x 2½" long, 8d x 1½" = 0.131" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.



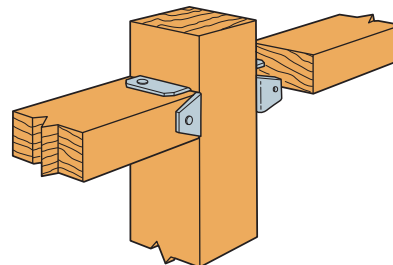
FBFZ
U.S. Patent Pending



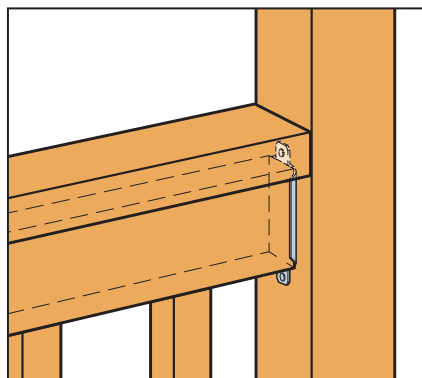
FBR24



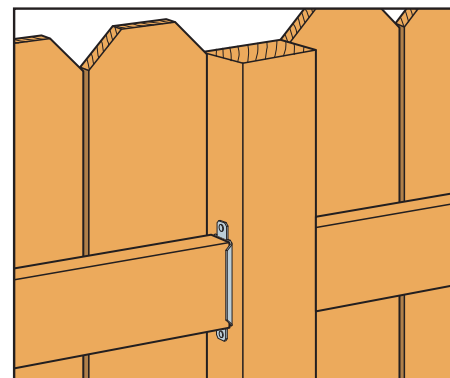
Typical FB26 Fencing Installation



Typical FB24Z Installation



Typical FBFZ Handrail Installation



Typical FBFZ Fence Rail Installation

E-Z Base™ / E-Z Mender™ / E-Z Spike™

Fence Products

Replacing an entire fence can be an expensive and difficult task. Simpson Strong-Tie® offers a line of products designed to help make reinforcing fence posts easy and economical. The E-Z Base™, E-Z Mender™ and E-Z Spike™ offer simple solutions for all types of fence post projects.

E-Z Spike (Model No. FPBS44)

- Allows easy installation of 4x4 wood posts without digging holes or pouring concrete
- Can be used for a variety of applications where quick-to-install posts are needed

E-Z Mender (Model No. FPBM44E)

- Allows easy repair of rotted or damaged 4x4 wood posts installed in concrete or dirt
- Reinforces weakened wood posts without having to replace the post or the concrete
- Sold individually; use in pairs

E-Z Base (Model No. FPBB44)

- Allows easy installation of 4x4 wood posts on existing concrete

Material: 12 gauge

Finish: Black powder-coat

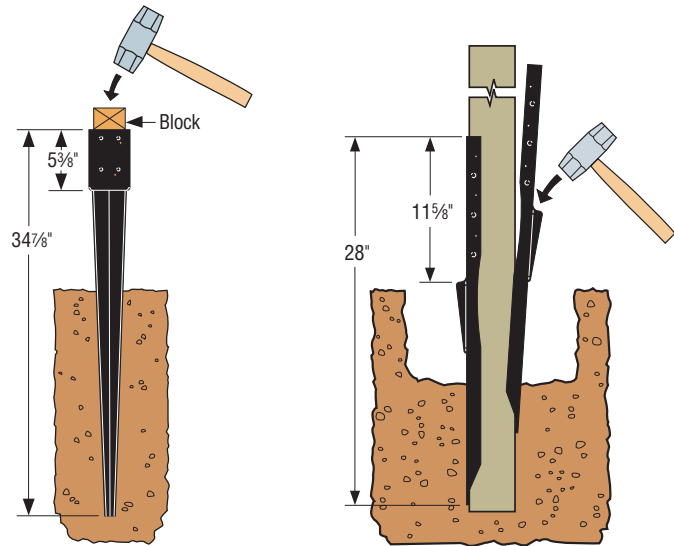
Installation:

- See flier F-EZFPP at strongtie.com
- Attach post to E-Z Spike or E-Z Base with (8) ¼" Strong-Drive SDS Heavy-Duty Connector screws or ¼" HDG lag screws and attach post to E-Z Mender using (6) HDG nails or screws per part

Note:

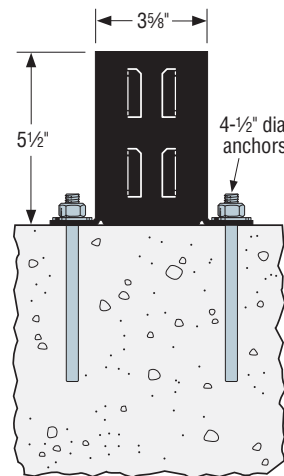
- Notwithstanding the terms of the Limited Warranty, Simpson Strong-Tie does not guarantee, represent or warrant that this product will perform under, or prevent or reduce damage caused by corrosion, any seismic, wind, atmospheric, or other load-producing event.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39-40 for more information.

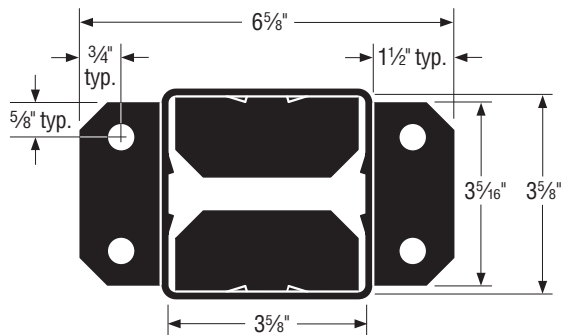


E-Z Spike™ (FPBS44)

E-Z Mender™ (FPBM44E)



E-Z Base™ (FPBB44)



E-Z Base™ (FPBB44) Top View

Miscellaneous



RC

Ripper Clip

The ripper clip is designed to connect ripped 2x framing to the top of another wood joist.

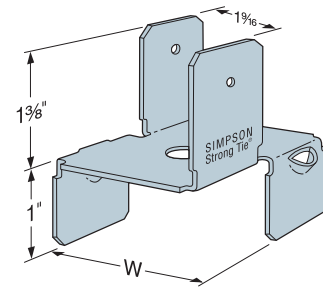
Material: 20 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; refer to General Notes
- Attach RC to ripper, then attach ripper/RC assembly to roof joist

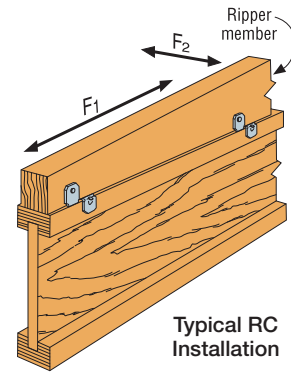
Codes: See p. 14 for Code Reference Key Chart



RC1.56
(Others similar)
U.S. Patent
5,603,580

Model No.	W (in.)	Fasteners		Allowable Uplift Load (160)	F ₁	F ₂	Code Ref.
		Ripper	Joist				
RC1.56	1 1/8"	(2) 10d x 1 1/2"	(2) 10d x 1 1/2"	205	240	205	170
RC1.81	1 3/8"						
RC2.1	2 1/8"						

1. Allowable loads are for DFL ripper members.
2. Uplift loads have been increased for wind or earthquake loading with no other increase allowed; reduce where other loads govern.
3. Designer to consider stability/blocking requirements for system, if necessary.
4. Spacing of RC per Designer.
5. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.



Typical RC Installation

PSCL/PSCA

Panel Sheathing Clips

Simpson Strong-Tie® panel sheathing clips are used to brace unsupported sheathing edges and provide a 1/8" gap to address shrinkage and expansion of roof sheathing.

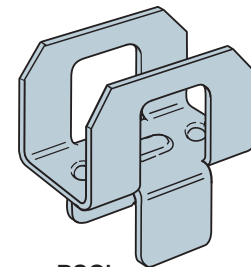
Material: 20 gauge

Finish: Galvanized

Installation:

- Use the same size sheathing clip as the panel thickness
- Maximum spans may be reduced for low slopes or high uniform loads; refer to manufacturer's installation instructions

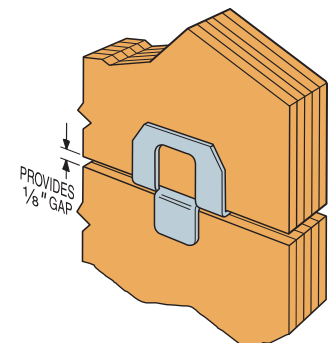
Codes: See p. 14 for Code Reference Key Chart



PSCL
(PSCA similar)

Span Rating	Panel Thickness (in.)	Model No.	Maximum Roof Sheathing Span		No. of Clips Per Span	Code Ref.
			With Clip	Without Clip		
24/0	3/8"	PSCL3/8"	24	20	1	180
24/16	7/16"	PSCA7/16"	24	24	1 ²	
24/16	7/16"	PSCL7/16"	24	24	1	
32/16	15/32"	PSCA15/32"	32	28	1 ²	
32/16	15/32"	PSCL15/32"	32	28	1	
32/16	1/2"	PSCA1/2"	32	28	1 ²	
32/16	1/2"	PSCL1/2"	32	28	1	
40/20	5/8"	PSCL5/8"	40	32	1	
40/20	19/32"	PSCL19/32"	40	32	1	
48/24	3/4"	PSCL3/4"	48	36	2	

1. Span rating and Maximum Roof Sheathing Spans are for reference only, refer to 2015 IBC Table 2304.8 (3) for additional important information.
2. Maximum roof sheathing span with single PSCA is 24". For spans > 24" use two PSCA's.



Typical PSCL Installation

SD

Wafer-Head Screw

The #8 x 1¼" SD wafer-head screw is ideal for miscellaneous fastening applications. The needle point ensures fast starts, and a deep #2 Phillips drive reduces cam-out and stripping.

Material: Heat-treated carbon steel

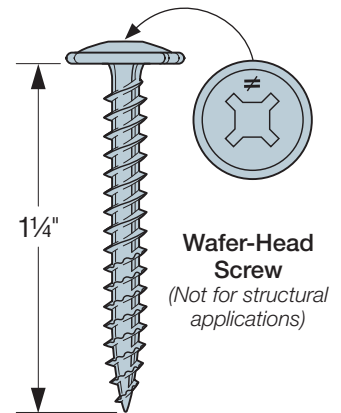
Finish: Electro-galvanized

Codes: See p. 14 for Code Reference Key Chart

Warning: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, use the #8 x 1¼" SD wafer-head screw in dry, interior and non-corrosive environments only.

Size (in.)	Model No.	DF/SP Allowable Loads	SPF/HF Allowable Loads	Code Ref.
		Shear (100) Steel Side Plate 10 ga. or Greater	Shear (100) Steel Side Plate 10 ga. or Greater	
5/8 x 1¼	SD8x1.25	50	45	170

1. SD8x1.25 requires ¾" minimum penetration. Do not use SD8x1.25 wood screws with structural connectors unless specified and stated in this catalog.



SBV/CF-R

Shelf Brackets / Concrete Form Angles

Use the SBV for shelving, counter brackets, window ledge supports, at a very competitive price.

The CF-R is used where a moderate-size shelf bracket and reinforcing angle is needed. When used for tilt-up perimeter forming, the nail hole placement ensures substantial re-use.

Material: 16 gauge

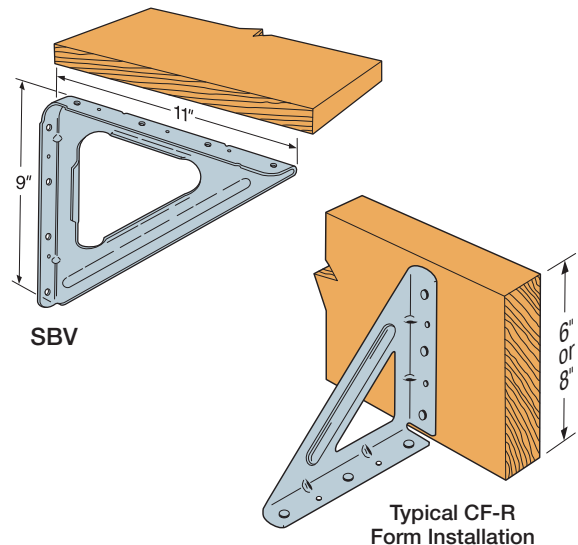
Finish: Galvanized

Installation: • Use all specified fasteners. See General Notes.

- SBV — Reversible for nominal 10" or 12" shelves of any thickness.
- CF-R (Retail Pack) — Recommended spacing is 36" for 2x's and 18" for 1x's. Use the 5" leg for 6" lumber and the 6" leg for 8" lumber. Holes are sized for ¼" fasteners or 10d commons.

Codes: See p. 14 for Code Reference Key Chart

Model No.	Fasteners	DF/SP Allowable Downloads (100)	Code Ref.
	Stud		
CF-R	(3) ¼" x 2" SDS	135	170
SBV	(4) ¼" x 2" SDS	145	



DS

Drywall Stop

Eliminates costly blocking at top plate, end walls, and corners. A typical residence will use several hundred of these inexpensive clips with a substantial savings in blocking and labor.

The installation prongs provide even more labor savings.

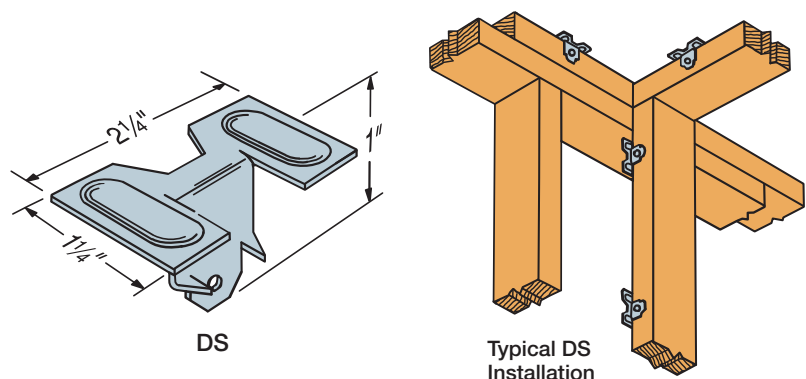
Material: 20 gauge

Finish: Galvanized

Installation:

- 16" on center or less, using 8d commons
- DS should not be used where gypsum board is used for structural loads

Code Ref.: IP6, FL, L26



RTC/FWH/RTA/RTB/RTF/RTR/RTU

Rigid Tie® Connectors

Rigid Tie® connector products are great utility connectors used to connect wood members together in a variety of ways. See the table and drawings for possible wood member connections.

Material: RTC44 — 14 gauge; RTA2 — 16 gauge; RTR and RTB — 20 gauge; all others — 18 gauge

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

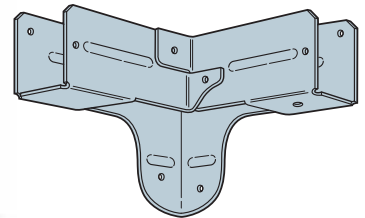
- Use all specified fasteners; see General Notes
- Always follow manufacturer's instructions when using power tools and building equipment

Codes: See p. 14 for Code Reference Key Chart

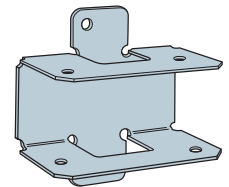
- ▶ These products are available with additional corrosion protection. For more information, see p. 18.
- ▶ These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.



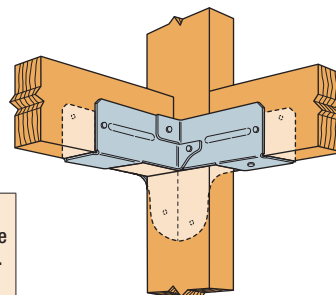
The Workbench/Shelving Kit is a fast-easy way to build a workbench and many other DIY-type projects that need a four-corner base. Visit diydoneright.com for more information.



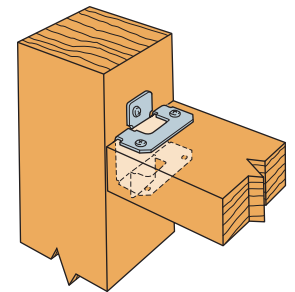
RTC2Z



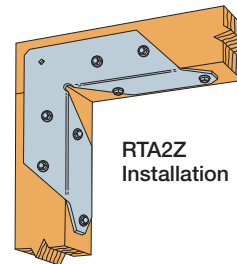
RTR



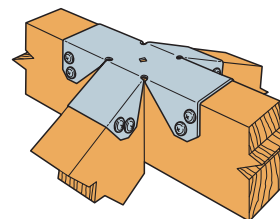
RTC2Z Installation



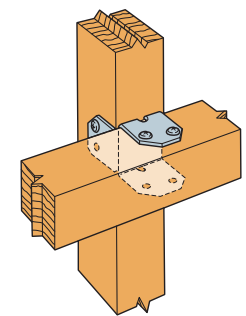
RTR Installation



RTA2Z Installation



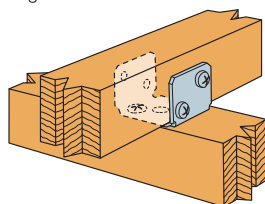
FWH2 Installation



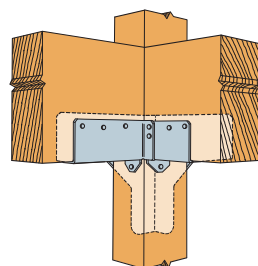
RTB22 Installation

Model No.	Post Size	Joist Size	Fasteners (Total)		Allowable Loads (DF/SP)		Code Ref.
			Post	Joist	Floor (100)	Roof (125)	
FWH2	2x	2x	(8) SD #8 x 1 1/4"	(8) SD #8 x 1 1/4"	N/A	N/A	180
RTA12	1x	1x	(8) SD #8 x 1 1/4"	(8) SD #8 x 1 1/4"	N/A	N/A	
▶ RTA2Z	2x	2x	(4) SD #9 x 1 1/2"	(4) SD #9 x 1 1/2"	150	150	
RTA4	4x	4x	(7) SD 8 x 1 1/4"	(5) SD #8 x 1 1/4"	N/A	N/A	
RTB22	2x	2x	(4) SD 8 x 1 1/4"	(4) SD #8 x 1 1/4"	N/A	N/A	
▶ RTC22Z	2x	2x	(5) SD #9 x 1 1/2"	(6) SD #9 x 1 1/2"	775	775	IP6, FL, L25
▶ RTC2Z	2x4	2x	(6) SD #8 x 1 1/4"	(6) SD #8 x 1 1/4"	300	375	
			(6) 10d x 1 1/2"	(6) 10d x 1 1/2"	710	875	
			(6) SD #9 x 1 1/2"	(6) SD #9 x 1 1/2"	1,025	1,260	
▶ RTC42	4x4	2x	(14) SD #8 x 1 1/4"	(8) SD #8 x 1 1/4"	650	810	
			(14) SD #10 x 1 1/2"	(8) SD #10 x 1 1/2"	2,420	3,030	
▶ RTC44	4x4	4x	(14) 16d sinkers	(15) 16d sinkers	1,770	2,140	
			(14) 16d	(15) 16d	2,085	2,530	
			(14) SD #10 x 1 1/2"	(15) SD #10 x 1 1/2"	2,420	3,030	
▶ RTF2Z	2x4	2x	(4) SD#9 x 1 1/2"	(8) SD #9 x 1 1/2"	685	855	
▶ RTT22Z	2x	2x	(3) SD#9 x 1 1/2"	(7) SD #9 x 1 1/2"	500	500	
RTR	2x	2x	(2) SD#8 x 1 1/4"	(4) SD #8 x 1 1/4"	N/A	N/A	180
RTU2	2x	2x	(2) SD#8 x 1 1/4"	(4) SD #8 x 1 1/4"	N/A	N/A	

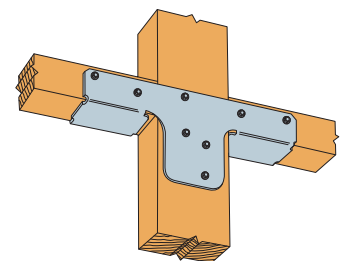
1. Allowable loads must be equally distributed on both joists.
2. **Nails:** 16d = 0.162" dia. x 3 1/2" long; 16d sinker = 0.148" dia. x 3 1/4" long; 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.
3. **Screws:** SD #9 x 1 1/2" = 0.131" dia. x 1 1/2" long, SD #10 x 1 1/2" = 0.161" dia. x 1 1/2" long, (see pp. 39–40), SD #8 x 1 1/4" = 0.156" dia. x 1 1/4" long.



