SIMPSON
Strong-Tie®

Wood Construction Connectors

Canadian Limit States Design

C-C-CAN2018

(800) 999-5099 | strongtie.com

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 catalogue 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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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.

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SIMPSON Strong-Tie®

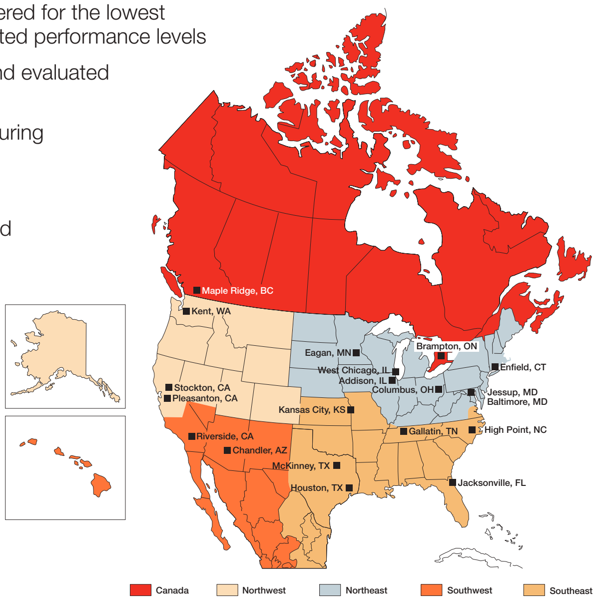
Introduction

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
- Member of WWTA, OSWA, AWTFA, WRLA, LBMAO, ABSDA, TPIC, PEO



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® catalogue are you using? *(See the front cover for the catalogue 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?

nqa. ISO 9001 Registered

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.

USA and Canada (800) 999-5099 | strongtie.com

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New Products

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. 373 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. 107 for more information.

FBFZ Fence Bracket

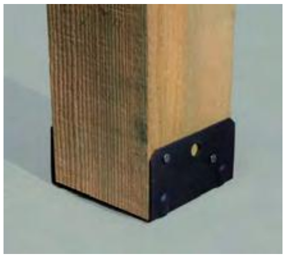
The patent-pending FBFZ is the latest addition to our line of fence brackets for connecting fence rails and posts. The flat design of the FBFZ offers a more concealed install look. The diversity of the FBFZ also offers a concealed look for hand rail to post attachments in some applications.

See p. 356 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 capacities.

See p. 55 for more information.



RCPS HDGPC Rebar Carport Saddle

The popular RCPS rebar carport saddle works as a cast-in-place or post-installed saddle for connecting posts to concrete. Now it has been redesigned with added features and is available in a black powder-coat finish for applications that call for a more finished look.

See p. 101 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 capacity.

See pp. 144 and 147 for more information.

New Products

LSSJZ Hanger

The new and innovative patent-pending LSSJZ 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 LSSJZ 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. 160 for more information.

MPBZ Moment Post Base

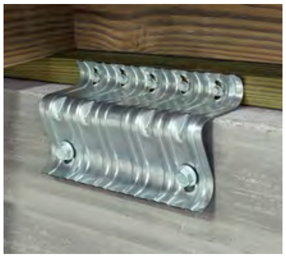
The new patent-pending MPBZ moment post base is the first post base specifically designed to provide moment resistance for columns or posts. An innovative overlapping sleeve design encapsulates the post, helping to resist rotation around its base. It is available for 4x4 and 6x6 posts.

See p. 91 for more information.

DG/DGH/DGB Firewall Hangers

The new DG firewall hangers are designed for installation on a two-hour fire wall and can be installed at the time of framing. All models have been tested according to ASTM E814 for flame and temperature ratings.

See p. 254 for more information.



URFP Foundation Plate

The patent-pending URFP universal retrofit foundation plate offers increased capacity 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. 55 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. 328 for more information.

PGT2OZ

The PGT2OZ Pipe Grip Tie® attaches wood fence rails to metal fence posts, eliminating rotted and failed wood posts. It features a narrow, 4⅞" width that is easy to conceal in a 1x wood box frame.

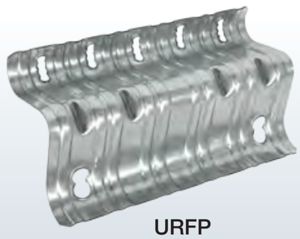
See p. 355 for more information.

Products 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* catalogue 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-CAN2018 Page #)	
Foundation Anchor and Plate			
 UFP	**UFP** (Limited availability)	**URFP** (p. 55)	 URFP
 FAP	**FAP** (Limited availability)	**FRFP** (p. 55)	 FRFP
Bearing Plate			
 BP¾	**BP¾** (Limited availability)	**BP¾-3** (p. 51)	 BP¾-3
Holdown and Anchor			
 HDC	**HDC** (Limited availability)	**HDU11** **HDQ8** **or others similar** (pp. 82–85)	 HDU11  HDQ8

Discontinued Products

Discontinued Product		Replacement Product (C-C-CAN2018 Page #)	
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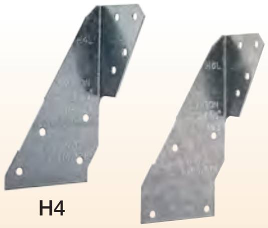
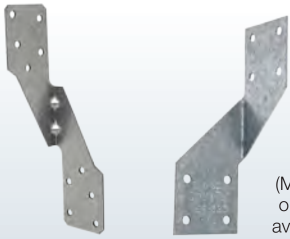
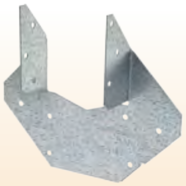
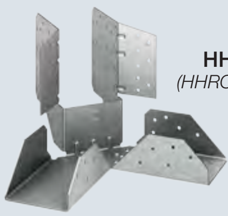
 H4; H5 *(H5A similar)*	H4 H5 H5A (Limited availability)	H2.5A H3 (p. 301)	 H2.5A; H3 (Multiple options available)
 H10-2	H10-2 (Limited availability)	H10A-2 (p. 301)	 H10A-2
Hangers			
 HUSC	HUSC (Limited availability)	HUC (pp. 132 and 187)	 HUC
 MSCPT	MSCPT (Limited availability)	HTHMQ (p. 274)	 HTHMQ
 WM *(WMI similar)*	WM WMI (Limited availability)	WMU (p. 338)	 WMU
Hip-Ridge Connector			
 HRC44	HRC42 HRC44 (Limited availability)	HHRC42 HHRC44 (pp. 162–163)	 HHRC44 *(HHRC42 similar)*

Discontinued Products

Discontinued Product		Replacement Product (C-C-CAN2018 Page #)	
Hinge Connectors			
 HCC3TA	HCC3TA (Limited availability)	HC4C3TA (p. 179)	 HC4C3TA
 HC4CTA	HC4CTA (Limited availability)	HC4C3TA (p. 179)	 HC4C3TA
Straps and Tie			
 FSC	FSC (Limited availability)	DTT2Z (pp. 82, 349)	 DTT2Z

How To Use This Catalogue

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

- **Changes In Red**
  Significant changes from last year's catalogue 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. 20–24 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. 32–34 for more information.

How We Determine Factored Resistances

Factored resistances in this catalogue are determined by calculations and test criteria established by industry, such as CCMC, ICC-ES Acceptance Criteria, IAPMO UES Evaluation Criteria, CSA standards and ATSM standards.

Connectors are typically evaluated in accordance with CSA O86 — *Engineering Design in Wood*. Evaluation is based on the minimum of three static load tests in wood assemblies. The published factored resistance is the lower of the corrected lowest ultimate load of the tests or the modified average 3 mm (⅛") deflection. In some cases, fastener calculations or member capacities are used to limit the published values.

Holdowns and tension ties are tested in accordance with ICC-ES AC155 — *Acceptance Criteria for Holdowns (Tie-downs) Attached to Wood Members*. The published factored resistances are based on the lower of the corrected lowest ultimate load of the tests or the average test value at 6.4 mm (¼"). Static load tests include holdown testing on steel jigs and wood assemblies.

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 tested 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 per CSA S136 and CSA O86. Testing to determine factored resistances in this catalogue 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

Catalogue Definition

Deflection: The distance a point moves when a load is applied.

Hanger Load Table Explanation, see p. 124.

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

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

Factored Resistances: The maximum resistance 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 **Lateral** **Down**

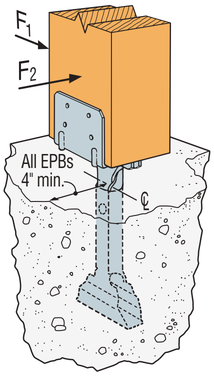
Load Duration: Assumed duration factor used to determine the factored resistance.

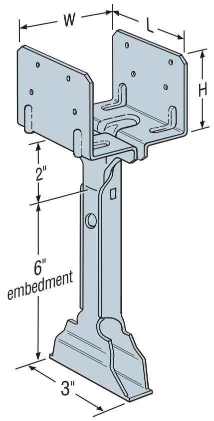
Model No.	Dimensions (in.)			Nails	Factored Resistance							
					D.Fir-L				S-P-F			
	W	L	H		Uplift (K_D = 1.15) lb. / kN	F_1 (K_D = 1.15) lb. / kN	F_2 (K_D = 1.15) lb. / kN	Down (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	F_1 (K_D = 1.15) lb. / kN	F_2 (K_D = 1.15) lb. / kN	Down (K_D = 1.00) lb. / kN
EPB44PHDG	3 9/16	3¼	2¼	(8) 16d	1045[3]	—	—	5660	1045[3]	—	—	5660
					4.65	—	—	25.18	4.65	—	—	25.18
EPB44A	3 9/16	3	2⅜	(8) 16d	1965	1340	1530	4370	1395	950	1085	3640
					8.74	5.96	6.81	19.44	6.21	4.23	4.83	16.19
EPB44	3 9/16	3¼	2 9/16	(8) 16d	1270	1945	1700	8465	900	1380	1205	6995
					5.65	8.65	7.56	37.66	4.00	6.14	5.36	31.12
EPB46	5½	3 5/16	3	(12) 16d	1270	1390	1635	8465	900	990	1160	6980
					5.65	6.18	7.27	37.66	4.00	4.40	5.16	31.05
EPB66	5½	5½	3	(12) 16d	1570	1390	1635	8465	1115	990	1160	6225
					6.98	6.18	7.27	37.66	4.96	4.40	5.16	27.69

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. 27–28 for other nail sizes and information.

All installations should be designed only in accordance with the factored resistance values set forth in this catalogue.





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

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 maximum factored resistances, 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 tor the Designer, as well as consult the applicable catalogue pages for specific product installation instructions and notes.

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

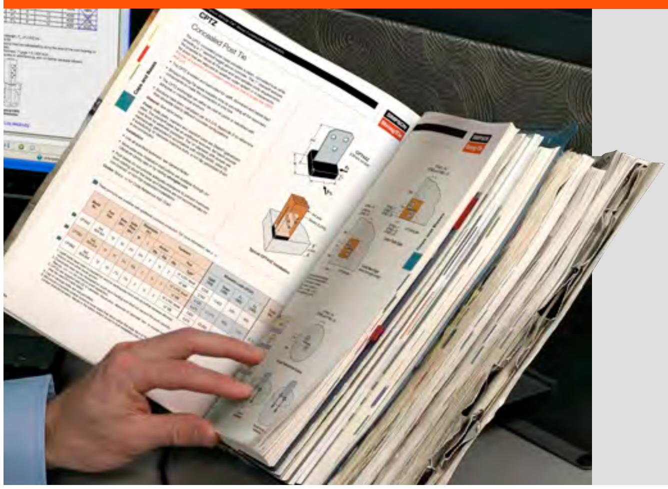
1. Be familiar with the application and correct use of the connector.
2. Follow all installation instructions provided in the applicable catalogue, website, Installer's Pocket Guide or any other Simpson Strong-Tie publications.
3. Install all required fasteners per installation instructions provided 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 required 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 ⅛" unless otherwise noted.

In addition to following the basic rules provided above as well as all notes, warnings and instructions provided in the catalogue, 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-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 catalogues;
- Code reports — Simpson Strong-Tie® Code Report Finder software;
- Technical fliers and bulletins;
- Master format specifications;
- Material safety data sheets;
- Corrosion information;
- Connector selection guides for engineered wood products (by manufacturer);
- Simpson Strong-Tie® Connector Selector® software;
- Simpson Strong-Tie® AutoCAD® menu;
- Simpson Strong-Tie® Strong-Wall® Selector software;
- Simpson Strong-Tie® Anchor Tiedown System Selector and anchor-related software; and
- Answers to frequently asked questions and technical topics.

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 catalogue 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 catalogue.



Keep this catalogue – it is valid for two years

Simpson Strong-Tie publishes the *Wood Construction Connectors* catalogue 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, resistances are in pounds.

d. Unless otherwise noted, bolts and nails cannot be combined. 8d (0.131" x 2½"), 10d (0.148" x 3") and 16d (0.162" x 3½") specify common nails that meet the requirement of CSA B111 or ASTM F1667. When a shorter nail is specified, it will be noted (for example 8d x 1½"). Refer to p. 27–28 for more nail info.

e. Unless otherwise noted, factored resistances are for Douglas Fir-Larch under continuously dry conditions (K_S = 1.00). Factored resistances for other species or conditions must be adjusted according to CSA O86-14.

The following material properties were used to generate the resistances in this catalogue in accordance with CSA O86-14. For LVL and other engineered wood products verify with the manufacturer that their material properties meet or exceed the values shown in the table below.

Species	ϕ F_{cp}	Specific Gravity
Douglas Fir-Larch (D.Fir-L)	812 psi (5.60 MPa)	0.49
Spruce-Pine-Fir (S-P-F)	615 psi (4.24 MPa)	0.42
Hem-Fir (HF)	533 psi (3.68 MPa)	0.46
D Fir-L Glulam	812 psi (5.60 MPa)	0.49
Spruce-Pine Glulam	672 psi (4.64 MPa)	0.44
LVL	1092 psi (7.53 MPa)	0.50
Parallam® PSL	1092 psi (7.53 MPa)	0.50
LSL (E = 1.3 x 10^6)	992 psi (6.84 MPa)	0.50
LSL (E > 1.5 x 10^6)	1092 psi (7.53 MPa)	0.50

f. Simpson Strong-Tie Company Inc. will manufacture non-catalogue products provided prior approval is obtained and an engineering drawing is included with the order. Steel specified on the drawings as ⅛", 3⁄16", and ¼" will be 11 gauge (0.120"), 7 gauge (0.179"), and 3 gauge (0.239"), respectively. The minimum yield and tensile strengths are 33 ksi and 52 ksi, respectively.

g. All references to bolts or machine bolts (MBs) are for structural quality through bolts equal to or better than American Society of Testing and Materials ASTM Standard A307, Grade A or Society of Automotive Engineers standard SAEJ429, Grade 2. RFB is F1554 Grade 36; SSTB is ASTM A36.

h. 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.

i. A fastener that splits the wood will not take the factored 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. Use a 5⁄32" bit for Simpson Strong-Tie Strong-Drive® SDS Heavy-Duty Connector screws and a 3⁄32" bit for Strong-Drive SD9/SD10 Connector screws.

j. 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 catalogue, 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.

k. Top flange hangers may cause unevenness. Possible remedies should be evaluated by a professional and include using a face mount hanger, and routering the beam or cutting the subfloor to accommodate the top flange thickness.

l. 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/Engineer of Record.

m. Do not overload. Do not exceed catalogue factored resistances, which would jeopardize the connection.

n. Some model configurations may differ from those shown in this catalogue. Contact Simpson Strong-Tie for details.

o. Hanger Options — 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 tabulated factored resistance for the non-modified hanger, and adjust as indicated. Gauge may vary from that specified depending on the manufacturing process used. U and W hangers normally have single stirrups; occasionally, the seat may be welded. B, GLT, HGLT, HW, LBV, W and WNP hangers for sloped seat installations are assumed backed. To order a custom non-backed hanger, contact the Simpson Strong-Tie.

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 catalogue 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 tendancy to crack when welded. Cracked steel will not carry load and must be replaced.

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. 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 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. Factored resistances for hangers are determined by a static load test resulting in not more than a ⅛" (3 mm) deflection of the joist relative to the header.

b. Factored resistances for more than one direction for a single connection cannot be added together. A factored load which can be divided into components in the directions given must be evaluated as follows:

 Factored Uplift / Factored Uplift Resistance + Factored Parallel to Plate / Factored Parallel to Plate Resistance + Factored Perpendicular to Plate / Factored Perpendicular to Plate Resistance < 1.0.

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

c. Factored resistances are based on CSA O86-14 unless otherwise specified.

d. Unless otherwise noted, resistances include Load Duration, Group Action and Toe-Nail factors from CSA 086 as applicable. The application of additional adjustment factors shall be by the Designer. Load Duration Factor, K_D as specified by CSA O86-14 is as follows:

 Standard term (K_D = 1.00) — applies to all roof and floor factored resistances and is designated as “Normal” in tables.

 Short term (K_D = 1.15) — applies to all wind and seismic factored resistances. Other factored resistance values, based on load durations or special conditions, may govern in certain geographic areas and may be used where applicable, up to the maximum tabulated factored resistance. Load duration increases are only applied if the factor of safety can be maintained.

e. Wood shear is not considered in the factored resistances given; reduce factored resistances when wood shear is limiting.

f. 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 factored resistances based on reliable published testing data or calculations. The Engineer/Designer of Record should evaluate and give written approval for substitution prior to installation.”

g. Verify that the dimensions of the supporting member are sufficient to receive the specified fasteners, and develop the top flange bearing length.

h. Some catalogue illustrations show connections that could cause tension stresses perpendicular to grain or bending of the wood during loading if not sufficiently reinforced. In this case, mechanical reinforcement should be considered.

i. Simpson Strong-Tie recommends that hanger height be at least 60% of joist height for stability against rotation while under construction prior to sheathing installation.

j. The term “Designer” used throughout this catalogue is intended to mean a licensed/certified building design professional, a licensed professional engineer, or a licensed architect.

k. For holdowns, anchor bolt nuts should be finger-tight plus ⅓ to ½ 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.

l. Holdown and Tension Tie capacities are based on installations with an anchor rod length of 6" from the concrete to top of holdown seat. These products may be raised to any height with consideration of the increased deflection due to additional rod elongation. For cases where the anchor rod 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 rod offset of 1½". See “General Instructions for the Installer” (p. 18 note q).

m. Throughout the catalogue 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.

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 catalogue. Incorrect fastener quantity, size, placement, type, material, or coating may cause the connection to fail. Prior to using a particular fastener, please consult the Fastener Guide in this catalogue.
   - 16d fasteners are common nails (0.162" dia. x 3½" long) and cannot be replaced with 16d sinkers (0.148" dia. x 3¼" long) for full load value unless otherwise specified.
   - 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.

b. Fill all fastener holes as specified in the installation instructions for that product. Refer to Simpson Strong-Tie Fastener Guide for the requirements of the various shaped fastener holes.

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 catalogue.

g. Do not alter installation procedures from those set forth in this catalogue.

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" (1 mm) and no more than a maximum of 1⁄16" (2 mm) larger than the bolt diameter (per 12.4.1.2 CSA O86-14).

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 CSA W59. 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 factored resistances. Contact Simpson Strong-Tie. Powder-actuated fasteners should not be used to install connectors, unless noted otherwise. Reference pp. 204 and 208 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 ⅛" (3 mm) per ASTM D1761 and ASTM D7147 test standards.

p. For holdowns, anchor bolt nuts should be finger-tight plus ⅓ to ½ 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.

q. Holdowns and Tension Ties may be raised off the sill as dictated by field conditions to accommodate an anchor mislocated no more than 1½". The holdown shall be raised off the sill at least 3" for every ¼" that the anchor is offset from the model's centreline (as defined on p. 76 to maximum of 18"). Anchor bolt slope shall be no greater than 1:12 (or 5 degrees). Contact the Designer if the holdown anchor is offset more then 1½". Raised holdown height is measured from the top of concrete to the top of the holdown bearing plate.

r. Strong-Drive® screws are permitted to be installed through metal truss plates as approved by the Truss Designer (predrilling required through the plate using a maximum of a 5⁄32" bit).

s. 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.

t. Nuts shall be installed such that the end of the threaded rod or bolt is at least flush with the top of the nut.

u. 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.

v. Unless otherwise noted, connectors shown in this catalogue 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 catalogue.

w. When bolts are used, standard cut washers must be placed between the wood and the nut or the wood and the head when there is no steel between (see 12.2.2.4 — CSA O86-14).

Important Information and General Notes

Codes

Simpson Strong-Tie® connectors are recognized by most code agencies. Agencies that recognize some or all of our products include CCMC, ICC-ES; the City of Los Angeles, California; State of Florida; and IAPMO Evaluation Service.

The factored resistances shown in this catalogue comply with the National Building Code of Canada (NBC 2010 and NBC 2015).

Call Simpson Strong-Tie or visit the code agencies' web sites for the current evaluation reports if recognition or approval is to be based on the report. Specific reductions and restrictions may be required by other code agencies.

CCMC — Canadian Construction Materials Centre:
Nos. CCMC 12862-R, 12863-R.

International Code Council:

NER — 209, 393, 413, 432, 443, 499, 694.

ER — 1211, 4935, 5313, 5349, 5357, 5655, 5672, 5708, 5709, 5952.

ESR — 1622, 1866, 2105, 2203, 2236, 2330, 2549, 2551, 2552, 2553, 2554, 2555, 2604, 2605, 2606, 2607, 2608, 2611, 2613, 2614, 2615, 2616, 2877, 2920, 3046.

City of Los Angeles, CA:

Nos. RR 25711, RR 25712, RR 25713, RR 25714, RR 25716, RR 25718, RR 25719, RR 25720, RR 25725, RR 25726, RR 25800, RR 25801, RR 25802, RR 25803, RR 25804, RR 25806, RR 25807, RR 25814, RR 25818, RR 25827, RR 25828, RR 25851

State of Florida:

FL9589, 10441, 10444, 10446, 10447, 10456, 10531, 10655, 10667, 10849, 10852, 10856, 10854, 10860, 10861, 10864, 10865, 10866, 11166, 11169, 11468, 11470, 11473, 11478, 11496, 12708, 13326, 13628, 13904, 13975, 14101.

IAPMO Evaluation Service:

ER — 112, 130, 143, 192

Limited Warranty

Simpson Strong-Tie Company Inc. warrants catalogue 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 catalogue 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 catalogue, or to non-catalogue 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 catalogue. Properly-installed Simpson Strong-Tie products will perform in accordance with the specifications set forth in the applicable Simpson Strong-Tie catalogue. Additional performance limitations for specific products may be listed on the applicable catalogue 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 catalogue 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.

Corrosion Information

SIMPSON Strong-Tie®

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), Hasteloy 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) and the Canadian Standards Association (CSA) identify several 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 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 and CSA Use Categories. From the building code perspective, fastener corrosion resistance is provided by hot-dip galvanization applied following ASTM A153, Class D or a corrosion resistant base metal, such as stainless steel, silicon bronze or copper regardless of exposure.

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.

The Use Category system (UCS) employed in the CAN/CSA O80 Series of Standards is based on the UCS developed by AWPA, with minor differences that account for treated wood production and use patterns in Canada. Some of the categories listed by AWPA are not included in CAN/CSA O80 due to regional use and/or other factors.

Use Category System (UCS)	
CAN/CSA 080.1	AWPA U1-13
UC1	UC1
UC2	UC2
UC3.1	UC3A
UC3.2	UC3B
UC4.1	UC4A
UC4.2	UC4B
UC5A	UC5A
UCF.1	UCFA

Simpson Strong-Tie General Recommendations

Simpson Strong-Tie has evaluated the AWPA (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 AWPA 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 AWPA 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 AWPA 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. 19).

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:

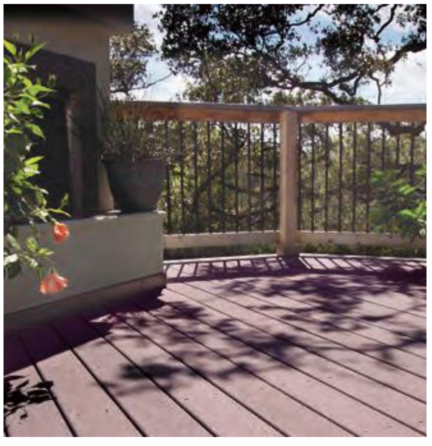
- **Dry Service:** Generally interior applications and includes wall and ceiling cavities, raised floor applications in enclosed buildings that have been designed to prevent condensation and exposure to other sources of moisture. Prolonged exposure during construction should also be considered, as this 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 AWPA 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 AWPA 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. 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 capacities 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.

Dry Service

Wet Service



Severe

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

1. These are general guidelines that may not consider all application criteria. Refer to product-specific information for additional guidance.
2. 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.
3. 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.
4. 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).
5. If uncertain about Use Category, treatment chemical or environment, use Types 316/305/304 stainless steel, silicon bronze or copper.
6. 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.
7. 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.
8. 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.
9. 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.

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
ZMAX® G185	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
HOT DIP HDG GALVANIZED®	Products are hot-dip galvanized after fabrication (14 ga. and thicker). The coating weight increases with material thickness. The minimum average coating weight is 2.0 oz./ft.² (per ASTM A123 total 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
316 Stainless Steel 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.	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
HOT DIP HDG GALVANIZED® ASTM A153, Class C	Simpson Strong-Tie Strong-Drive Timber-Hex screws are hot-dip galvanized in accordance with ASTM A153, Class C. Hot-dip galvanized fasteners have a minimum average of 1.25 oz./ft.² of zinc coating.	High/Severe

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

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 kPa

Bolt Diameter

in.	mm
⅜	9.5
½	12.7
⅝	15.9
¾	19.1
⅞	22.2
1	25.4

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.

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°

U.S. Standard Steel Gauge Equivalents in Nominal Dimensions

Ga.	Min. Thick. (mil)	Approximate Dimensions		Decimals (in.)		
		in.	mm	Uncoated Steel	Galvanized Steel (G90)	ZMAX® (G185)
3	229	¼	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	⅛	3.1	0.120	0.123	0.125
12	97	7/64	2.7	0.105	0.108	0.110
14	68	5/64	2.0	0.075	0.078	0.080
16	54	1/16	1.6	0.060	0.063	0.065
18	43	3/64	1.3	0.048	0.052	0.054
20	33	1/32	1.0	0.036	0.040	0.042
22	27	1/32	1.0	0.030	0.033	0.035

Steel thickness may vary according to industry mill standards.