RTU2 Installation



RTC44 Installation
(RTC2Z similar)



RTF2Z Installation

NS/PSPNZ

Nail Stoppers

Nail stoppers help prevent nails from piercing pipes and electrical lines. Installed over utilities that pass through framing members.

PSPN516Z and PSPN58Z protecting shield plate nail stoppers meet IRC, IBC and the International Plumbing Code. PSPN516Z meets structural and protection requirements with one strap.

Material: 16 gauge

Finish: Galvanized; PSPN-ZMAX® coating; see Corrosion Information, pp. 15–18

Installation:

- PSPN516Z — 16d commons (see footnote 2 below).
- Other models — 8d commons or prongs. For more information refer to flier F-REPRPROTECT at strongtie.com.

Codes: See p. 14 for Code Reference Key Chart

PSPN516Z (16 gauge ZMAX) at top plates

- International Residential Code® – 2012/2015 P2603.2.1 and R602.6.1
- International Building Code® – 2012/2015 2308.5.8
- International Plumbing Code – 2012/2015 305.6

PSPN516Z (16 gauge ZMAX) at bottom plate.

- International Building Code® – 2012/2015 2308.5.8
- International Plumbing Code – 2012/2015 305.6

PSPN58Z (16 gauge ZMAX) at top plates and bottom plate.

- International Plumbing Code – 2012/2015 305.6
- International Residential Code® – 2012/2015 P2603.2.1

NS1 — Nail stops to protect supply lines from drywall nails or screws.

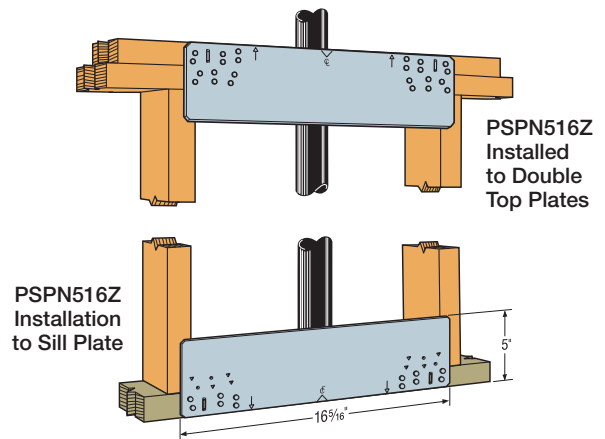
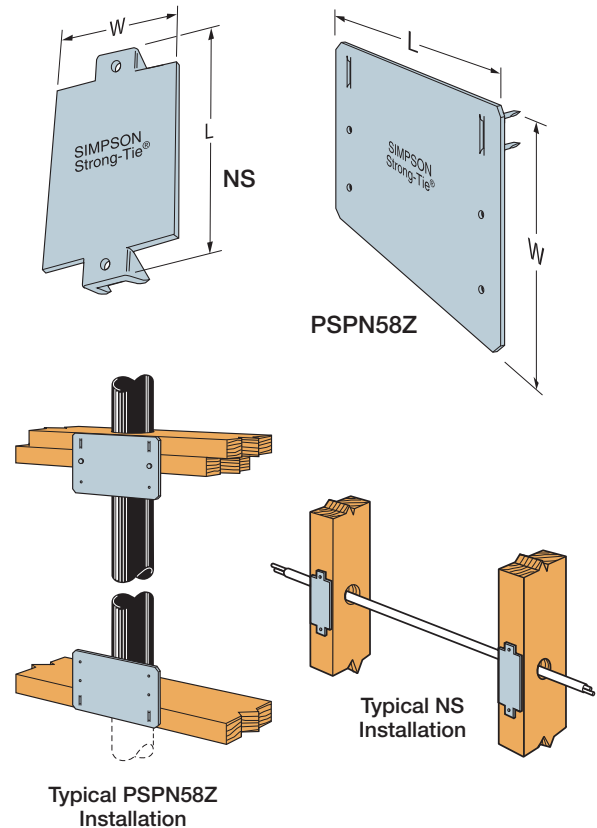
- International Residential Code® – 2012/2015 Table E3802.1
- National Electric Code – 2008/2011 300.4

These products are available with additional corrosion protection. For more information, see p. 18.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	W (in.)	L (in.)	Code Ref.
NS1	1½	3	190
NS2	1½	6	
PSPN58Z	5	8	
PSPN516Z	5	16⅞	

1. PSPN516Z — (12) 16d nails into sill plate achieves 1,365 lb. for DF/SP, and 1,180 lb. for SPF/HF, (24) 16d nails into top plates achieves 1,820 lb. for DF/SP, and 1,575 lb. for SPF/HF.
2. To meet the prescriptive IRC requirement 16d box nails (0.135" dia. x 3½") may be used.
3. **Nails:** 16d = 0.162" dia. x 3½" long, 8d = 0.131" dia. x 2½" long. See pp. 26–27 for other nail sizes and information.



CTS218

Compression and Tension Straps

The CTS218 is designed to repair wood members such as top plates, studs and trusses, and it handles both tension and compression loads. The unique rolled edges of the strap allow it to span gaps as wide as 4½", and its 1½" width enables installation on the narrow face of 2x lumber.

- Tested specifically for top/bottom plate repair with various multi-strap configurations
- Meets the requirements of the IBC and IRC for repairing top plates that have been cut or notched to accommodate plumbing or HVAC ductwork

Material: 14 gauge

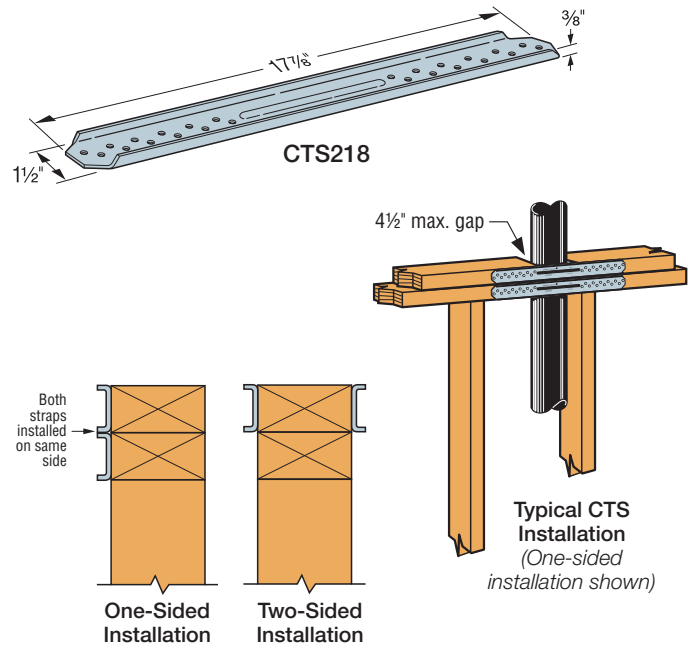
Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- One-sided installations — install one or two CTS straps on the same side of the member.
- Two-sided installation — install CTS straps on opposite sides of member. For three-part installations, install two parts on one side, one part on opposite side.

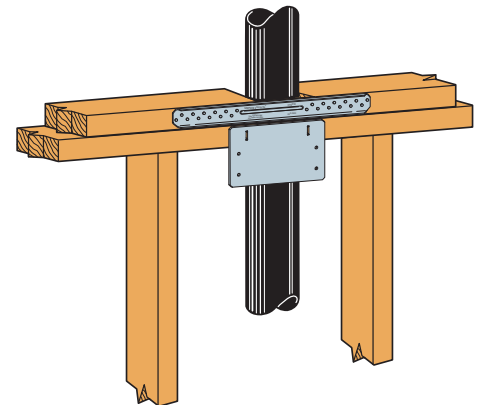
Codes: See p. 14 for Code Reference Key Chart

- International Building Code® – 2012/2015 2308.5.8

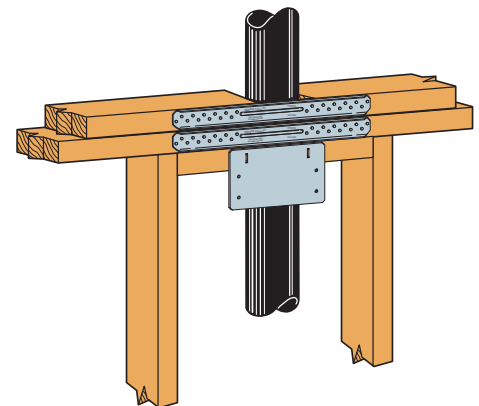


These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Strap Qty.	Installation	Fasteners (Per Strap)	Allowable Loads DF/SP		Allowable Loads SPF/HF		Code Ref.
				Compression (160)	Tension (160)	Compression (160)	Tension (160)	
CTS218	1	One sided	(24) 10d x 1½"	1,020	2,270	880	1,970	FL, I4, L3
	2	One sided		2,045	4,540	1,760	3,940	
	2	Two sided		2,370	4,540	2,040	3,940	
	3	Two sided		3,725	6,810	3,205	5,910	
	4	Two sided	4,740	9,080	4,080	7,880		
	1	One sided	(24) SD #9 x 1½"	1,175	2,480	1,010	2,150	
	2	One sided		2,350	4,960	2,020	4,300	
	2	Two sided		2,735	4,960	2,350	4,300	
	3	Two sided		4,130	7,440	3,550	6,450	
	4	Two sided		5,470	9,920	4,700	8,600	



Single CTS218 and P58 Installation



Double CTS218 and P58 Installation

1. Allowable loads have been increased for wind or seismic with no further increase allowed; reduce where other loads govern.
2. Fastener quantities are for a single strap.
3. Maximum gap between wood members is 4½".
4. **Fasteners:** 10d x 1½" = 0.148" dia. x 1½", SD #9 x 1½" = 0.131" dia. x 1½" long. See pp. 26–27 for other nail sizes and information.

RPS

Strap Ties

The RPS meets IBC, IRC and City of Los Angeles code requirements for HVAC and pipes in walls.

Finish: Galvanized, some products available in ZMAX® coating. See Corrosion Information, pp. 15–18.

Installation:

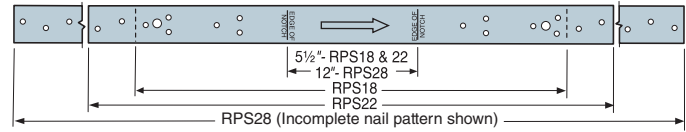
- Use all specified fasteners; see General Notes

Codes: See p. 14 for Code Reference Key Chart

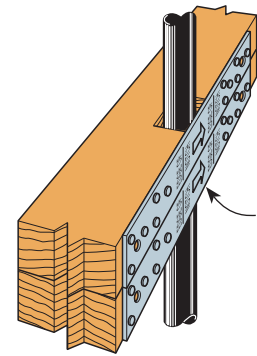
Use RPS22 or RPS28 (16 gauge) to reinforce top plate.

Use RPS18Z, RPS22Z or RPS28Z (16 gauge ZMAX) to reinforce sill plate.

- International Residential Code® – 2012/2015 R602.6.1
- International Building Code® – 2012 2308.9.8; 2015 2308.5.8



RPS



For installations on both sides of the plate, arrows should always point to the right.

Typical RPS Installation
(Only one strap may be necessary to meet IRC requirements)

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Ga.	Dimensions (in.)		Notch Width	Fasteners (Total) Nails	Allowable Tension Loads (DF/SP) (160)	Allowable Tension Loads (SPF/HF) (160)	Code Ref.
		W	L					
RPS18	16	1 1/2	18 5/16	≤ 5 1/2"	(12) 16d	1,380	1,190	I16, L9, FL
RPS22		1 1/2	22 5/16	≤ 5 1/2"	(12) 16d	1,380	1,190	
		1 1/2	22 9/16	≤ 5 1/2"	(16) 16d	1,805	1,585	
RPS28		1 1/2	28 5/16	≤ 12"	(12) 16d	1,380	1,190	
	1 1/2	28 9/16	≤ 12"	(16) 16d	1,805	1,585		

1. Loads include a 60% load duration increase on the fasteners for wind or earthquake loading.
2. To meet the prescriptive IRC requirement 10d x 1 1/2" (0.148" dia. x 1 1/2" long) may be used.
3. **Nails:** 16d = 0.162" dia. x 3 1/2" long. See pp. 26–27 for other nail sizes and information.

J/JP

Floor Beam Levelers

Jack piers and standard floor beam levelers offer unique leveling simplicity during and after construction.

Material: 12 gauge plates, 3/4" threaded rod, 1 1/16" O.D. steel pipe

Finish: None

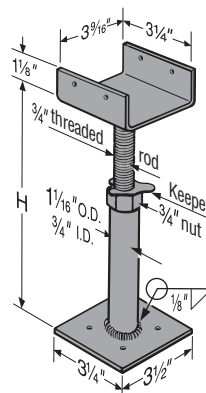
Installation:

- Use all specified fasteners; see General Notes
- Holes are provided for installation with (4) 10d x 1 1/2" nails
- Do not use J/JPs for dynamic jacking of structures, such as houses

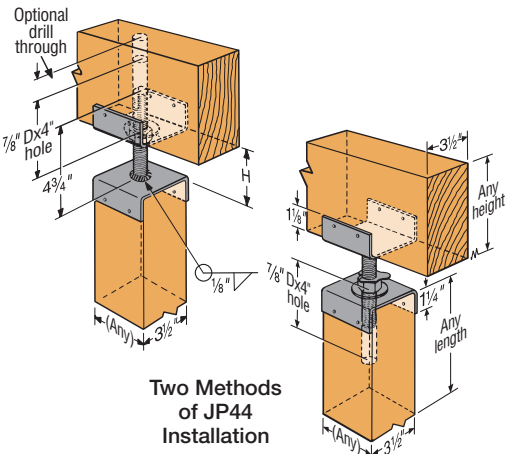
Codes: See p. 14 for Code Reference Key Chart

Model No.	Dimensions		Allowable Bearing Loads (DF/SP/SPF/HF) (100)	Code Ref.
	H (Min.–Max.) (in.)	Threaded Rod Length (in.)		
JP44	2–4	4 3/4	4,440	170
J57	5–7	4	4,380	

1. Post design by Designer. See pp. 383–385 for post allowable loads.
2. Loads may not be increased for short-term loading.
3. **Nails:** 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.



J57 Floor Beam Leveler



Two Methods of JP44 Installation

HSS/SS

Stud Shoes

Stud shoes reinforce studs notched in construction. They are not a total replacement of removed material. Installs over pipe up to 2 3/8" outside diameter.

HSS stud shoes provide tension load capacity as well as increased compression loads. Flared flange provides greater strength.

Material: 16 gauge

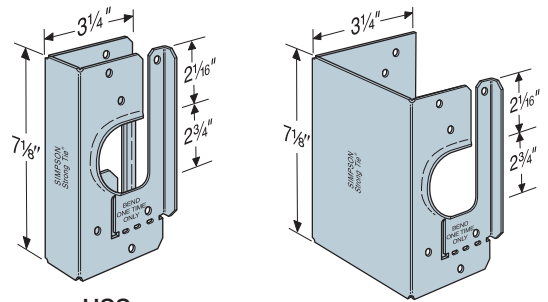
Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- HSS — Bend flanges at 90° angle during installation, then bend back and screw into position (screws included)
- Bend flanges one cycle only

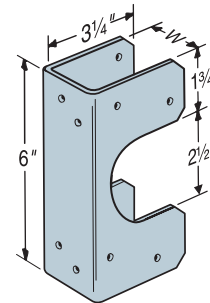
Codes: See p. 14 for Code Reference Key Chart

- International Residential Code® – 2012/2015 R602.6 and P2603.2.1
- International Building Code® – 2012 2308.9.10 and 2308.9.11; 2015 2308.5.9 and 2308.5.10
- International Plumbing Code – 2009 - 305.8 / 2012 - 305.6

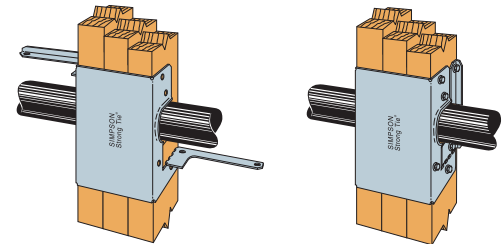


HSS
US Patent 6,176,057

HSS2-3

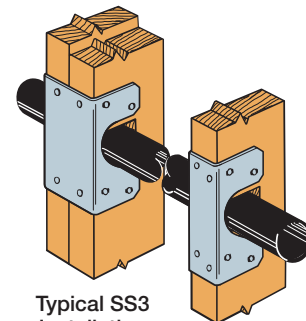


SS



Step 1
Install HSS (HSS2-3 shown) over stud with flanges bent at a 90° angle.

Step 2
Bend HSS (HSS2-3 shown) flanges one time only. Screw into position.



Typical SS3 Installation

Typical SS1.5 Installation

Model No.	Stud Size	W (in.)	Fasteners	Allowable Loads ¹			Code Ref.
				DF/SP			
				Compression		Tension	
				Floor (100)	Roof (125)		
SS1.5	2x	1 9/16	(12) 10d x 1 1/2"	500	500	—	116, FL
SS2.5	3x	2 9/16	(12) 10d x 1 1/2"	500	500	—	
SS3	(2) 2x	3 1/16	(12) 10d	665	785	—	
SS4.5	(3) 2x	4 9/16	(14) 10d	665	785	—	
HSS2-SDS1.5	2x	1 9/16	(12) 1/4" x 1 1/2" SDS	1,200	1,200	1,000	
HSS2-2-SDS3	(2) 2x	3	(12) 1/4" x 3" SDS	1,200	1,200	1,000	
HSS2-3-SDS3	(3) 2x	4 9/16	(12) 1/4" x 3" SDS	1,000	1,000	970	
HSS4-SDS3	4x	3 9/16	(12) 1/4" x 3" SDS	1,200	1,200	1,000	

1. Roof loads are 125% of floor loads unless limited by other criteria. Floor loads may be adjusted for other load durations according to the code, provided they do not exceed roof loads.
2. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1 1/2" = 0.148" dia. x 1 1/2" long. See pp. 26–27 for other nail sizes and information.