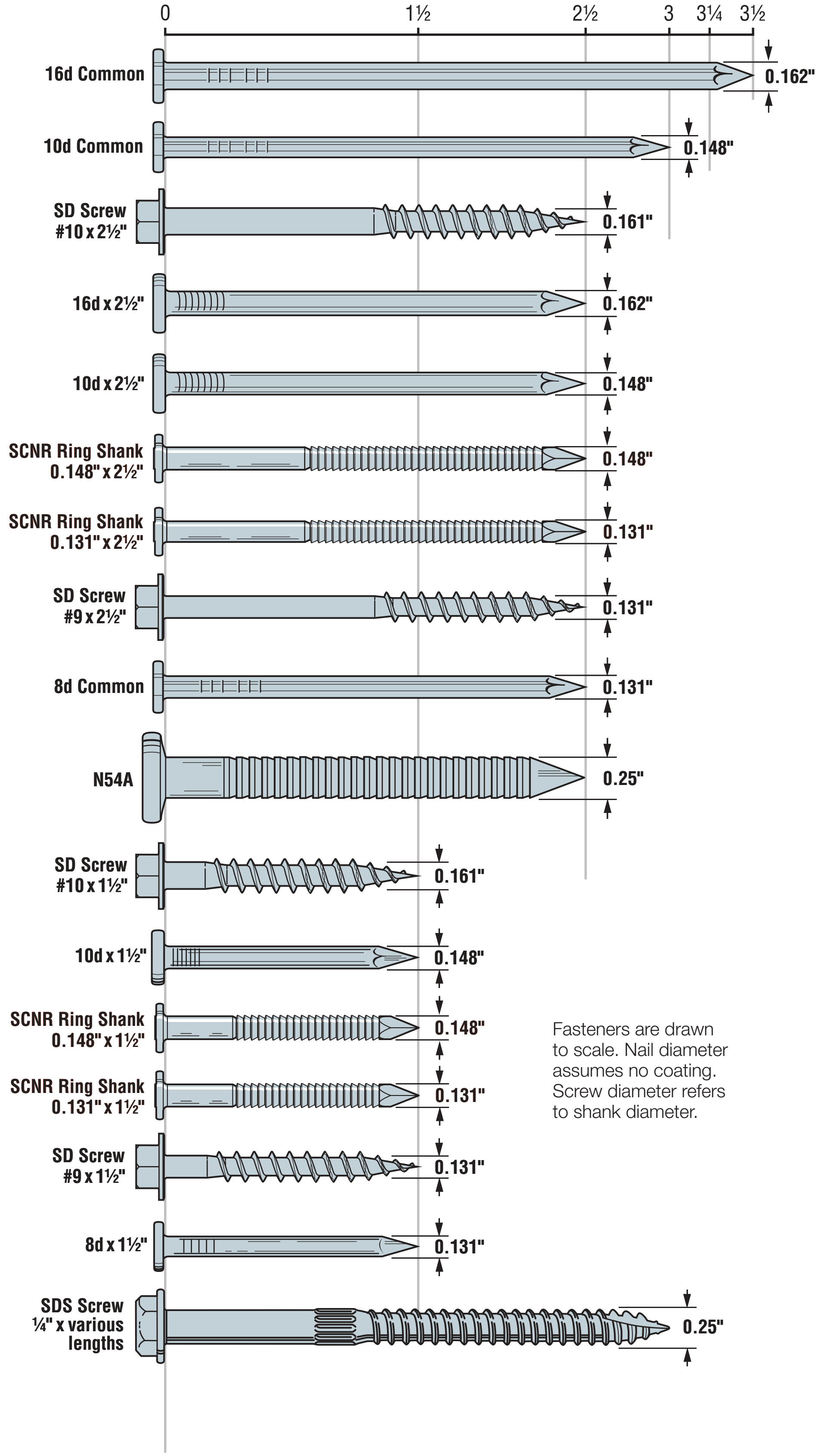
Fasteners

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 values. 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* catalogue 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. 32–34 for more information.

The factored resistances 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.

Fastener Design Information

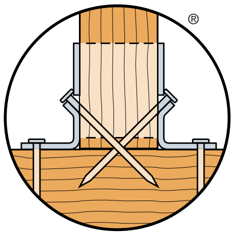
In some cases, it is desirable to install Simpson Strong-Tie face-mount joist hangers and straight straps with nails that are a different type or size than what is called out in the load table. In these cases, these reduction factors must be applied to the factored resistances listed for the connector.

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

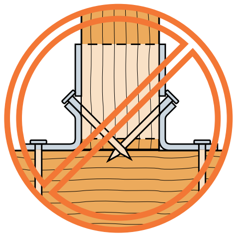
Specified Catalogue Nail	Replacement Nail	Face-Mount Hangers	Straight Straps
16d common (0.162" x 3½")	10d common (0.148" x 3")	0.83	0.83
	12d common (0.148" x 3¼")		
16d common (0.162" x 3½")	16d x 2½" (0.162" x 2½")	1.00	1.00
16d common (0.162" x 3½")	10d x 1½" (0.148" x 1½")	0.64	0.77
16d common (0.162" x 3½")	16d spiral (0.152" x 3½")	0.91	0.91
16d common (0.162" x 3½")	10d spiral (0.122" x 3")	0.61	0.61
	12d spiral (0.122" x 3¼")		
10d common (0.148" x 3")	10d x 2½" (0.148" x 2½")	0.85	1.00
10d common (0.148" x 3")	8d common (0.131" x 2½")	0.80	0.80
10d common (0.148" x 3")	10d x 1½" (0.148" x 1½")	0.77	0.92
10d common (0.148" x 3")	10d spiral (0.122" x 3")	0.74	0.74
8d common (0.131" x 2½")	8d x 1½" (0.131" x 1½")	0.85	0.98
8d common (0.131" x 2½")	8d spiral (0.110" x 2½")	0.64	0.75

1. Resistance adjustment factors shown in the table are based on calculated reduction factors and are applicable for all face mount hangers and straight straps throughout this catalogue, except as noted in the footnotes below.
2. Some products have been tested specifically with alternate fasteners and have reduced capacities published on the specific product page which may differ from the values calculated using this table. The values on the product page shall 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 gauge.
4. Unless noted otherwise, 10d x 1½", 10d x 2½" or 16d x 2½" nails may not be substituted for joist nails in double-shear hangers (i.e. LUS, HUS, HHUS, HGUS). For applications involving pneumatic nails, refer to **strongtie.com** for additional information.
5. Do not substitute 10d x 1½" nails for face nails on slope and skew combinations or skewed only LSU and LSSU.
6. For straps installed over sheathing use a 2½" long nail minimum.

For LUS, HUS, LJS26DS, HHUS and HGUS hangers

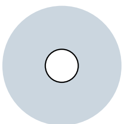


Double-shear nailing shall use full length common nails

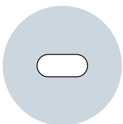


Shorter nails may not be used as double-shear nails

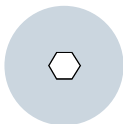
Fastening Identification



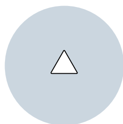
Round Holes
Purpose: To fasten a connector.
Fill Requirements: Always fill, unless noted otherwise.



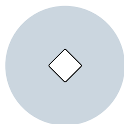
Obround Holes
Purpose: To make fastening a connector in a tight location easier.
Fill Requirements: Always fill.



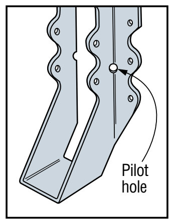
Hexagonal Holes
Purpose: To fasten a connector to concrete or masonry.
Fill Requirements: Always fill when fastening a connector to concrete or masonry.



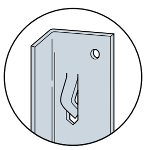
Triangular Holes
Purpose: To increase a connector's strength or to achieve max. strength.
Fill Requirements: When the Designer specifies max. nailing.



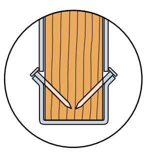
Diamond Holes
Purpose: To temporarily fasten a connector to make installing it easier.
Fill Requirements: None.



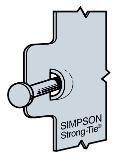
Pilot Holes
Tooling holes for manufacturing purposes. No fasteners required.



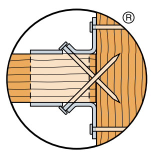
Speed Prongs
Used to temporarily position and secure the connector for easier and faster installation.



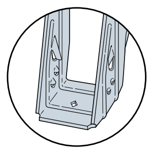
Positive Angle Nailing (PAN)
Provided when wood splitting may occur, and to speed installation.



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 catalogue 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. 18 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. HDG nails sold by Simpson Strong-Tie meet the specifications of ASTM A153. Stainless-steel nails are Type 316 stainless.
4. 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

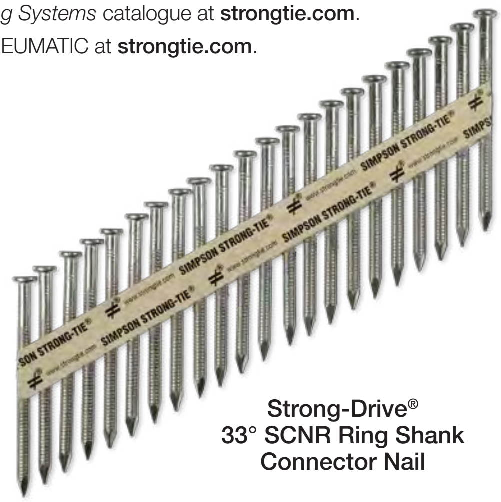
Simpson Strong-Tie® Strong-Drive® SCN Smooth-Shank Carbon-Steel Connector nails and SCNR Ring-Shank Connector nails are designed to provide installers with a power-driven alternative to hand-driven nails. The nails are approved for use in many popular Simpson Strong-Tie® products and serve as a replacement 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 factored resistances. 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* catalogue 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® 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.

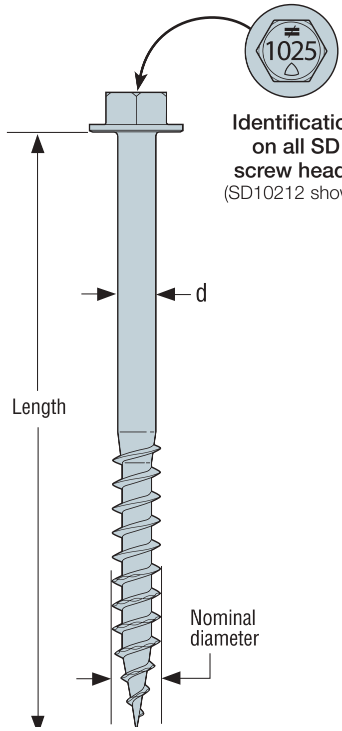
The Strong-Drive® SD Connector screw features an optimized shank, specifically designed for capability with the fastener holes in Simpson Strong-Tie connectors. The hex head virtually eliminates cam-out and helps avoid stripping of the head during installation. The sharp point of the screw enables fast 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 (see pp. 20–24).
- ¼" hex drive included. Model no. Hex DBHEX.
- Head identification.

Material: Heat-treated carbon steel

Finish: Mechanically galvanized (ASTM Class 55)



Identification on all SD screw heads (SD10212 shown)

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

Since testing of the Strong-Drive® SD Connector screw is ongoing, Simpson Strong-Tie continues to add connectors to the approved-connector list. For the most current list of approved connectors, load values and applications, visit **strongtie.com/sd**.

See pp. 32–34 for a list of connectors with the Strong-Drive® SD Connector screw.

Strong-Drive® SD

Connector Screw (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Product Information

Model No.	Shank Size (d) (in.)	Nominal Diameter (in.)	Length (in.)
SD9112R100	#9 (0.131")	0.177	1½
SD9112R500			
SD9112MB			
SD9212R100			2½
SD9212R500			
SD9212MB			
SD10112R100	#10 (0.161")	0.200	1½
SD10112R500			
SD10112MB			
SD10212R100			2½
SD10212R500			
SD10212MB			

Model No.	Size (in.)	Thread Length (in.)	D.Fir-L					S-P-F				
			Factored Lateral Resistance (K_D = 1.00)				Factored Withdrawal Resistance (K_D = 1.15)	Factored Lateral Resistance (K_D = 1.00)				Factored Withdrawal Resistance (K_D = 1.15)
			Side Plate					Side Plate				
			Wood		Steel			Wood		Steel		
			½"	1½"	20 ga.	12 ga.		½"	1½"	20 ga.	12 ga.	
			lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
			kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
SD9112	#9 x 1½	1	150	—	195	295	220	130	—	175	280	170
			0.67	—	0.87	1.31	0.99	0.58	—	0.78	1.25	0.75
SD9212	#9 x 2½	1	240	230	285	390	220	205	195	250	360	170
			1.07	1.02	1.27	1.73	0.99	0.91	0.87	1.11	1.60	0.75
SD10112	#10 x 1½	1	165	—	220	340	245	140	—	200	320	185
			0.73	—	0.98	1.51	1.09	0.62	—	0.89	1.42	0.83
SD10212	#10 x 2½	1	270	265	325	445	245	230	225	290	395	185
			1.20	1.18	1.45	1.98	1.09	1.02	1.00	1.29	1.76	0.83

1. Factored resistances shown have been developed in accordance with 12.11 CSA O86-14. Apply the adjustment factors K_D, K_{SF} and K_T as per 12.11.4.1 CSA O86-14 to the tabulated values shown when applicable. Resistances assume full penetration into the main member.
2. Factored resistances shown assume steel side plates with F_u = 45000 psi (310 MPa).
3. Factored resistances shown for ½" wood side plates is applicable to structural panel side members (OSB, DFP and CSP) as per 12.11.4.2 CSA O86-14.
4. Factored withdrawal resistances shown are for full penetration to the main member. Head pull through resistance may govern and must be calculated in accordance with 12.11.5.3 CSA O16-14 using a washer diameter of 0.378".
5. Minimum spacing edge and end distances shall be in accordance with 12.9.2.1 CSA O86-14 using the nominal diameter.

SIMPSON Strong-Tie®

Connector Screw (cont.)

Connectors Approved for Use with the Strong-Drive® SD 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)	—	—
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)
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)	—	—	—
HSUR/L26-2	—	(16)	—	—
HSUR/L210-2	—	(26)	—	—
HSUR/L214-2	—	(34)	—	—
HSUR/L46	—	(16)	—	—
HSUR/L410	—	(26)	—	—
HSUR/L414	—	(34)	—	—
HSUR/L4.12/9	(12)	(2)	—	—

1. Strong-Drive® SD Connector screw substitutions may have load reductions. For additional information refer to **strongtie.com/sd**.

Strong-Drive® SD

Connector Screw (cont.)

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

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
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)
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)	—

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
ST2115	—	—	(6)	—
ST2215	—	—	(14)	—
LSTA30	(14)	—	—	—
LSTA36	(14)	—	—	—
LSTI49	(16)	—	—	—
LSTI73	(16)	—	—	—
LTP4	(12)	—	—	—
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)	—	—
LSSUH310	—	(30)	—	—
LSSU210-2	—	(30)	—	—
LSSU410	—	(30)	—	—
LSU4.12	—	(40)	—	—
LSU4.28	—	(40)	—	—
LSU3510-2	—	(40)	—	—
LSU5.12	—	(40)	—	—
MST27	—	—	(30)	—

1. Strong-Drive® SD Connector screw substitutions may have load reductions.
For additional information refer to **strongtie.com/sd**.

Connector Screw (cont.)

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

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
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)	—
ST12	—	—	(10)	—
ST18	—	—	(12)	—
ST22	—	—	(12)	—
ST292	—	—	(12)	—
ST2115	—	—	(6)	—
ST2122	—	—	(12)	—
ST2215	—	—	(14)	—
ST6215	—	—	(16)	—
ST6224	—	—	(20)	—
ST6236	—	—	(28)	—

Model No.	SD9 Qty.		SD10 Qty.	
	1½"	2½"	1½"	2½"
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	—	—	—
VTCR	(7)	—	—	—

1. Strong-Drive® SD Connector screw substitutions may have load reductions. For additional information refer to **strongtie.com/sd**.

Strong-Drive® SDS

Heavy-Duty Connector Screw

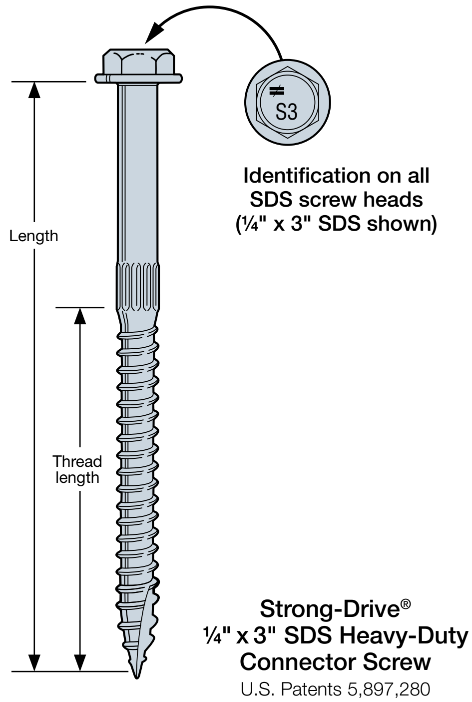
The Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screw is a ¼"-diameter structural wood screw ideal for various connector installations as well as wood-to-wood applications. It installs with no predrilling and has been extensively tested in various applications. The Strong-Drive SDS Heavy-Duty Connector screw is improved with an easy-driving point and a corrosion resistant double-barrier coating.

Features:

- The point is designed to reduce installation torque and make driving easier with no predrilling and minimal wood splitting.
- A double-barrier coating finish provides corrosion resistance equivalent to hot-dip galvanization. Now one screw can handle interior, exterior and certain pressure-treated wood applications (see Corrosion Information on pp. 20–24 for more information).
- ⅜" hex washer head is stamped with the No-Equal sign and fastener length for easy identification after installation.

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

Finish: Double-barrier coating



Strong-Drive® ¼" x 3" SDS Heavy-Duty Connector Screw

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

These products are available with additional corrosion protection. For more information, see p. 24.

	Model No.	Size (in.)	Thread Length (in.)	Fasteners per Carton	D.Fir-L Factored Lateral Resistance (K_D = 1.00) Side Plate: Wood 1½"	Wood 1¾" SCL	Steel 14 ga.	Steel 10 ga.	Steel 3 ga.	D.Fir-L Factored Withdrawal Resistance (K_D = 1.15)	S-P-F Factored Lateral Resistance (K_D = 1.00) Side Plate: Wood 1½"	Wood 1¾" SCL	Steel 14 ga.	Steel 10 ga.	Steel 3 ga.	S-P-F Factored Withdrawal Resistance (K_D = 1.15)
					lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
SS	SDS25112	¼ x 1½	1	1,500	—	—	340	465	545	280	—	—	315	435	435	215
					—	—	1.51	2.07	2.42	1.25	—	—	1.40	1.94	1.94	0.96
SS	SDS25200	¼ x 2	1¼	1,300	—	—	400	530	655	355	—	—	370	455	455	270
					—	—	1.78	2.36	2.91	1.58	—	—	1.65	2.02	2.02	1.20
SS	SDS25212	¼ x 2½	1½	1,100	—	—	465	590	825	425	—	—	420	550	590	320
					—	—	2.07	2.62	3.67	1.89	—	—	1.87	2.45	2.62	1.42
SS	SDS25300	¼ x 3	2	950	370	—	525	655	840	565	320	—	475	590	590	430
					1.65	—	2.34	2.91	3.74	2.51	1.42	—	2.11	2.62	2.62	1.91
SS	SDS25312	¼ x 3½	2¼	900	435	435	585	715	840	635	370	370	525	590	590	485
					1.94	1.94	2.60	3.18	3.74	2.82	1.65	1.65	2.34	2.62	2.62	2.16
	SDS25412	¼ x 4½	2¾	800	475	510	585	720	840	775	420	450	530	590	590	590
					2.11	2.27	2.60	3.20	3.74	3.45	1.87	2.00	2.36	2.62	2.62	2.62
	SDS25500	¼ x 5	2¾	500	475	510	585	720	840	775	420	450	530	590	590	590
					2.11	2.27	2.60	3.20	3.74	3.45	1.87	2.00	2.36	2.62	2.62	2.62
	SDS25600	¼ x 6	3¼	600	475	510	585	720	840	915	420	450	530	590	590	700
					2.11	2.27	2.60	3.20	3.74	4.07	1.87	2.00	2.36	2.62	2.62	3.11
	SDS25800	¼ x 8	3¼	400	475	510	585	720	840	915	420	450	530	590	590	700
					2.11	2.27	2.60	3.20	3.74	4.07	1.87	2.00	2.36	2.62	2.62	3.11

1. Factored resistances shown have been developed in accordance with 12.11 CSA O86-14. Apply the adjustment factors K_D, K_{SF} and K_T as per 12.11.4.1 CSA O86-14 when applicable.
2. Factored lateral resistances shown assume steel side plates with a minimum F_u = 45000 psi (310 MPa).
3. Factored lateral resistances shown assume full penetration into the main member.
4. Factored withdrawal resistances shown are applicable to short term loads, reduce for other load durations where applicable.
5. Factored withdrawal resistances shown assume the entire threaded portion of the screw is installed into the main member. Where the penetration into the main member is less than the length of the thread, the factored resistance may be calculated by multiplying the length of penetration of the threads x 280 lb./in. (49 N/mm) for D.Fir-L and 215 lb./in. (38 N/mm) for S-P-F).
6. Factored withdrawal resistances shown are for penetration into the main member. Head pull through resistance may govern and must be calculated in accordance with 12.11.5.3 CSA O86-14 using a washer diameter d_w = 0.480".
7. LSL wood-to-wood applications that require 4½", 5", 6" or 8" Strong-Drive SDS Heavy-Duty Connector screws are limited to interior-dry use only.
8. Minimum spacing, edge and end distances shall be in accordance with 12.9.2.1 CSA O86-14 using a fastener diameter of 0.250" (6.4 mm).
9. Screws may be provided with the 4CUT™ or Type 17 point.
10. Strong-Drive® SDS Heavy-Duty Connector screws install best with a low speed ½" drill with a ⅜" hex head driver.
11. Where predrilling is required for SDS, use a 5/32" bit.

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 predrilling and are available in optimized lengths for fastening 2-, 3- and 4-ply trusses or 1¾" 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™

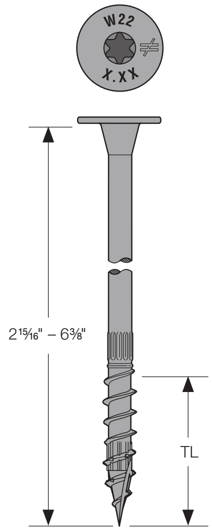
Warning: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, the Strong-Drive SDW Truss-Ply and EWP-Ply screws should only be used in dry, interior and non-corrosive environments.

Installation:

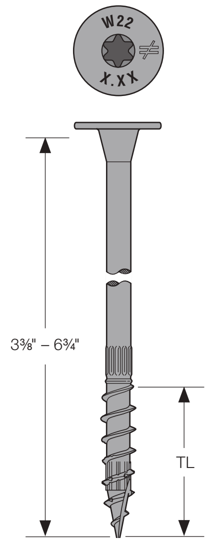
- Use all specified fasteners; see General Notes.
- Strong-Drive SDW Truss-Ply and EWP-Ply screws install best with a low-speed ½" drill motor and a T-40 6-lobe bit. The matched bit included with the screws is recommended for best results.
- Predrilling is typically not required. Strong-Drive SDW Truss-Ply and EWP-Ply screws may be installed through metal truss plates as approved by the Truss Designer (predrilling required through the plate using a maximum of 5/32" bit).
- Screw heads that are countersunk flush to the wood surface are acceptable if the screw has not spun out.

Notes to the Designer:

1. Factored lateral and withdrawal resistances are based on testing per ICC-ES AC233 and Clause 12.11 of CSA O86-14.
2. Factored lateral resistances may be increased 15% for short-term load duration (K_D = 1.15). For load durations other than standard or short-term, see 5.3.2 of CSA O86-14 for reduction values.
3. Fastener spacing, end and edge distances shall conform to Table 12.9.2.1 CSA O86-14 using a diameter value of 0.30" (see Table 9 on p. 41).
4. Maximum fastener spacing is recommended not to exceed 24" on-centre except as approved by a qualified Designer.
5. Structural composite lumber (SCL) is laminated veneer lumber (LVL), parallel strand lumber (PSL) or laminated strand lumber (LSL). Verify the effective specific gravity (SG) with structural composite lumber manufacturer for selection of tabulated values.
6. Factored resistances are based on the capacity of the Simpson Strong-Tie® Strong-Drive SDW22 fasteners. The capacity of the multi-ply assembly must be checked by a qualified Designer using the reduced cross-sectional area per Clause 12.2.2.5 CSA O86-14.
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

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

Product Information

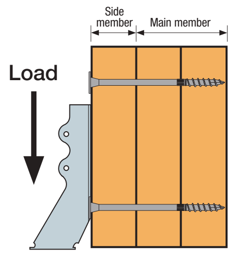
Model No.[2,3]	Head Stamp Length	Nominal Screw Length (L) (in.)	Typical Application[1]	Thread Length (TL) (in.)	Retail Box[3] Quantity (1 Bit)	Retail Boxes/ Carton	Mini-Bulk Bucket Quantity[2] (1 Bit)	Bulk Bucket Quantity (2 Bits)
SDW22300	3.00	2 15/16	2x/Truss	1 7/16	50	6	250	950
SDW22338	3.37	3 3/8	SCL	1 9/16	50	6	250	900
SDW22458	4.62	4 5/8	2x/Truss	1 7/16	50	4	200	600
SDW22500	5.00	5	SCL/3x2PCT	1 9/16	50	4	200	600
SDW22600[4]	6.00	6	2x/Truss	1 7/16	50	4	200	500
SDW22638[4]	6.37	6 3/8	2x/Truss	1 7/16	50	4	200	500
SDW22634	6.75	6 3/4	SCL/4x2PCT	1 9/16	50	4	200	500

1. Typical screw application key:
   2x/Truss = Solid sawn dimensional lumber and plated wood trusses.
   SCL = 1¾" plies of structural-composite lumber.
   SCL/3x2PCT = 1¾" plies of structural-composite lumber or double 3x2 parallel-chord trusses.
   SCL/4x2PCT = 1¾" or 3½" 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 6 3/16" thick, use the SDW22600.