NCA/TB/LTB

Bridging

NCA — Nailless installation eliminates callbacks for nail squeaks. Designed for secure grip before the drive-home blow, and deeper prong penetration. Precision-formed into a rigid “V” section.

TB — Tension-type bridging with maximum nailing flexibility. Use just two of the seven nail holes at each end.

LTB — Staggered nail pattern accommodates 2x8 and 2x10 joists. Use just two of the six nail holes at each end. LTB40 has rigid prongs that install easily into the joist, and embossments that allow crisp bends.

Material: LTB — 22 gauge; NCA and TB — 20 gauge (except NCA2x12-16 — 18 gauge)

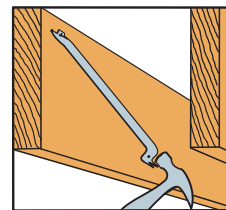
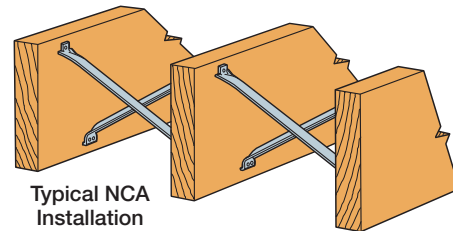
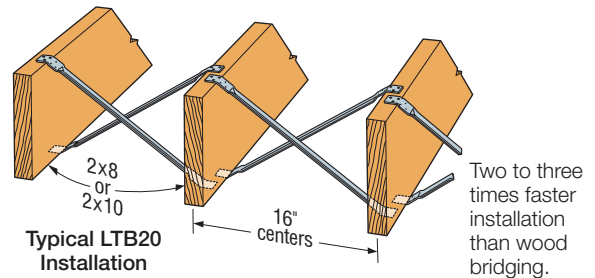
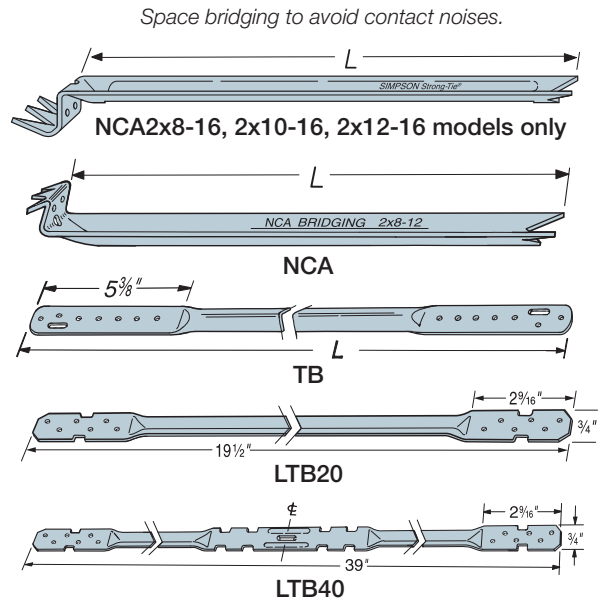
Finish: Galvanized

Installation: • Support floor joists with a depth-to-thickness ratio of six or more with bridging at intervals not exceeding 8'. If span is greater than 8', install on 2x8 or larger joists. If span is greater than 16', use more than one pair.

- Tension bridging works only in tension, so must be used in cross pairs.
- Install bridging tightly; loose installation may allow floor movement.
- NCA may be installed before or after sheathing, from the top or bottom. Simply locate the bend line approximately 1" from the joist edge.
- NCA has nail holes in one end for use if a prong is bent during installation. Fully seat nails if they are used; otherwise, they may lead to squeaks.
- TB requires two 10d x 1½" fasteners per end.
- LTB requires two 6d commons per end.

Codes: See p. 14 for Code Reference Key Chart

Code Reference: IRC 2009/2012, R502.7.1, R802.8.1



Install from below as shown, or from above. Drive upper end into joist approximately 1" from the top.

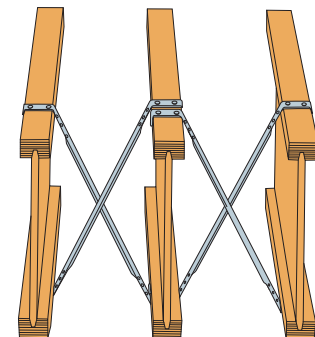
Tension Bridging for I-Joists

Joist Height (in.)	Joist Spacing (in.)								
	12	16	19.2	24	30	32	36	42	48
9½	TB20	TB27	TB27	TB30	TB36	TB36	TB42	TB48	TB54
10	TB20	TB27	TB27	TB30	TB36	TB36	TB42	TB48	TB54
11⅞	TB20	TB27	TB27	TB30	TB36	TB36	TB42	TB48	TB54
12	TB20	TB27	TB27	TB30	TB36	TB36	TB42	TB48	TB54
14	TB27	TB27	TB27	TB36	TB36	TB42	TB42	TB48	TB54
16	TB27	TB27	TB30	TB36	TB42	TB42	TB42	TB48	TB54
18	TB27	TB30	TB30	TB36	TB42	TB42	TB48	TB54	TB56
20	TB30	TB30	TB36	TB36	TB42	TB42	TB48	TB54	TB56
22	TB30	TB36	TB36	TB36	TB42	TB42	TB48	TB54	TB56
24	TB36	TB36	TB36	TB42	TB42	TB48	TB48	TB54	TB56
26	TB36	TB36	TB36	TB42	TB48	TB48	TB48	TB54	TB60
28	TB36	TB36	TB42	TB42	TB48	TB48	TB54	TB54	TB60
30	TB36	TB42	TB42	TB42	TB48	TB48	TB54	TB56	TB60
32	TB42	TB42	TB42	TB42	TB48	TB48	TB54	TB56	TB60

Tension Bridging for Solid Sawn Lumber

Joist Size	Spacing (in.)	NCA		TB		LTB	Code Ref.
		Model No.	L (in.)	Model No.	L (in.)	Model No.	
2x10	12	NCA2x10-12	12½	TB20	20	—	I16, FL, L9
2x12	12	NCA2x12-12	13⅝	TB20	20	—	
2x14	12	NCA2x8-16	15¼	TB27	27	—	
2x16	12	NCA2x10-16	15⅞	TB27	27	—	
2x8	16	NCA2x8-16	15¼	TB27	27	LTB20 or 40	
2x10	16	NCA2x10-16	15⅞	TB27	27	LTB20 or 40	
2x12	16	NCA2x12-16	16⅞	TB27	27	—	
2x14	16	—	—	TB27	27	—	
2x16	16	—	—	TB27	27	—	
2x10	24	—	—	TB30	30	—	
2x12	24	—	—	TB36	36	—	
2x14	24	—	—	TB36	36	—	
2x16	24	—	—	TB36	36	—	

For all bridging avoid contact between steel members (this may cause squeaks).



Typical TB Installation

WB/WBC/TWB/RCWB

Wall Bracing

Simpson Strong-Tie® wall bracing products offer effective options to resist racking during construction. Additionally the RCWB and WB/WBC can be used to fulfill the same code bracing requirements as a 1x4 let-in brace, but are cost effective and faster to install. Not designed to replace structural panel shearwall load-carrying component.

The WBC (coiled WB) multiple product dispenser pack weighs less than 40 pounds, making storage and transportation easy. WB106C — 15 pieces per roll, WB126C — 12 pieces per roll, WB143C — 10 pieces per roll.

The RCWB features a rolled edge (the TWB has two rolled edges) for extra strength and safety.

Material: WB and WBC — 16 gauge; TWB — 22 gauge; RCWB — 20 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.

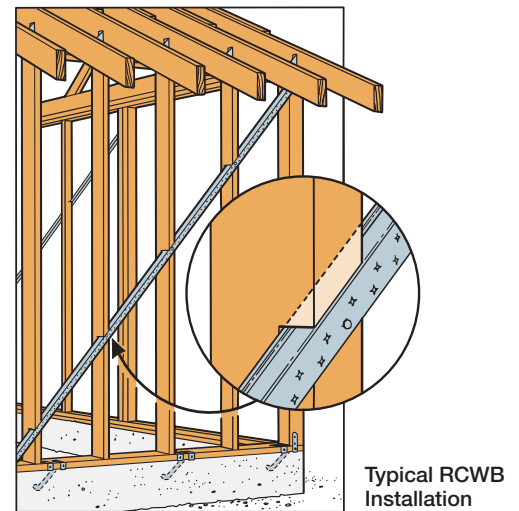
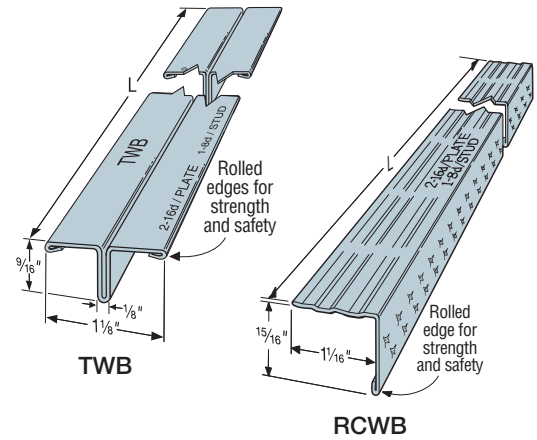
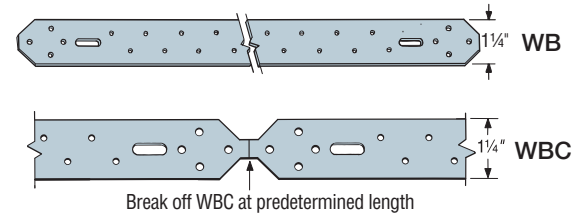
WB and WBC:

- Install in "X" pairs or in opposing "V" fashion.
- Use with 16" or 24" o.c. 2x4 (min.) studs.

RCWB and TWB:

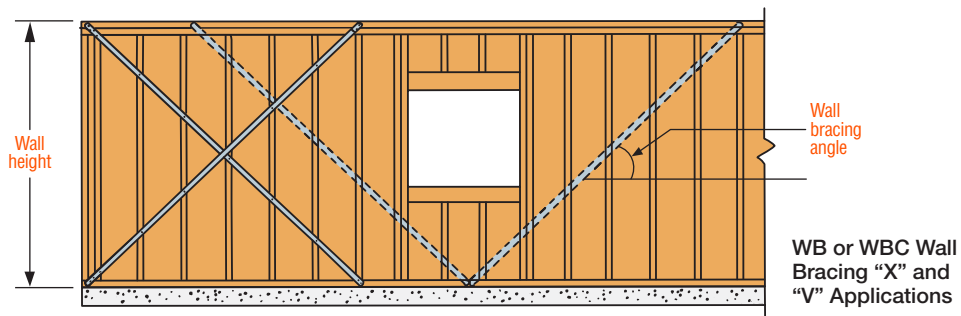
- Use with 16" o.c. studs.
- Use minimum of 2x4 studs with TWB.
- Use minimum of 2x6 studs with RCWB (2x4 min. for interior, non-bearing wall).
- Establish a run-line using the bracing as a straight edge. Single cut a saw kerf 5/8" deep (TWB) or 1 1/8" deep (RCWB) along the run line. If the wall is pre-framed on the floor, place the part into the saw kerf, and put one nail into the top plate. Tilt the wall up and plumb before nailing off top plate, bottom plate and studs according to the nailing schedule.

Codes: See p. 14 for Code Reference Key Chart



1. Nails: 16d = 0.162" dia. x 3 1/2" long, 8d = 0.131" dia. x 2 1/2" long. See pp. 26-27 for other nail sizes and information.

Model No.	L	Wall Height and Angle	Fasteners		Code Ref.
			Plates	Studs	
WB106	9'-5 5/8"	8' @ 60	(2) 16d	(1) 8d	I16, L9, FL
WB106C	9'-6"	8' @ 60	(2) 16d	(1) 8d	
TWB10	9'-9"	8' @ 55	(2) 16d	(1) 8d	I16, FL
RCWB12	11'-4"	8' @ 45	(2) 16d	(1) 8d	I16, L9, FL
WB126	11'-4 3/8"	8' @ 45	(2) 16d	(1) 8d	
WB126C	11'-4 3/4"	8' @ 45	(2) 16d	(1) 8d	I16, FL
TWB12	11'-4"	8' @ 45	(2) 16d	(1) 8d	
RCWB12	11'-4"	9' @ 53	(2) 16d	(1) 8d	I16, L9, FL
WB126	11'-4 3/8"	9' @ 53	(2) 16d	(1) 8d	
WB126C	11'-4 3/4"	9' @ 53	(2) 16d	(1) 8d	I16, L9, FL
TWB12	11'-4"	9' @ 53	(2) 16d	(1) 8d	
WB143C	14'-3"	10' @ 45	(2) 16d	(1) 8d	I16, L9, FL
RCWB14	14'-2"	10' @ 45	(2) 16d	(1) 8d	
TWB14	14'-2"	10' @ 45	(2) 16d	(1) 8d	



ICFVL

Ledger Connector System

The ICFVL ledger connector system is engineered to solve the challenges of mounting wood or steel ledgers to insulated concrete form (ICF) walls. The ICFVL is designed to provide both vertical and lateral in-plane performance. The system offers many benefits over traditional anchor bolting, including better on-center spacing in most cases, faster installation and no protrusions.

The embedded legs of the ICFVL are embossed for additional stiffness and the hole enables concrete to flow through and around the connector. The exposed flange on the face of the ICF provides a structural surface for mounting either a wood or steel ledger.

Material: ICFVL — 14 gauge; ICFVL-CW and ICFVL-W — 16 gauge

Finish: Galvanized

Installation:

ICFVL in ICF

- For use with a minimum 4" thick core
- Snap a chalk line for the bottom of the ledger
- Mark required on-center spacing
- Use ICFVL to mark kerfs locations
- Cut kerfs as marked
- Insert ICFVL flush to the face of the ICF
- Pour concrete

Wood Ledger Attachment — ICFVL-W or ICFVL-CW

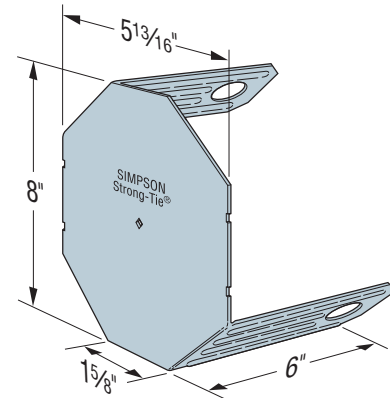
- Slip appropriate ledger connector underneath the ledger
- Install the eight ICF-D3.62 screws partially into the ledger
- Position bottom of the ledger level to the chalk line and drive the screws through the wood and into the ICFVL

Steel Ledger Attachment

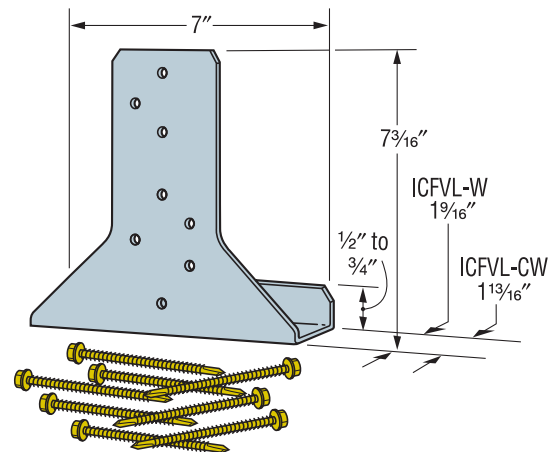
- Position bottom of the ledger level to the chalk line and against the ICFVL
- Attach with four #14 x ¾", #3 drill point screws (not provided)
- All screws should be located at least ½" from the edge of the ICFVL
- Space screws evenly

Codes: See p. 14 for Code Reference Key Chart

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



ICFVL
Patent pending



ICFVL-W and ICFVL-CW

Ledger Type	Fasteners	Allowable Loads (lb.)	
		Download (100/115/125)	Lateral F ₁ (160)
Wood	(8) ICF-D3.62	1,940	1,905
Steel	(4) #14 x ¾" ³	1,660	1,525

1. Fasteners for wood ledger (ICF-D3.62) are provided with the part and fasteners for steel ledger are not provided.
2. Loads apply to ICF foam thicknesses of 3¼" or less.
3. Alternately, ¼" x ¾" fastener may be used.
4. Tabulated loads may not be increased.
5. Concrete $f'_c = 2,500$ psi minimum.
6. When combining download and lateral loads, Designer shall evaluate as follows:
Design Download/Allowable Download + Design Lateral Load/Allowable Lateral Load ≤ 1 .
7. The ICFVL must be installed no closer than 4" below the top of the wall to achieve the allowable loads shown. For installations where the ICFVL is installed less than 4" from the top of the wall (including flush applications) multiply the allowable loads by 0.94.

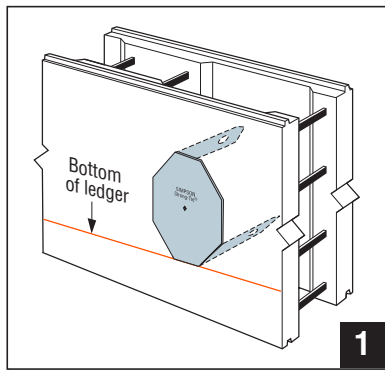
ICFVL

Ledger Connector System (cont.)

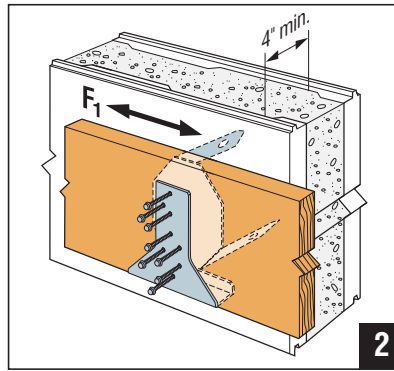
These tables address vertical load applications only.

Ledger Type	Connector Type	ICFVL Spacing To Replace Anchor Bolts (in.) ^{1,2,3}																Code Ref.
		1/2"-Diameter Anchors at				5/8"-Diameter Anchors at				(2) 5/8"-Diameter Anchors at				3/4"-Diameter Anchors at				
		12" O.C.	24" O.C.	36" O.C.	48" O.C.	12" O.C.	24" O.C.	36" O.C.	48" O.C.	12" O.C.	24" O.C.	36" O.C.	48" O.C.	12" O.C.	24" O.C.	36" O.C.	48" O.C.	
Wood Ledgers																		
DF/SP/SPF	ICFVL w/ ICFVL-W	48	48	48	48	48	48	48	48	24	48	48	48	42	48	48	48	170
LVL	ICFVL w/ ICFVL-CW	48	48	48	48	48	48	48	48	24	48	48	48	42	48	48	48	
Steel Ledgers																		
68 mil (0.068")	ICFVL	11	22	33	44	9	18	27	36	—	—	—	—	—	—	—	—	170
54 mil (0.054")	ICFVL	15	30	45	48	12	24	36	48	—	—	—	—	—	—	—	—	

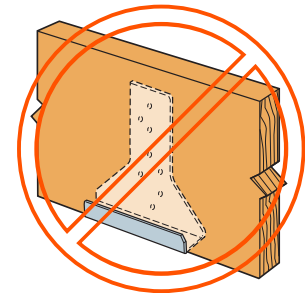
1. The Designer may specify different spacing based on the load requirements.
2. Spacings are based on perpendicular-to-grain capacity of bolt in wood ledger compared to tested value of ICFVL. Additional connectors required for out-of-plane loads.
3. See flier F-C-ICFVL at strongtie.com for additional connection details.
4. For steel ledgers, the 68 mil ledger spacing is closer than the 54 mil ledger because the calculated load of a bolt is higher in a thicker piece of steel.
5. Steel ledger values are based on steel. $F_u = 60$ ksi.
6. Maximum ICF foam thickness is 2 3/4".



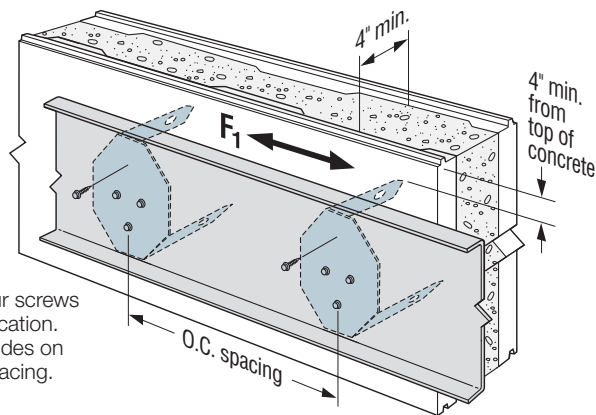
ICFVL



Typical Wood Ledger Installation with ICFVL and ICFVL-W



Misinstallation



Requires four screws at each location. Table provides on center spacing.

Typical Steel Ledger Installation with ICFVL
(Minimum 16 ga. steel ledger)

FC

Framing Clips

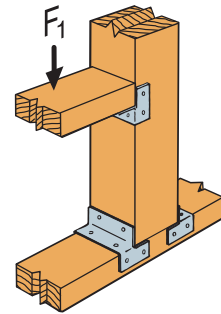
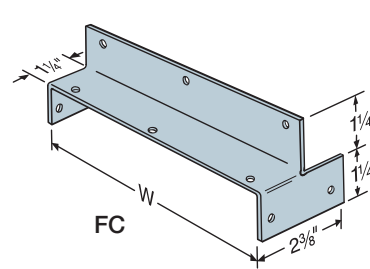
For fast, accurate framing. Three-dimensional nailing pattern results in high-strength joint values. Ideal for fence construction.

Material: 16 gauge **Finish:** Galvanized

Installation:

- Use all specified fasteners; see General Notes

Codes: See p. 14 for Code Reference Key Chart



Typical FC Load Installation

Model No.	W	Fasteners	Allowable F ₁ Loads (100)	Code Ref.
FC4	3 1/16"	(8) 16d	865	IP1, L18, FL
FC6	5 1/2"	(10) 16d	1,010	

1. Loads may not be increased for short-term loading.
2. A 2 1/2" minimum lumber thickness is required to achieve the full load.
3. **Nails:** 16d = 0.162" dia. x 3 1/2" long. See pp. 26–27 for other nail sizes and information.

BT

Brick Ties

Brick Ties provide a connection between the wood structure and brick façade.

Material: 22 gauge

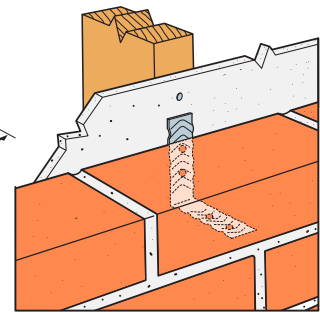
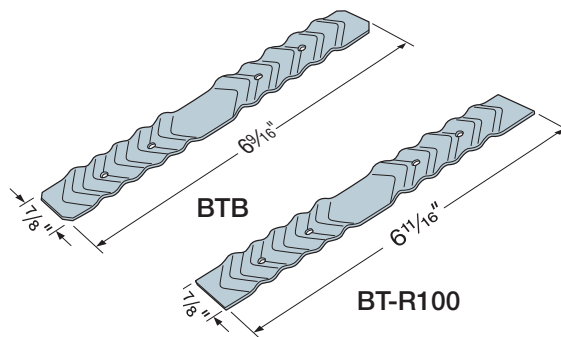
Finish: Galvanized; available in Type 304 stainless steel (order as BTBSS)

Installation:

- Holes sized for 10d commons. See code for spacing requirements.

Codes: IRC 2012, R703.7.4; 2015 R703.8.4

To Order: BT-R100 = retail pack of 100
BTB = bulk carton of 500



Typical BT Installation

IS

Insulation Supports

The insulation supports are cut from carbon steel spring wire for optimum flexibility and strength. Mitered tips dig into the wood, securing itself and insulation when installed between joists.

Material: 14 gauge **Finish:** None

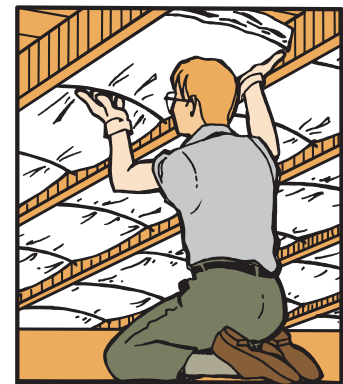
Installation:

- Install between joists. IS16 for 16" o.c. spacing; IS24 for 24" o.c. spacing. Follow insulation manufacturer's installation instructions.
- Wear safety glasses, gloves and other appropriate safety equipment.

Codes: See p. 14 for Code Reference Key Chart



IS16 (IS24 similar)



Typical IS Installation

Model No.	Diameter	Length (in.)	Joist Spacing	Code Ref.
IS16-R100	0.08	15 1/2"	16" o.c.	180
IS24-R100	0.08	23 1/2"	24" o.c.	

MP

Mending Plates

Versatile and easy-to-use mending plates for wood-to-wood connections. No nails or notching of wood required. For non-structural applications only; not for truss applications.

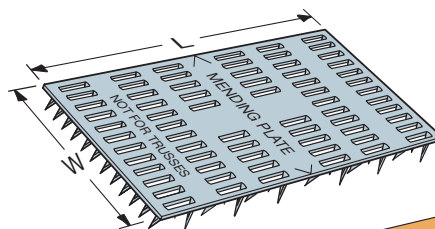
Material: 20 gauge

Finish: Galvanized

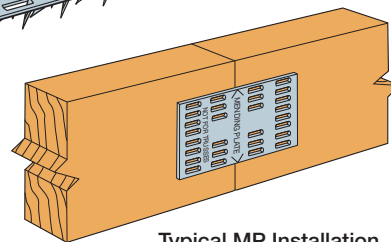
Installation:

- Place plate over two pieces of aligned wood with arrows aligned at joint
- Place a wood block over the mending plate and hammer the wood block to embed the prongs

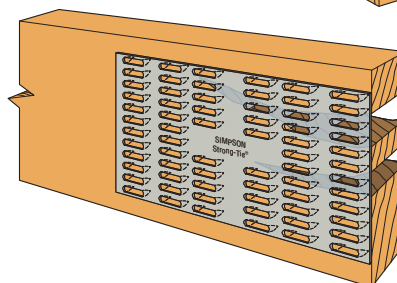
Codes: See p. 14 for Code Reference Key Chart



MP36
(Other sizes similar)



Typical MP Installation



Pallet Repair Application

Model No.	Dimensions (in.)		Code Ref.
	W	L	
MP14	1	4	180
MP24	2	4	
MP36	3	6	

1. Connectors are not load rated.

TP/TPA

Tie Plates

Ties are nail-on tie plates. TPAs are flanged for added support.

Material: 20 gauge

Finish: Galvanized

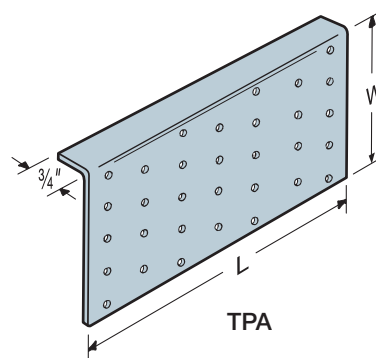
Installation:

- Holes are sized for 8d common or 8d x 1 1/2" nails

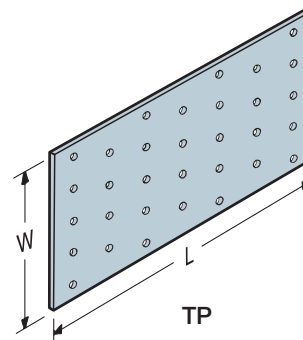
Codes: See p. 14 for Code Reference Key Chart

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 39–40 for more information.

Model No.	Dimensions (in.)		Number of Nail Holes	Code Ref.
	W	L		
TP15	1 13/16	5	13	180
TPA37	3 1/2	7	32	
TPA39	3 1/2	9	41	
TP35	3 1/8	5	23	
TP37	3 1/8	7	32	
TP39	3 1/8	9	41	
TP311	3 1/8	11	50	
TP45	4 1/8	5	30	
TP47	4 1/8	7	42	
TP49	4 1/8	9	54	
TP411	4 1/8	11	66	
TP57	5 3/4	7	60	
TPA57	5	7	49	



TPA



TP

1. Connectors are not load rated.

Decorative Hardware



Outdoor Accents®

APA/APB/APDJT/APL/APT



The new Outdoor Accents® decorative hardware product line features connectors and fasteners that bring strength and style to custom outdoor living structures. The Mission Collection® adds a hint of southwestern flair.

Outdoor Accents post bases secure wood columns to concrete while providing a 1" stand-off height that helps reduce decay. These bases accommodate 4x4 and 6x6 lumber in both sawn and rough sizes.

The Outdoor Accents structural screw reduces installation time by driving easily without predrilling. When combined with the new load-rated hex-head washer, the solution delivers the appearance of a bolt while providing the easy installation and convenience of a screw for the installer.

Outdoor Accents angles make connections between beams and posts stronger and provide more consistent, straight corners for a variety of outdoor projects. There are two sizes to accommodate 4x and 6x lumber. Flat T and L straps provide reinforcement for connections where one lumber piece intersects another at a 90-degree angle. The angles and straps are also installed with the Outdoor Accents structural screws and hex-head washers.

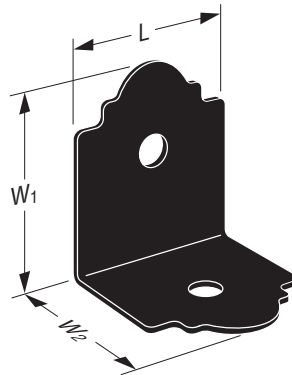
Material: 12 gauge, except APA21, 14 gauge

Finish: ZMAX® with textured powder-coated, flat black paint

Installation: • Use all specified fasteners; see General Notes

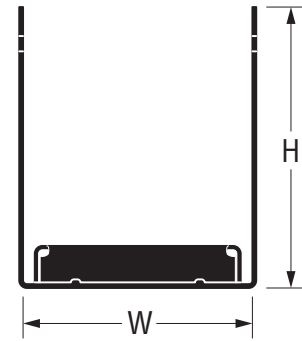
- Use of the Outdoor Accents connectors requires the use of Hex-Head Washer (STN22) with Structural Wood screw (SDWSDBB)

Codes: See p. 14 for Code Reference Key Chart

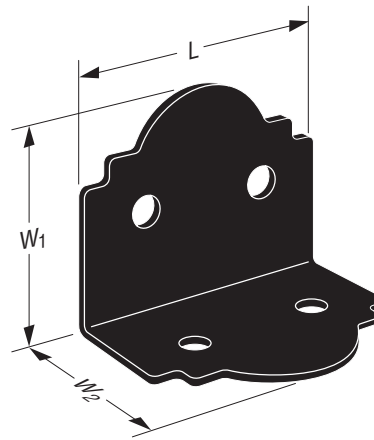


APA4

U.S. Patent Pending

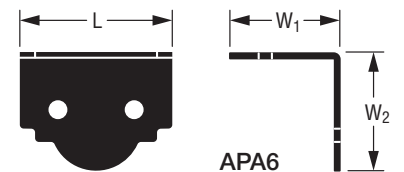


APB

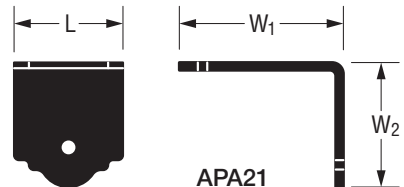


APA6

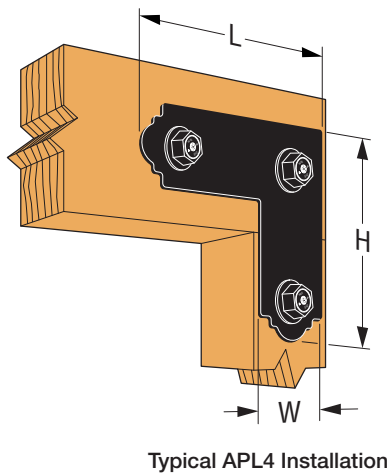
U.S. Patent Pending



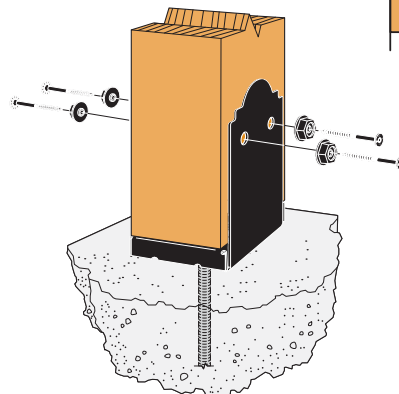
APA6



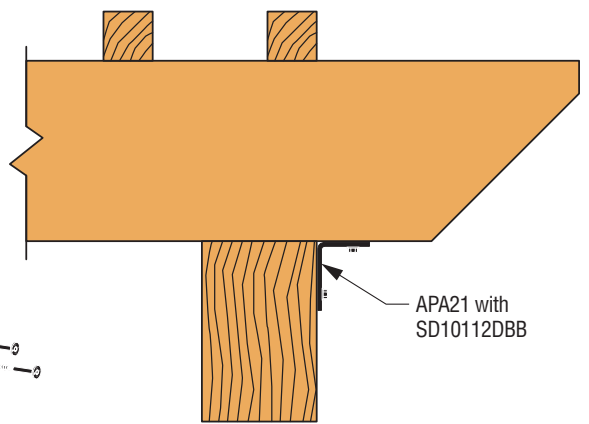
APA21



Typical APL4 Installation



Typical APB Installation



Typical APA21 Installation

APA21 with SD10112DBB

Outdoor Accents®

APA/APB/APDJT/APL/APT (cont.)

Beam-to-Column Ties

Model No.	Ga.	Dimensions (in.)			Fastener Qty. ²		Allowable Loads		Code Ref.
		W	L	H	Column	Beam	Uplift	F ₁	
APL4	12	3	8¼	8¼	2	4	1,155	670	IP6, FL
APL6	12	5	11¼	11¼	4	6	1,905	1,340	
APT4	12	3	13½	8¼	2	4	1,330	1,015	
APT6	12	5	17½	11¼	4	8	2,130	1,425	

1. Allowable loads have been increased for wind or seismic loads with no further increase allowed.
2. Connectors must be installed in pairs. Allowable loads do not apply to single parts.
3. All fasteners are a Simpson Strong-Tie® SDWS22312DBB inserted through an STN22 washer.

Heavy Angles

Model No.	Ga.	Dimensions (in.)			Fastener Qty.		Allowable Loads		Code Ref.
		L	W ₁	W ₂	Column	Beam	Uplift	F ₁	
APA4	12	3	3¼	3	2	2	710	1,220	IP6, FL
APA6	12	5	3¾	3½	4	4	1,265	1,985	

1. Allowable loads have been increased for wind or seismic loads with no further increase allowed.
2. Connectors must be installed in pairs. Allowable loads do not apply to single parts.
3. All fasteners are a Simpson Strong-Tie® SDWS22312DBB inserted through an STN22 washer.

Light Rafter Tie

Model No.	Ga.	Dimensions (in.)			Fastener Qty.		Allowable Loads		Code Ref.
		L	W ₁	W ₂	Column	Beam	Uplift	F ₁	
APA21	14	1¾	2	1½	1	1	200	120	IP6, FL

1. Allowable loads have been increased for wind or seismic loads with no further increase allowed.
2. Allowable loads are for a single part.
3. All fasteners are a Simpson Strong-Tie® SD10112DBB.

Post Bases

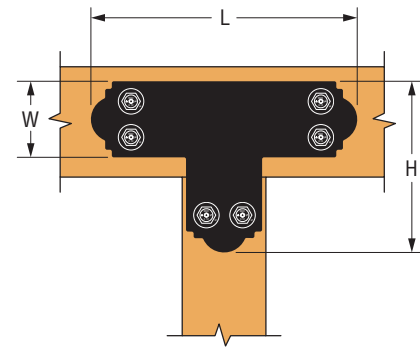
Model No.	Ga.	Dimensions (in.)			Fastener Qty.		Allowable Loads		Code Ref.
		L	W	H	Column	Anchor	Uplift	Down	
APB44	12	3	3¾	7	4	¾	1,035	6,725	IP6, FL
APB44R	12	3	4¼	6¾	4	¾	1,035	6,725	
APB66	12	5	5½	7½	4	¾	1,260	11,450	
APB66R	12	5	6	7¼	4	¾	1,260	11,450	

1. Uplift loads have been increased for wind or earthquake or seismic with no further increase allowed; reduce where others govern.
2. Downloads may not be increased for short-term loading.
3. Specifier to design concrete for uplift capacity.
4. Downloads shall be reduced where limited by capacity of the post.
5. All post fasteners are a Simpson Strong-Tie® SDWS22312DBB inserted through an STN22 washer.
6. Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-top-supported installations (such as fences or unbraced carports).