Table 1 — Strong-Drive® SDW Truss-Ply Screws Factored Lateral Resistances — Solid-Sawn Lumber and 2x Truss Loaded on Head Side

Assembly	Model No.	Nominal Length (in.)	Thread Length (in.)	Side Member Thickness (in.)	Factored Lateral Resistance (K_D = 1.00) D.Fir-L lb. / kN	Factored Lateral Resistance (K_D = 1.00) S-P-F lb. / kN
2-ply 2x/Truss	SDW22300	3	1 7/16	1½	335 / 1.49	290 / 1.29
3-ply 2x/Truss	SDW22458	4 5/8	1 7/16	1½	455 / 2.02	405 / 1.80
4-ply 2x/Truss	SDW22600	6	1 7/16	1½	455 / 2.02	405 / 1.80
4-ply 2x/Truss	SDW22638	6 3/8	1 7/16	1½	455 / 2.02	405 / 1.80

1. Factored resistances shown assume full penetration into the main member.

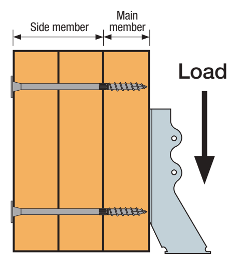


Loaded on Head Side
(3-ply assembly shown – other configurations similar)

Table 2 — Strong-Drive® SDW Truss-Ply Screws Factored Lateral Resistances — Solid-Sawn Lumber and 2x Truss Loaded on Point Side

Assembly	Model No.	Nominal Length (in.)	Thread Length (in.)	Side Member Thickness (in.)	Factored Lateral Resistance (K_D = 1.00) D.Fir-L lb. / kN	Factored Lateral Resistance (K_D = 1.00) S-P-F lb. / kN
2-ply 2x/Truss	SDW22300	3	1 7/16	1½	305 / 1.36	260 / 1.16
3-ply 2x/Truss	SDW22458	4 5/8	1 7/16	3	410 / 1.82	365 / 1.62
4-ply 2x/Truss	SDW22600	6	1 7/16	4½	410 / 1.82	365 / 1.62
4-ply 2x/Truss	SDW22638	6 3/8	1 7/16	4½	410 / 1.82	365 / 1.62

1. Factored resistances shown assume full penetration into the main member.



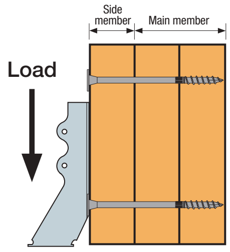
Loaded on Point Side
(3-ply assembly shown – other configurations similar)

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

Table 3 — Strong-Drive® SDW EWP-Ply Screws Factored Lateral Resistances — Structural Composite Lumber Loaded on Head Side

Assembly	Model No.	Nominal Length (in.)	Thread Length (in.)	Side Member Thickness (in.)	Factored Lateral Resistance (K_D = 1.00)	
					Equivalent Specific Gravity	
					SG = 0.50	SG = 0.42
					lb.	lb.
					kN	kN
2-ply 1¾" SCL	SDW22338	3⅜	1 9/16	1¾	390	325
					1.73	1.45
3-ply 1¾" SCL	SDW22500	5	1 9/16	1¾	495	430
					2.20	1.91
4-ply 1¾" SCL	SDW22634	6¾	1 9/16	1¾	495	430
					2.20	1.91
2-ply 3½" SCL	SDW22634	6¾	1 9/16	3½	570	505
					2.54	2.25

1. Factored resistances shown assume full penetration into the main member.

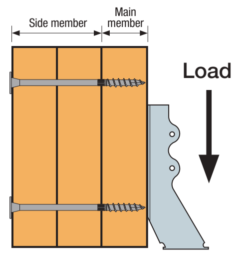


Loaded on Head Side
(3-ply assembly shown – other configurations similar)

Table 4 — Strong-Drive® SDW EWP-Ply Screws Factored Lateral Resistances — Structural Composite Lumber Loaded on Point Side

Assembly	Model No.	Nominal Length (in.)	Thread Length (in.)	Side Member Thickness (in.)	Factored Lateral Resistance (K_D = 1.00)	
					Equivalent Specific Gravity	
					SG = 0.50	SG = 0.42
					lb.	lb.
					kN	kN
2-ply 1¾" SCL	SDW22338	3⅜	1 9/16	1¾	340	285
					1.51	1.27
3-ply 1¾" SCL	SDW22500	5	1 9/16	3½	415	365
					1.85	1.62
4-ply 1¾" SCL	SDW22634	6¾	1 9/16	5¼	415	365
					1.85	1.62
2-ply 3½" SCL	SDW22634	6¾	1 9/16	3½	570	490
					2.54	2.18

1. Factored resistances shown assume full penetration into the main member.



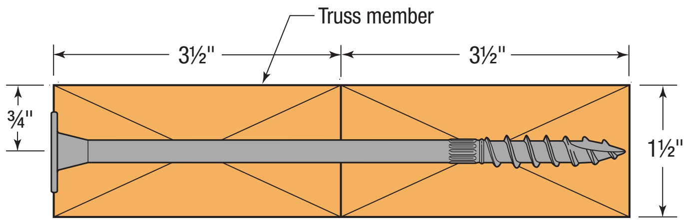
Loaded on Point Side
(3-ply assembly shown – other configurations similar)

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

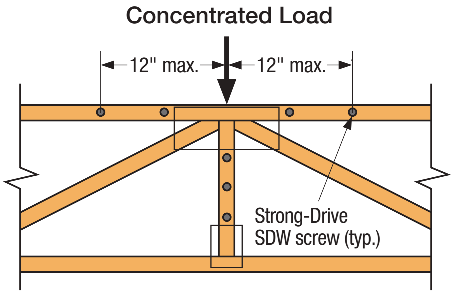
Table 5 — Strong-Drive® SDW Truss-Ply Screws Factored Lateral Resistances — Two-Ply 3x2/4x2 Parallel-Chord Trusses Loaded on Either Side

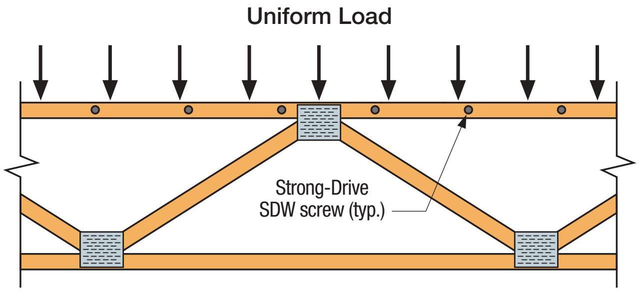
Assembly	Model No.	Nominal Length (in.)	Thread Length (in.)	Side Member Thickness (in.)	Factored Lateral Resistance (K_D = 1.00)	
					D.Fir-L	S-P-F
					lb.	lb.
					kN	kN
2-ply 3x2 PCT	SDW22500	5	1 9/16	2½	405	290
					1.80	1.29
2-ply 4x2 PCT	SDW22634	6¾	1 9/16	3½	405	290
					1.80	1.29

1. To transfer uniform or concentrated loads applied to simply supported spans on assembly top chord:
   a) Space screws as required to transfer half the load into the supporting truss.
   b) Minimum screw spacing shall be 4" o.c.
2. To transfer concentrated loads applied to simply supported spans on an assembly top chord or vertical web:
   a) Concentrated loads must be applied at a panel point.
   b) Screws to be installed within 12" of the concentrated load on top-chord assembly
3. Gap between the trusses shall not exceed ⅛".
4. Floor sheathing shall be screwed or nailed to each top-chord ply. (Fastener spacing per the applicable Code requirements, or 12" o.c.)
5. Strong-Drive® SDW screws shall not be installed in areas where lumber wane exceeds ¼".
6. Truss members must be evaluated using a reduced cross sectional area due to the 0.22" diameter SDW screw.
7. Other configurations acceptable as long as approved by Truss Designer.



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





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

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

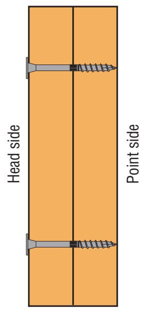
Multiple Members		Nominal Length (in)	Loaded Side	Maximum Factored Uniform Load Applied to Either Outside Member (K_D = 1.00)											
				D.Fir-L						S-P-F					
				12" o.c.		16" o.c.		24" o.c.		12" o.c.		16" o.c.		24" o.c.	
Assembly	Component			2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows
				lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.
				kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m
A-W	2-ply 2x Truss	3	Head	1340	2010	1005	1508	670	1005	1160	1740	870	1305	580	870
				19.60	29.30	14.70	22.00	9.80	14.70	16.90	25.40	12.70	19.00	8.50	12.70
			Point	1220	1830	915	1373	610	915	1040	1560	780	1170	520	780
				17.80	26.70	13.40	20.00	8.90	13.40	15.20	22.80	11.40	17.10	7.60	11.40
B-W	3-ply 2x Truss	4⅝	Head	1364	2046	1023	1535	682	1023	1214	1822	911	1366	607	911
				19.90	29.90	14.90	22.40	10.00	14.90	17.70	26.60	13.30	19.90	8.90	13.30
			Point	1229	1844	922	1383	615	922	1094	1642	821	1231	547	821
				17.90	26.90	13.50	20.20	9.00	13.50	16.00	24.00	12.00	18.00	8.00	12.00
C-W	4-ply 2x Truss	6	Head	1213	1820	910	1365	607	910	1080	1620	810	1215	540	810
				17.70	26.60	13.30	19.90	8.90	13.30	15.80	23.60	11.80	17.70	7.90	11.80
			Point	1093	1640	820	1230	547	820	973	1460	730	1095	487	730
				16.00	23.90	12.00	17.90	8.00	12.00	14.20	21.30	10.70	16.00	7.10	10.70
		6⅜	Head	1213	1820	910	1365	607	910	1080	1620	810	1215	540	810
				17.70	26.60	13.30	19.90	8.90	13.30	15.80	23.60	11.80	17.70	7.90	11.80
			Point	1093	1640	820	1230	547	820	973	1460	730	1095	487	730
				16.00	23.90	12.00	17.90	8.00	12.00	14.20	21.30	10.70	16.00	7.10	10.70

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 factored load is exceeded. (Example: a 4-ply D.Fir-L assembly with a head side load of 1300 lb./ft. and a point side load of 1200 lb./ft. may be fastened together with three rows of 6" SDW at 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.

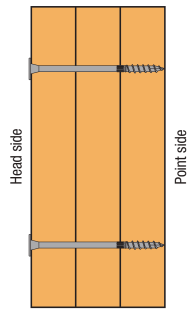
Table 7 — Factored Withdrawal Resistance

Model No.	Nominal Length (in.)	Thread Length (in.)	Factored Lateral Resistance	
			D.Fir-L	S-P-F
			lb.	lb.
			kN	kN
SDW22300	3	1 7/16	485	370
			2.16	1.65
SDW22338	3⅜	1 9/16	530	405
			2.36	1.80
SDW22458	4⅝	1 7/16	485	370
			2.16	1.65
SDW22500	5	1 9/16	530	405
			2.36	1.80
SDW22600	6	1 7/16	485	370
			2.16	1.65
SDW22638	6⅜	1 7/16	485	370
			2.16	1.65
SDW22634	6¾	1 9/16	530	405
			2.36	1.80

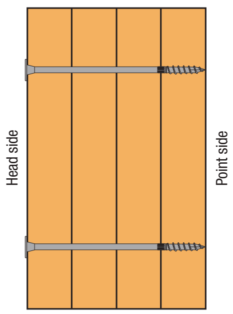
1. Factored withdrawal resistances are for short term load duration (K_D = 1.15). Reduce where other load durations govern.



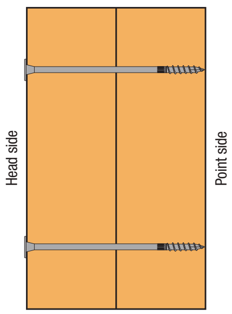
Assembly A-W



Assembly B-W



Assembly C-W



Assembly F-W

Strong-Drive® SDW

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

Table 8 — Strong-Drive® SDW EWP-Ply Screws Maximum Factored Uniform Load Applied to Either Outside Member — Side-Loaded Multi-Ply Structural Composite Lumber Assemblies

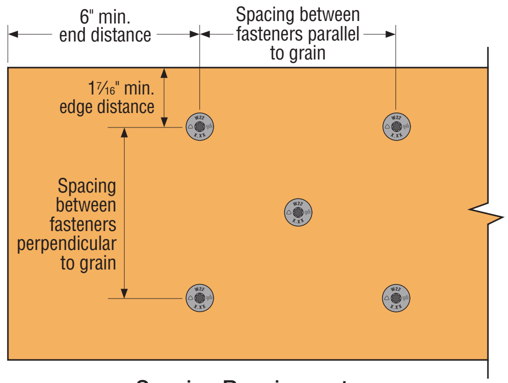
Multiple Members		Nominal Length (in)	Loaded Side	Maximum Factored Uniform Load Applied to Either Outside Member (K_D = 1.00)											
				Equivalent Specific Gravity											
				SG = 0.5						SG = 0.42					
				12" o.c.		16" o.c.		24" o.c.		12" o.c.		16" o.c.		24" o.c.	
Assembly	Component			2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows	2 Rows	3 Rows
				lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.	lb./ft.
				kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m	kN/m
A-W	2-ply 1¾" SCL	3⅜	Head	1560	2340	1170	1755	780	1170	1300	1950	975	1463	650	975
				22.80	34.10	17.10	25.60	11.40	17.10	19.00	28.50	14.20	21.30	9.50	14.20
			Point	1360	2040	1020	1530	680	1020	1140	1710	855	1283	570	855
				19.80	29.80	14.90	22.30	9.90	14.90	16.60	25.00	12.50	18.70	8.30	12.50
B-W	3-ply 1¾" SCL	5	Head	1484	2226	1113	1670	742	1113	1289	1934	967	1451	645	967
				21.70	32.50	16.20	24.40	10.80	16.20	18.80	28.20	14.10	21.20	9.40	14.10
			Point	1244	1867	933	1400	622	933	1094	1642	821	1231	547	821
				18.20	27.20	13.60	20.40	9.10	13.60	16.00	24.00	12.00	18.00	8.00	12.00
C-W	4-ply 1¾" SCL	6¾	Head	1320	1980	990	1485	660	990	1147	1720	860	1290	573	860
				19.30	28.90	14.40	21.70	9.60	14.40	16.70	25.10	12.50	18.80	8.40	12.50
			Point	1107	1660	830	1245	553	830	973	1460	730	1095	487	730
				16.10	24.20	12.10	18.20	8.10	12.10	14.20	21.30	10.70	16.00	7.10	10.70
F-W	2-ply 3½" SCL	6¾	Head	2280	3420	1710	2565	1140	1710	2020	3030	1515	2273	1010	1515
				33.30	49.90	25.00	37.40	16.60	25.00	29.50	44.20	22.10	33.20	14.70	22.10
			Point	2280	3420	1710	2565	1140	1710	1960	2940	1470	2205	980	1470
				33.30	49.90	25.00	37.40	16.60	25.00	28.60	42.90	21.40	32.20	14.30	21.40

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 factored load is exceeded. (Example: a 3-ply assembly (SG = 0.50) with a head side load of 1600 lb./ft. and a point side load of 1300 lb./ft. 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.

Table 9 — Spacing Requirements

Geometry	Minimum Dimensions (in.)	
	D.Fir-L	S-P-F
Spacing parallel to grain	6	5
End distance parallel to grain	6	6
Spacing perpendicular to grain	3	2½
Edge distance perpendicular to grain	1⁷⁄₁₆	1⁷⁄₁₆

1. Additional screws may be staggered diagonally between rows.



Spacing Requirements

Concrete Connectors and Anchors

Titen HD®

Heavy-Duty Screw Anchor for Cracked and Uncracked Concrete

The Titen HD® anchor is a patented, high-strength screw anchor for concrete and masonry. It is designed for optimum performance in both cracked and uncracked concrete. The high-strength, easy-to-install Titen HD anchor has been tested and shown to provide outstanding performance in cracked and uncracked concrete under both static and seismic loading conditions. The self-undercutting, non-expansion characteristics of the Titen HD anchor make it ideal for structural applications, even at reduced edge distances and spacings. Recommended for permanent dry, interior non-corrosive environments or temporary outdoor applications.

Performance Features:

- Code-listed in accordance with ICC-ES AC193 and ACI355.2 for cracked and uncracked concrete per ICC-ES ESR-2713; includes Titen HD® Rod Hanger (models THD37212RH and THD50234RH only).
- Code-listed in accordance with ICC-ES AC106 for masonry per ICC-ES ESR-1056.
- Higher load capacity and vibration resistance — Threads along the length of the anchor undercut the concrete and efficiently transfer the load to the base material.
- Vibration and shock resistance — The mechanical interlock of the threads and the ratchet teeth on the underside of the head help prevent the anchor from loosening in vibratory conditions. The Titen HD anchor has been tested to 12.6 million vibratory cycles with no performance reductions.
- Specialized heat treating process — Creates superior surface hardness at the tip to facilitate cutting, while at the same time not compromising ductility within the anchor body.
- Less spacing and edge distance required — The anchor does not exert expansion forces on the base material.
- Easy post-installation inspection — The head is stamped with the Simpson Strong-Tie® "≠" sign and the anchor length in inches.

Installation Features:

- No special drill bit needed — Designed to install using standard-sized ANSI tolerance drill bits.
- Installs with 50% less torque — Testing shows that when compared to competitors, the Titen HD requires 50% less torque to be installed in concrete.
- Hex-washer head — Requires no separate washer and provides a clean installed appearance.
- Removable — Ideal for temporary anchoring (e.g. formwork, bracing) or applications where fixtures may need to be moved.

Material: Carbon steel, heat treated

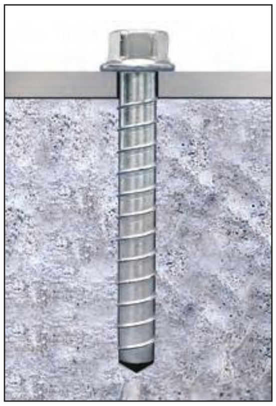
Finish: Zinc plated or mechanically galvanized

Codes: ICC-ES ESR-2713 (concrete); ICC-ES ESR-1056 (CMU); City of L.A. RR25741(concrete); City of L.A. RR25560 (CMU); Florida FL 11506.7; Factory Mutual 3017082, 3035761 and 3043442

Titen HD® Screw Anchor

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

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



Longer ½" diameter Titen HD anchors achieve sufficient embedment depth to develop tension capacities equal to many Simpson Strong-Tie holdowns that specify a ⅝" diameter anchor. Testing has been conducted to assure compatibility of these holdowns' anchor holes with the ½" Titen HD screw anchor.

Suitable for use in place of code anchor bolts.

Heavy-Duty Screw Anchor for Cracked and Uncracked Concrete (cont.)

Test Criteria:

The Titen HD® anchor has been tested in accordance with ICC-ES AC193, ACI 355.2 and ICC-ES AC106 for the following:

- Static tension and shear loading in cracked and uncracked concrete
- Seismic and wind loading in cracked and uncracked concrete
- Performance in uncracked masonry

Anchor Fatigue Testing — Tested in accordance with ASTM E 488 for the effects of fatigue. 25% of the average ultimate load was applied to the anchor for 2 million cycles at a frequency of 15 Hz. Subsequent load tests showed no reduction in ultimate tension capacity.

Vibratory Load Testing — A 150 lb. concrete block was suspended from a ⅜"-diameter anchor embedded at 1½" and vibrated for 12.6 million cycles at a frequency of 30 Hz and an amplitude of 0.0325". Subsequent load test showed no reduction in ultimate tension capacity.

Field Testing — For guidance on field testing see technical bulletin T-A-THDINSP.

Installation:

Holes in metal fixtures to be mounted should be ⅛" to 3⁄16" larger than the anchor diameter.

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. Use a Titen HD screw anchor one time only. Installing the anchor multiple times may result in excessive thread wear and reduce load capacity.

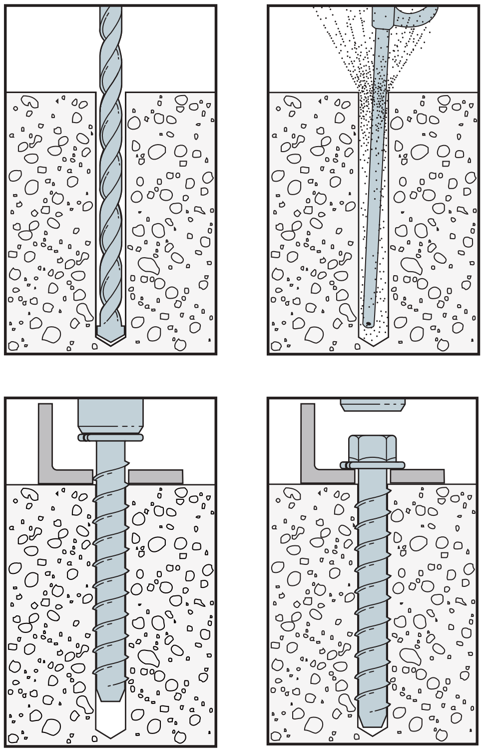
- Drill a hole in the base material using a carbide drill bit the same diameter as the nominal diameter of the anchor to be installed. Drill the hole to the specified embedment depth plus ½" minimum to allow the thread tapping dust to settle and blow it clean using compressed air. Overhead installations need not be blown clean. Alternatively, drill the hole deep enough to accommodate embedment depth and dust from drilling and tapping.
- Insert the anchor through the fixture and into the hole.
- Tighten the anchor into the base material until the hex washer head contacts the fixture.
- Do not use impact wrenches to install into hollow CMU.

Suggested Specifications:

Screw anchors shall have 360° contact with the base material and shall not require oversized holes for installation. Fasteners shall be manufactured from carbon steel, and are heat-treated. Anchors shall be zinc plated in accordance with ASTM B633 or mechanically galvanized in accordance with ASTM B695. Anchors are not to be reused after initial installation. Screw anchors shall be Titen HD anchors from Simpson Strong-Tie, Pleasanton, CA. Anchors shall be installed per the Simpson Strong-Tie instructions for the Titen HD anchor.

See **strongtie.com** for more information.

Installation Sequence



See table below.

Additional Installation Information

Titen HD® Diameter (in.)	Wrench Size (in.)	Recommended Fixture Hole Size (in.)	Min. Hole Depth Overdrill (in.)
¼	⅜	⅜ to 7⁄16	⅛
⅜	9⁄16	½ to 9⁄16	¼
½	¾	⅝ to 11⁄16	½
⅝	15⁄16	¾ to 13⁄16	½
¾	1⅛	⅞ to 15⁄16	½

Titen® and Titen® 2

Concrete and Masonry Screws

Titen® screws are 3⁄16"- and ¼"-diameter hardened screws for attaching all types of components to concrete and masonry. Available in hex and phillips head designs in three colors. Use with appropriately sized Titen drill bits included with each box.

Warning: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Accordingly, use these products in dry, interior and non-corrosive environments only.

Material: Heat-treated carbon steel

Finish: Zinc plated with a baked on ceramic coating

Installation:

Caution: Industry studies show that hardened fasteners can experience performance problems in wet or corrosive environments. Steps must be taken to prevent inadvertent sustained loads above the listed factored resistance. Overtightening and bending moments can initiate cracks detrimental to the hardened screw's performance. Use the Simpson Strong-Tie installation tool kit as it has a bit that is designed to reduce the potential for overtightening the screw.

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.

- Drill a hole in the base material using the appropriate diameter carbide drill bit as specified in the table. Drill the hole to the specified embedment depth plus ½" to allow the thread tapping dust to settle and blow it clean using compressed air. Overhead installations need not be blown clean. Alternatively, drill the hole deep enough to accommodate embedment depth and dust from drilling and tapping.
- Position fixture, insert screw and tighten using drill and installation tool fitted with a hex socket or phillips bit.

Preservative-Treated Wood Applications:

Suitable for use in non-ammonia formulations of CCA, ACQ-C, ACQ-D, CA-B, SBX/DOT and zinc borate. Use in dry, interior environments only. Use caution not to damage ceramic barrier coating during installation. Recommendations are based on testing and experience at time of publication and may change. Simpson Strong-Tie cannot provide estimates on service life of screws. Contact Simpson Strong-Tie for additional information.

See **strongtie.com** for more information.

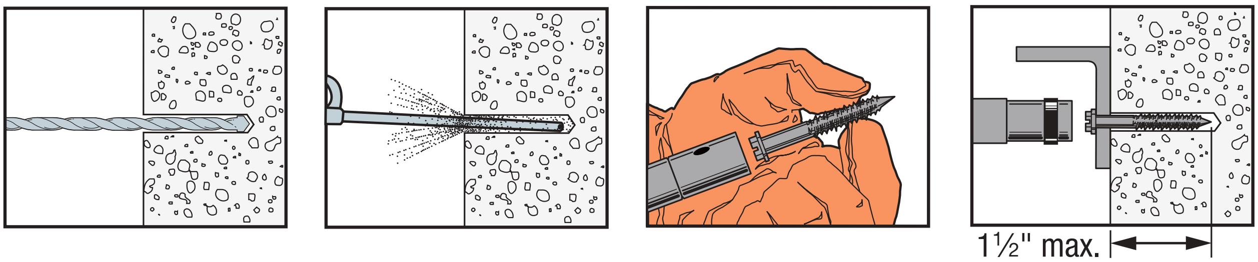
Titen® 2 Hex Head Screw

Titen® Phillips Flat Head Screw (PF)

Titen® Hex Head Screw (H)

Titen® Phillips head screw available in white and standard blue

Installation Sequence



Titen® and Titen® 2

Concrete and Masonry Screws (cont.)

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			
					f'c ≥ 4000 psi		f'c ≥ 2500 psi	
					Tension	Shear	Tension	Shear
3⁄16	5⁄32	1	3	1	225	225	180	180
3⁄16	5⁄32	1¼	3	1	330	250	260	200
3⁄16	5⁄32	1½	3	1	450	275	355	215
3⁄16	5⁄32	1¾	3	1	575	300	455	235
¼	3⁄16	1	3	2	250	400	200	315
¼	3⁄16	1¼	3	2	400	425	315	335
¼	3⁄16	1½	3	2	550	455	435	360
¼	3⁄16	1¾	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 ≥ 1500 psi)			
					Ungrouted CMU		GFCMU	
					Tension	Shear	Tension	Shear
3⁄16	5⁄32	1¼	3⅞	3	150	170	—	—
3⁄16	5⁄32	2	3⅞	3	—	—	345	225
3⁄16	5⁄32	2	1½	3	—	—	315	240
¼	3⁄16	1¼	3⅞	4	155	165	—	—
¼	3⁄16	2	3⅞	4	—	—	275	310
¼	3⁄16	2	1½	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			
					Concrete (f'c ≥ 2000 psi)		GFCMU (f'm ≥ 1500 psi)	
					Tension	Shear	Tension	Shear
3⁄16	5⁄32	1	2¼	1⅛	125	255	110	205
3⁄16	5⁄32	1½	2¼	1⅛	305	400	—	—
¼	3⁄16	1	3	1½	145	225	150	250
¼	3⁄16	1½	3	1½	365	400	—	—

1. The allowable loads listed are based on a safety factor of 4.0 for concrete and 5.0 for GFCMU.
2. Allowable loads may not be increased for short-term loading due to wind or seismic forces.
3. The attached member or element may govern the allowable load. The Designer shall verify allowable load.
4. Refer to **strongtie.com** for additional information on the Titen and Titen 2 screws.
5. Maximum anchor embedment is 1½" unless noted otherwise.
6. Minimum concrete thickness is 1.5 x embedment for Titen and 3¼" for Titen 2.

AnchorMate®

Anchor Bolt Holder

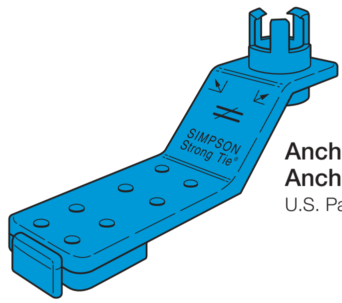
The reusable AnchorMate® anchor bolt holder is designed to hold the anchor in place before the concrete pour, as required in some jurisdictions. The gripping section secures the bolt in place without a nut for quicker setup and teardown. It also protects the threads from wet concrete and simplifies trowel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

Features:

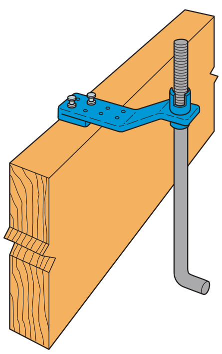
- Built-in 2x4 and 2x6 stops eliminate measuring.
- Color coded for easy size identification.
- Use the ⅝" and ⅞" AnchorMate to secure the SSTB to the formboard before the concrete pour. Alignment arrows (left or right) match the SSTB bolt head arrow.

Material: Nylon

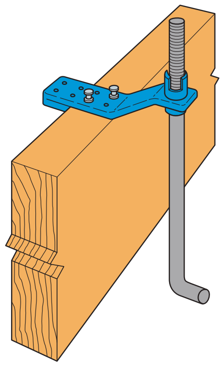
Model No.	Diameter (in.)	Color
AM½	½	Yellow
AM⅝	⅝	Blue
AM¾	¾	Red
AM⅞	⅞	Green
AM1	1	Black



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

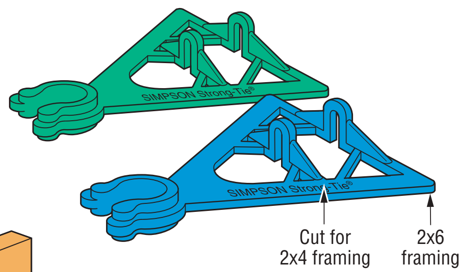
The ABS stabilizes the anchor bolt to prevent it from being pushed against the form during the concrete pour.

Features:

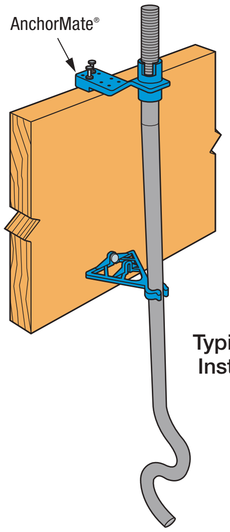
- Supports the bolt approximately 8" below the top of the concrete
- Model ABS⅝ is for the ⅝" SSTB and ABS⅞ is for the ⅞" SSTB
- Thin section limits the effect of a cold joint
- Sized for 2x4 and 2x6 mudsills

Material: Engineered Composite Plastic

Model No.	Diameter (in.)	Color
ABS⅝	⅝	Blue
ABS⅞	⅞	Green



ABS Anchor Bolt Stabilizer



Typical ABS Installation

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.