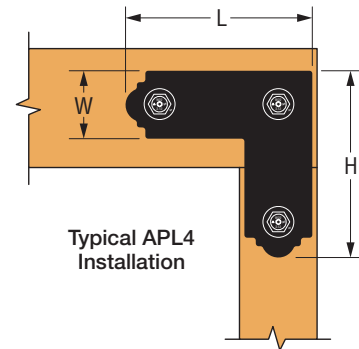
Deck Joist Tie

Model No.	Ga.	Dimensions (in.)			Allowable Down Loads		Code Ref.
		S	W	H	Floor (100)	Roof (125)	
APDJT2-4	12	1½	3	10	1,870	2,340	160
APDJT2R-4	12	2	3	9½	1,870	2,340	
APDJT2-6	12	1½	5	10	1,870	2,340	
APDJT2R-6	12	2	5	9½	1,870	2,340	

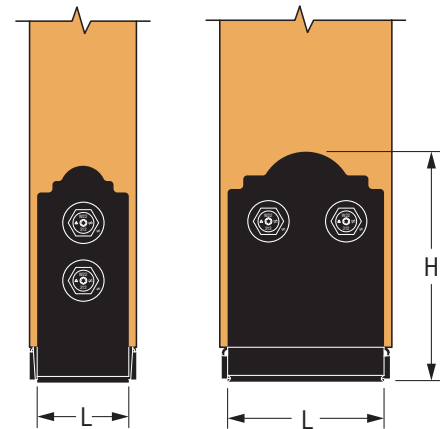
1. Roof loads are 125% of floor loads. Floor loads may be adjusted for other load durations according to the code, provided they do not exceed the roof loads.
2. Loads are per part.
3. Joist fastener is a Simpson Strong-Tie® SDWS22512DBB inserted through an STN22 washer. Post fastener is a Simpson Strong-Tie SDWS22312DBB inserted through an STN22 washer.



Typical APT6 Installation

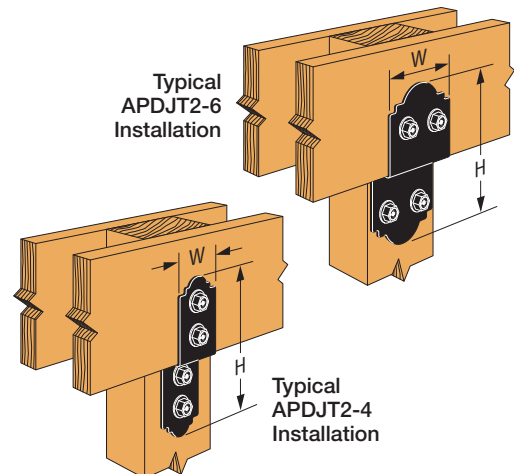


Typical APL4 Installation



Typical APB44 Installation

Typical APB66 Installation



Typical APDJT2-6 Installation

Typical APDJT2-4 Installation

Outdoor Accents®

Outdoor Accents® Fasteners

Outdoor Accents® Connector Screw

The Outdoor Accents® Connector Screw reduces installation time by driving easily without predrilling. Designed for installation with the Outdoor Accents® APA21 90-degree angle, the screw's black finish accents any outdoor living project. The sharp point of the screw enables fast starts, and the patented serrated threads reduce torque for improved drivability.

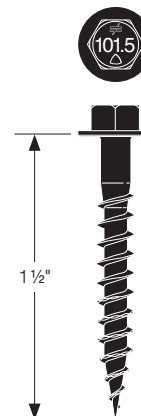
Features:

- Use with Outdoor Accents® Decorative Hardware (sold separately) for an appealing look
- ¼" hex head reduces cam-out for easier installation and helps avoid stripping of the head during installation (¼" hex drive included)
- Optimized heat treating for ductility and strength
- The single-fastener steel-side-plate allowable load of the SD10 exceeds the shear load of a 16d common nail

Material: Heat-treated carbon steel

Finish: Double-barrier black proprietary coating

Code Ref.: I24. See p. 14 for Code Reference Key Chart



SD10112DBB

Outdoor Accents® Hex-Head Washer

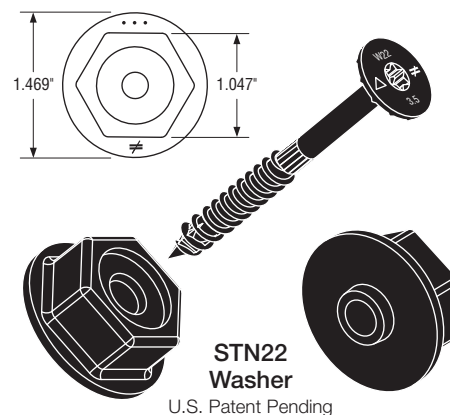
The Outdoor Accents® Hex-Head Washer provides the decorative appearance of a bolted connection. Its patent-pending design provides an easier and significantly faster installation time compared to through-bolting. The patent-pending Hex-Head Washer is code listed (IAPMO-UES ER-192) and is designed exclusively to help fasten Outdoor Accents post bases, T and L straps and angles.

Features:

- Combined with the Outdoor Accents® structural wood screw, it provides a structural load-rated solution
- Easy to install

Finish: Quik Guard® black coating for exterior use with a black powder-coat finish

Code Ref.: IP4. See p. 14 for Code Reference Key Chart



STN22
Washer

U.S. Patent Pending

Outdoor Accents® Structural Wood Screw

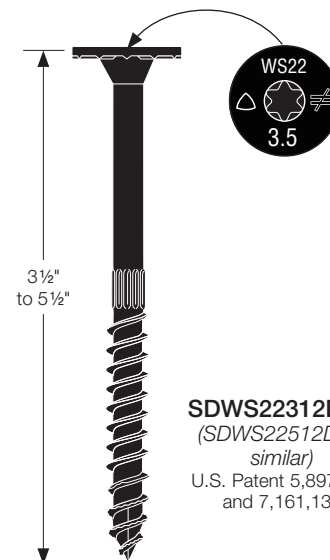
The Outdoor Accents® structural wood screw reduces installation time by driving easily without predrilling. When combined with the patent-pending, load-rated Outdoor Accents Hex-Head Washer, the solution delivers the decorative appearance of a bolt connection but with a much easier installation. The structural screw and washer are sold separately from each other and from the Outdoor Accents connectors.

Features:

- Use with Outdoor Accents® Decorative Hardware and hex-head washer (sold separately) for an appealing look
- Use Outdoor Accents® Structural Wood Screw solitarily as a wood-to-wood fastener
- Patented 4CUT™ 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

Finish: Double-barrier black proprietary coating

Code Ref.: IP4. See p. 14 for Code Reference Key Chart



SDWS22312DBB
(SDWS22512DBB
similar)

U.S. Patent 5,897,280
and 7,161,133

Outdoor Accents®

Outdoor Accents® Fasteners (cont.)

Outdoor Accents® Connector Screw

Size (in.)	Model No.	Thread Length (in.)	DF/SP Allowable Loads		SPF/HF Allowable Loads		Code Ref.
			Shear Steel Side Plate 20 ga. – 12 ga. (lb.)	Withdrawal (lb./in.)	Shear Steel Side Plate 20 ga. – 12 ga. (lb.)	Withdrawal (lb./in.)	
#10 x 1½"	SD10112DBB	1	173	173	138	122	I24, FL

1. Allowable loads are shown at the wood load duration factor of $C_D = 1.00$. Loads may be increased for load duration per the building code up to a $C_D = 1.60$.
2. Withdrawal loads and steel-side-plate shear loads are based on testing per ICC-ES AC233.
3. Withdrawal loads are based on the entire threaded section installed into the main member.
4. Visit strongtie.com for wood-to-wood shear values and wood-side-plate details.

Outdoor Accents® Structural Wood Screw with Hex-Head Washer

Size (in.)	Model No.	Thread Length (in.)	Allowable Shear Loads (lb.)						Code Ref.
			2x Wood Side Member			12-ga. Steel Side Member			
			DF/SP	SPF/HF	Western Cedar	DF/SP	SPF/HF	Western Cedar	
0.22 x 3½"	SDWS22312DBB with STN22	2	235	192	179	470	385	320	IP4, FL
0.22 x 5½"	SDWS22512DBB with STN22	2¾	465	430	395	640	495	425	

See footnotes below.

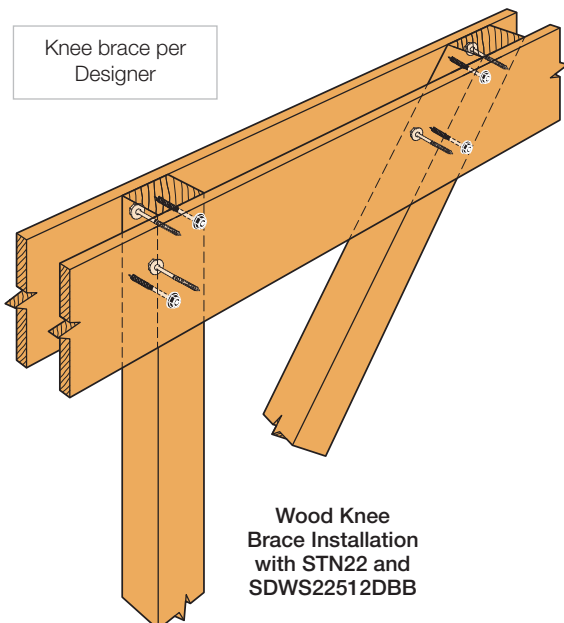
Outdoor Accents® Structural Wood Screw – Wood to Wood

Size (in.)	Model No.	Thread Length (in.)	Allowable Shear Loads (lb.)			Allowable Withdrawal Loads (lb./in.)			Code Ref.
			2x Wood Side Member			DF/SP	SPF/HF	Western Cedar	
			DF/SP	SPF/HF	Western Cedar				
0.22 x 3½"	SDWS22312DBB	2	255	190	225	164	151	142	IP4, FL
0.22 x 5½"	SDWS22512DBB	2¾	405	405	230	214	187		

1. Allowable loads are for connections between two members with full thread penetration into the main member.
2. Allowable loads are shown at the wood load duration factor of $C_D = 1.0$. Loads may be increased for load duration per the building code up to a $C_D = 1.60$. Tabulated values must be multiplied by all applicable adjustment factors per the NDS.
3. Minimum spacing, edge, and end distance requirements are per IAPMO-UES ER-192.
4. Loads are based on installation into the side grain of the wood with the screw axis perpendicular to the face of the member.

Outdoor Accents Structural Screws:

- SD10112DBB-R50 (50) Outdoor Accents Connector Screws per clamshell
- SDWS22312DBB-RC12 (12) Outdoor Accents Structural Screws per clamshell
- SDWS22312DBB-R50 (50) Outdoor Accents Structural Screws per box
- SDWS22512DBB-RC12 (12) Outdoor Accents Structural Screws per clamshell
- STN22-R8 (8) Outdoor Accents Hex-Head Washers per clamshell



Indoor Architectural Products

Indoor Architectural Products consist of aesthetically pleasing, pre-finished connectors and innovative concealed joist ties designed for exposed wood applications. These connectors provide structural performance while adding a unique appearance feature to a project. There are two styles available to meet different design needs. The Classic Collection features modern smooth edges and clean lines that work as well in a contemporary loft as they would in a century-old warehouse. The Rustic Collection features notched detailing to create the look and feel of a rugged cabin. Used with heavy timbers and beams, these connectors have an antique quality. The product group also features specialty connectors that can stand alone or work with any classic or rustic design. This group includes bearing plates, specialty joist hangers, stand-off bases, custom plates and concealed connectors.

- **Architectural Finishes**

Eliminate time-consuming prep work and costly field painting. Available finishes include textured flat black powder coat, gray paint and hot-dip galvanized coating.

- **Availability**

Select products are in stock and readily available. Contact Simpson Strong-Tie for product availability and lead times for non-stocked items.

- **Pre-Engineered and Tested**

Load-rated products are verified to perform to design loads, unlike custom-designed and -fabricated connectors.

- **Quality Assurance**

No-Equal quality-controlled manufacturing ensures product consistency and high quality.



Products shown in this section come with textured flat black powder coat unless otherwise noted. Most are also available with a galvanized coating or gray primer. Contact Simpson Strong-Tie for availability.

strongtie.com/apg



Indoor Architectural Products

Classic Collection

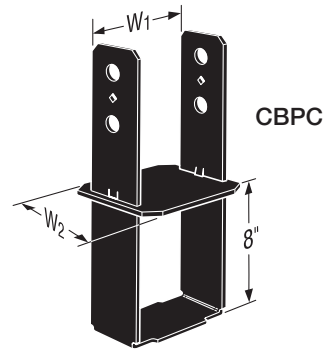
Material: As noted in tables

Finish: Textured powder-coated flat black paint

Installation:

- Use all specified fasteners; see General Notes

Codes: See p. 14 for Code Reference Key Chart



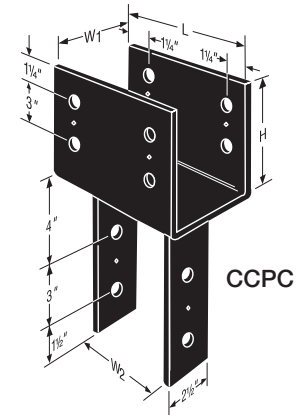
Column Bases

Model No.	Ga.	Dimensions (in.)		Bolts		Allowable Tension Loads (160)	Code Ref.
		W ₁	W ₂	Qty.	Dia.		
CB44PC	7	3 ³ / ₁₆	3 ¹ / ₂	2	5/8"	4,200	I28, L27, FL
CB46PC	7	3 ³ / ₁₆	5 ¹ / ₂	2	5/8"	4,200	
CB48PC	7	3 ³ / ₁₆	7 ¹ / ₂	2	5/8"	4,200	
CB66PC	7	5 ¹ / ₂	5 ¹ / ₂	2	5/8"	4,200	
CB68PC	7	5 ¹ / ₂	7 ¹ / ₂	2	5/8"	4,200	
CB88PC	3	7 ¹ / ₂	7 ¹ / ₂	2	3/4"	6,650	170
CB810PC	3	7 ¹ / ₂	9 ¹ / ₂	2	3/4"	6,650	

1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Minimum side cover for full loads is 3" for CBs.
3. Install with bottom of base flush with concrete.
4. Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports).

Column Caps

Model No.	Ga.	Dimensions (in.)				Bolts				Allowable Loads		Code Ref.
						Beam		Post		Uplift (160)	Down (100)	
		W ₁	W ₂	L	H	Qty.	Dia.	Qty.	Dia.			
CC44PC	7	3 ³ / ₁₆	3 ³ / ₁₆	7	4	2	5/8"	2	5/8"	1,465	15,310	I12, L4, FL
CC46PC	7	3 ³ / ₁₆	5 ¹ / ₂	11	6 ¹ / ₂	4	5/8"	2	5/8"	2,800	24,060	
CC66PC	7	5 ¹ / ₂	5 ¹ / ₂	11	6 ¹ / ₂	4	5/8"	2	5/8"	4,040	30,250	
CC68PC	7	5 ¹ / ₂	7 ¹ / ₂	11	6 ¹ / ₂	4	5/8"	2	5/8"	4,040	37,810	
CC88PC	3	7 ¹ / ₂	7 ¹ / ₂	13	8	4	3/4"	2	3/4"	7,440	54,600	

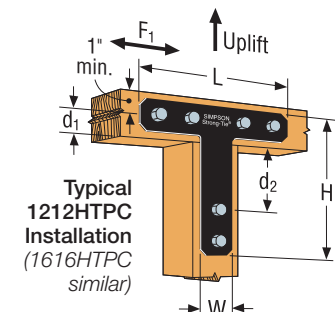
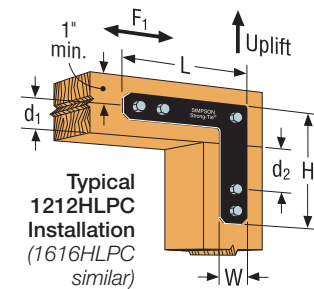


1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Post sides are assumed to lie in the same vertical plane as the beam sides.
3. Downloads are determined using F_c perpendicular equal to 625 psi on seat area; reduce where end bearing value of post, L/R of post, or other criteria are limiting.
4. See pp. 114–115 for glulam beam sizes and end conditions. Add PC to the model, i.e. CC3/4-4PC.
5. Column caps for end conditions available to order; add an "E" to the start of the model number. See pp. 114–115 for load values.

Beam-to-Column Ties

Model No.	Ga.	Dimensions (in.)			Minimum Bolt End and Edge Distances (in.)		Bolts		Allowable Loads ^{1,2}		Code Ref.
									Tension/Uplift (100/160)	F ₁ (100/160)	
		W	H	L	d ₁	d ₂	Qty.	Dia.			
1212HLPC	7	2 ¹ / ₂	12	12	2 ¹ / ₂	4%	5	5/8"	1,535	565	170
1616HLPC	7	2 ¹ / ₂	16	16	2 ¹ / ₂	4%	5	5/8"	1,535	565	
1212HTPC	7	2 ¹ / ₂	12	12	2 ¹ / ₂	4%	6	5/8"	2,585	815	
1616HTPC	7	2 ¹ / ₂	16	16	2 ¹ / ₂	4%	6	5/8"	2,585	815	

1. 1212HL, 1616HL, 1212HT and 1616HT are to be installed in pairs with machine bolts in double shear. A single part with machine bolts in single shear is not load rated.
2. Allowable loads are based on a minimum member thickness of 3¹/₂".
3. 1212HT and 1616HT loads assume a continuous beam.

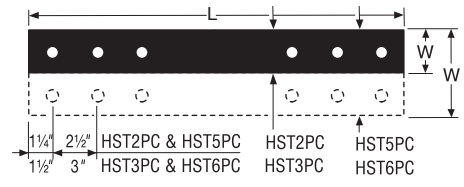


Indoor Architectural Products

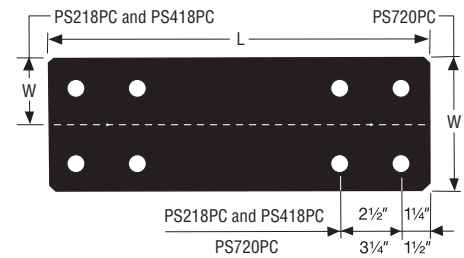
Classic Collection (cont.)

Strap Ties

Model No.	Ga.	Dimensions (in.)		Bolts		Allowable Tension Loads ^{1,2} (160)	Code Ref.
		W	L	Qty.	Dia.		
HST2PC	7	2½	21¼	6	⅝"	5,220	I4, L3, FL
HST5PC	7	5	21¼	12	⅝"	10,650	
HST3PC	3	3	25½	6	¾"	7,625	
HST6PC	3	6	25½	12	¾"	15,360	
PS218PC	7	2	18	4	¾"	4,990	180
PS418PC	7	4	18	4	¾"	5,030	
PS720PC	7	6¾	20	8	½"	4,685	



HSTPC



PSCP

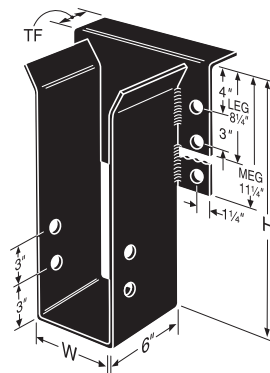
1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Allowable loads are based on parallel-to-grain loading and a minimum member thickness of 3½" with machine bolts in single shear. Straps must be centered about splice joint, and bolt edge distances must meet NDS minimum requirements.
3. Designer must determine allowable loads when combining bolts parallel and perpendicular to grain.