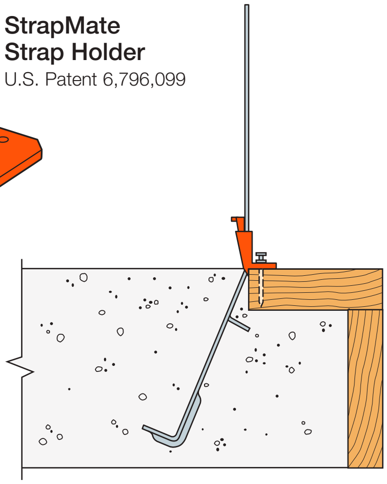
Features:

- The StrapMate is reusable
- Works with STHD and LSTHD

Material: Engineered Composite Plastic

- Designed to fit ¾" plywood forms up to 1¾" LVL forms and larger
- The strap is positioned off the front edge of the form board

StrapMate Strap Holder
U.S. Patent 6,796,099



Alternate StrapMate Installation for Brick Ledges

Model No.	Nails
SM1	(2) 8d Duplex

ABL

Anchor Bolt Locator

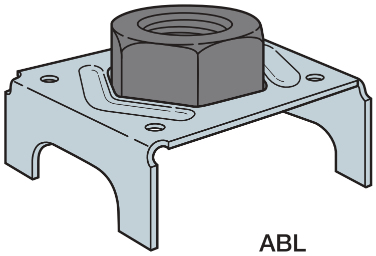
The ABL enables the accurate and secure placement of anchor bolts on concrete-deck forms prior to concrete placement. The structural heavy-hex nut is attached to a pre-formed steel “chair,” which eliminates the need for an additional nut on the bottom of the anchor bolt. Electro-galvanized versions available 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" stand off. Also available with 1½" 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

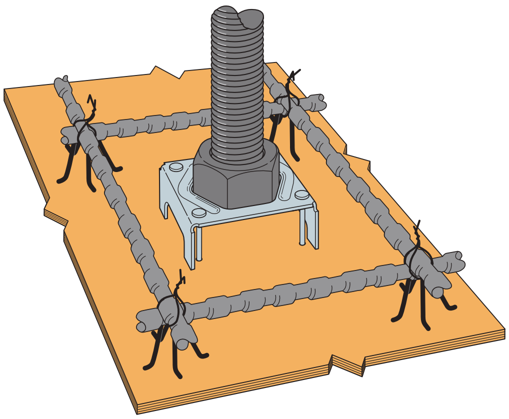
Finish: Nut — None or Electro-galvanized; Chair — G90; ABL-OST — HDG



ABL
U.S. Patent 8,621,816 and 8,381,482

Model No.	Anchor Bolt Diameter (in.)
ABL4-1	½
ABL5-1	⅝
ABL6-1	¾
ABL7-1	⅞
ABL8-1	1
ABL9-1	1⅛
ABL10-1	1¼

See p. 65 for Shallow Anchorage information in podium slabs.



Typical ABL Installation

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.

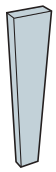
Designed for low foundation wall applications. ⅝"-wide formed "V" design for rigidity allows accurate form spacing and support. Sizes now available for composite form board.

Material: W1 — 14 gauge; WT — 18 gauge

Finish: Galvanized

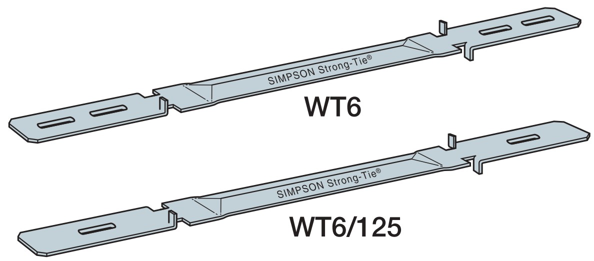
Installation:

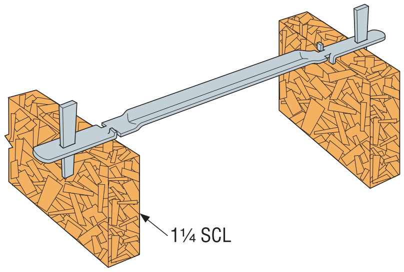
- Two W1 wedges required for each tie
- Not recommended for wall pours greater than 4' high
- Wall thickness from 6" to 12"

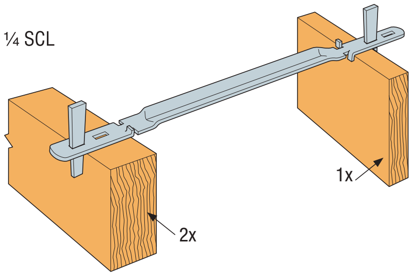


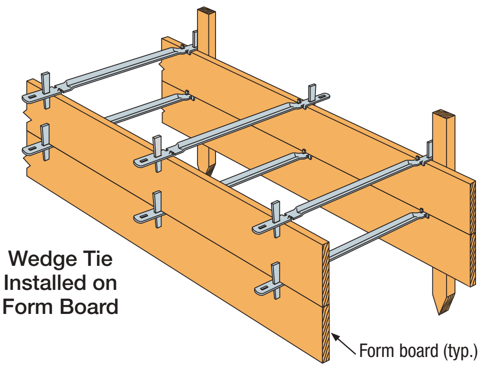
Order wedges separately. Specify W1.

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 1¼" 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 Spacing (in.)	2x6 Spacing (in.)	Depth of Form (in.)	1x8 Spacing (in.)	2x8 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 Spacing (in.)	2x10 Spacing (in.)	Depth of Form (in.)	1x12 Spacing (in.)	2x12 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	—	—	—

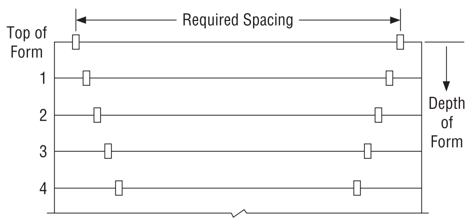


Figure 1 — Spacing Locations

For SCL

Location (see Fig. 1)	Depth of Form (in.)	1¼" x 9½" Spacing (in.)	Depth of Form (in.)	1¼" x 11⅞" Spacing (in.)	Depth of Form (in.)	1¼" x 14" Spacing (in.)	Depth of Form (in.)	1¼" x 16" 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. Solid Sawn	Model No. SCL	Wall Thickness (in.)
WT6	WT6/125	6
WT8	WT8/125	8
WT10	—	10
WT12	—	12

Note: Form board design by others.

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 BPS and LBPS are bearing plates that offer increased flexibility while the slotted hole allows for adjustability to account for bolts that are not in the middle of the sill plate.

The BP⅝SKT uses ¼" x 1½" Strong-Drive® SDS Heavy-Duty Connector screws to provide lateral resistance when ⅝" 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.

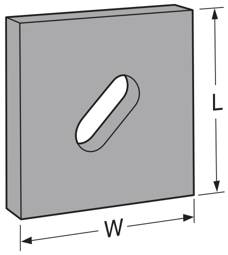
The RP6 retrofit plate is installed on the outside of masonry buildings and helps tie the walls to the roof or floor structure with a ¾"-diameter rod.

Material: See table

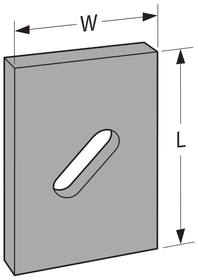
Finish: LBP, LBPS — Galvanized; BP⅞-2, BP⅝S — Zinc Plated; BPS, BP — None; RP6 — Simpson Strong-Tie® gray paint. BPs, BPSs and RP6 may be ordered HDG; LBP and LBPS products may be ordered ZMAX®; contact Simpson Strong-Tie; see Corrosion Information, pp. 20–24.

Installation:

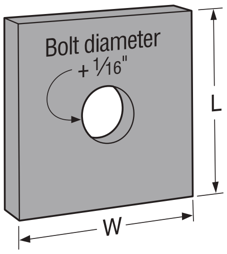
- See General Notes
- BP/BPS — For shearwall applications, position edge of plate washer within ½" of sheathed edge of sill plate.
- BPS-6 plate washers are sized to accommodate the ½" from the sheathed edge in single- and double-sheathed 2x6 walls.
- Standard-cut washer required with BPS slotted bearing plates. Washer not required when used with Titen HD® heavy-duty screw anchors.



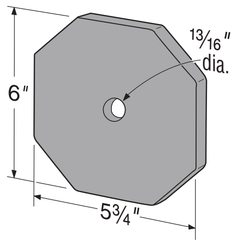
BPS
(LBPS similar)



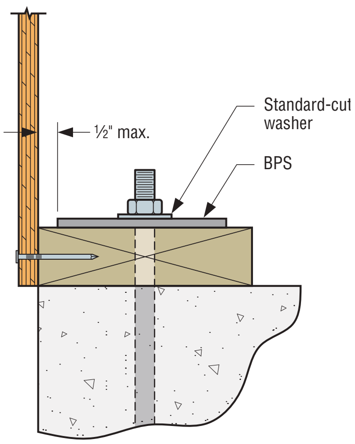
BPS½-6
(other models similar)



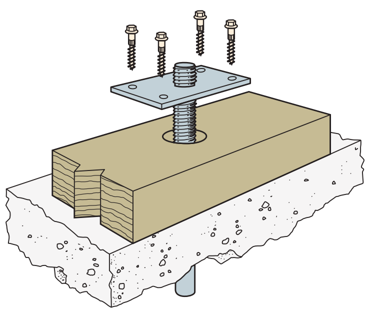
BP
(LBP similar)



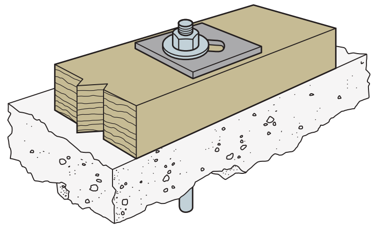
RP6



Typical BPS Installed as a Shear Anchor



The BP⅝SKT is used when ⅝" diameter sill bolt holes are overdrilled



Typical BPS Installation

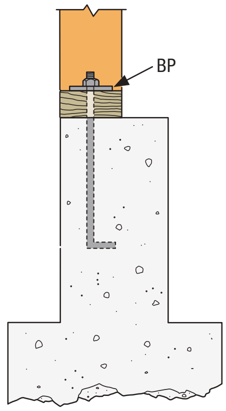
BP/LBP/RP6

Bearing Plates (cont.)

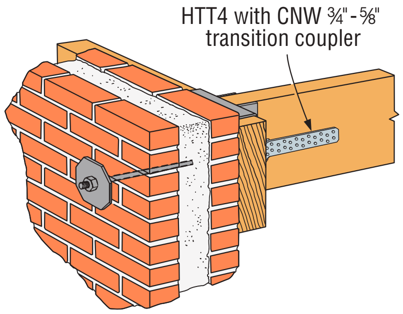
These products are available with additional corrosion protection. For more information, see p. 24.

Bolt Diameter (in.)	Model No.	Thickness	Dimensions (in.)	
			W	L
⅜	BP⅜-2	3/16"	2	2
½	LBP½	9/64"	2	2
	LBPS½	9/64"	3	3
	BPS½-3	3 ga.	3	3
	BPS½-6	3 ga.	3	4½
	BP½	3/16"	2	2
	BP½-3	3 ga.	3	3
⅝	LBP⅝	9/64"	2	2
	LBPS⅝	9/64"	3	3
	BPS⅝-3	3 ga.	3	3
	BPS⅝-6	3 ga.	3	4½
	BP⅝-2	3/16"	2	2
	BP⅝SKT	3 ga.	4	2
	BP⅝	¼"	2½	2½
	BP⅝-3	3 ga.	3	3
¾	BP¾-3	3 ga.	3	3
	BPS¾-3	3 ga.	3	3
	BPS¾-6	3 ga.	3	4½
	RP6	⅜"	6	5¾
⅞	BP⅞-2	⅜"	1 15/16	2¼
	BP⅞	5/16"	3	3
1	BP1	⅜"	3½	3½

1. BP⅝SKT sold as a kit.
2. Standard cut washer required with BPS½-3, BPS⅝-3, BPS¾-3, BPS½-6, BPS⅝-6 and BPS¾-6 (not provided).



Typical BP Installed with a Mudsill Anchor Bolt



Typical RP6 Installation

KST

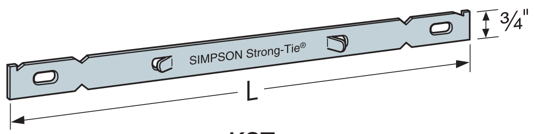
Speed Wall Ties (Kwik Strip)

Material: 16 gauge

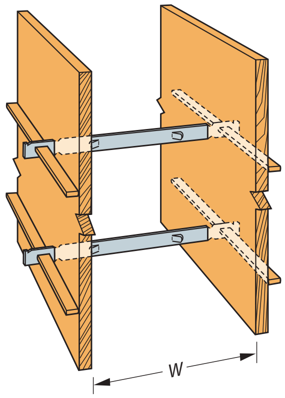
Finish: None

Model No.	Wall Thickness W (in.)	Length L (in.)
KST6	6	10⅛
KST8	8	12⅛
KST10	10	14⅛
KST12	12	16⅛

1. The Factored Tensile Resistance for all models is 1410 lb. (6.27 kN).
2. Formwork Designer to specify tie spacing and concrete pour rate to ensure that Factored Resistances are not exceeded.



KST



Typical KST Installation

CNW/HSCNW

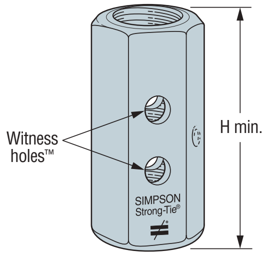
Coupler Nuts

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 meets and exceeds the tensile capacity of corresponding ASTM A307 bolts and threaded rod. The HSCNW meets and exceeds the tensile capacity of corresponding ASTM A449 bolts and threaded rod. Contact Simpson Strong-Tie for other coupler nut sizes.

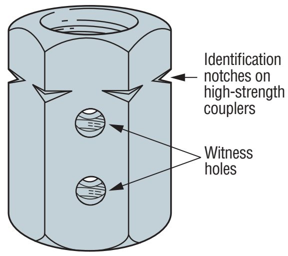
Finish: Zinc Plated

Installation:

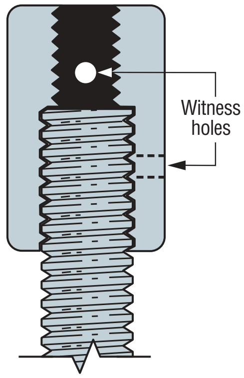
- Tighten the two rods until each all-thread rod is visible in the witness hole. Any portion of thread visible in the witness hole is a correct installation.
- Standard CNW for use with non-hot-dip galvanized all-thread rod only.
- ⅝"- and ⅞"-diameter couplers available with oversized threads for installation to hot-dip galvanized bolts (order CNW⅝-⅝OST and CNW⅞-⅞OST).
- 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 sides. Contact Simpson Strong-Tie.



CNW
Allows Fast Visual Check for Correct All Thread Rod Installation

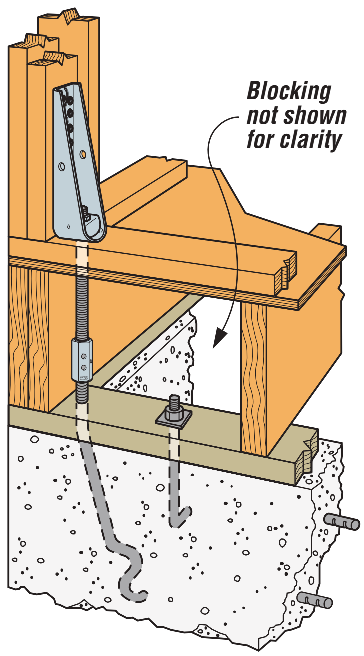


HSCNW
High-Strength Coupler Nut



CNW Transition Coupler Nut

Model No.	Rod Diameter (in.)	H Min. (in.)
CNW½	0.500	1½
CNW⅝	0.625	1⅞
CNW¾	0.750	2¼
CNW⅞	0.875	2½
CNW1	1.000	2¾
CNW1¼	1.250	3
HSCNW¾	0.750	2¼
HSCNW1	1.000	2¾
Transition Couplers		
CNW⅝–½	0.625 to 0.500	1½
CNW¾–⅝	0.750 to 0.625	1¾
CNW⅞–⅝	0.875 to 0.625	2
CNW1–⅞	1.000 to 0.875	2¼



Typical CNW Installation

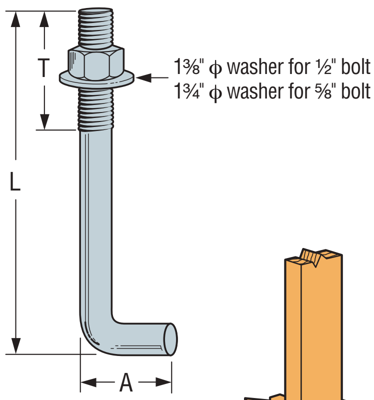
L-BOLT

Anchor Bolts

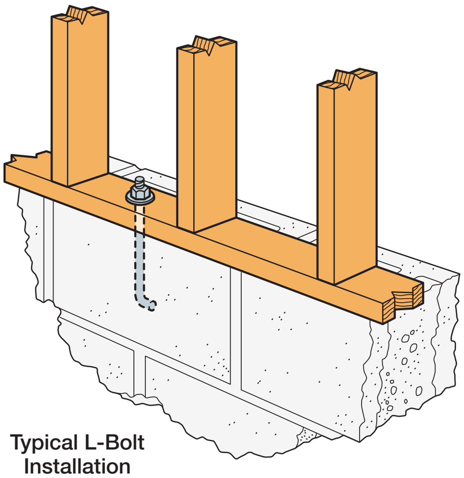
The L-Bolt anchor bolts are used to attach sill plates to concrete or masonry foundations, provide anchorage for light weight post bases and for general anchorage to concrete. The L-Bolt anchor bolts meet the prescriptive requirements of article 9.23.6 of the National Building Code of Canada 2015 (NBC 2015).

Material: ASTM F1554 Grade 36

Finish: Unfinished, available in HDG (per ASTM A153)



L-Bolt



Typical L-Bolt Installation

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in.)			
	Diameter	L	T	A
LBOLT50600	½	6	1½	1½
LBOLT50800	½	8	1½	1½
LBOLT50100	½	10	1½	1½
LBOLT50120	½	12	1½	1½
LBOLT62600HDG	⅝	6	3	1⅞
LBOLT62800	⅝	8	3	1⅞
LBOLT62100	⅝	10	3	1⅞

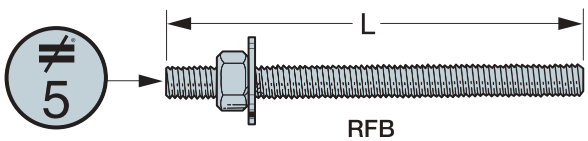
RFB

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)



RFB

These products are available with additional corrosion protection. For more information, see p. 24.

	Model No.	Length, L (in.)	Bolt Diameter (in.)
	RFB#4X4	4	½
	RFB#4X5	5	½
	RFB#4X6	6	½
	RFB#4X7	7	½
	RFB#4X10	10	½
	RFB#4X8HDG-R	8	½
	RFB#5X5	5	⅝
SS	RFB#5X8	8	⅝
	RFB#5X10	10	⅝
	RFB#5X12HDG-R	12	⅝
	RFB#5X16	16	⅝
	RFB#6X10.5	10½	¾

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).

SIMPSON Strong-Tie®

FJA/FSA

Foundation Anchors

This series is for retrofit or new construction. These products may be used together as a system or in individual applications, designed and tested for earthquake and high wind conditions.

FJA foundation joist anchor nails or bolts directly into floor joist, and provides a direct connection between the foundation and joist. It provides uplift and lateral resistance.

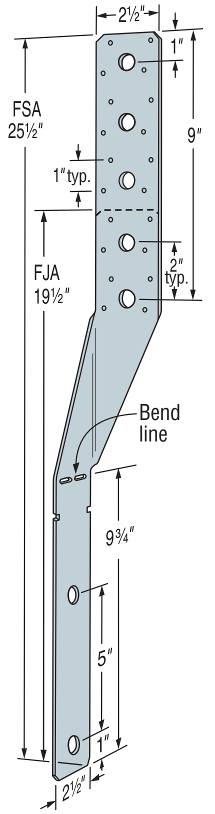
FSA foundation stud anchor nails or bolts to floor joist, or nails to stud. Plywood shearwall may require notching with stud-to-foundation installation.

Material: 12 gauge

Finish: Galvanized; may be ordered HDG, contact Simpson Strong-Tie. See Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes.
- Select and install concrete anchor bolts in accordance with the manufacturer's recommendations.
- See Acrylic-Tie® AT-XP adhesive, p. 73 and RFB, p. 53.
- Spacing to be specified by the Designer.
- FSA may be bent along bend line up to 20° to accommodate installation. Bend one time only.

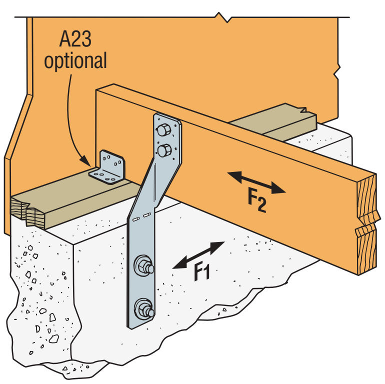


FJA/FSA

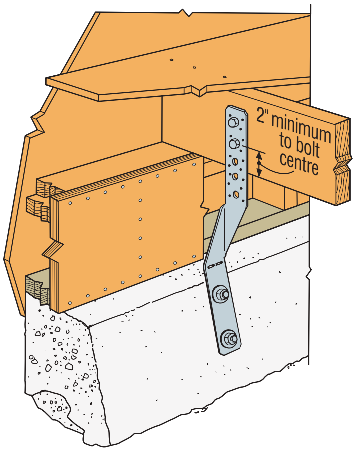
These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Fasteners: Anchor Bolt Qty.	Fasteners: Anchor Bolt Dia. (in.)	Fasteners: Stud / Joist / Plate	Factored Resistance (K_D = 1.15): D.Fir-L Uplift	Factored Resistance (K_D = 1.15): S-P-F Uplift
				lb.	lb.
				kN	kN
FJA	2	½	(8) 10d x 1½"	2085	1480
				9.27	6.58
			(2) ½" MB	1805	1425
				8.02	6.33
FSA	2	½	(8) 10dx1½"	1790	1270
				7.96	5.65
			(2) ½" MB	960	760
				4.27	3.38

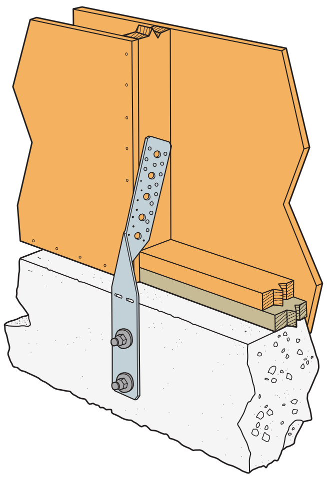
1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other load durations govern.
2. Use the RFB#4x6 with Acrylic-Tie® for the anchorage system.
3. See p. 35 for Strong-Drive SDS Heavy-Duty Connector screw information.
4. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long.
See pp. 27–28 for other nail sizes and information.



Typical FJA Installation Foundation to Joist



Typical FSA Installation Foundation to Joist


Typical FSA Installation Foundation to Stud

URFP/FRFP

Retrofit Foundation Plates

The URFP universal retrofit foundation plate is the new, improved version of the UFP, offering increased load capacity 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.

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 requirements when filling the original three holes, or as an alternate, fill the newly added two optional triangle holes and Designers can utilize increased capacities.

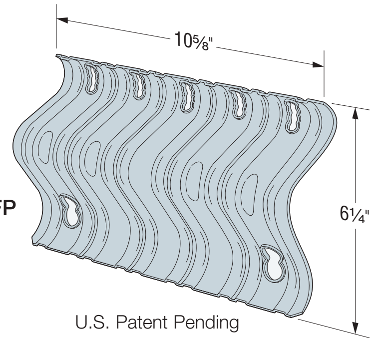
Material: URFP — 14 gauge; FRFP — 7 gauge

Finish: Galvanized. May be ordered HDG; contact Simpson Strong-Tie. See Corrosion Information, pp. 20–24.

Installation:

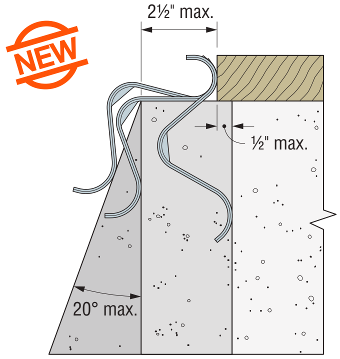
- Use all specified fasteners; see General Notes.
- Capacities are based on test results using Simpson Strong-Tie® Strong-Drive® ¼" x 3" SDS Heavy-Duty Connector screws, which are supplied with the URFP.
- For URFP, alternate lag screws will not achieve published values.
- FRFP shall use a minimum Strong-Drive SDS Heavy-Duty Connector screw length of 2½" plus the shim thickness. SDS screws are not supplied with FRFP.

URFP

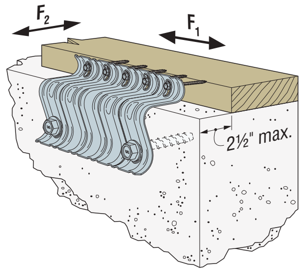


U.S. Patent Pending

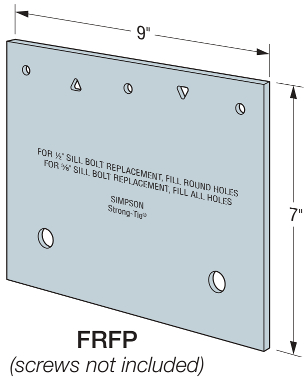
NEW



Typical URFP Installation for Three Foundation Types (End View)

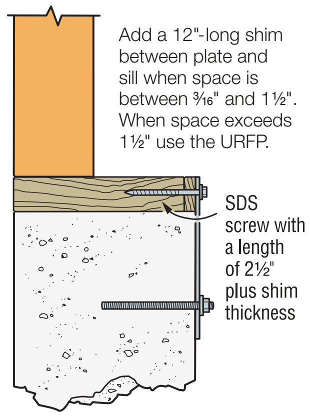


URFP Installed on a Straight Foundation with ½" Offset Mudsill



NEW

FRFP
(screws not included)



Typical FRFP Installation Foundation to Mudsill

These products are available with additional corrosion protection. For more information, see p. 24 .

Model No.	Fasteners: Anchor Bolt Qty.	Fasteners: Anchor Bolt Dia.	Fasteners: Sill Plate	Factored Resistance (K_D = 1.15) D.Fir-L F_1	D.Fir-L F_2	S-P-F F_1	S-P-F F_2
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
URFP-SDS3	2	½	(5) ¼" x 3" SDS	2435	—	1755	—
				10.83	—	7.81	—
FRFP	2	½	(3) ¼" x 2 ½" SDS + shim thickness	1900	690	1370	495
				8.45	3.07	6.09	2.20
	2	½	(5) ¼" x 2 ½" SDS + shim thickness	3165	690	2280	495
				14.08	3.07	10.14	2.20

1. Factored resistances have been increased 15% for wind or earthquake loading. Reduce where other load durations govern.
2. Nominal embedment depths for post-installed anchors shall be a minimum of 4" and is for use with AT-XP or SET-XP structural anchoring adhesive or Titen HD screw anchors.
3. Each anchor bolt requres a standard cut-washer. The Simpson Strong-Tie Titen HD Heavy Duty screw anchor does not require a washer.
4. The minimum concrete loaded end distance for the anchor bolts is 12" for AT-XP or SET-XP adhesive and 13" for Titen HD screw anchors.
5. For additional retrofit information see flier F-SEISRTRGD.
6. The minimum concrete compressive strength shall be 2500 psi (17.2 MPa).