Beam Hangers

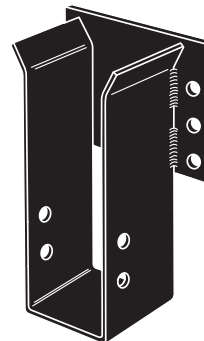
Material: Top flange — 7 gauge; stirrups — 7 gauge

Model No.	Dimensions (in.)			Bolts				Allowable Loads						Code Ref.
	W	Min. H	TF	Header		Joist		Without Top Flange		No Triangle Theory		Triangle Theory		
				Qty.	Dia.	Qty.	Dia.	(100)	(125)	(100)	(125)	(100)	(125)	
LEG3PC	3¼	9	2½	4	¾"	2	¾"	3,465	4,330	12,675	13,215	11,865	12,730	I19, L14, FL
LEG5PC	5¼	9	2½	4	¾"	2	¾"	3,465	4,330	16,290	16,290	11,865	12,730	
MEG5PC	5¼	9	2½	6	¾"	2	¾"	5,170	6,460	19,710	19,710	13,570	14,865	
LEG7PC	6¾	9	2½	4	¾"	2	¾"	3,465	4,330	16,290	16,290	11,865	12,730	
MEG7PC	6¾	9	2½	6	¾"	2	¾"	5,170	6,460	19,710	19,710	13,570	14,865	

1. Allowable loads assume a 5½" carrying member.
2. Specify desired height, minimum height listed in the table.
3. Glulam widths listed in table. To specify other widths add an X to the name and specify.
4. See Glulam Connectors section of this catalog for additional information on these products.
5. Refer to p. 170 footnote 4 for triangle theory explanation.
6. For LEG and MEG without a top flange, specify "No TF." For example, LEG3NOTFPC.



LEGPC/MEGPC



**MEGPC
without Top Flange**

Indoor Architectural Products

Rustic Collection

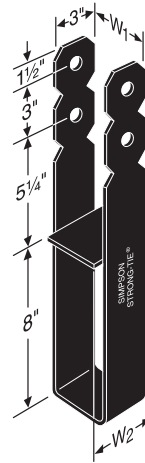
Material: As noted in tables

Finish: Textured powder-coated flat black paint

Installation:

- Use all specified fasteners; see General Notes

Codes: See p. 14 for Code Reference Key Chart



OCB (3 ga.)

1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Minimum side cover for full loads is 3" for CBs.
3. Install with bottom of base flush with concrete.
4. Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-top-supported installations (such as fences or unbraced carports).

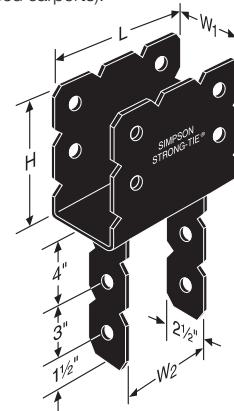
Column Bases

Model No.	Ga.	Dimensions (in.)		Bolts		Allowable Uplift Loads (160)	Code Ref.
		W1	W2	Qty.	Dia.		
OCB44	3	3 3/16	3 1/2	2	5/8"	4,200	170
OCB46	3	3 3/16	5 1/2	2	5/8"	4,200	
OCB48	3	3 3/16	7 1/2	2	5/8"	4,200	
OCB66	3	5 1/2	5 1/2	2	5/8"	4,200	
OCB68	3	5 1/2	7 1/2	2	5/8"	4,200	
OCB88	3	7 1/2	7 1/2	2	3/4"	6,650	
OCB810	3	7 1/2	9 1/2	2	3/4"	6,650	

Column Caps

Model No.	Ga.	Dimensions (in.)				Bolts				Allowable Loads		Code Ref.
		W1	W2	L	H	Beam		Post		Uplift (160)	Down (100)	
						Qty.	Dia.	Qty.	Dia.			
OCC44	3	3 3/8	3 3/8	9	4 1/2	2	5/8"	2	5/8"	1,465	15,310	170
OCC46	3	3 3/8	5 1/2	12	7 1/2	4	5/8"	2	5/8"	2,800	24,060	
OCC66	3	5 1/2	5 1/2	12	7 1/2	4	5/8"	2	5/8"	4,040	30,250	
OCC68	3	5 1/2	7 1/2	12	7 1/2	4	5/8"	2	5/8"	4,040	37,810	
OCC88	3	7 1/2	7 1/2	15	7 1/2	4	3/4"	2	3/4"	7,440	54,600	

1. Allowable uplift loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Downloads are determined by nominal sawn beam allowable bearing at 625 psi on seat area; reduce where shear value of beam, end bearing value of post, L/R of post, or other criteria are limiting.
3. Post sides are assumed to lie in the same vertical plane as the beam sides.
4. For end conditions, specify OECC.

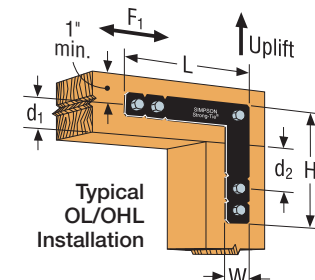
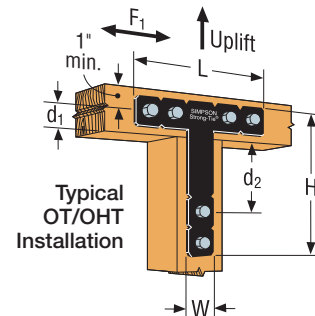


OCC (3 ga.)

Beam-to-Column Ties

Model No.	Ga.	Dimensions (in.)			Minimum Bolt End and Edge Distances (in.)		Bolts		Allowable Loads ^{1,2,3}		Code Ref.
		W	H	L	d1	d2	Qty.	Dia.	Tension/Uplift	F1	
									(100/160)	(100/160)	
OL	12	2	12	12	2	3 1/2	5	1/2"	1,435	565	170
OHL	7	2 1/2	12	12	2 1/2	4 3/8	5	5/8"	1,535	565	
OT	12	2	12	12	2	3 1/2	6	1/2"	2,585	815	
OHT	7	2 1/2	12	12	2 1/2	4 3/8	6	5/8"	2,585	815	

1. OL, OHL, OT and OHT must be installed in pairs with machine bolts in double shear. A single part with machine bolts in single shear is not load rated.
2. Allowable loads are based on a minimum member thickness of 3 1/2".
3. OT, OHT loads assume a continuous beam.

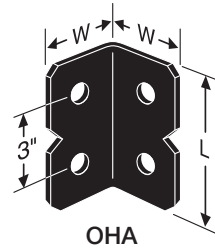


Indoor Architectural Products

Rustic Collection (cont.)

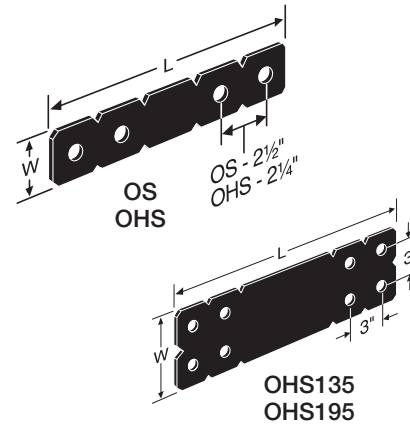
Heavy Angles

Model No.	Ga.	Dimensions (in.)		Bolts		Code Ref.
		W	L	Qty.	Dia.	
OHA33	7	3½	3	2	¾"	180
OHA36	7	3½	6	4	¾"	



Strap Ties

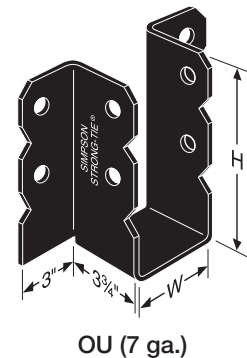
Model No.	Ga.	Dimensions (in.)		Bolts		Allowable Loads ^{1,2}	Code Ref.
		W	L	Qty.	Dia.	Tension/Uplift (160)	
OS	12	2	12	4	½"	1,565	170
OHS	7	2½	12	4	⅝"	2,015	
OHS135	7	6	13½	4	¾"	5,045	
OHS195	7	6	19½	8	¾"	10,085	



1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Allowable loads are based on parallel-to-grain loading and a minimum member thickness of 3/8" with machine bolts in single shear. Straps must be centered about splice joint, and bolt edge distances must meet NDS minimum requirements.
3. Designer must determine allowable loads when combining bolts parallel and perpendicular to grain.

Joist Hangers

Model No.	Ga.	Dimensions (in.)		Bolts		Allowable Loads ^{1,2}			Code Ref.
		W	H	Header	Joist	Uplift (160)	Floor (100)	Roof ² (125)	
OU46	7	3⅝	5	(2) ¾"	(1) ¾"	685	1,270	1,590	170
OU48	7	3⅝	7	(4) ¾"	(2) ¾"	1,365	2,545	3,175	
OU410	7	3⅝	9	(4) ¾"	(2) ¾"	1,365	2,545	3,175	
OU412	7	3⅝	11	(6) ¾"	(3) ¾"	2,050	3,815	4,765	
OU414	7	3⅝	13	(6) ¾"	(3) ¾"	2,050	3,815	4,765	
OU68	7	5½	7	(4) ¾"	(2) ¾"	1,365	2,545	3,175	
OU610	7	5½	9	(4) ¾"	(2) ¾"	1,365	2,545	3,175	
OU612	7	5½	11	(6) ¾"	(3) ¾"	2,050	3,815	4,765	
OU614	7	5½	13	(6) ¾"	(3) ¾"	2,050	3,815	4,765	
OU810	7	7½	9	(4) ¾"	(2) ¾"	1,365	2,545	3,175	
OU812	7	7½	11	(6) ¾"	(3) ¾"	2,050	3,815	4,765	
OU814	7	7½	13	(6) ¾"	(3) ¾"	2,050	3,815	4,765	



1. Load values allowed assume a carrying member of not less than 3/8".
2. Roof loads are 125% of floor loads unless a limited by other criteria. Floor loads may be adjusted for other load durations according to the code provided they do not exceed those in the roof column.
3. Additional glulam beam widths are available. Add an "X" to the name and specify width, i.e., OU68X, W = 5.25.
4. Skew and slope options not available.

Indoor Architectural Products

HL – Heavy Angles and Gussets

Versatile angle gussets and heavy angles promote standardization and construction economy, and are compatible with Simpson Strong-Tie® structural hardware.

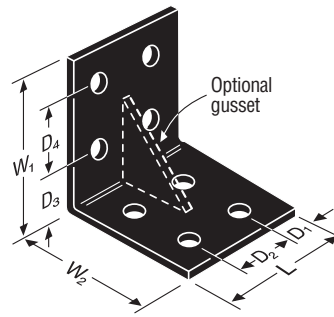
Finish: Textured powder-coated flat black paint; Simpson Strong-Tie® gray paint and also available galvanized

To Order: All products with PC suffix are textured powder-coated flat black paint. 7 gauge products without the PC suffix are galvanized. 3 gauge products without the PC suffix are Simpson Strong-Tie gray paint.

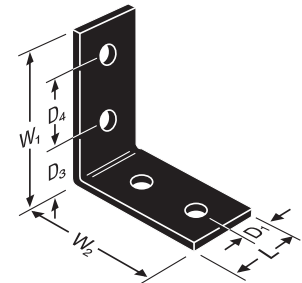
Options:

- Gussets may be added to HL models when $L \geq 5"$. Specify G after numbers in model number as in HL46GPC.

Codes: See p. 14 for Code Reference Key Chart



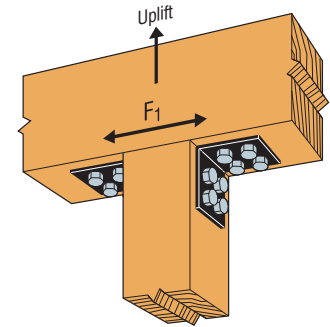
HL55PC



HL53PC

Model No.	Ga.	Dimensions (in.)						Bolts (Total)		Allowable Loads		Code Ref.
		W ₁ and W ₂	L	D ₁	D ₂	D ₃	D ₄	Qty.	Dia.	Uplift	F ₁	
Single Row Angles												
HL33PC	7	3¼	2½	1¼	—	2	—	2	½	910	1,580	170
HL35PC	7	3¼	5	1¼	2½	2	—	4	½	910	1,580	
HL37PC	7	3¼	7½	1¼	2½	2	—	6	½	910	1,580	
HL43PC	3	4¼	3	1½	—	2¾	—	2	¾	1,555	1,580	
HL46PC	3	4¼	6	1½	3	2¾	—	4	¾	1,555	2,025	
HL49PC	3	4¼	9	1½	3	2¾	—	6	¾	1,555	2,025	
Double Row Angles												
HL53PC	7	5¾	2½	1¼	—	2	2½	4	½	910	1,580	170
HL55PC	7	5¾	5	1¼	2½	2	2½	8	½	910	1,580	
HL57PC	7	5¾	7½	1¼	2½	2	2½	12	½	910	1,580	
HL73PC	3	7¼	3	1½	—	2¾	3	4	¾	1,555	2,025	
HL76PC	3	7¼	6	1½	3	2¾	3	8	¾	2,115	3,800	
HL79PC	3	7¼	9	1½	3	2¾	3	12	¾	2,115	3,800	

1. Allowable loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. Use 0.85 times table load for Hem-Fir.
3. Parts should be centered on the face of the member to which they are attached.
4. Wood members for the '3' and '5' series must have a minimum width and thickness of 3½" for table loads to apply.
5. Wood members for the '4' and '7' series must have a minimum width and thickness of 5½" for table loads to apply.
6. Parts must be used in pairs. Lag screws of equal diameter (minimum 5" long) may be substituted for machine bolts into beam with no reduction in load.



Typical HL55PC Installation

Indoor Architectural Products

UA/HUA – Heavy-Duty Joist Hangers

The UA/HUA hangers are heavy-duty, load-rated joist hangers that are attached with Simpson Strong-Tie® Strong-Drive® ¼" x 3" SDS Heavy-Duty Connector screws (supplied with product). These hangers can be ordered hot-dip galvanized for exterior use.

Finish: Black paint, textured powder-coated flat black paint or hot-dip galvanized

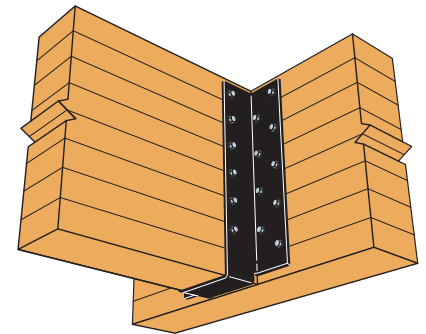
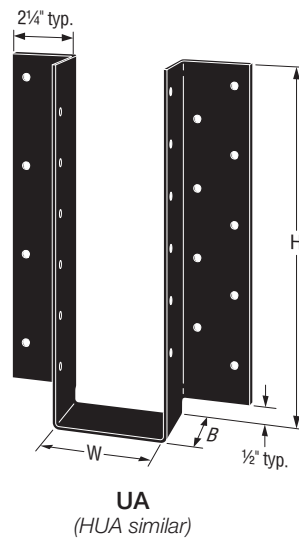
Ordering:

Specify model number, W dimension and finish

Ordering Examples:

- UA9 – W = 4.625 (For 3-ply 2x10) black paint
- HUA24PC – W = 6.875 (For 6¾ x 24 glulam)
PC = Powder-Coated
- UA15HDG – W = 5.375 (For 5¼ x 16 PSL)
HDG = Hot-Dip Galvanized

Codes: See p. 14 for Code Reference Key Chart



Typical UA12 Installation

These products are available with additional corrosion protection. For more information, see p. 18.

Model No.	Ga.	Dimensions (in.)				SDS Fasteners		DF/SP Allowable Loads (lb.)				SPF/HF Allowable Loads (lb.)				Code Ref.
		H	W		B	Face	Joist	Uplift	Floor	Snow	Roof	Uplift	Floor	Snow	Roof	
			Min.	Max.				(160)	(100)	(115)	(125)	(160)	(100)	(115)	(125)	
UA6	12	5¾	3⅞	7¼	2⅞	(10) ¼" x 3"	(4) ¼" x 3"	1,930	4,050	4,050	4,050	1,390	2,915	2,915	2,915	170
UA7.5	12	7¼	3⅞	7¼	2⅞	(12) ¼" x 3"	(6) ¼" x 3"	2,765	5,040	5,285	5,285	1,990	3,600	3,805	3,805	
UA9	12	8¾	3⅞	7¼	2⅞	(14) ¼" x 3"	(8) ¼" x 3"	3,565	5,880	6,520	6,520	2,570	4,200	4,695	4,695	
UA10.5	12	10¼	3⅞	7¼	2⅞	(16) ¼" x 3"	(10) ¼" x 3"	4,600	6,720	7,730	7,750	3,310	4,800	5,520	5,580	
UA12	12	11¾	3⅞	7¼	2⅞	(18) ¼" x 3"	(12) ¼" x 3"	5,520	7,560	8,695	8,985	3,975	5,400	6,210	6,470	
UA13.5	12	13¼	3⅞	7¼	2⅞	(20) ¼" x 3"	(14) ¼" x 3"	6,440	8,400	9,660	10,500	4,635	6,000	6,900	7,500	
UA15	12	14¾	3⅞	7¼	2⅞	(22) ¼" x 3"	(16) ¼" x 3"	7,360	9,240	10,625	11,550	5,300	6,600	7,590	8,250	
UA16.5	12	16¼	3⅞	7¼	2⅞	(24) ¼" x 3"	(18) ¼" x 3"	8,280	10,080	11,590	12,600	5,960	7,200	8,280	9,000	
UA18	12	17¾	3⅞	7¼	2⅞	(26) ¼" x 3"	(20) ¼" x 3"	9,200	10,920	12,560	13,650	6,625	7,800	8,970	9,750	
HUA19.5	7	19¼	5⅞	7¼	2⅞	(28) ¼" x 3"	(14) ¼" x 3"	6,440	11,760	13,525	14,590	4,635	8,400	9,660	10,440	
HUA21	7	20¾	5⅞	7¼	2⅞	(30) ¼" x 3"	(16) ¼" x 3"	7,360	12,600	14,490	15,640	5,300	9,000	10,350	11,190	
HUA22.5	7	22¼	5⅞	7¼	2⅞	(32) ¼" x 3"	(18) ¼" x 3"	8,280	13,440	15,455	16,690	5,960	9,600	11,040	11,940	
HUA24	7	23¾	5⅞	7¼	2⅞	(34) ¼" x 3"	(20) ¼" x 3"	9,200	14,280	16,420	17,740	6,625	10,200	11,730	12,690	

1. Uplift loads have been increased for wind and earthquake loading with no further increase allowed.
2. Downloads are based on $F_{c\perp} = 565$ psi for DF/SP and $F_{c\perp} = 405$ psi for SPF/HF.
3. DF/SP allowable loads may be used for Glulam, LVL, LSL and PSL with minimum specific gravity = 0.50 and minimum $F_{c\perp} = 565$ psi.
4. Specify W dimension equal to beam width plus ⅞".
5. Header height shall be at least as tall as hanger height.
6. Header thickness shall be 3" minimum.