SB

Anchor Bolt

The SB⅝x24 anchor bolt offers a load-tested anchorage solution that exceeds the capacity of all of our holdowns that call for a ⅝"-diameter anchor. Similarly, the SB1x30 covers holdowns utilizing a 1"-diameter anchor that exceed the capacity of our SSTB bolts. The SB⅞x24 is designed to maximize performance with minimum embedment for holdowns utilizing a ⅞"-diameter anchor.

Features:

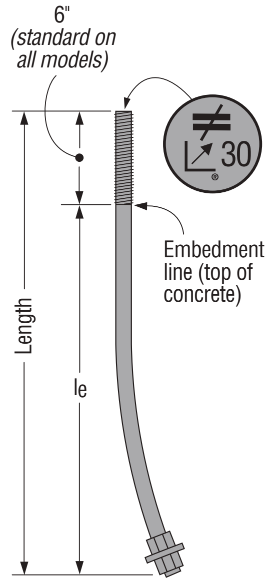
- Identification on the bolt head showing embedment angle and model
- Sweep geometry to optimize position in form
- Rolled thread for higher tensile capacity
- Hex nuts and plate washer fixed in position
- Available in HDG for additional corrosion resistance

Material: ASTM F1554, Grade 36

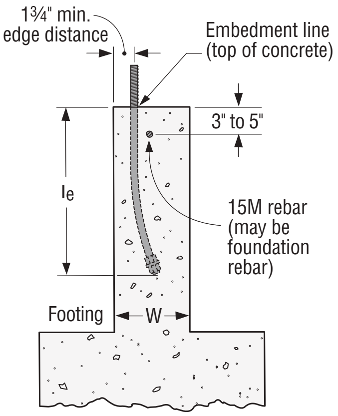
Finish: None. May be ordered HDG; contact Simpson Strong-Tie

Installation:

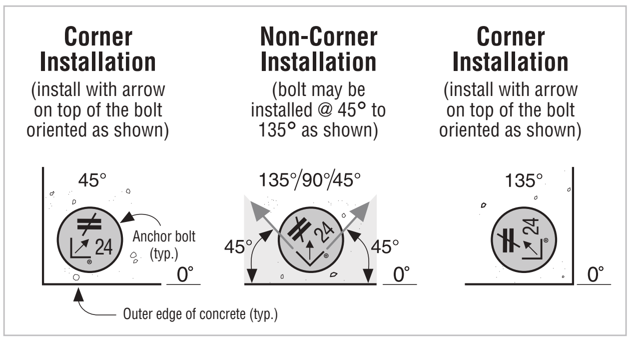
- SB is only for concrete applications poured monolithically except where noted.
- Top nuts and washers for holdown attachment are not supplied with the SB; install standard nuts, couplers and/or washers as required.
- On HDG SB anchors, chase the threads to use standard nuts or couplers or use overtapped products in accordance with ASTM A563, for example Simpson Strong-Tie® NUT⅝-OST, NUT⅞-OST and NUT1-OST.
- Install SB before the concrete pour using AnchorMates®. Install the SB per the plan view detail.
- Minimum concrete compressive strength is 20 MPa.
- When rebar is required it does not need to be tied to the SB.



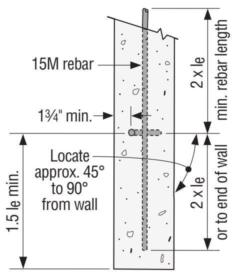
SB1x30
(other models similar)



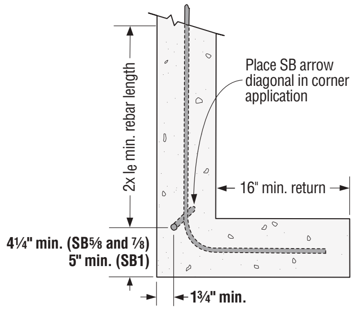
Typical SB Installation



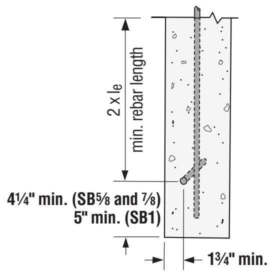
Plan View of SB Placement in Concrete



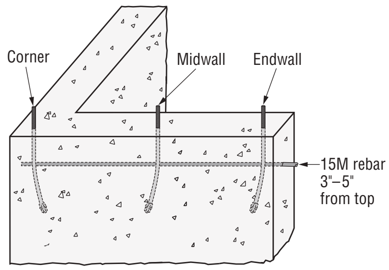
Midwall



Corner



End Wall



Perspective View

Stemwall Plan Views

SIMPSON Strong-Tie®

Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

SB Bolts at Stemwall

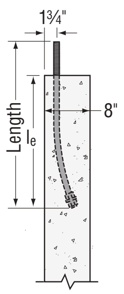
Model No.	Dimensions (in.)				Factored Tensile Resistance					
					Wind / Seismic $I_E F_a S_a(0.2) < 0.35$			Seismic $I_E F_a S_a(0.2) \geq 0.35$		
	Stemwall Width	Diameter	Length	Min. Embed. (l_e)	Midwall	Corner	End Wall	Midwall	Corner	End Wall
					lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN
SB⅝x24	6	⅝	24	18	8915	8915	8915	8915	7600	7600
					39.66	39.66	39.66	39.66	33.81	33.81
SB⅞x24	8	⅞	24	18	15560	13895	10135	11670	10420	7600
					69.22	61.81	45.08	51.91	46.35	33.81
SB1x30	8	1	30	24	20285	13895	10730	15215	10420	8045
					90.24	61.81	47.73	67.68	46.35	35.79

See p. 58 for notes to the Designer.

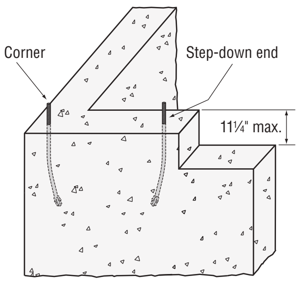
SB Bolts at Stemwall: Garage Front

Model No.	Dimensions (in.)				Factored Tensile Resistance			
					Wind / Seismic $I_E F_a S_a(0.2) < 0.35$		Seismic $I_E F_a S_a(0.2) \geq 0.35$	
	Stemwall Width	Diameter	Length	Min. Embed. (l_e)	Step-Down End	Corner	Step-Down End	Corner
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
SB⅞x24	8	⅞	24	18	10735	11385	8050	8540
					47.75	50.65	35.81	37.99
SB1x30	8	1	30	24	16790	14550	12595	10910
					74.69	64.72	56.03	48.53

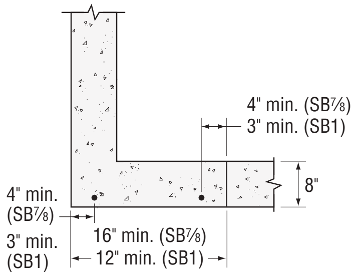
See p. 58 for notes to the Designer.



Stemwall Garage Front



Perspective View



Plan View

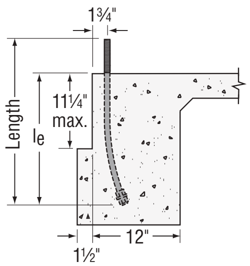
SIMPSON Strong-Tie®

Anchor Bolt (cont.)

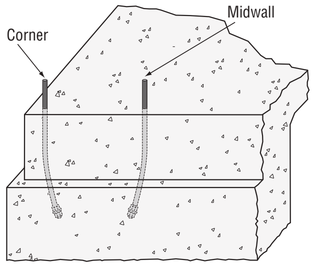
These products are available with additional corrosion protection. For more information, see p. 24.

SB Bolts at Slab on Grade: Edge

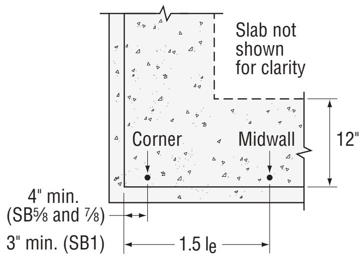
Model No.	Dimensions (in.)				Factored Tensile Resistance			
					Wind / Seismic $I_EF_aS_a(0.2) < 0.35$		Seismic $I_EF_aS_a(0.2) \geq 0.35$	
	Footing Width	Diameter	Length	Min. Embed. (l_e)	Midwall	Corner	Midwall	Corner
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
SB⅝x24	12	⅝	24	18	8915	8915	8915	7600
					39.66	39.66	39.66	33.81
SB⅞x24	12	⅞	24	18	18220	18025	16345	13520
					81.05	80.18	72.71	60.14
SB1x30	12	1	30	24	23900	23150	23580	17360
					106.32	102.98	104.89	77.22



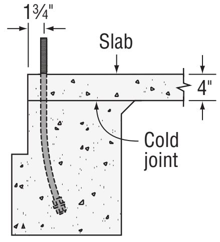
Slab Edge



Perspective View



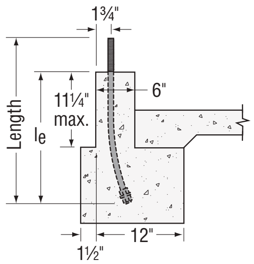
Plan View



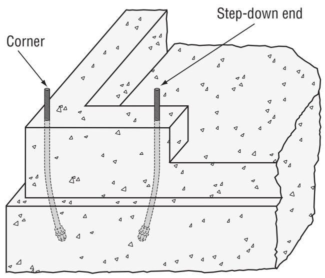
Two-Pour Installation

SB Bolts at Slab on Grade: Garage Curb

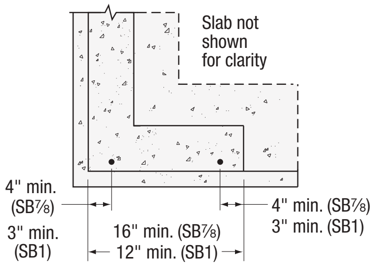
Model No.	Dimensions (in.)				Factored Tensile Resistance			
					Wind / Seismic $I_EF_aS_a(0.2) < 0.35$		Seismic $I_EF_aS_a(0.2) \geq 0.35$	
	Curb Width	Diameter	Length	Min. Embed. (l_e)	Step-Down End	Corner	Step-Down End	Corner
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
SB⅞x24	6	⅞	24	18	13630	16685	10225	12515
					60.63	74.22	45.48	55.67
SB1x30	6	1	30	24	23150	23150	17360	17360
					102.98	102.98	77.22	77.22



Slab Garage Curb



Perspective View



Plan View

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 SB bolts are as shown in graphics.
3. Factored resistances have been developed based on testing per ICC AC399 in uncracked concrete using the corresponding adjustment factors from CSA A23.3-14 Annex D.
4. Factored resistances for seismic $I_EF_aS_a(0.2) \geq 0.35$ applications assumes ductile yielding in the attachment. See D.4.3.5.3 CSA A23.3-14 for more information.
5. Midwall loads apply when anchor is 1.5 l_e or greater from the end. For bolts acting in tension simultaneously, the minimum bolt centre-to-centre spacing is 3 l_e.
6. Full published values apply for two pour applications for slab on grade: edge.

SSTB®

Anchor Bolt

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 tensile capacity of the SSTB when installed in many common applications.

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 F1554, Grade 36

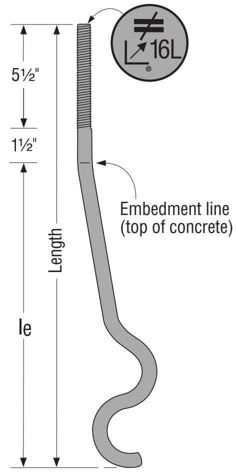
Finish: None. May be ordered HDG; contact Simpson Strong-Tie

Installation:

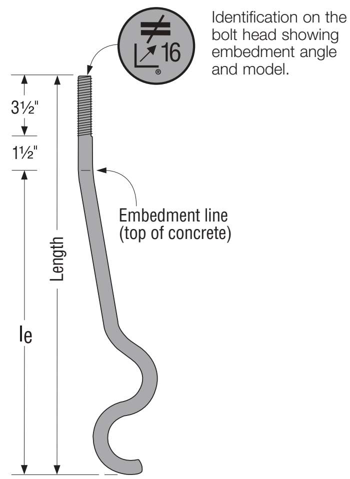
- SSTB is suitable for monolithic and two-pour concrete applications.
- Nuts and washers for holdown attachment are not supplied with the SSTB; install standard nuts, couplers and/or washers as required.
- On HDG SSTB anchors, chase the threads to use standard nuts or couplers or use overtapped products in accordance with ASTM A563, for example Simpson Strong-Tie® NUT⅝-OST or NUT⅞-OST.
- Install SSTB before the concrete pour using AnchorMates®. Install the SSTB per the plan view detail.
- Minimum concrete compressive strength is 20 MPa.
- 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 tensile capacities are the same. SSTB34 and SSTB36 feature 4½" and 6½" of thread respectively and are not available in "L" versions.

Reinforced Concrete Block

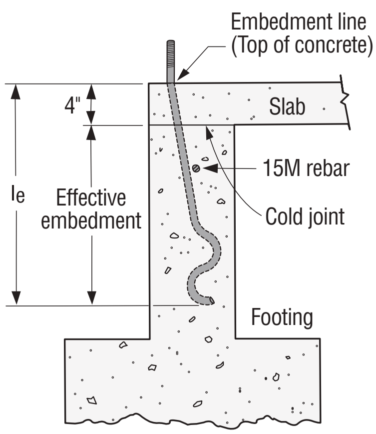
- Before concrete pour, install diagonally at approximately 45° in the cell.
- Grout all cells with coarse grout per CSA A179. Vibrate the grout per Code.
- See typical SSTB Installation in Grouted Concrete Block detail on p. 62.



SSTB16L
(other models similar)



SSTB16
(other models similar)

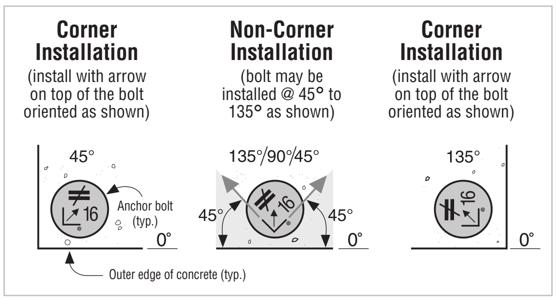


Two-Pour Installation
(SSTB20, 24, 34 and 36)

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

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

See p. 62 for additional installation details.



Plan View of SSTB Placement in Concrete

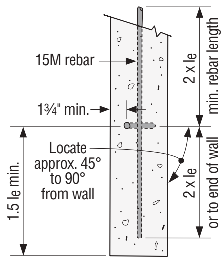
Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

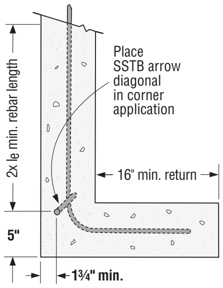
SSTB Bolts at Stemwall

Model No.	Dimensions (in.)				Factored Tensile Resistance					
					Wind / Seismic $I_EF_aS_a(0.2) < 0.35$			Seismic $I_EF_aS_a(0.2) \geq 0.35$		
	Stemwall Width	Dia.	Length	Min. Embed. (l_e)	Midwall	Corner	End Wall	Midwall	Corner	End Wall
					lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN
SSTB16	6	⅝	17⅝ (16L = 19⅝)	12⅝	5365	5365	5365	3380	3380	3380
					23.87	23.87	23.87	15.04	15.04	15.04
SSTB20	6	⅝	21⅝ (20L = 24⅝)	16⅝	6415	6005	6005	4170	3895	3895
					28.54	26.71	26.71	18.55	17.33	17.33
SSTB24	6	⅝	25⅝ (24L = 28⅛)	20⅝	7470	6645	6645	4960	4410	4410
					33.23	29.56	29.56	22.06	19.62	19.62
SSTB28	8	⅞	29⅞ (28L = 32⅞)	24⅞	14710	12940	11315	11035	9705	8485
					65.44	57.56	50.33	49.09	43.17	37.74
SSTB34	8	⅞	34⅞	28⅞	14710	12940	11315	11035	9705	8485
					65.44	57.56	50.33	49.09	43.17	37.74
SSTB36	8	⅞	36⅞	28⅞	14710	12940	11315	11035	9705	8485
					65.44	57.56	50.33	49.09	43.17	37.74

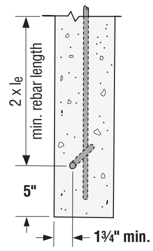
See p. 62 for notes to the Designer.



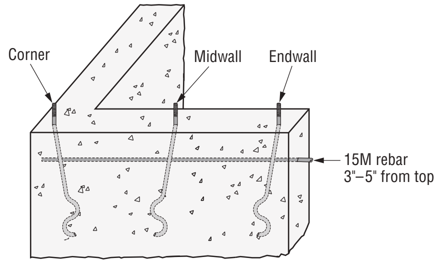
Midwall



Corner



End Wall



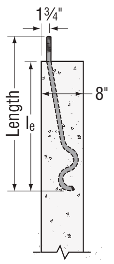
Perspective View

Stemwall Plan Views

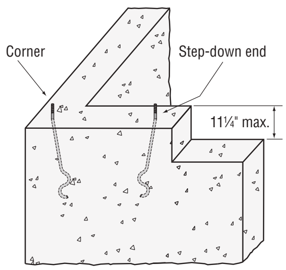
SSTB Bolts at Stemwall: Garage Front

Model No.	Dimensions (in.)				Factored Tensile Resistance			
					Wind / Seismic $I_EF_aS_a(0.2) < 0.35$		Seismic $I_EF_aS_a(0.2) \geq 0.35$	
	Stemwall Width	Diameter	Length	Min. Embed. (l_e)	Step-Down End	Corner	Step-Down End	Corner
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
SSTB28	8	⅞	29⅞	24⅞	10425	10470	7820	7850
					46.37	46.57	34.79	34.92

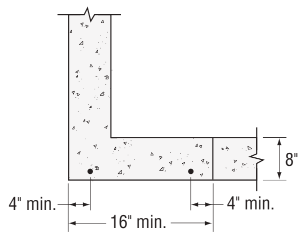
See p. 62 for notes to the Designer.



Stemwall Garage Front



Perspective View



Plan View

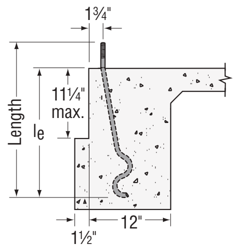
Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

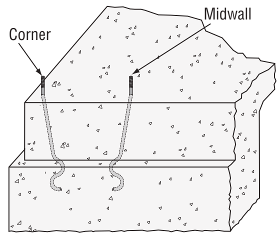
SSTB Bolts at Slab on Grade: Edge

Model No.	Dimensions (in.)				Factored Tensile Resistance			
					Wind / Seismic $I_E F_a S_a(0.2) < 0.35$		Seismic $I_E F_a S_a(0.2) \geq 0.35$	
	Footing Width	Diameter	Length	Min. Embed. (l_e)	Midwall	Corner	Midwall	Corner
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
SSTB16	12	⅝	17⅝	12⅝	7955	7955	5015	5015
					35.39	35.39	22.31	22.31
SSTB20	12	⅝	21⅝	16⅝	8915	8915	6345	6345
					39.66	39.66	28.23	28.23
SSTB24	12	⅝	25⅝	20⅝	8915	8915	7680	7680
					39.66	39.66	34.16	34.16
SSTB28	12	⅞	29⅞	24⅞	18220	18220	14670	15400
					81.05	81.05	65.26	68.51
SSTB34	12	⅞	34⅞	28⅞	18220	18220	14670	15400
					81.05	81.05	65.26	68.51
SSTB36	12	⅞	36⅞	28⅞	18220	18220	14670	15400
					81.05	81.05	65.26	68.51

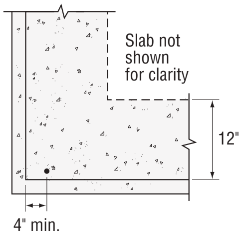
See p. 62 for notes to the Designer.



Slab Edge



Perspective View

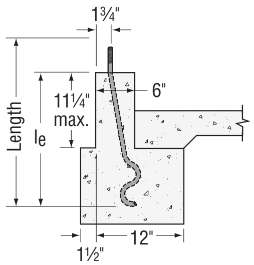


Plan View

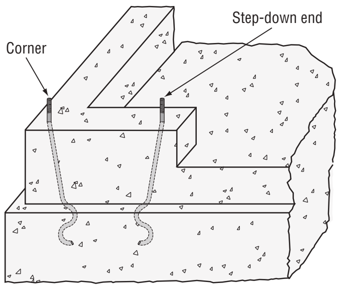
SSTB Bolts at Slab on Grade: Garage Curb

Model No.	Dimensions (in.)				Factored Tensile Resistance			
					Wind / Seismic $I_E F_a S_a(0.2) < 0.35$		Seismic $I_E F_a S_a(0.2) \geq 0.35$	
	Curb Width	Diameter	Length	Min. Embed. (l_e)	Step-Down End	Corner	Step-Down End	Corner
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
SSTB28	6	⅞	29⅞	24⅞	15255	18220	11440	13785
					67.86	81.05	50.89	61.32

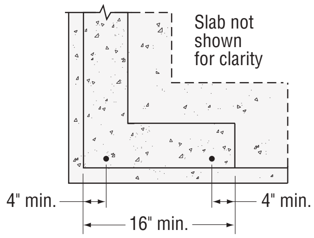
See p. 62 for notes to the Designer.



Slab Garage Curb



Perspective View



Plan View

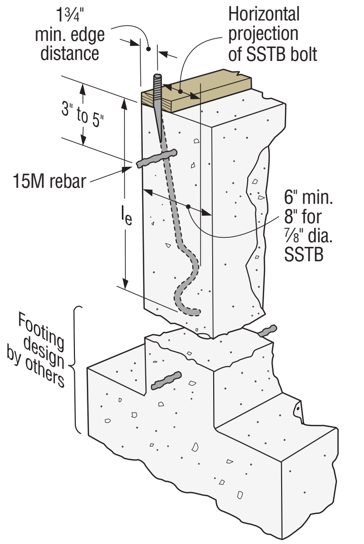
Anchor Bolt (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

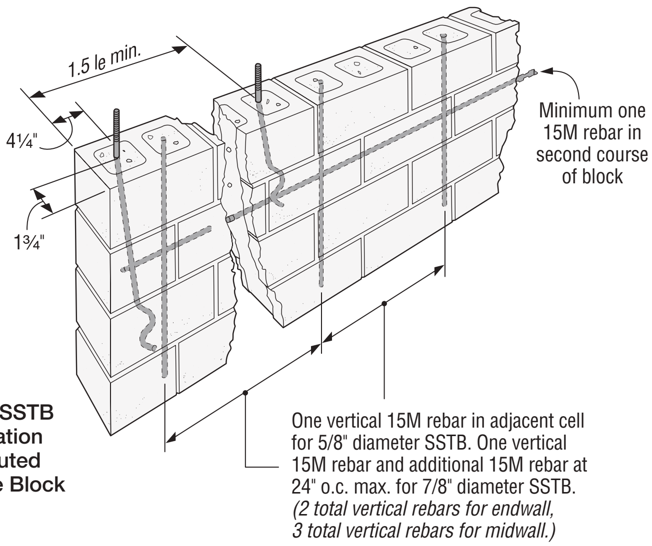
SSTB Bolts in 8" CMU Wall

Model No.	Dimensions (in.)			Factored Tensile Resistance	
	Diameter	Length	Min. Embed. (le)	Midwall	End Wall
				lb.	lb.
				kN	kN
SSTB16	⅝	17⅝ (16L = 19⅝)	12⅝	5715	2340
				25.42	10.41
SSTB20	⅝	21⅝ (20L = 24⅝)	16⅝	5715	2340
				25.42	10.41
SSTB24	⅝	25⅝ (24L = 28⅛)	20⅝	5715	2340
				25.42	10.41
SSTB28	⅞	29⅞ (28L = 32⅞)	24⅞	8030	5760
				35.72	25.62
SSTB34	⅞	34⅞	28⅞	8030	5760
				35.72	25.62
SSTB36	⅞	36⅞	28⅞	8030	5760
				35.72	25.62

1. Factored resistances shown are based on testing per CSA A370-14.
2. Reinforced concrete masonry units shall have a minimum specified compressive strength of 15 MPa per CSA S304.1-14 using Type N mortar and filled solid using coarse grout per CSA A179-14.
3. Minimum end distance required to achieve Midwall resistance is 1.5 l_e.
4. Minimum end distance required to achieve End Wall resistance is 4¼".
5. See installation detail for minimum reinforcing requirements.



Typical SSTB Installation in Concrete Foundation
Maintain minimum rebar cover, per CSA A23.1-14 requirements



Typical SSTB Installation in Grouted Concrete Block

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. Factored resistances have been developed based on testing per ICC AC399 in uncracked concrete using the corresponding adjustment factors from CSA A23.3-14 Annex D.
4. Factored resistances for seismic $I_E F_a S_a(0.2) \geq 0.35$ applications assumes ductile yielding in the attachment. See D.4.3.5.3 CSA A23.3-14 for more information.
5. See ESR-2611 for additional information.
6. Midwall capacities apply when anchor is 1.5 l_e or greater from the end. For bolts acting in tension simultaneously, the minimum bolt centre-to-centre spacing is 3 l_e.

PAB

Pre-Assembled Anchor Bolt

The PAB anchor bolt is a versatile cast-in-place anchor bolt ideal for high-tension-load applications. 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 ½" to 1¼" 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 "HS" on high-strength rods

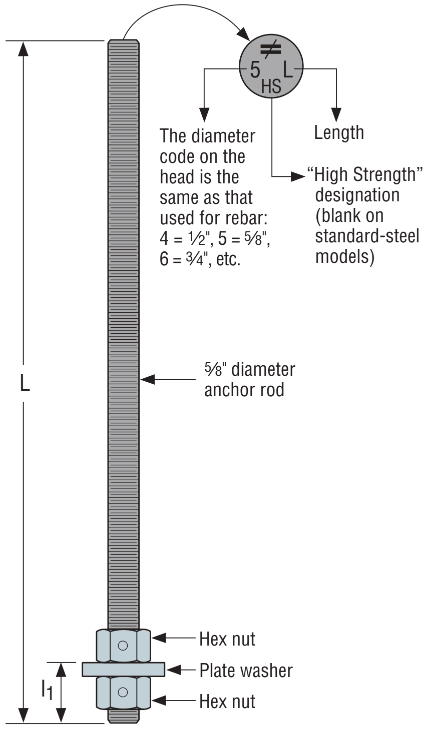
Material:
Standard Steel — ASTM F1554 Grade 36, A36 or A307; F_u = 58 ksi
High-Strength Steel (up to 1" diameter) — ASTM A449; F_u = 120 ksi
High-Strength Steel (1⅛" and 1¼" diameter) — ASTM A193 B7 or F1554 Grade 105; F_u = 125 ksi

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® NUT⅝-OST, NUT⅞-OST, CNW⅝-OST, CNW⅞-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 CSA A23.3 Annex D Limit States Design methodology. It provides cracked and uncracked-concrete anchorage solutions for numerous Simpson Strong-Tie Anchor Systems mechanical and adhesive anchors as well as the PAB anchor. 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.



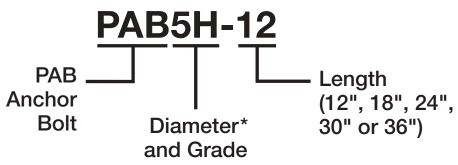
PAB

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 ⅝" x 18" anchor bolt, the model number would be PAB5-18 (or PAB5H-18 for high strength).

Naming Legend



*Units in ⅛" Increments (Ex: 9 = 9⁄8" or 1⅛")

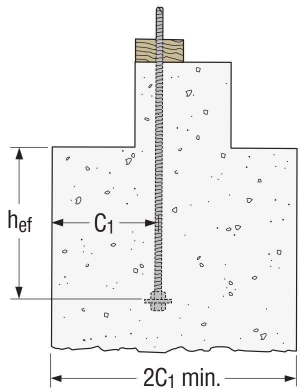
PAB Anchor Bolt – Standard Steel

Diameter (in.)	Plate Washer Size (in.)	l_1 (in.)	Root Model No.	Lengths (in.)
½	¼ x 1¼ x 1¼	1	PAB4-XX	12" to 36" (in 6" increments)
⅝	⅜ x 1½ x 1½	1¼	PAB5-XX	
¾	⅜ x 2 x 2	1⅜	PAB6-XX	
⅞	⅜ x 2¼ x 2¼	1½	PAB7-XX	
1	⅜ x 2½ x 2½	1⅝	PAB8-XX	
1⅛	⅜ x 2¾ x 2¾	1¾	PAB9-XX	
1¼	½ x 3 x 3	2½	PAB10-XX	

PAB Anchor Bolt – High-Strength Steel

Diameter (in.)	Plate Washer Size (in.)	l_1 (in.)	Root Model No.	Lengths (in.)
½	¼ x 1¼ x 1¼	1	PAB4H-XX	12" to 36" (in 6" increments)
⅝	⅜ x 1½ x 1½	1¼	PAB5H-XX	
¾	⅜ x 2 x 2	1⅜	PAB6H-XX	
⅞	⅜ x 2¼ x 2¼	1½	PAB7H-XX	
1	⅜ x 2½ x 2½	1⅝	PAB8H-XX	
1⅛	⅜ x 2¾ x 2¾	1¾	PAB9H-XX	
1¼	½ x 3 x 3	2½	PAB10H-XX	

Plate washers are designed to develop the capacity of the bolt.



Design values are calculated using a full shear cone. Coverage on each side of the bolt shall be a minimum of C_1 or reductions must be taken.

Pre-Assembled Anchor Bolt (cont.)

PAB Anchor Bolt – Anchorage Solutions

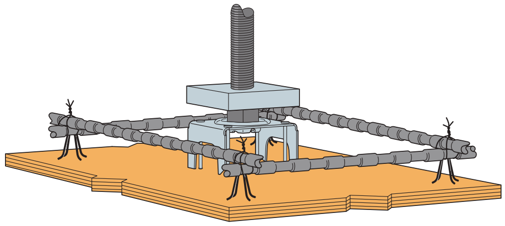
Model No.	Diameter (in.)	Factored Tensile Resistance N_r					
		Wind / Seismic $I_E F_a S_a(0.2) < 0.35$			Seismic $I_E F_a S_a(0.2) \geq 0.35$		
		h_{ef}	C_1	N_r	h_{ef}	C_1	N_r
		in.	in.	lb.	in.	in.	lb.
		mm	mm	kN	mm	mm	kN
PAB4	½	4	7	5600	4	7	5600
		102	178	24.91	102	178	24.91
PAB5	⅝	5	8.5	8915	6	10	8915
		127	216	39.66	152	254	39.66
PAB6	¾	6	10	13175	7	11.5	13175
		152	254	58.61	178	292	58.61
PAB7	⅞	8	13.5	18225	9	15	18225
		203	343	81.07	229	381	81.07
PAB7H	⅞	12	19	37725	15	24	37725
		305	483	167.82	381	610	167.82
PAB8	1	9	15	23905	11	18	23905
		229	381	106.34	279	457	106.34
PAB8H	1	15	24	49485	*18*	*28.5*	*49485*
		381	610	220.13	*457*	*724*	*220.13*
PAB9	1⅛	11	18	30100	13	21	30100
		279	457	133.90	330	533	133.90
PAB10	1¼	12	19.5	38225	15	24	38225
		305	495	170.04	381	610	170.04

1. Factored resistances shown are in accordance with CSA A23.3-14 Annex D using 20 MPa concrete assuming cracked concrete and no supplementary reinforcement (Category B).
2. PAB8H values shown in italics for seismic applications require minimum 25 MPa concrete.
3. Foundation dimensions are for anchorage only. Foundation design (size and reinforcement) is the responsibility of the design professional.
4. Factored resistances for seismic $I_E F_a S_a(0.2) \geq 0.35$ applications assumes ductile yielding in the attachment. See D.4.3.5.3 CSA A23.3-14 for more information.

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.

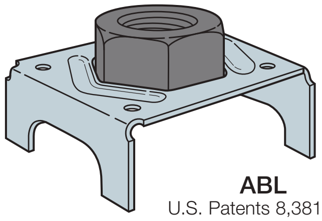


Shallow Podium Slab Anchor Kit

Naming Legend

SA1OST-8H-18KT

- Shallow Anchor
- Standoff (1 for 1" cover)
- Oversize Threads (When hot-dip galvanized anchors are specified)
- Rod Diameter in ⅛" Increments (Ex: 8 = 8⁄8" or 1")
- High Strength
- Length (18", 24", 30", 36")
- Kit (includes ABL and SAR)



ABL
U.S. Patents 8,381,482 and 8,621,816
See p. 48 for more information on the ABL.

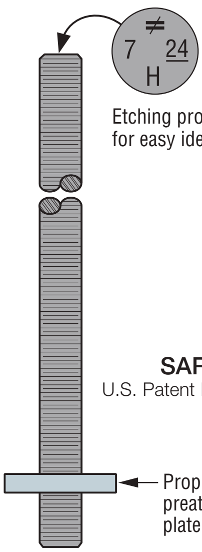
SAR

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:

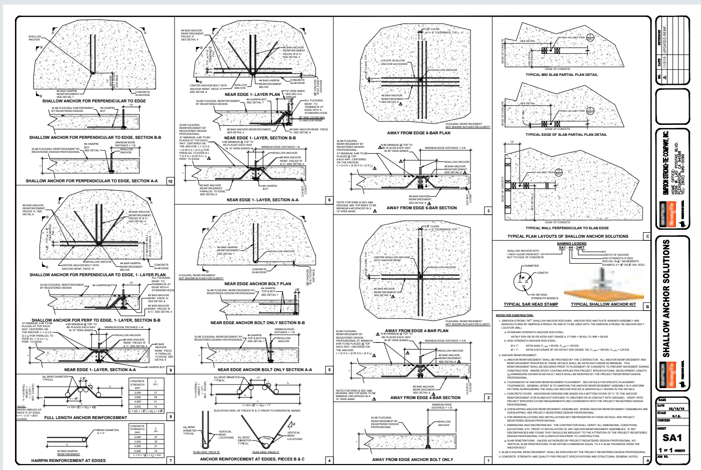
- Proprietary, pre-attached plate washer
- Available in standard or high strength
- Anchor rod diameters from ½" to 1¼"
- Standard lengths available 18", 24", 30" or 36"
- Specify "HDG" for hot-dip galvanized



Etching provides for easy identification

Proprietary, preattached plate washer

SAR
U.S. Patent Pending



Reference the Shallow Anchor Solutions details for more information.

Visit **strongtie.com/sardetails.**

LMAZ/MAB/MASB

Mudsill Anchors

The LMAZ offers a higher lateral load capacity in a lighter gauge.

The MASB is designed for installation on concrete masonry units.

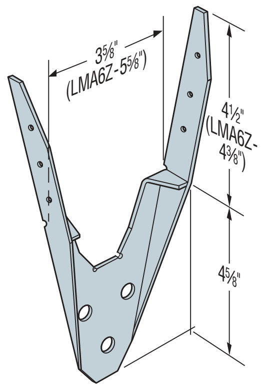
The MAB anchors the mudsill to concrete block, poured walls or slab foundation.

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

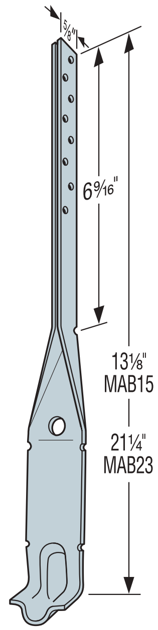
Finish: Galvanized. Some products available in ZMAX®; LMAZ—ZMAX only. See Corrosion Information, pp. 20–24.

Installation:

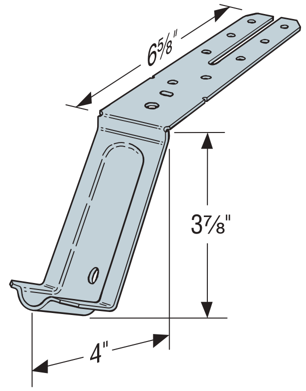
- Use all specified fasteners; see General Notes.
- Not for use where (a) a horizontal cold joint exists between the slab and foundation wall or footing beneath, unless provisions are made to transfer the load, or (b) anchors are installed in slabs poured over foundation walls formed of concrete block. All grout and concrete must have a minimum f'_c of 2000 psi (13.8 MPa).
- MASB — First fill CMU cell with concrete grout. Place MASB into the grouted cell, and adjust into position. Attach mudsill to anchor after the concrete cures.
- MAB — When used in monolithic slab or stemwall construction, prior to installation, spread the MAB legs to accommodate mudsill. Immediately after pouring and screeding, insert into the concrete or grout. Attach the mudsill to the anchor with 10d x 1½" nails after the concrete cures. When installed in grouted concrete block or solid pour for a centre hole installation, drill a ¾" hole through the mudsill and install straps through the hole. Wrap MAB straps around the mudsill and install 10d x 1½" nails.



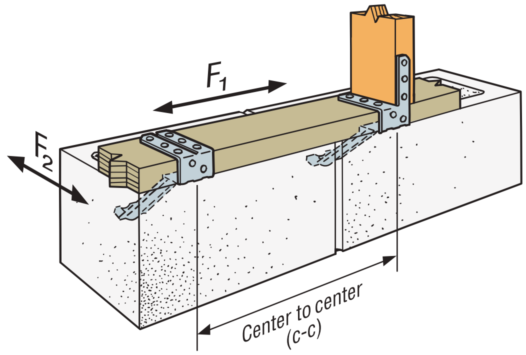
LMA4Z
(LMA6Z similar)



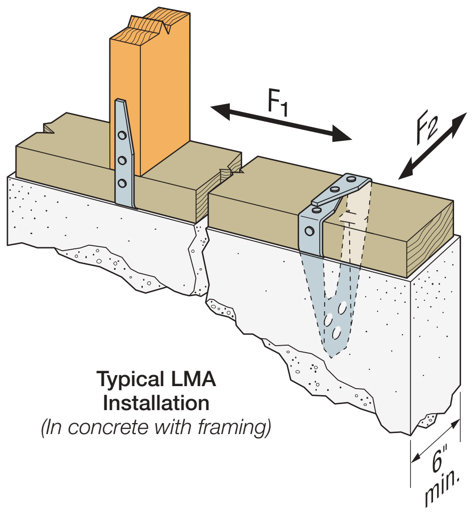
MAB



MASB



Typical MASB Installation



Typical LMA Installation
(In concrete with framing)

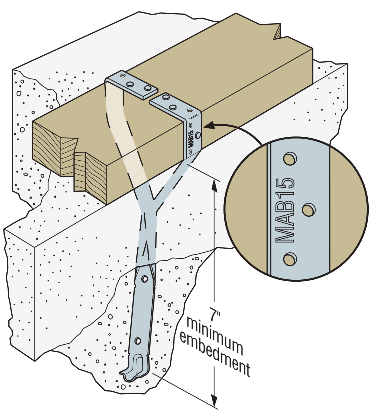
LMAZ/MAB/MASB

Mudsill Anchors (cont.)

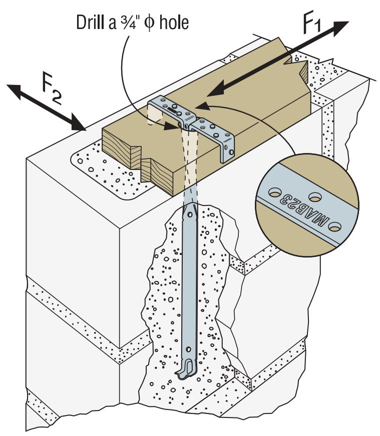
These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Sill Size	Fasteners		Factored Resistance (K_D = 1.15)					
				D.Fir-L			S-P-F		
		Sides (total)	Top	Uplift	Parallel to Plate F_1	Perpendicular to Plate F_2	Uplift	Parallel to Plate F_1	Perpendicular to Plate F_2
				lb.	lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN	kN
MASB	2x4, 2x6	(2) 10d x 1½"	(6) 10d x 1½"	200	1235	900	140	1235	640
				0.89	5.49	4.00	0.62	5.49	2.85
MAB15	2x4, 2x6	(2) 10d x 1½"	(4) 10d x 1½"	800	725	705	570	515	500
				3.56	3.23	3.14	2.54	2.29	2.22
MAB23	2x4, 2x6	(2) 10d x 1½"	(4) 10d x 1½"	800	725	705	570	515	500
				3.56	3.23	3.14	2.54	2.29	2.22
LMA4Z	2x4	(2) 10d x 1½"	(4) 10d x 1½"	1410	955	930	1000	675	660
				6.27	4.25	4.14	4.45	3.00	2.94
	3x4	(4) 10d x 1½"	(2) 10d x 1½"	1410	955	930	1000	675	660
				6.27	4.25	4.14	4.45	3.00	2.94
LMA6Z	2x6	(2) 10d x 1½"	(4) 10d x 1½"	1410	1165	1125	1000	825	800
				6.27	5.18	5.00	4.45	3.67	3.56
	3x6	(4) 10d x 1½"	(4) 10d x 1½"	1570	1165	1125	1115	825	800
				6.98	5.18	5.00	4.96	3.67	3.56

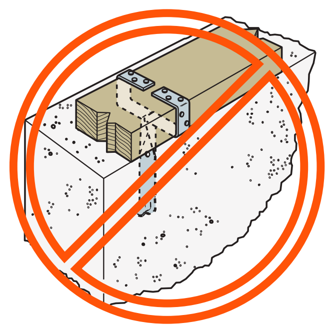
1. Factored resistances have been increased 15% for short-term load duration; reduce where other durations govern.
2. For factored uplift resistances, provide attachment from the mudsill to the building structural components to prevent cross grain bending.
3. LMA attached to the studs has a factored uplift resistance of 1125 lb. (5.00 kN) for D.Fir-L and 800 lb. (3.55kN) for S-P-F; a factored F_1 resistance of 1025 lb. (4.56 kN) for D.Fir-L and 725 lb. (3.22 kN) for S-P-F; a factored F_2 resistance of 1075 lb. (4.78 kN) for D.Fir-L and 760 lb. (3.38 kN) for S-P-F.
4. MASB with one leg attached to the studs has a a factored F_1 resistance of 1110 lb. (4.93 kN) for D.Fir-L and 1020 lb. (4.54 kN) for S-P-F; a factored F_2 resistance of 895 lb. (3.98 kN) for D.Fir-L and 635 lb. (2.82 kN) for S-P-F. MASB is not load rated for uplift with one leg up.
5. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



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.



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

MASA/MASAP

Mudsill Anchors

This product is preferable to similar connectors because of a) easier installation, b) higher capacities, 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 than our original MAS. As a result, the MASA provides an alternative for ⅝" and ½" mudsill anchor bolts on 2x, double-2x and 3x mudsills. Two versions of the MASA are available – the standard MASA for installation on standard forms and the MASAP for panelized forms.

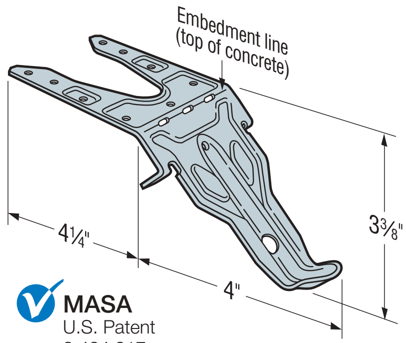
The MASA and MASAP have been tested to meet the requirements of ICC-ES acceptance criteria AC-398 for cracked and uncracked concrete.

Material: 16 gauge

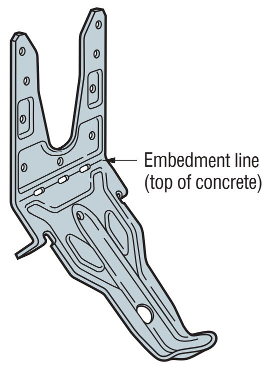
Finish: Galvanized, all available in ZMAX® coating; see Corrosion Information, pp. 20–24

Installation:

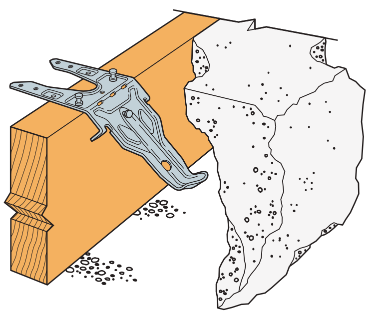
- Use all specified fasteners; see General Notes.
- Concrete shall have a minimum f'_c = 2500 psi (17.25 MPa).
- Spalling — Full resistances apply for spalls up to a maximum height of 1¼" and a maximum depth of ⅞". Any exposed portion of the mudsill anchor must be protected against possible corrosion.
- Minimum MASA end distance is 4" and minimum centre-to-centre spacing is 8" for full capacity.
- For installation in severe corrosion environments, refer to **strongtie.com/cipcorrosion** for additional considerations.



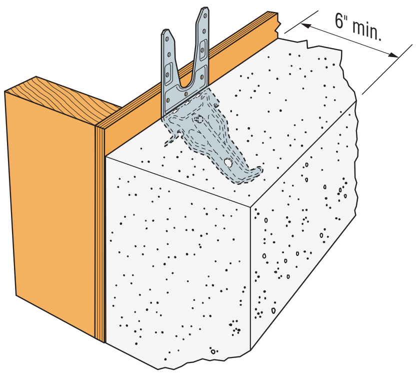
MASA
U.S. Patent 8,484,917



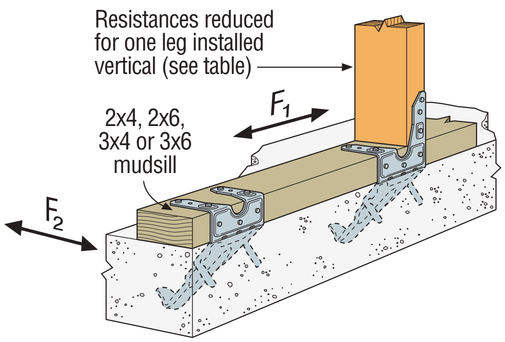
MASAP
U.S. Patent D656,391S



Typical MASA Installation in Concrete



Typical MASAP Installation in Concrete



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. 24 .

Factored Resistance for Non-Cracked Concrete

Model No.	Sill Plate Size	Fasteners		Factored Resistance Non-Cracked Concrete									
				Wind / Seismic $I_E F_a S_a(0.2) < 0.35$					Seismic $I_E F_a S_a(0.2) \geq 0.35$				
		Sides	Top	Uplift	F_1		F_2		Uplift	F_1		F_2	
				(K_D=1.15)	(K_D=1.15)	(K_D=0.65)	(K_D=1.15)	(K_D=0.65)	(K_D=1.15)	(K_D=1.15)	(K_D=0.65)	(K_D=1.15)	(K_D=0.65)
				lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
Standard Installation — Attached to D.Fir-L Sill Plate													
MASA or MASAP	2x4, 2x6	(3) 10d x 1½"	(6) 10d x 1½"	1235	2000	1130	1800	1035	1155	1810	1130	1490	1035
				5.49	8.90	5.03	8.01	4.60	5.14	8.05	5.03	6.63	4.60
	3x4, 3x6	(5) 10d x 1½"	(4) 10d x 1½"	935	1910	1130	1260	710	730	1430	1130	1245	710
				4.16	8.50	5.03	5.60	3.16	3.25	6.36	5.03	5.54	3.16
One-Leg-Up Installation — Attached to D.Fir-L Sill Plate													
MASA or MASAP	2x4, 2x6	(6) 10d x 1½"	(3) 10d x 1½"	1115	1330	755	—	—	875	1025	755	—	—
				4.96	5.92	3.36	—	—	3.89	4.56	3.36	—	—
Both Legs Over Maximum ½" Plywood or OSB Installation — Attached to D.Fir-L Sill Plate and Rimboard													
MASA or MASAP	2x4, 2x6	(9) 10d x 1½"	—	1310	1560	1130	—	—	980	1170	1130	—	—
				5.83	6.94	5.03	—	—	4.36	5.20	5.03	—	—
Double 2x Sill Plate Installation — Attached to D.Fir-L Sill Plate													
MASA or MASAP	2x4, 2x6	(5) 10d x 1½"	(2) 10d x 1½"	1300	1555	880	1315	745	975	1290	880	1315	745
				5.78	6.92	3.91	5.85	3.31	4.34	5.74	3.91	5.85	3.31
Standard Installation — Attached to S-P-F Sill Plate													
MASA or MASAP	2x4, 2x6	(3) 10d x 1½"	(6) 10d x 1½"	875	1505	1040	1275	735	875	1505	1040	1275	735
				3.89	6.69	4.63	5.67	3.27	3.89	6.69	4.63	5.67	3.27
	3x4, 3x6	(5) 10d x 1½"	(4) 10d x 1½"	665	1615	1040	895	505	665	1430	1040	895	505
				2.96	7.18	4.63	3.98	2.25	2.96	6.36	4.63	3.98	2.25
One-Leg-Up Installation — Attached to S-P-F Sill Plate													
MASA or MASAP	2x4, 2x6	(6) 10d x 1½"	(3) 10d x 1½"	795	950	650	—	—	795	950	650	—	—
				3.54	4.23	2.89	—	—	3.54	4.23	2.89	—	—
Both Legs Over Maximum ½" Plywood or OSB Installation — Attached to S-P-F Sill Plate and Rimboard													
MASA or MASAP	2x4, 2x6	(9) 10d x 1½"	—	960	1290	840	—	—	960	1170	840	—	—
				4.27	5.74	3.74	—	—	4.27	5.20	3.74	—	—
Double 2x Sill Plate Installation — Attached to S-P-F Sill Plate													
MASA or MASAP	2x4, 2x6	(5) 10d x 1½"	(2) 10d x 1½"	1000	1170	760	935	525	975	1170	760	935	525
				4.45	5.20	3.38	4.16	2.34	4.34	5.20	3.38	4.16	2.34

1. Factored resistances shown are based on testing per ICC AC398 using the corresponding adjustment factors from CSA A23.3-14 Annex D.
2. The minimum 28-day concrete compressive strength (f'_c) shall be 2500 psi (17.25 MPa).
3. Factored resistances are base on a minimum wall width of 6".
4. For simultaneous loads in more than one direction, the connector must be evaluated using the unity equation (see Instructions for the Designer).
5. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

Mudsill Anchors (cont.)

These products are available with additional corrosion protection. For more information, see p. 24 .

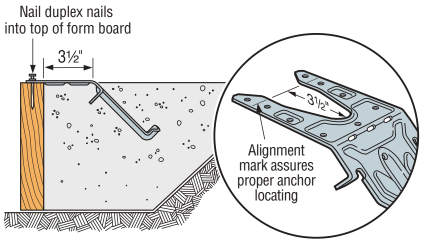
Factored Resistance for Cracked Concrete

Model No.	Sill Plate Size	Fasteners		Factored Resistance Cracked Concrete									
				Wind / Seismic $I_EF_aS_a(0.2) < 0.35$					Seismic $I_EF_aS_a(0.2) \geq 0.35$				
		Sides	Top	Uplift	F_1		F_2		Uplift	F_1		F_2	
				(K_D=1.15)	(K_D=1.15)	(K_D=0.65)	(K_D=1.15)	(K_D=0.65)	(K_D=1.15)	(K_D=1.15)	(K_D=0.65)	(K_D=1.15)	(K_D=0.65)
				lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
Standard Installation — Attached to D.Fir-L Sill Plate													
MASA or MASAP	2x4, 2x6	(3) 10d x 1½"	(6) 10d x 1½"	1165	2000	1130	1455	1035	875	1810	1130	1090	1035
				5.18	8.90	5.03	6.47	4.60	3.89	8.05	5.03	4.85	4.60
	3x4, 3x6	(5) 10d x 1½"	(4) 10d x 1½"	735	1910	1130	1215	710	550	1430	1130	910	710
				3.27	8.50	5.03	5.40	3.16	2.45	6.36	5.03	4.05	3.16
One-Leg-Up Installation — Attached to D.Fir-L Sill Plate													
MASA or MASAP	2x4, 2x6	(6) 10d x 1½"	(3) 10d x 1½"	880	1330	755	—	—	660	1025	755	—	—
				3.91	5.92	3.36	—	—	2.94	4.56	3.36	—	—
Both Legs Over Maximum ½" Plywood or OSB Installation — Attached to D.Fir-L Sill Plate and Rimboard													
MASA or MASAP	2x4, 2x6	(9) 10d x 1½"	—	1125	1560	1130	—	—	840	1170	1130	—	—
				5.00	6.94	5.03	—	—	3.74	5.20	5.03	—	—
Double 2x Sill Plate Installation — Attached to D.Fir-L Sill Plate													
MASA or MASAP	2x4, 2x6	(5) 10d x 1½"	(2) 10d x 1½"	985	1555	880	1315	745	735	1290	880	1150	745
				4.38	6.92	3.91	5.85	3.31	3.27	5.74	3.91	5.12	3.31
Standard Installation — Attached to S-P-F Sill Plate													
MASA or MASAP	2x4, 2x6	(3) 10d x 1½"	(6) 10d x 1½"	875	1505	1040	1275	735	875	1505	1040	1090	735
				3.89	6.69	4.63	5.67	3.27	3.89	6.69	4.63	4.85	3.27
	3x4, 3x6	(5) 10d x 1½"	(4) 10d x 1½"	665	1615	1040	895	505	550	1430	1040	895	505
				2.96	7.18	4.63	3.98	2.25	2.45	6.36	4.63	3.98	2.25
One-Leg-Up Installation — Attached to S-P-F Sill Plate													
MASA or MASAP	2x4, 2x6	(6) 10d x 1½"	(3) 10d x 1½"	795	950	650	—	—	660	950	650	—	—
				3.54	4.23	2.89	—	—	2.94	4.23	2.89	—	—
Both Legs Over Maximum ½" Plywood or OSB Installation — Attached to S-P-F Sill Plate and Rimboard													
MASA or MASAP	2x4, 2x6	(9) 10d x 1½"	—	960	1290	840	—	—	840	1170	840	—	—
				4.27	5.74	3.74	—	—	3.74	5.20	3.74	—	—
Double 2x Sill Plate Installation — Attached to S-P-F Sill Plate													
MASA or MASAP	2x4, 2x6	(5) 10d x 1½"	(2) 10d x 1½"	985	1170	760	935	525	735	1170	760	935	525
				4.38	5.20	3.38	4.16	2.34	3.27	5.20	3.38	4.16	2.34

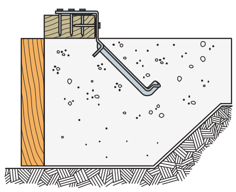
See footnotes on p. 69.

Alternative Mudsill Anchor Installations

Alternate Installation for Inside of Wall Continuity

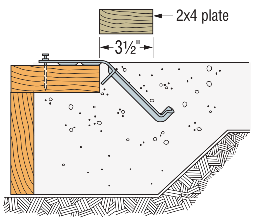


1 **Step 1:**
Attach MASA 3½" from inside of form. After concrete cures, remove nails and bend straps up 90°.

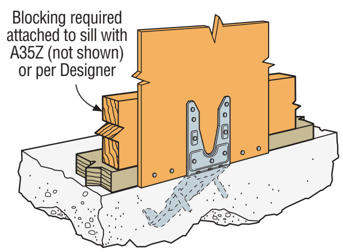


2 **Step 2:**
Place mudsill on concrete and nail MASA over mudsill.