Indoor Architectural Products

Ornamental – Joist Hanger

The OHU ornamental joist hangers are heavy-duty, load-rated joist hangers that are attached with Simpson Strong-Tie® Strong-Drive® ¼" x 3" double-barrier coating SDS Heavy-Duty Connector screws (supplied with product).

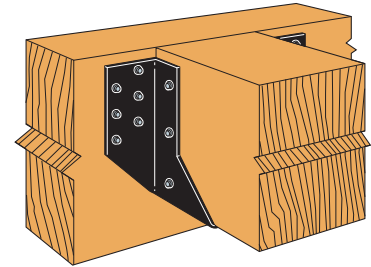
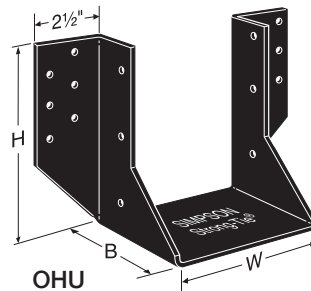
Material: 12 gauge

Finish: Textured powder-coated flat black paint

Options:

- No modifications

Codes: See p. 14 for Code Reference Key Chart



Typical OHU Installation

Model No.	Joist Size	Ga.	Dimensions (in.)			No. of SDS ¼" x 3" Wood Screws		DF/SP				SPF/HF				Code Ref.
			W	H	B	Face	Joist	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	Uplift (160)	Floor (100)	Snow (115)	Roof (125)	
OHU46-SDS3	4x6	12	3¾	5	4	6	4	1,930	2,520	2,900	3,150	1,390	1,800	2,070	2,250	170
OHU48-SDS3	4x8	12	3¾	6¾	4	8	6	2,765	3,360	3,865	4,200	1,990	2,400	2,760	3,000	
OHU410-SDS3	4x10	12	3¾	8¾	4	12	6	2,765	5,040	5,795	6,300	1,990	3,600	4,140	4,500	
OHU412-SDS3	4x12	12	3¾	10¾	4	12	8	3,565	5,040	5,795	6,300	2,570	3,600	4,140	4,500	
OHU414-SDS3	4x14	12	3¾	12¾	4	14	10	3,565	5,880	6,760	7,350	2,570	4,200	4,830	5,250	
OHU66-SDS3	6x6	12	5½	5	4	6	4	1,930	2,520	2,900	3,150	1,390	1,800	2,070	2,250	
OHU68-SDS3	6x8	12	5½	7	4	12	6	2,765	5,040	5,795	5,955	1,990	3,600	4,140	4,290	
OHU610-SDS3	6x10	12	5½	9	4	14	6	2,765	5,880	6,760	6,885	1,990	4,200	4,830	4,960	
OHU612-SDS3	6x12	12	5½	11	4	16	8	3,565	6,720	7,730	7,815	2,570	4,800	5,520	5,630	
OHU614-SDS3	6x14	12	5½	13	4	18	10	3,565	7,560	8,695	8,745	2,570	5,400	6,210	6,300	

1. Allowable uplift loads have been increased 60% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.

Special Order Parts

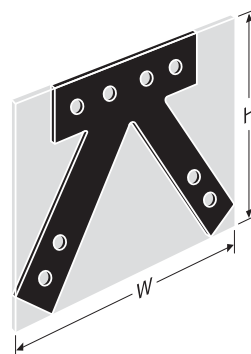
Simpson Strong-Tie can make a variety of flat and bent steel shapes, which include gusset plates for heavy timber trusses, custom ornamental shapes and retaining plates.

Material: 3 gauge maximum

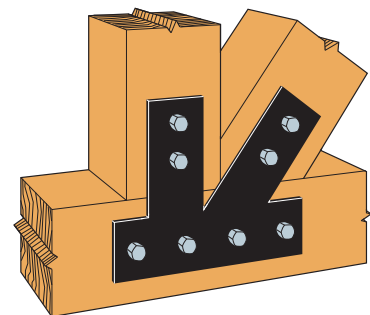
Finish: Galvanized, textured powder-coated flat black, Simpson Strong-Tie® gray paint, stainless steel. Contact Simpson Strong-Tie for availability.

To Obtain a Quote:

- Supply a CAD drawing in .dxf format complete with plate dimensions, hole diameter and locations, steel thickness, desired finish (Simpson Strong-Tie gray paint, black powder-coat, HDG or raw steel)
- Total plate shape and size up to maximum dimensions of 48" x 48" (approx. ¼" tolerance)
- Simpson Strong-Tie does not provide product engineering or load values for special order plates
- Contact Simpson Strong-Tie for pricing information
- Refer to General Notes, note g on p. 20 for additional information



"W" and "H" indicate the envelope size of the steel shape.



Typical Installation
(Plate shown has black powder-coat)

Indoor Architectural Products

CPS/PBV – Standoff Bases

The PBV is a hidden standoff post base. Two different sizes fit a variety of posts shapes.

Material: 14 gauge galvanized steel

Finish: Textured powder-coated flat black paint or galvanized

To Order: For powder-coated flat black, order PBV6PC or PBV10PC. For galvanized coating, order PBV6 or PBV10. For kit containing Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws, RFB bolt, SET Epoxy Anchoring adhesive, and powder-coated PBV, order PBV6KT or PBV10KT.

The CPS is a Composite Plastic Standoff designed for increased concrete surface area.

Material: Engineered composite plastic

Installation:

PBV and CPS

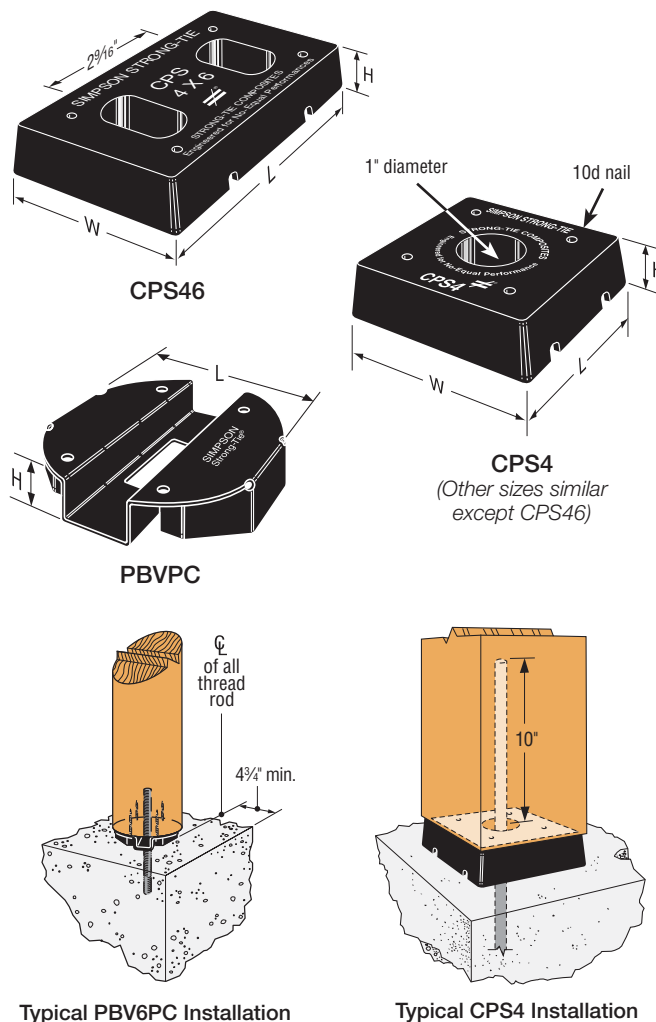
Post:

- Drill a ¾" diameter hole, 10" into the center of the post.
- Clean out dust. Fill hole halfway with Simpson Strong-Tie® SET Epoxy Anchoring adhesive.
- Insert all-thread rod and allow epoxy to set and cure.
- Secure standoff to post using four 10d nails except PBV which uses four Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws.

Concrete:

- Drill a ¾" diameter hole per anchor design (see footnote 2 below).
- Clean out dust. Fill hole halfway with Simpson Strong-Tie SET Epoxy Anchoring adhesive. Insert post subassembly into hole and allow epoxy to set and cure.
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non top-supported installations (such as fences or unbraced carports).

Codes: See p. 14 for Code Reference Key Chart



Model No.	Post or Column Size	Dimensions (in.)			Fasteners		Allowable Loads		Code Ref.
		L	W	H	Post	Anchor Bolt	Uplift (160)	Down ³ (100)	
CPS4	4x4	3¼	3¼	1	(4) 10d	½"	4,490	5,195	170
CPS46	4x6	5⅝	3⅝	1	(4) 10d	(2) ⅝"	4,490	5,865	
CPS5	5x5	4⅞	4⅞	1	(4) 10d	⅝"	4,490	5,865	
CPS6	6x6	5⅝	5⅝	1	(4) 10d	⅝"	4,490	7,745	
CPS7	8x8	7¼	7¼	1¼	(4) 10d	⅝"	4,490	8,315	
PBV6PC	6" dia.	5¼	—	1	(4) ¼" x 3" SDS	⅝"	3,800	9,250	FL
PBV10PC	10" dia.	9⅝	—	1	(4) ¼" x 3" SDS	⅝"	3,800	19,225	

1. Allowable uplift load capacities are for solid sawn posts with specific gravity of 0.36 minimum except the PBV, which is based on round "Viga" (Ponderosa Pine) wood posts.
2. All allowable uplift loads are based on a lowest ultimate load from testing divided by a safety factor of 4. Concrete anchorage to be designed by others, refer to Simpson Strong-Tie® Anchoring and Fastening Systems for Concrete and Masonry catalog (form C-A-2106) at strongtie.com. Uplift loads shall not exceed those shown in the table.
3. Downloads are calculated based on the standoff bearing area and a concrete strength of 2,500 psi except the PBV, which is based on the wood bearing strength (700 psi for Ponderosa Pine).
4. Allowable loads may not be increased for short-term loading.
5. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 26–27 for other nail sizes and information.

CJTZ/HCJTZ

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. It is part of a concealed connector system that includes the CPTZ and CBTZ.

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

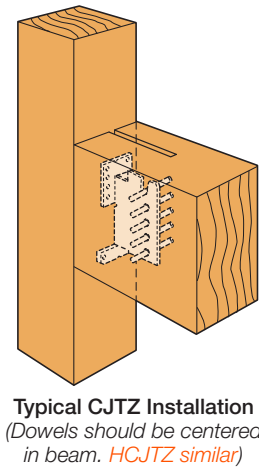
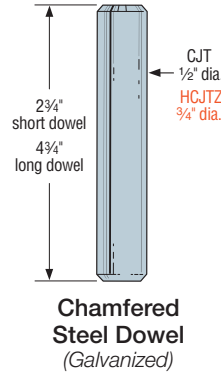
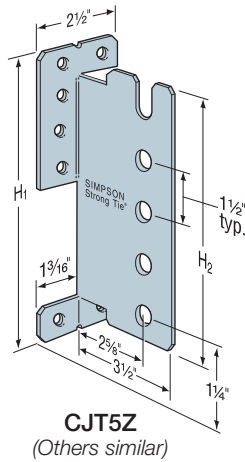
Installation:

- 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. CJT3ZS) or long dowels (e.g. CJT3ZL) (see footnote #1 below).

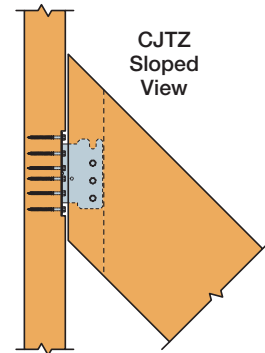
Options:

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

Codes: See p. 14 for Code Reference Key Chart

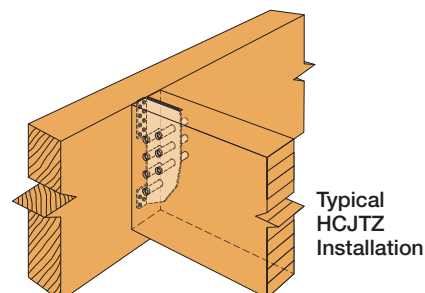
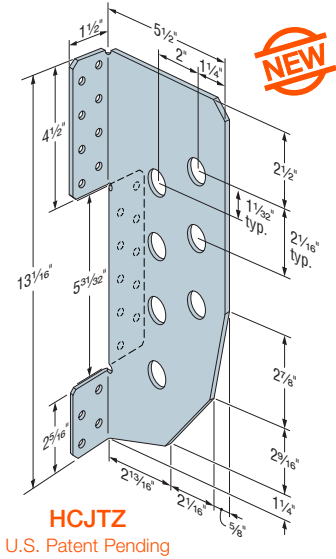


Warning: This connector requires special attention to ensure correct installation. The beam must be installed perpendicular to the support member. The connection's components may be damaged if the beam is rotated from its opposite end during or after installation. Damaged components may not be noticeable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



These products are available with additional corrosion protection. For more information, see p. 18.

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 5/16	4 7/16	(6) 1/4" x 3" SDS	(3) 1/2"	985	1,050	1,050	1,050	IP6, FL, L26
	4x8	5 9/16	4 7/16	(6) 1/4" x 3" SDS	(3) 1/2"	1,825	1,730	1,730	1,730	
CJT4Z	4x10	7	5 15/16	(8) 1/4" x 3" SDS	(4) 1/2"	2,780	2,420	2,785	2,970	
CJT5Z	4x12	8 9/16	7 7/16	(10) 1/4" x 3" SDS	(5) 1/2"	3,490	2,950	3,390	3,685	
CJT6Z	4x12	10	8 13/16	(12) 1/4" x 3" SDS	(6) 1/2"	4,565	3,425	3,940	4,280	
Glulam										
CJT3Z	3 1/8" x 7 1/2"	5 9/16	4 7/16	(6) 1/4" x 3" SDS	(3) 1/2"	1,825	1,835	1,835	1,835	IP6, FL, L26
CJT4Z	3 1/8" x 9"	7	5 15/16	(8) 1/4" x 3" SDS	(4) 1/2"	2,780	2,410	2,770	3,010	
CJT5Z	3 1/8" x 10 1/2"	8 9/16	7 7/16	(10) 1/4" x 3" SDS	(5) 1/2"	3,490	2,925	3,360	3,655	
CJT6Z	3 1/8" x 12"	10	8 13/16	(12) 1/4" x 3" SDS	(6) 1/2"	4,510	3,380	3,890	4,225	
HCJTZ	5 1/8" x 15"	13 1/16	13 1/16	(22) 1/4" x 3" SDS	(7) 3/4"	9,210	8,350	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"	1,825	1,855	2,135	2,320	IP6, FL, L26
CJT4Z	3 1/2" x 9 1/2"	7	5 15/16	(8) 1/4" x 3" SDS	(4) 1/2"	2,780	2,440	2,805	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"	3,490	2,985	3,435	3,730	
CJT6Z	3 1/2" x 11 7/8"	10	8 13/16	(12) 1/4" x 3" SDS	(6) 1/2"	4,650	3,485	4,010	4,360	
HCJTZ	5 1/8" x 15"	13 1/16	13 1/16	(22) 1/4" x 3" SDS	(7) 3/4"	9,210	8,350	8,465	8,465	



1. Center dowel in beam. Short dowel (1/2" x 2 3/4") 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") for use with 5 1/8" glulam beam, 6x sawn lumber or greater widths.
2. See technical bulletin T-C-CJTZ at strongtie.com for additional load information with long dowels.

Decorative Hardware

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BP

Bearing Plates

Bearing plates give greater bearing surface than standard cut washers and help distribute the load at critical connections.

Material: See table

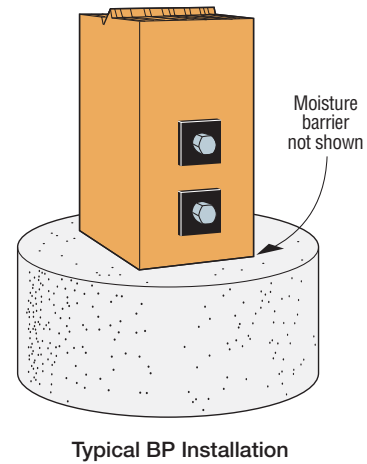
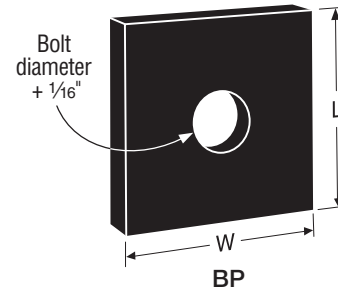
Finish: Textured flat black powder coat

Installation:

- See General Notes

Codes: See p. 14 for Code Reference Key Chart

Model No.	Thickness (in.)	Dimensions (in.)		Bolt Dia. (in.)	Code Ref.
		W	L		
BP1½PC	¾	2	2	½	190
BP¾-2PC	¾	2	2	¾	
BP5⁄8PC	¼	2½	2½	5⁄8	
BP¾PC	5⁄16	2¾	2¾	¾	
BP7⁄8PC	5⁄16	3	3	7⁄8	
BP1PC	¾	3½	3½	1	



Continuous Load Path

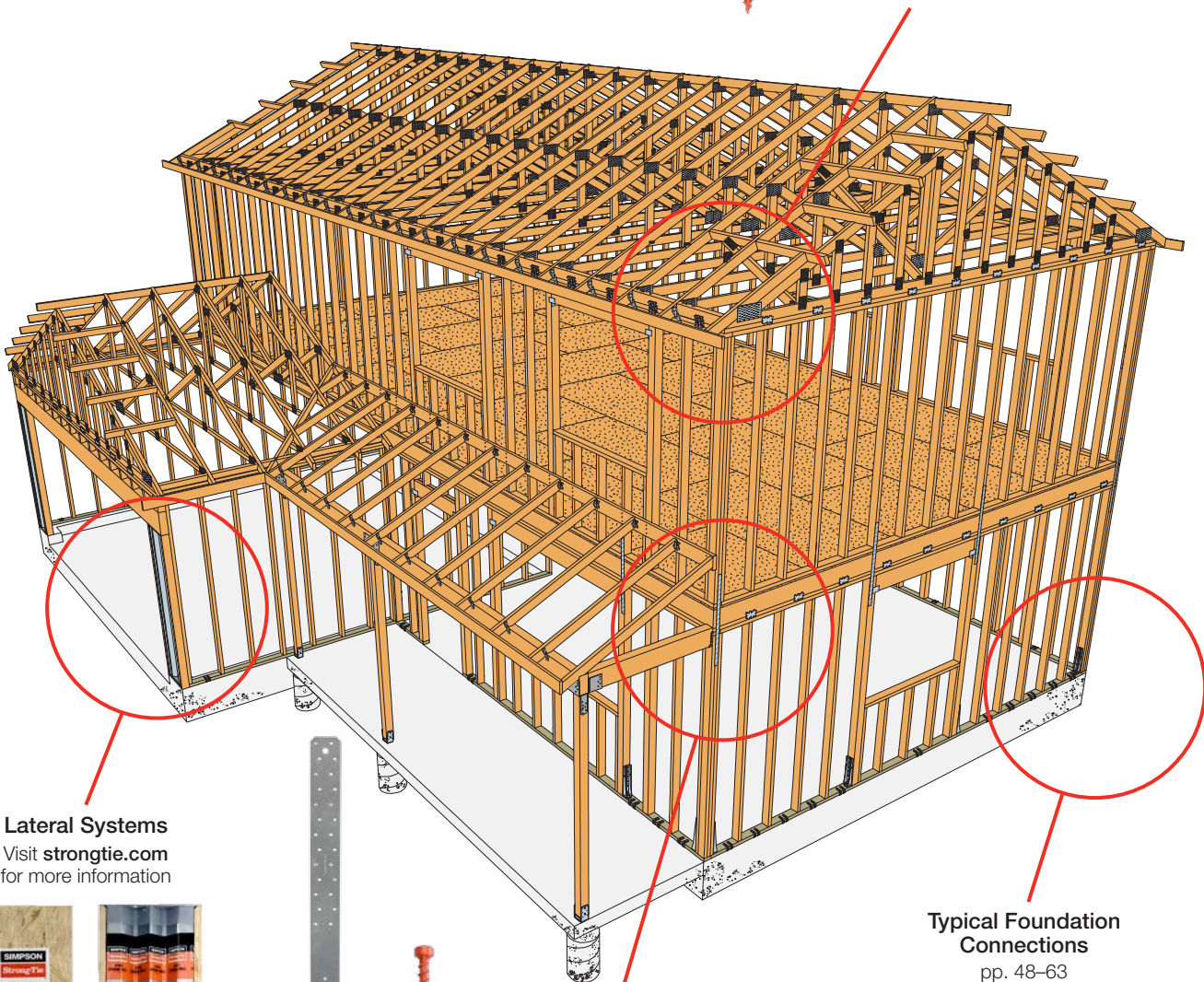
This drawing shows the connection points for a continuous load path from the rafters to the foundation of a two-story house.