Alternate Installation for Brick Ledges



Alternate MASA Installation for Brick Ledges



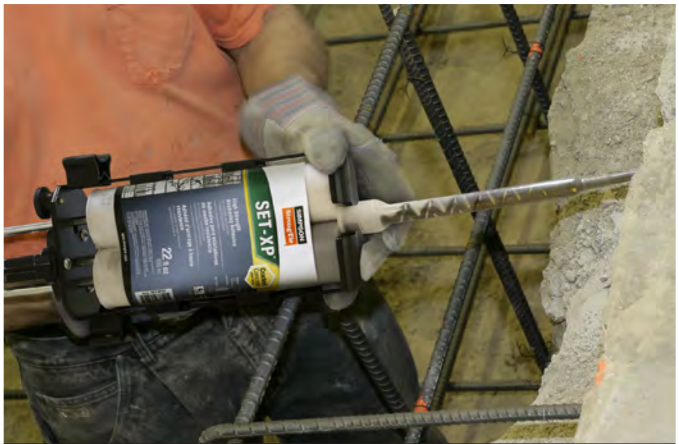
MASA/MASAP Rim Joist or Blocking Installation in Concrete Over Maximum ½" Sheathing

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**.

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 specified in 9.23.6.1 NBC 2015.

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 in accordance with ICC-ES AC193 and ACI355.2 for cracked and uncracked concrete per ICC-ES ESR-3037
- Code-listed 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

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

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 in accordance with ICC-ES AC193 and ACI355.2 for cracked and uncracked concrete per ICC-ES ESR-2713; includes Titen HD® Rod Hanger (models THD37212RH and THD50234RH only)
- Code-listed 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

For complete information on these products, visit 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 and ACI355.4 regarding elevated temperature and long-term sustained loading conditions
- Code-listed for cracked and uncracked concrete per ICC-ES ESR-2508
- Code-listed 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 and ACI355.4 regarding reduced temperature, elevated temperature, and long-term sustained loading conditions
- Code-listed for cracked and uncracked concrete per IAPMO UES ER-263
- Code-listed 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 and ACI355.4 regarding elevated temperature and long-term sustained loading conditions
- Code-listed for cracked and uncracked concrete per ICC-ES ESR-3372
- Code-listed 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.

Holdowns and Tension Ties

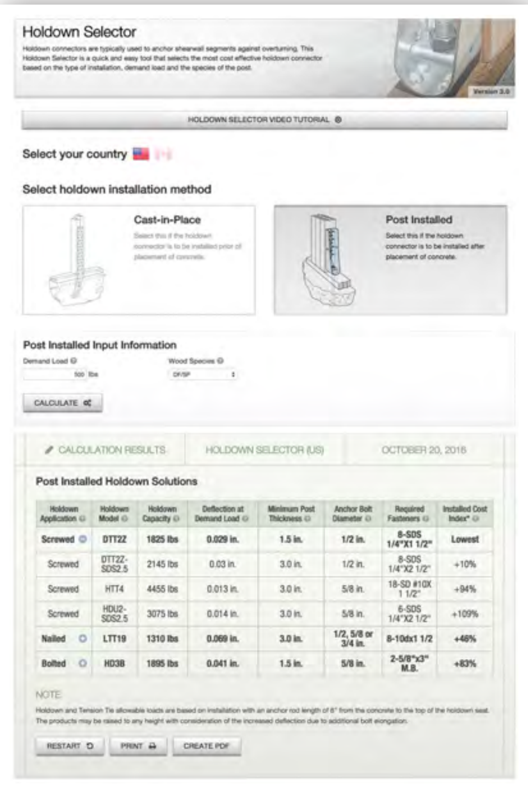
General Information and Notes

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.

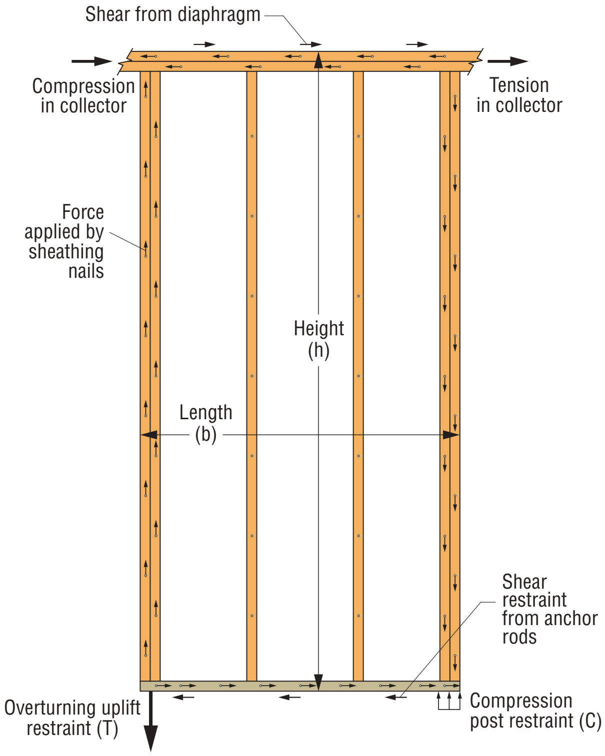
Holdowns can be separated into two categories — post-installed or cast-in-place. Cast-in-place holdowns, such as the STHD holdowns or the PA purlin anchors are installed at the time of concrete placement and attached to wood framing with nails. Cast-in-place holdowns are an economical anchorage solution with factored resistances up to 8800 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 factored resistances ranging from about 1000 lb. up to nearly 20000 lb.

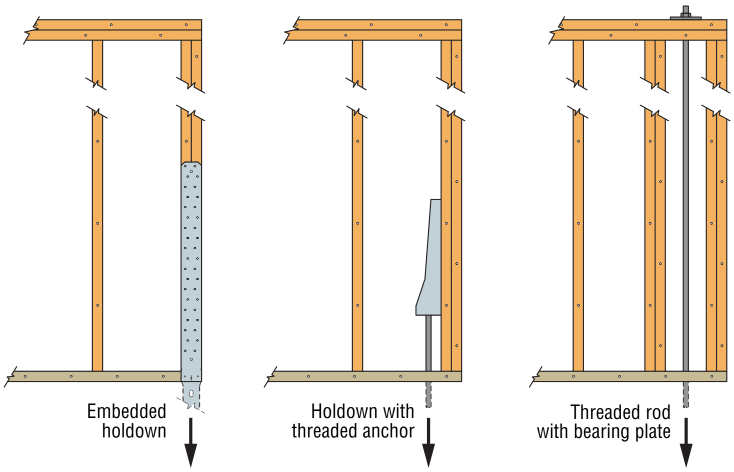
The Holdown Selector is a simple web application that selects holdown solutions based on design loads. See **strongtie.com/holdownselector** for more information.



Holdown Selector
strongtie.com/holdownselector



Idealized Force Diagram on Full-Height Shearwall Segment

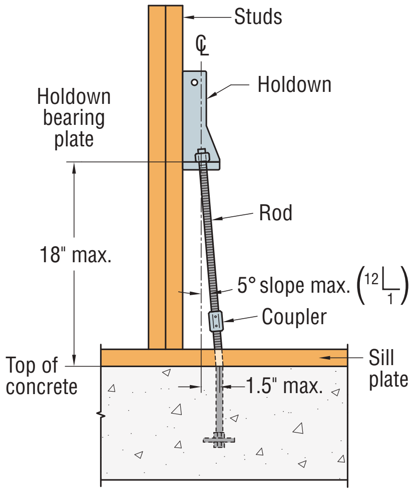


Methods of Providing Overturning Restraint

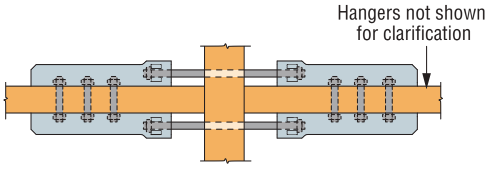
General Information and Notes (cont.)

Holdown and Tension Tie General Notes:

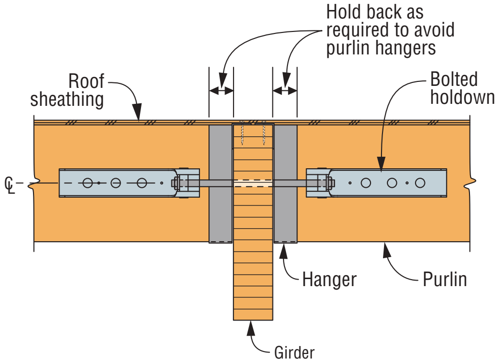
- Factored resistances have been increased 15% for earthquake or wind load durations with no further increase allowed. Reduce where other loads govern.
- Use all specified fasteners.
- The Designer must specify anchor bolt type, length and embedment. See pp. 56–58 for SB, pp. 59–62 for SSTB anchor bolts and p. 63 for PAB anchor bolts.
- Anchor bolt nut should be finger tight plus ⅓ to ½ 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"-deep post (in a 3½" wall), unless noted otherwise. Posts may consist of multiple members provided they are connected independently of the holdown fasteners.
- 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 Factored Resistances is determined by testing on wood posts and includes fastener slip, holdown deformation and anchor rod elongation for holdowns installed 6" above top of concrete (4½" for HTT). Holdown deflections may be linearly reduced for design loads less than the factored resistance.
- 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 factored resistance of the assembly based on 12.4 CSA O86-14 assuming bolts in double shear. Anchorage is the responsibility of the Designer.
- Factored resistances 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 holdown fastener interference or the holdowns are offset to eliminate fastener interference. Designer must evaluate the factored resistances of the wood member and the anchorage.
- 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-SCLCLMCAN at **strongtie.com** for reductions in resistances due to narrow face installations.



Holdown Raised Off Sill Plate

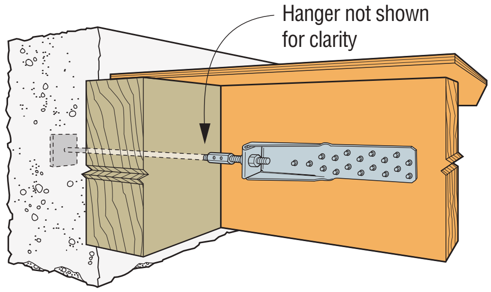


Plan View



Elevation View

Purlin-to-Purlin Cross-Tie Detail



Horizontal HTT Installation

LSTHD/STHD

Strap-Tie Holdowns

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

The STHD is an embedded strap-tie holdown 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

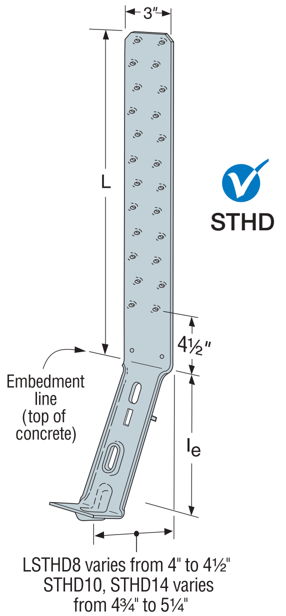
- The nailing pattern allows for nailing to the edges of double 2x's
- Strap nail slots are countersunk to provide a lower nail head profile
- The slots below the embedment line enable increased front-to-back concrete bond and help to reduce spalling
- Rim joist models accommodate up to a 17" clear span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

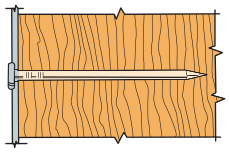
Material: LSTHD — 14 gauge; STHD — 12 gauge

Finish: Galvanized

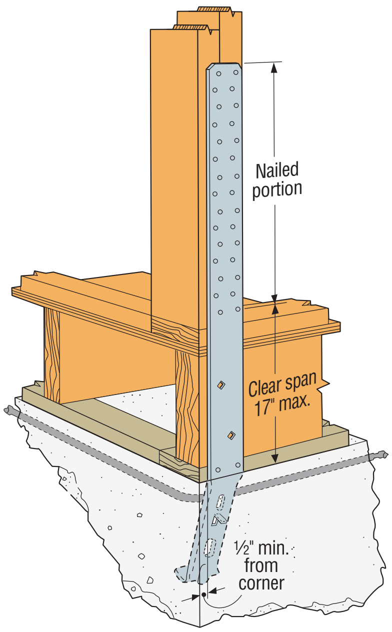
Installation:

- Use all specified fasteners; see General Notes.
- Install before concrete pour with a StrapMate, or other holding device.
- Nail strap from the bottom up.
- 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 values apply. Any portion of the strap left exposed should be protected against corrosion.
- Unless otherwise noted, 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. 78 for rebar information.



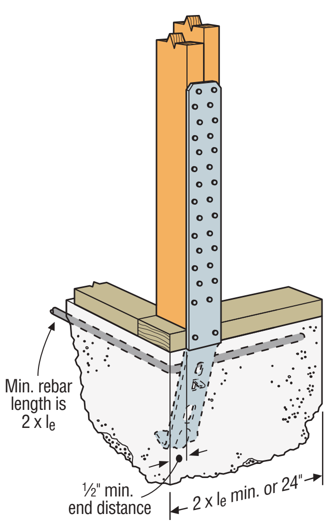


Nails are countersunk for a low-profile strap surface.

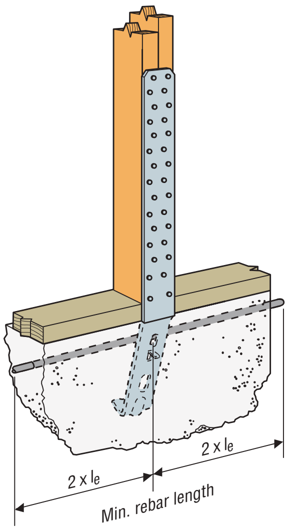


Typical STHD14RJ Rim Joist Application

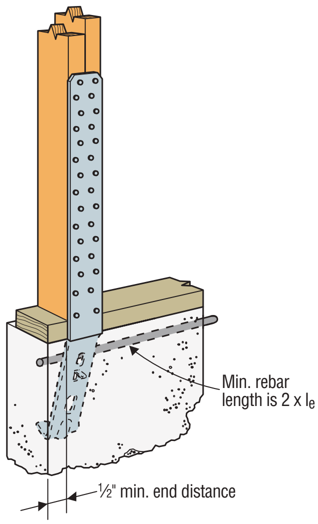
Strap-Tie Holdowns (cont.)



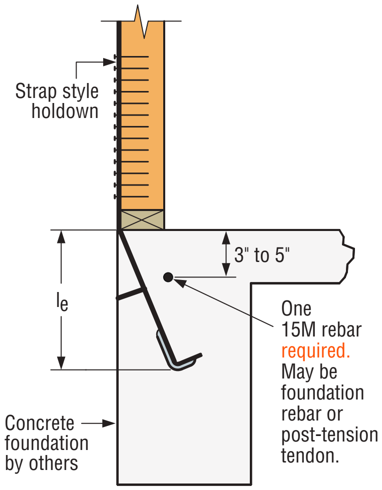
Typical STHD14
Corner Installation



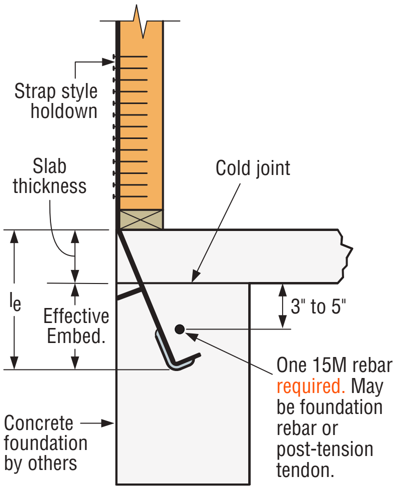
Typical STHD14
Mid-Wall Installation



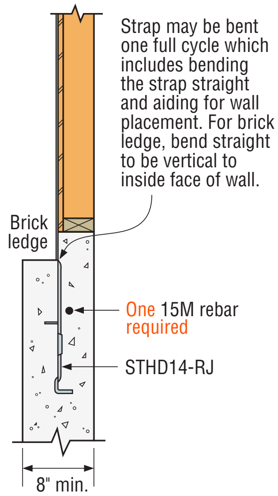
Typical STHD14
End-Wall Installation



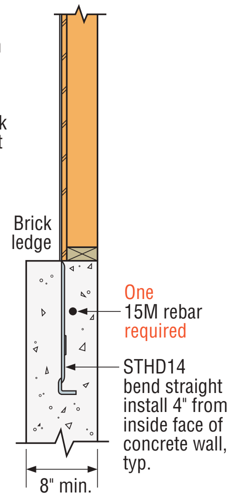
Single-Pour Rebar Installation
Maintain minimum rebar cover, per CSA A23.1-14.



Two-Pour Installation
for Downturn Footings



Brick-Ledge Installation
with Step



Brick-Ledge Installation
without Step

Spall Reduction System for STHD Strap Tie Holdown

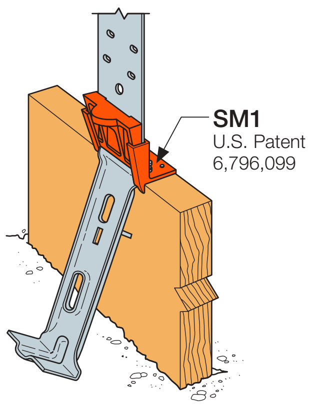
Features
- Built-in tab
- StrapMate® locator line
- Additional diamond hole in RJ versions

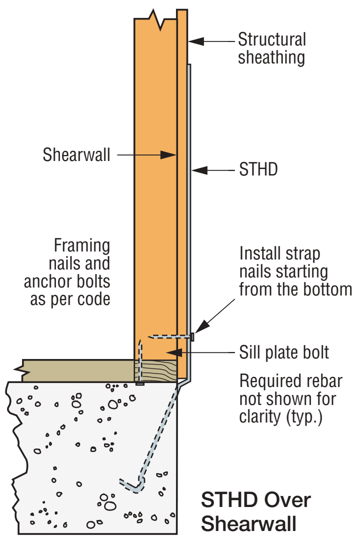
Benefits

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

LSTHD/STHD

Strap-Tie Holdowns (cont.)

Factored Resistances for Wind and Seismic $I_E F_a S_a(0.2) < 0.35$

Min. Stem Wall Width (in.)	Model No.		Strap Length (L) (in.)		I_e (in.)	Fasteners	Factored Tensile Resistance (K_D = 1.15)					
							Non-Cracked			Cracked		
	Standard	Rim Joist	Standard	Rim Joist			Midwall	Corner	Endwall	Midwall	Corner	Endwall
							lb.	lb.	lb.	lb.	lb.	lb.
							kN	kN	kN	kN	kN	kN
6	LSTHD8	LSTHD8RJ	18⅝	32⅛	8	(20) 10d	4625	4130	2515	3975	3550	2160
							20.57	18.37	11.19	17.68	15.79	9.61
	STHD10	STHD10RJ	24⅝	38⅛	10	(24) 10d	5485	5485	3045	4470	4470	2480
							24.40	24.40	13.55	19.88	19.88	11.03
	STHD14	STHD14RJ	26⅛	39⅝	14	(30) 10d	7655	7655	4755	7655	7655	4755
							34.05	34.05	21.15	34.05	34.05	21.15
8	LSTHD8	LSTHD8RJ	18⅝	32⅛	8	(20) 10d	4625	4015	3310	3975	3450	2845
							20.57	17.86	14.72	17.68	15.35	12.66
	STHD10	STHD10RJ	24⅝	38⅛	10	(24) 10d	7400[3]	6320	4670	6070	5150	3810
							32.92[3]	28.11	20.77	27.00	22.91	16.95
	STHD14	STHD14RJ	26⅛	39⅝	14	(30) 10d	8800[4]	8195[4]	6185	7960[4]	7350	5550
							39.15[4]	36.45[4]	27.51	35.41[4]	32.70	24.69

See footnotes below.

Factored Resistances for Seismic $I_E F_a S_a(0.2) \geq 0.35$

Min. Stem Wall Width (in.)	Model No.		Strap Length (L) (in.)		I_e (in.)	Fasteners	Factored Tensile Resistance (K_D = 1.15)					
							Non-Cracked			Cracked		
	Standard	Rim Joist	Standard	Rim Joist			Midwall	Corner	Endwall	Midwall	Corner	Endwall
							lb.	lb.	lb.	lb.	lb.	lb.
							kN	kN	kN	kN	kN	kN
6	LSTHD8	LSTHD8RJ	18⅝	32⅛	8	(20) 10d	3470	3100	1885	2980	2660	1620
							15.44	13.79	8.39	13.26	11.83	7.21
	STHD10	STHD10RJ	24⅝	38⅛	10	(24) 10d	4110	4110	2280	3350	3350	1860
							18.28	18.28	10.14	14.90	14.90	8.27
	STHD14	STHD14RJ	26⅛	39⅝	14	(30) 10d	5740	5740	3565	5740	5740	3565
							25.53	25.53	15.86	25.53	25.53	15.86
8	LSTHD8	LSTHD8RJ	18⅝	32⅛	8	(20) 10d	3470	3010	2485	2980	2585	2135
							15.44	13.39	11.05	13.26	11.50	9.50
	STHD10	STHD10RJ	24⅝	38⅛	10	(24) 10d	5550	4740	3505	4525	3865	2855
							24.69	21.09	15.59	20.13	17.19	12.70
	STHD14	STHD14RJ	26⅛	39⅝	14	(30) 10d	6655	6145	4640	5970	5510	4160
							29.60	27.34	20.64	26.56	24.51	18.51

1. Factored resistances have been developed based on testing per ICC-ES AC 398 using the corresponding adjustment factors from CSA A23.3-14 Annex D.
2. Unless otherwise noted, tabulated values are applicable to D.Fir-L and S-P-F framing members.
3. S-P-F factored resistance is 7210 lb. (32.07 kN).
4. S-P-F factored resistance is 7725 lb. (34.36 kN).
5. The minimum 28-day concrete compressive strength (f'_c) shall be 2500 psi (17.25 MPa).
6. The minimum centre-to-centre spacing is three times the required embedment depth (S_{min} = 3xIe).
7. See technical bulletin T-SCLCLMCAN at **strongtie.com** for installation on structural composite lumber posts or studs.
8. Deflection at the highest factored resistance for installation over double studs are as follows:
   – Installed on framing: LSTHD8 = 0.094"; STHD10 = 0.157"; STHD14 = 0.135"
   – Installed over structural sheathing: LSTHD8 = 0.159"; STHD10 = 0.201"; STHD14 = 0.290"
   Deflection values shown are applicable for D.Fir-L studs. For attachment to S-P-F studs multiply the deflection values by 1.13.
9. Deflection values may be reduced linearly for lesser loads including specified wind loads at h/500.
10. Use the specified number of nails listed. In some cases, not all nail holes will be filled. Nail strap from bottom up.
11. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

LTT/HTT

Tension Ties

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 new code standards, the HTT4 and HTT5 offer higher capacities than their predecessors.

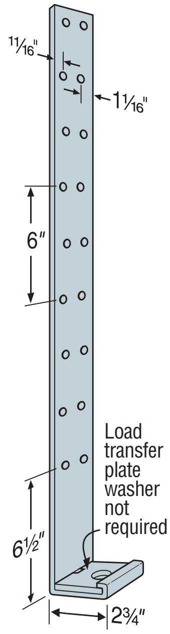
The LTT19 light tension tie is designed for 2x joists or purlins and the LTT20B is for nail- or bolt-on applications. The 3" nail spacing makes the LTT20B suitable for wood I-joists with 10d x 1½". The LTTI31 is designed for wood chord open web truss attachments to concrete or masonry walls and may also be installed vertically on a minimum 2x6 stud.

Material: See table

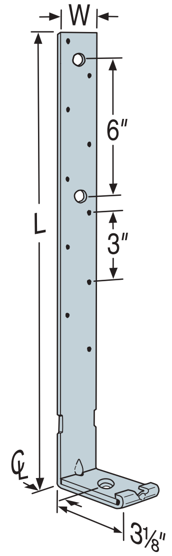
Finish: Galvanized

Installation:

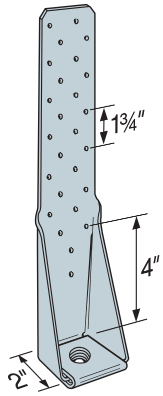
- Use all specified fasteners; see General Notes.
- Use the specified number and type of nails to attach the strap portion to the top or side of purlin or beam (minimum 4x width (2-2x4 or 4x4), except LTT19). Bolt the base to the wall or foundation with a suitable anchor; see table for the required bolt diameter.
- Do not install LTT tension ties raised off the mudsill.
- See AT-XP® anchoring adhesive, p. 73.
- 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.
- Anchor bolt nut should be finger tight plus ⅓ to ½ 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.



LTTI31

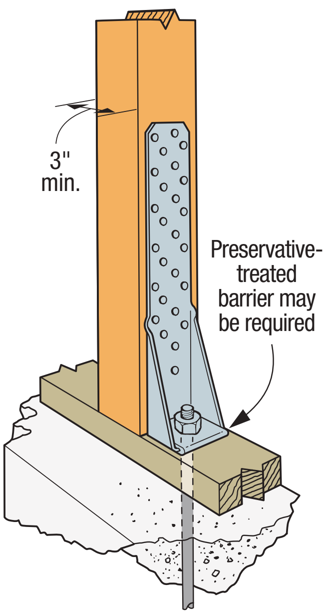


LTT20B
(LTT19 similar)

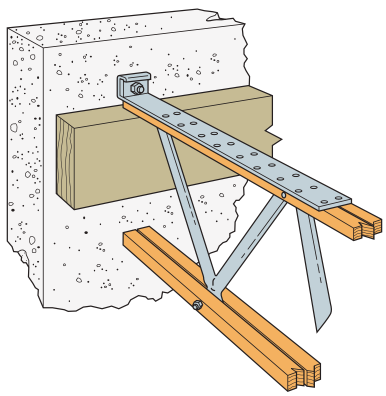


HTT5
(HTT4 similar)

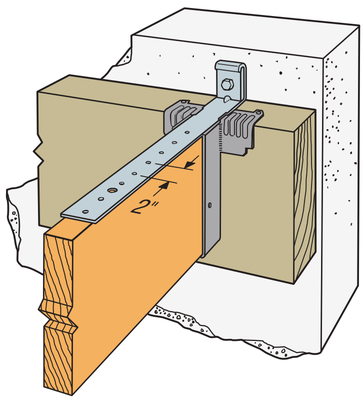
For tension ties, per ASTM test standards, anchor bolt nut should be finger-tight plus ⅓ to ½ turn with a hand wrench, with consideration given to possible future wood shrinkage. Care should be taken not to over-torque the nut. Impact wrenches should not be used.