Building with a continuous load path is an essential part of creating a structure better able to withstand the forces of mother nature.

This drawing is for illustrative purposes only and should not be considered an engineered system. Refer to the page numbers for the full range of Simpson Strong-Tie® connectors. Consult a qualified Designer to ensure that correct connector quantities and installation methods are used to achieve the full design load values.



Typical Roof/Wall Connections
pp. 314–332



Lateral Systems
Visit strongtie.com
for more information



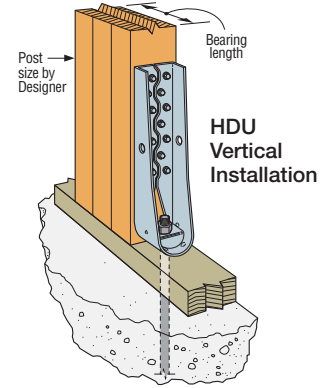
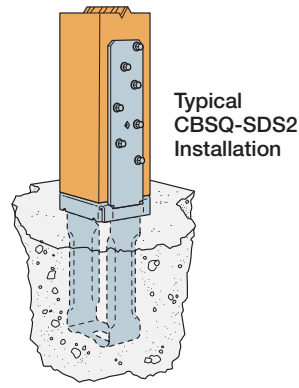
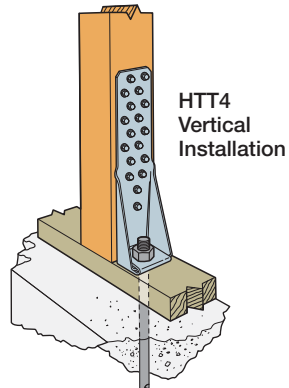
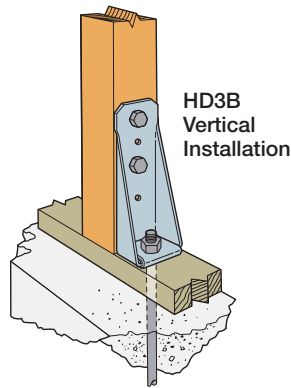
Typical Floor-to-Floor Connections
pp. 75–83
and 301–311



Typical Foundation Connections
pp. 48–63



Post Allowable Loads



Post Tension Loads for Douglas Fir-Larch

Framing	Lumber		Allowable Tension				
	Size	Grade	P _t , (160)				
			Bolt Diameter (in.)				
			0	½	¾	7/8	1
4-Inch Wall	2x4	#2	7,245	6,080	5,820	5,305	5,045
	3x4	#2	12,075	10,135	9,705	8,840	8,410
	(2) 2x4	#2	14,490	12,160	11,645	10,610	10,090
	4x4	#2	16,905	14,190	13,585	12,375	11,775
	(3) 2x4	#2	21,735	18,240	17,465	15,915	15,135
	4x6	#2	23,025	19,325	18,500	16,855	16,035
	4x8	#2	28,015	23,510	22,510	20,510	19,510
	4x10	#2	32,765	27,500	26,330	23,990	22,815
6-Inch Wall	2x6	#2	9,865	8,860	8,635	8,185	7,960
	3x6	#2	16,445	14,765	14,390	13,640	13,270
	(2) 2x6	#2	19,735	17,715	17,265	16,370	15,920
	4x6	#2	23,025	20,670	20,145	19,100	18,575
	(3) 2x6	#2	29,600	26,575	25,900	24,555	23,885
	6x6	#1	32,670	29,330	28,585	27,100	26,360
	6x8	#1	44,550	39,995	38,980	36,955	35,945

Post Tension Loads for Southern Pine

Framing	Lumber		Allowable Tension				
	Size	Grade	P _t , (160)				
			Bolt Diameter (in.)				
			0	½	¾	7/8	1
4-Inch Wall	2x4	#2	5,670	4,760	4,555	4,150	3,950
	3x4	#2	9,450	7,930	7,595	6,920	6,580
	(2) 2x4	#2	11,340	9,520	9,115	8,305	7,900
	4x4	#2	13,230	11,105	10,630	9,685	9,215
	(3) 2x4	#2	17,010	14,275	13,670	12,455	11,845
	4x6	#2	18,480	15,510	14,850	13,530	12,870
	4x8	#2	22,330	18,740	17,945	16,350	15,550
	4x10	#2	24,605	20,650	19,770	18,015	17,135
6-Inch Wall	2x6	#2	7,920	7,110	6,930	6,570	6,390
	3x6	#2	13,200	11,850	11,550	10,950	10,650
	(2) 2x6	#2	15,840	14,220	13,860	13,140	12,780
	4x6	#2	18,480	16,590	16,170	15,330	14,910
	(3) 2x6	#2	23,760	21,330	20,790	19,710	19,170
	6x6	#1	43,560	39,105	38,115	36,135	35,145
	6x8	#1	59,400	53,325	51,975	49,275	47,925

Post Tension Loads for Spruce-Pine-Fir

Framing	Lumber		Allowable Tension				
	Size	Grade	P _t , (160)				
			Bolt Diameter (in.)				
			0	½	¾	7/8	1
4-Inch Wall	2x4	#1/#2	5,670	4,760	4,555	4,150	3,950
	3x4	#1/#2	9,450	7,930	7,595	6,920	6,580
	(2) 2x4	#1/#2	11,340	9,520	9,115	8,305	7,900
	4x4	#1/#2	13,230	11,105	10,630	9,685	9,215
	(3) 2x4	#1/#2	17,010	14,275	13,670	12,455	11,845
	(4) 2x4	#1/#2	22,680	19,035	18,225	16,605	15,795
6-Inch Wall	2x6	#1/#2	7,720	6,930	6,755	6,405	6,230
	3x6	#1/#2	12,870	11,555	11,260	10,675	10,385
	(2) 2x6	#1/#2	15,445	13,865	13,515	12,810	12,460
	(3) 2x6	#1/#2	23,165	20,795	20,270	19,215	18,690
	(4) 2x6	#1/#2	28,315	25,420	24,775	23,490	22,845

Post Tension Loads for Hem-Fir

Framing	Lumber		Allowable Tension				
	Size	Grade	P _t , (160)				
			Bolt Diameter (in.)				
			0	½	¾	7/8	1
4-Inch Wall	2x4	#2	7,245	6,080	5,820	5,305	5,045
	3x4	#2	12,075	10,135	9,705	8,840	8,410
	(2) 2x4	#2	14,490	12,160	11,645	10,610	10,090
	4x4	#2	16,905	14,190	13,585	12,375	11,775
	(3) 2x4	#2	21,735	18,240	17,465	15,915	15,135
	(4) 2x4	#2	28,980	24,325	23,290	21,220	20,185
6-Inch Wall	2x6	#2	9,865	8,860	8,635	8,185	7,960
	3x6	#2	16,445	14,765	14,390	13,640	13,270
	(2) 2x6	#2	19,735	17,715	17,265	16,370	15,920
	(3) 2x6	#2	29,600	26,575	25,900	24,555	23,885
	(4) 2x6	#2	39,470	35,430	34,535	32,740	31,845

See footnotes on p. 385.

Post Allowable Loads

Post Allowable Compression Loads for Douglas Fir-Larch

Framing	Lumber		Perp. to Grain, $P_{c\perp}$	Compression Parallel to Grain, P_c (100)					Compression Parallel to Grain, P_c (160)				
	Size	Grade		Nominal Top-Plate Height (ft.)					Nominal Top-Plate Height (ft.)				
				8	9	10	11	12	8	9	10	11	12
4-Inch Wall	2x4	#2	3,280	3,170	2,565	2,105	1,755	1,485	3,345	2,665	2,170	1,795	1,510
	3x4	#2	5,470	5,285	4,275	3,510	2,930	2,475	5,570	4,440	3,615	2,995	2,520
	(2) 2x4	#2	6,565	6,340	5,130	4,215	3,515	2,970	6,685	5,330	4,335	3,590	3,020
	4x4	#2	7,655	7,395	5,985	4,915	4,100	3,465	7,800	6,215	5,060	4,190	3,525
	(3) 2x4	#2	9,845	9,510	7,695	6,320	5,270	4,455	10,030	7,995	6,505	5,390	4,535
	4x6	#2	12,030	11,540	9,360	7,700	6,425	5,430	12,215	9,745	7,935	6,575	5,535
	4x8	#2	15,860	15,090	12,270	10,105	8,440	7,140	16,035	12,805	10,435	8,650	7,285
4x10	#2	20,235	19,080	15,555	12,835	10,730	9,085	20,365	16,285	13,280	11,015	9,280	
6-Inch Wall	2x6	#2	5,155	8,970	7,940	6,935	6,025	5,235	11,030	9,230	7,740	6,535	5,575
	3x6	#2	8,595	14,945	13,235	11,560	10,040	8,725	18,385	15,380	12,895	10,895	9,290
	(2) 2x6	#2	10,315	17,935	15,885	13,875	12,050	10,470	22,060	18,455	15,475	13,075	11,145
	4x6	#2	12,030	20,925	18,530	16,185	14,060	12,215	25,735	21,530	18,055	15,255	13,005
	(3) 2x6	#2	15,470	26,905	23,825	20,810	18,075	15,705	33,090	27,685	23,215	19,610	16,720
	6x6	#1	18,905	25,260	23,500	21,505	19,415	17,375	34,255	30,035	26,025	22,475	19,450
	6x8	#1	25,780	34,450	32,045	29,320	26,475	23,690	46,715	40,955	35,485	30,645	26,520

Post Allowable Compression Loads for Southern Pine

Framing	Lumber		Perp. to Grain, $P_{c\perp}$	Compression Parallel to Grain, P_c (100)					Compression Parallel to Grain, P_c (160)				
	Size	Grade		Nominal Top-Plate Height (ft.)					Nominal Top-Plate Height (ft.)				
				8	9	10	11	12	8	9	10	11	12
4-Inch Wall	2x4	#2	2,965	2,815	2,270	1,860	1,550	1,310	2,955	2,350	1,910	1,580	1,330
	3x4	#2	4,945	4,690	3,785	3,105	2,585	2,180	4,920	3,920	3,185	2,635	2,220
	(2) 2x4	#2	5,935	5,625	4,540	3,725	3,100	2,620	5,905	4,700	3,820	3,165	2,660
	4x4	#2	6,920	6,565	5,295	4,345	3,615	3,055	6,890	5,485	4,460	3,690	3,105
	(3) 2x4	#2	8,900	8,440	6,810	5,585	4,650	3,925	8,860	7,050	5,735	4,745	3,990
	4x6	#2	10,875	10,260	8,295	6,810	5,675	4,790	10,800	8,600	6,995	5,795	4,875
	4x8	#2	14,335	13,450	10,890	8,950	7,460	6,305	14,195	11,315	9,210	7,630	6,420
4x10	#2	18,290	17,055	13,835	11,380	9,495	8,030	18,055	14,405	11,730	9,720	8,180	
6-Inch Wall	2x6	#2	4,660	8,195	7,190	6,230	5,385	4,660	9,905	8,235	6,875	5,795	4,930
	3x6	#2	7,770	13,655	11,980	10,385	8,975	7,765	16,510	13,725	11,460	9,655	8,220
	(2) 2x6	#2	9,325	16,390	14,375	12,465	10,765	9,320	19,810	16,470	13,755	11,590	9,865
	4x6	#2	10,875	19,120	16,775	14,540	12,560	10,875	23,115	19,215	16,045	13,520	11,505
	(3) 2x6	#2	13,985	24,580	21,565	18,695	16,150	13,980	29,715	24,700	20,630	17,385	14,795
	6x6	#1	17,090	21,495	20,270	18,835	17,260	15,655	30,025	26,820	23,595	20,610	17,975
	6x8	#1	23,305	29,315	27,640	25,680	23,540	21,345	40,940	36,575	32,180	28,105	24,515

See footnotes on p. 385.

Post Allowable Loads

Post Allowable Compression Loads for Spruce-Pine-Fir

Framing	Lumber		Perp. to Grain, $P_{C\perp}$	Compression Parallel to Grain, P_C (100)					Compression Parallel to Grain, P_C (160)				
	Size	Grade		Nominal Top-Plate Height (ft.)					Nominal Top-Plate Height (ft.)				
				8	9	10	11	12	8	9	10	11	12
4-Inch Wall	2x4	#1/#2	2,230	2,775	2,250	1,850	1,540	1,305	2,930	2,340	1,905	1,575	1,325
	3x4	#1/#2	3,720	4,625	3,745	3,080	2,570	2,170	4,885	3,895	3,175	2,630	2,210
	(2) 2x4	#1/#2	4,465	5,545	4,495	3,695	3,085	2,605	5,865	4,675	3,805	3,155	2,655
	4x4	#1/#2	5,205	6,470	5,245	4,310	3,595	3,040	6,840	5,455	4,440	3,680	3,095
	(3) 2x4	#1/#2	6,695	8,320	6,745	5,545	4,625	3,910	8,795	7,015	5,710	4,730	3,980
	(4) 2x4	#1/#2	8,925	11,095	8,990	7,395	6,165	5,215	11,730	9,355	7,615	6,310	5,310
6-Inch Wall	2x6	#1/#2	3,505	7,745	6,885	6,035	5,255	4,575	9,600	8,055	6,770	5,725	4,885
	3x6	#1/#2	5,845	12,905	11,475	10,060	8,760	7,625	16,000	13,425	11,280	9,545	8,145
	(2) 2x6	#1/#2	7,015	15,485	13,770	12,070	10,515	9,150	19,200	16,110	13,540	11,450	9,770
	(3) 2x6	#1/#2	10,520	23,230	20,660	18,110	15,770	13,730	28,795	24,165	20,305	17,180	14,660
	(4) 2x6	#1/#2	14,025	30,970	27,545	24,145	21,025	18,305	38,395	32,225	27,075	22,905	19,545

Post Allowable Compression Loads for Hem-Fir

Framing	Lumber		Perp. to Grain, $P_{C\perp}$	Compression Parallel to Grain, P_C (100)					Compression Parallel to Grain, P_C (160)				
	Size	Grade		Nominal Top-Plate Height (ft.)					Nominal Top-Plate Height (ft.)				
				8	9	10	11	12	8	9	10	11	12
4-Inch Wall	2x4	#2	2,125	2,630	2,115	1,730	1,435	1,210	2,745	2,180	1,770	1,465	1,230
	3x4	#2	3,545	4,385	3,525	2,880	2,395	2,020	4,570	3,630	2,950	2,440	2,050
	(2) 2x4	#2	4,255	5,260	4,230	3,460	2,875	2,425	5,485	4,355	3,540	2,925	2,460
	4x4	#2	4,960	6,140	4,935	4,035	3,355	2,830	6,400	5,085	4,125	3,415	2,870
	(3) 2x4	#2	6,380	7,890	6,340	5,185	4,310	3,635	8,230	6,535	5,305	4,390	3,690
	(4) 2x4	#2	8,505	10,525	8,455	6,915	5,750	4,850	10,970	8,715	7,075	5,855	4,920
6-Inch Wall	2x6	#2	3,340	7,950	6,880	5,905	5,065	4,365	9,385	7,735	6,425	5,395	4,580
	3x6	#2	5,570	13,250	11,470	9,840	8,440	7,270	15,640	12,890	10,710	8,995	7,635
	(2) 2x6	#2	6,685	15,900	13,765	11,810	10,130	8,725	18,765	15,470	12,850	10,790	9,165
	(3) 2x6	#2	10,025	23,855	20,645	17,715	15,195	13,090	28,150	23,205	19,275	16,185	13,745
	(4) 2x6	#2	13,365	31,805	27,525	23,620	20,260	17,455	37,535	30,935	25,700	21,585	18,325

- The allowable (ASD) loads are based on the 2015 National Design Specification for Wood Construction (NDS).
- Post heights are based on standard pre-cut stud heights and associated top plate heights. For Douglas Fir, wall height is nominal height plus 3/4" (California stud height). For all other species, wall height is nominal height plus 1 1/8". Effective post lengths, l_e , are the actual wall height s minus the thickness of (3) 2x plates (4 1/2").
- Shaded values are limited by the perpendicular-to-grain bearing load, $P_{C\perp}$, when posts bear on wood sill plates. Where posts and sill plates are different species, Designer shall limit allowable load to the lower of the post or the perpendicular-to-grain load for each species used.
- Perpendicular-to-grain allowable loads do not include the NDS Bearing Area Factor, C_b . For posts whose bearing area is not closer than 3" from the end of a sill plate, the $P_{C\perp}$ values may be multiplied by C_b .

T (in.)	1.5	2.5	3	3.5	4.5	5.5	≥ 6
C_b	1.25	1.15	1.13	1.11	1.08	1.07	1

T = Bearing Length (post thickness)
 C_b = Bearing Area Factor per NDS 3.10.4

- Parallel-to-grain values listed. Assume strong axis buckling.
- Tension loads are based on net section assuming hole size equal to bolt diameter plus 1/16". Tension loads have been increased for wind or seismic loading with no further increase allowed; reduce where other loads govern.
- Values do not consider combined axial and out-of-plane bending.
- Bolt diameter "None" indicates full cross-section.
- Refer to L-F-SDWBLTUP at strongtie.com for allowable loads of built-up columns fastened with Strong-Drive® SDW Truss-Ply screws.



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