Vertical HTT4 Installation



Horizontal LTTI31 Installation



Horizontal LTT19 Installation
(LTT20B similar)

LTT/HTT

SIMPSON Strong-Tie®

Tension Ties (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Ga.	Dimensions (in.) W	Dimensions (in.) L	Dimensions (in.) ℄[10]	Anchor Bolt Diameter (in.)	Fasteners	Minimum Wood Thickness (in.)	Factored Tensile Resistance (K_D = 1.15) D.Fir-L	Factored Tensile Resistance (K_D = 1.15) S-P-F	Deflection[6] at Factored Resistance
								lb.	lb.	in.
								kN	kN	mm
LTT19	16	1¾	19⅛	1 7/16	¾	(8) 10d x 1½"	1½	1795	1645	0.243
								7.98	7.32	6.17
						(8) 10d	3	1930	1785	0.241
								8.59	7.94	6.12
LTT20B	12	2	19¾	1½	¾	(10) 10d x 1½"	3	1900	1680	0.250
								8.45	7.47	6.35
						(10) 10d	3	2100	1840	0.250
								9.34	8.19	6.35
						(2) ½" Bolts	3	2270	2115	0.250
								10.10	9.41	6.35
LTTI31	18	3¾	31	1 7/16	⅝	(18) 10d x 1½"	3	1890	1560	0.250
								8.41	6.94	6.35
						(18) 10d x 1½"	3	3120[8]	2845[8]	0.250
								13.88[8]	12.66[8]	6.35
HTT4	11	2½	12⅜	1 5/16	⅝	(18) 10d x 1½"	3	4580	4020	0.175
								20.37	17.88	4.45
						(18) 16d	3	6000	5265	0.225
								26.69	23.42	5.72
HTT5	11	2½	16	1 5/16	⅝	(26) 10d x 1½"	3	6565	5760	0.250
								29.20	25.62	6.35
						(26) 10d	3	6720	5895	0.250
								29.89	26.22	6.35
						(26) 16d	3	7125	6255	0.250
								31.69	27.82	6.35

1. Factored resistances have been increased 15% for short term load duration; reduce where other load durations govern.
2. The Designer must specify anchor bolt type, length and embedment to ensure adequate anchorage to concrete.
3. Post design shall be by the Designer. Tabulated values are based on a minimum wood member thickness in the direction of the fastener penetration. Post may consist of multiple 2x members provided they are connected independently of the holdown fasteners.
4. Holdowns shall be installed centre along the width of the attached post.
5. Deflection at Factored Resistance includes fastener slip, holdown elongation and anchor bolt elongation (L = 6"). Additional elongation of anchor bolts shall be accounted for by the designer when the length of the anchor bolt above the top of the concrete to the attachment at the holdown is longer than 6". Similar consideration for floor to floor connections must be addressed by the Designer.
6. Deflection values may be reduced linearly for lesser loads including specified wind loads at h/500.
7. A ½"- or ⅝"-diameter anchor bolt may be used for the LTT19 or the LTT20B. A standard cut washer is required between the anchor bolt nut and the bearing seat of the tension tie for this application.
8. When the LTTI31 is installed with the base flush with the concrete or masonry wall this increased resistance applies.
9. When using structural composite lumber columns, screws must be applied to the wide face of the column (see technical bulletin T-SCLCMCAN at **strongtie.com** for details).
10. Centre line dimension is taken from the face of the post/framing member to the centre of anchor.
11. **Nails:** 16d = 0.162" dia. x 3½" long, 10d x 1½" = 0.148" dia. x 1½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

Holdowns

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

The HDU series of holdowns combine the advantages of low deflection and high capacity from the pre-deflected geometry with the ease of installation of Simpson Strong-Tie® patented Strong-Drive® SDS Heavy-Duty Connector screws.

The DTT2Z tension tie is suitable for lighter-duty holdown applications on single or double 2x posts, and installs easily with Strong-Drive SDS Heavy-Duty Connector screws (included).

HDU Special Features:

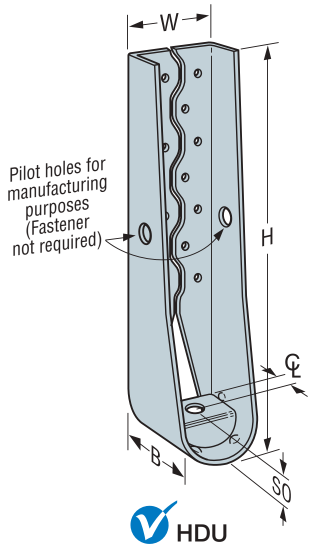
- Pre-deflected body virtually eliminates deflection due to material stretch.
- Uses Strong-Drive SDS Heavy-Duty Connector screws which install easily, reduce fastener slip, and provide a greater net section area of the post compared to bolts.
- ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws are supplied with the holdowns. (Lag screws will not achieve the same capacity.) This ensures the proper fasteners are used and is convenient for the installer.
- No stud bolts to countersink at openings.

Material: See table

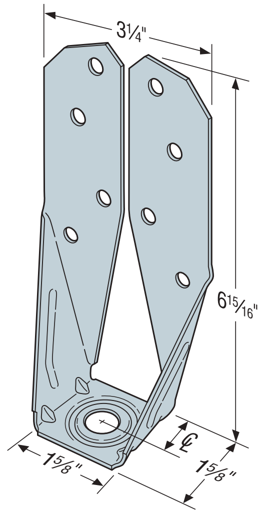
Finish: HDU — Galvanized; DTT2Z — ZMAX® coating; DTT2SS — Stainless steel

Installation:

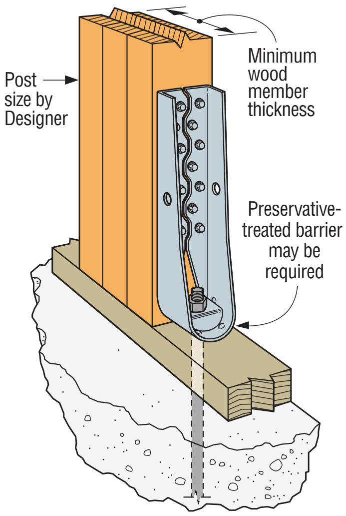
- Use all specified fasteners; see General Notes.
- Place the holdown over the anchor bolt.
- No additional washer required for HDU, the DTT2Z requires standard cut washer (included) be installed between the nut and seat.
- To tie multiple 2x members together, the Designer must determine the fasteners required to join the members to act as one unit without splitting the wood. Full length SDS Heavy-Duty Connector screws (4½", 6", 8") may be substituted for the 2½"-long screws to help facililtate this fastening.
- See SB and SSTB anchor bolts on pp. 56–62 for anchorage options.
- Strong-Drive SDS Heavy-Duty Connector screws install best with a low speed high torque drill with a ⅜" hex head driver.
- Anchor bolt nut should be finger tight plus ⅓ to ½ 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.



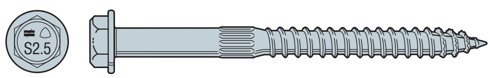
HDU
U.S. Patents
5,979,130



DTT2Z
U.S. Patent
8,555,580



Vertical HDU Installation



Strong-Drive ¼" x 2½" SDS Heavy-Duty Connector Screw
(See p. 35 for more information)

HDU/DTT2Z

Holdowns (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Ga.	Dimensions (in.) W	H	B	℄[11]	SO	Fasteners: Anchor Bolt Diameter (in.)	Fasteners: SDS Screws	Minimum Wood Thickness (in.)	Factored Tensile Resistance (K_D = 1.15) D.Fir-L	S-P-F	Deflection[7,8] at Factored Resistance
										lb.	lb.	in.
										kN	kN	mm
DTT2Z	14	3½	6 15/16	1⅝	15/16	3/16	½	(8) ¼" x 1½"	1½	2805	2520	0.25
										12.48	11.21	6.35
DTT2Z-SDS2.5								(8) ¼" x 2½"	3	3060	2950	0.25
										13.61	13.12	6.35
HDU2-SDS2.5	14	2⅞	8 11/16	3¼	1⅜	1⅜	⅝	(8) ¼" x 2½"	3	3210	2900	0.092
										14.28	12.90	2.34
HDU4-SDS2.5	14	2⅞	10 15/16	3¼	1⅜	1⅜	⅝	(10) ¼" x 2½"	3	5350	4515	0.13
										23.80	20.08	3.30
HDU5-SDS2.5	14	2⅞	13 3/16	3¼	1⅜	1⅜	⅝	(14) ¼" x 2½"	3	7485	6130	0.153
										33.30	27.27	3.89
HDU8-SDS2.5	10	3	16⅝	3½	1⅜	1½	⅞	(20) ¼" x 2½"	3	9130	7330	0.124
										40.61	32.61	3.15
									4½	12890	9280	0.190
										57.34	41.28	4.83
HDU11-SDS2.5	10	3	22¼	3½	1⅜	1½	1	(30) ¼" x 2½"	5½	14090	10145	0.196
										62.68	45.13	4.98
									7¼	16985	12230	0.197
										75.56	54.40	5.00
HDU14-SDS2.5	7	3⅛	25 11/16	3½	1 9/16	1 9/16	1	(36) ¼" x 2½"	7¼	20930	15070	0.250
										93.10	67.04	6.35
									5½[9]	20850	15010	0.250
										92.75	66.77	6.35

1. Factored resistances have been increased 15% for short term load duration; reduce where other load durations govern.
2. The Designer must specify anchor bolt type, length and embedment to ensure adequate anchorage to concrete.
3. When using structural composite lumber columns, screws must be applied to the wide face of the column (see technical bulletin T-SCLCLMCAN at **strongtie.com** for details).
4. Post design shall be by the Designer. Tabulated values are based on a minimum wood member thickness in the direction of the fastener penetration. Post may consist of multiple 2x members provided they are connected independently of the holdown fasteners.
5. Holdowns shall be installed centre along the width of the attached post.
6. Tension values are valid for holdowns flush or raised off of the sill plate.
7. Deflection at Factored Resistance includes fastener slip, holdown elongation and anchor bolt elongation (L = 6"). Additional elongation of anchor bolts shall be accounted for by the Designer when the length of the anchor bolt above the top of the concrete to the attachment at the holdown is longer than 6". Similar consideration for floor to floor connections must be addressed by the Designer.
8. Deflection values may be reduced linearly for lesser loads including specified wind loads at h/500.
9. Noted HDU14 factored resistances are based on a 5½"-wide (6x6) post. All other resistances assume 3½"-wide posts (minimum).
10. HDU14 requires heavy hex nut for anchor bolt (supplied with holdown).
11. Centre line dimension is taken from the face of the post/framing member to the centre of anchor.

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 holdown employ the Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws which install easily, reduce fastener slip and provide a greater net section area of the post when compared to bolts. They may be installed either flush or raised off the mudsill without a reduction in capacity.

Special Features:

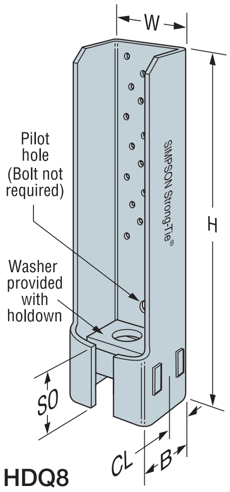
- Uses Strong-Drive SDS Heavy-Duty Connector screws which install easily, reduce fastener slip, and provide a greater net section area of the post compared to bolts
- Strong-Drive SDS Heavy-Duty Connector screws are supplied with the holdowns to ensure proper fasteners are used
- No stud bolts to countersink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

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

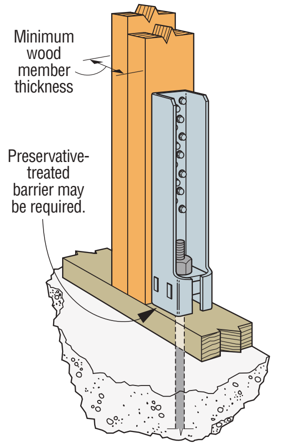
Finish: HDQ8 — Galvanized;
HHDQ — Simpson Strong-Tie® gray paint;
HHDQ11 — Available in stainless steel

Installation:

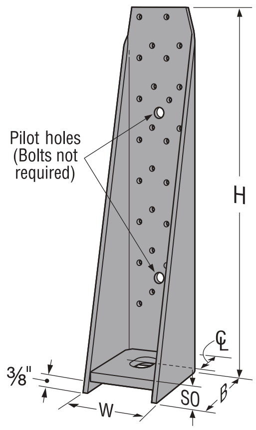
- Use all specified fasteners; see General Notes
- For use in vertical and horizontal applications
- No additional washer is required
- To tie multiple 2x members together, the Designer must determine the fasteners required to join members without splitting the wood
- See SB and SSTB anchor bolts on pp. 56–62 for anchorage options
- Strong-Drive SDS Heavy-Duty Connector screws install best with a low speed high torque drill with a ⅜" hex head driver
- HDQ8 has ⅝" of adjustability perpendicular to the wall
- HHDQ14 requires a heavy hex anchor nut (supplied with holdown)
- Anchor bolt nut should be finger tight plus ⅓ to ½ 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.



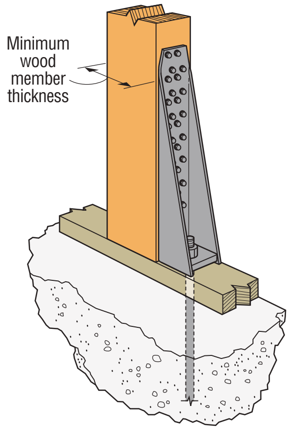
HDQ8
U.S. Patents
6,006,487 and
6,327,831



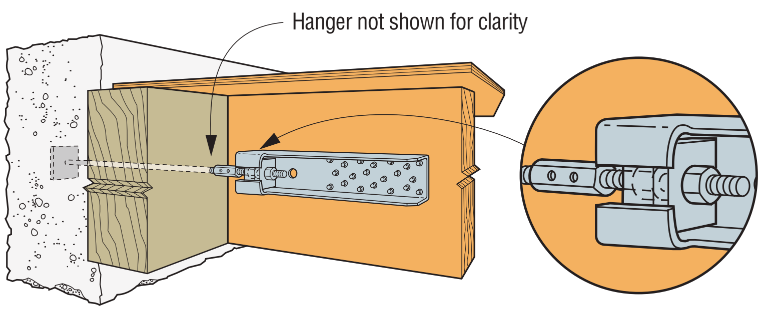
HDQ8 Vertical Installation



HHDQ11
(HHDQ14 similar)



Vertical HHDQ11 Installation
(HHDQ14 similar)



Horizontal HDQ8 Installation

HDQ8/HHDQ

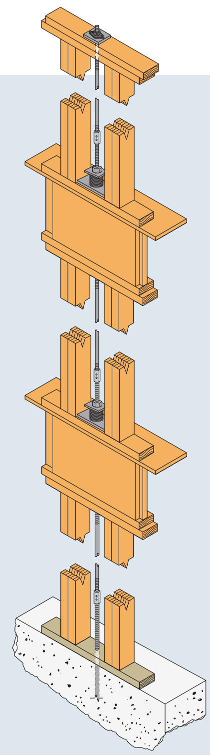
SIMPSON Strong-Tie®

Holdowns (cont.)

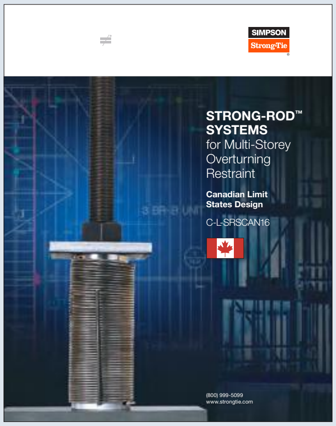
These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Ga.	Dimensions (in.) W	H	B	℄[11]	SO	Fasteners: Anchor Bolt Diameter (in.)	SDS Screws	Minimum Wood Thickness (in.)	Factored Tensile Resistance (K_D = 1.15) D.Fir-L lb. / kN	S-P-F lb. / kN	Deflection[7,8] at Factored Resistance in. / mm
HDQ8-SDS3	7	2⅞	14	2½	1¼	2⅜	⅞	(20) ¼" x 3"	3	9825	7075	0.112
										43.71	31.47	2.84
									4½	13885	9995	0.139
										61.77	44.46	3.53
SS HHDQ11-SDS2.5	7	3	15⅛	3½	1 9/16	⅞	1	(24) ¼" x 2½"	5½	16285	12420	0.218
										72.44	55.25	5.54
HHDQ14-SDS2.5	7	3	18¾	3½	1 9/16	⅞	1	(30) ¼" x 2½"	7¼	17510	12610	0.168
										77.89	56.09	4.27
									5½[9]	20355[9,10]	16280[9,10]	0.140
										90.55	72.42	3.56

1. Factored resistances have been increased 15% for short term load duration; reduce where other load durations govern.
2. The Designer must specify anchor bolt type, length and embedment to ensure adequate anchorage to concrete.
3. When using structural composite lumber columns, screws must be applied to the wide face of the column (see technical bulletin T-SCLCLMCAN at **strongtie.com** for details).
4. Post design shall be by the Designer. Tabulated values are based on a minimum wood member thickness in the direction of the fastener penetration. Post may consist of multiple 2x members provided they are connected independently of the holdown fasteners.
5. Holdowns shall be installed centre along the width of the attached post.
6. Tension values are valid for holdowns flush or raised off of the sill plate.
7. Deflection at Factored Resistance includes fastener slip, holdown elongation and anchor bolt elongation (L = 6"). Additional elongation of anchor bolts shall be accounted for by the Designer when the length of the anchor bolt above the top of the concrete to the attachment at the holdown is longer than 6". Similar consideration for floor to floor connections must be addressed by the Designer.
8. Deflection values may be reduced linearly for lesser loads including specified wind loads at h/500.
9. Noted HHDQ14 factored resistances are based on a 5½"-wide (6x6) post. All other resistances assume 3½"-wide posts (minimum).
10. Requires heavy hex nut for anchor bolt (supplied with holdown).
11. Centre line dimension is taken from the face of the post/framing member to the centre of anchor.



Need a Higher Capacity Holdown?



When one of our conventional holdowns doesn't offer enough overturning capacity for a multi-storey project, consider specifying the Simpson Strong-Tie® Anchor Tiedown System (ATS). ATS is a high-capacity overturning-restraint system commonly used in 2–6 storey wood structures to anchor stacked shearwalls. This continuous rod system features our patented shrinkage take-up devices, extends from the foundation to the top of the structure and is restrained (tied off) at each level. Designed properly, it can provide over 75000 lb. of overturning restraint; important when designing for the cumulative overturning forces in multi-storey buildings.

For more information and specification options see our *Strong-Rod Systems Canadian Limit States Design* catalogue (C-L-SRSCAN16) or visit **strongtie.com/ats**.

Holdowns

Simpson Strong-Tie offers a wide range of bolted holdowns offering low-deflection performance for a range of load requirements. All of these holdowns have been tested in accordance with ICC-ES's AC 155 acceptance criteria.

The HD3B is light-duty holdown 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 holdown and feature a unique seat design which greatly minimizes deflection under load. HDB holdowns are self-jigging, ensuring that a 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 resistances for intermediate-load-range shearwalls, braced-wall panels and lateral applications.

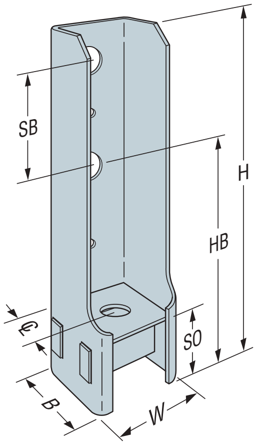
HD holdowns offer the highest bolted capacities for both vertical and horizontal applications. The HD12 and HD19 are self jigging, ensuring that a minimum of seven bolt diameters from the end of the post is met. They can be installed back-to-back when eccentricity is an issue.

Material: See table. For stainless-steel options, see engineering letter L-C-SSHD at **strongtie.com**.

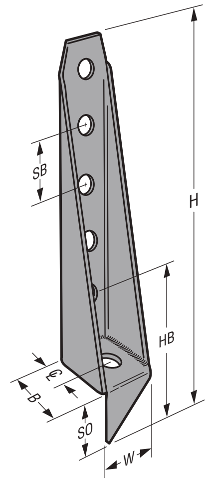
Finish: HD3B/HD5B/HD7B/HD9B — Galvanized;
HD — Simpson Strong-Tie® gray paint; HDG available.

Installation:

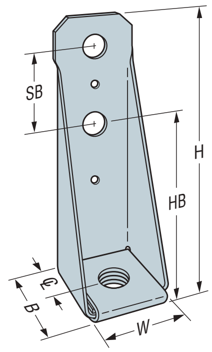
- Use all specified fasteners; see General Notes
- Bolt holes shall be a minimum of 1/32" to a maximum of 1/16" larger than the bolt diameter (per 12.4.1.2 CSA O86-14)
- Stud bolts should be snugly tightened with standard cut washers between the wood and nut
- The Designer must specify anchor bolt type, length, and embedment. See SB and SSTB anchor bolts on pp. 56–62
- To tie multiple 2x members together, the Designer must determine the fasteners required to join members without splitting the wood
- Anchor bolt nut should be finger tight plus 1/3 to 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.



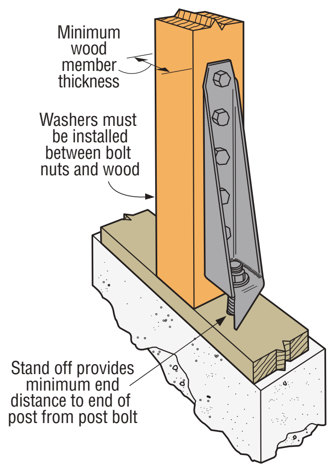
HD5B
(HD7B and HD9B similar)
U.S. Patents
6,006,487 and 6,327,831



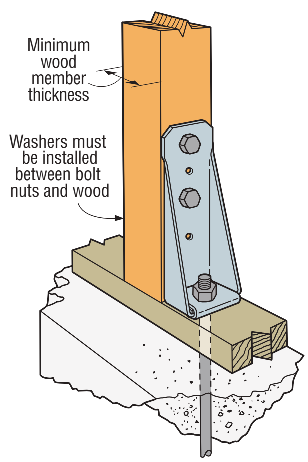
HD19
(HD12 similar)



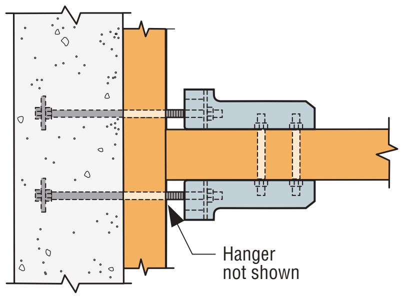
HD3B



Vertical HD19 Installation



Vertical HD3B Installation



Horizontal HDB Installation
(plan view)

Holdowns (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Body Ga.	Dimensions (in.)							Fasteners			Wood Member Thickness (in.)	Factored Tensile Resistance (K_D = 1.15)		Deflection[8,9] at Factored Resistance
		HB	SB	W	H	SO	B	℄[11]	Anchor Bolt Dia. (in.)	Stud Bolts Qty.	Stud Bolts Dia. (in.)		D.Fir-L	S-P-F	
													lb.	lb.	in.
													kN	kN	mm
HD3B	12	4¾	2½	2½	8⅝	⅜	2¼	1⁵⁄₁₆	⅝	2	⅝	1½	1305	1030	0.118
													5.81	4.58	3.00
												3	2610	2060	0.088
													11.61	9.16	2.24
												3½	3055	2412	0.114
													13.59	10.73	2.90
HD5B	10	5¼	3	2½	9⅜	2	2½	1¼	⅝	2	¾	3	3100	2445	0.106
													13.79	10.88	2.69
												3½	3630	2865	0.116
													16.15	12.74	2.95
												4½	4645	3670	0.142
													20.66	16.33	3.61
HD7B	10	5¼	3	2½	12⅜	2	2½	1¼	⅞	3	¾	3	4645	3670	0.107
													20.66	16.33	2.72
												3½	5440	4295	0.121
													24.20	19.11	3.07
												4½	5965	4710	0.130
													26.53	20.95	3.30
												5½	5965	4775	0.130
													26.53	21.24	3.30
HD9B	7	6⅛	3½	2⅞	14	2⅜	2½	1¼	⅞	3	⅞	3½	5415	4275	0.112
													24.09	19.02	2.84
												4½	8165	6445	0.155
													36.32	28.67	3.94
												5½	7915	6330	0.152
													35.21	28.16	3.86
												6	8320	6570	0.157
													37.01	29.23	3.99
HD12	3	7	4	3½	20⁵⁄₁₆	3⅝	4¼	2⅛	1[12]	4	1	3½	9700	7660	0.150
													43.15	34.07	3.81
												4½	12425	9810	0.166
													55.27	43.64	4.22
												5½[7]	12045[7]	9635[7]	0.134
													53.58	42.86	3.40
												6[7]	16565[7]	13080[7]	0.171
													73.69	58.19	4.34
HD19	3	7	4	3½	24½	3⅝	4¼	2⅛	1⅛[12]	5	1	5½[7]	15060[7]	12045[7]	0.187
													66.99	53.58	4.75
												6[7]	20710[7]	16350[7]	0.229
													92.12	72.73	5.82

1. Factored resistances have been increased 15% for short term load duration; reduce where other load durations govern.
2. The Designer must specify anchor bolt type, length and embedment to ensure adequate anchorage to concrete.
3. When using structural composite lumber columns, bolts must be applied to the wide face of the column (see technical bulletin T-SCLCLMCAN at **strongtie.com** for details).
4. Post design shall be by the Designer. Tabulated values are based on a minimum wood member thickness in the direction of the fastener penetration. Post may consist of multiple 2x members provided they are connected independently of the holdown fasteners.
5. Holdowns shall be installed centre along the width of the attached post.
6. Tension values are valid for holdowns flush or raised off of the sill plate.
7. Noted HD12 and HD19 factored resistances are based on a 5½"-wide post (6x6 or 4-2x6). All other resistances assume 3½"-wide posts (minimum).
8. Deflection at Factored Resistance includes fastener slip, holdown elongation and anchor bolt elongation (L = 6"). Additional elongation of anchor bolts shall be accounted for by the Designer when the length of the anchor bolt above the top of the concrete to the attachment at the holdown is longer than 6". Similar consideration for floor to floor connections must be addressed by the Designer.
9. Deflection values may be reduced linearly for lesser loads including specified wind loads at h/500.
10. The factored resistances shown are based on the lower of the assembly testing and the bolt calculations in accordance with 12.4 CSA O86-14. For applications where the HD or HDB holdowns are used on opposite sides of the post the capacity of the connection may be calculated using the lower of two times the tabulated value or the bolt calculations in accordance with 12.4 CSA O86-14 assuming double shear.
11. Centre line dimension is taken from the face of the post/framing member to the centre of anchor.
12. Standard cut washer required under the anchor nut where noted.

SIMPSON Strong-Tie®

PAI/MPAI

Purlin Anchors

Wood-to-concrete and -concrete block connectors. The PAs dual embedment line allows installation in concrete or concrete block.

Material: MPAI — 14 gauge; PAI — 12 gauge

Finish: Galvanized. Some products available HDG or ZMAX® coating.

Installation:

- Minimum concrete strength is 15 MPa.
- Use all specified fasteners; some models have extra fastener holes. See General Notes.
- Wood splitting may occur when anchor is nailed to wood less than 3½" wide. To reduce splitting for widths less than 3½", fill every other nail hole with 10d x 1½" nails. Reduce the factored resistance based on the size and quantity of fasteners used. (See nail table on p. 28.)

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

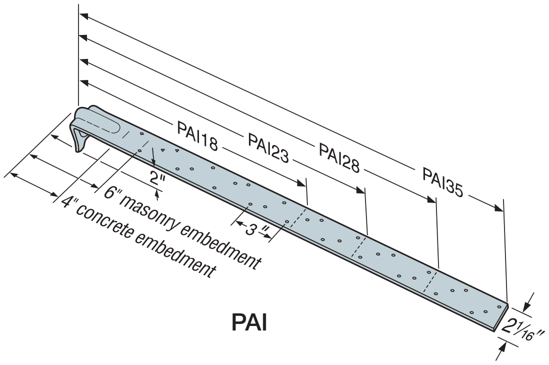
Concrete Block Walls — The masonry embedment line on PAI, MPAI allows for 4" of grout embedment in a standard 8" concrete masonry unit. The minimum wall specifications are:

A One 15M vertical rebar, 32" long, 16" each side of anchor;

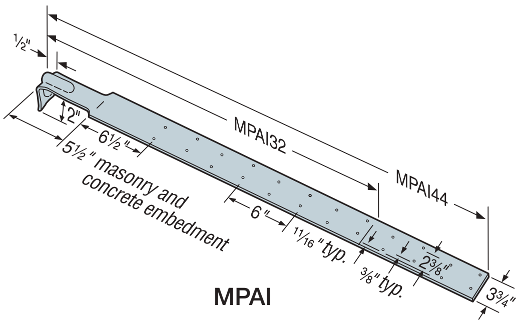
B Two courses of grout filled block above and below the anchor (no cold joints allowed);

C A horizontal bond beam with two 15M rebars, 40" long, a maximum of two courses above or below the anchor.

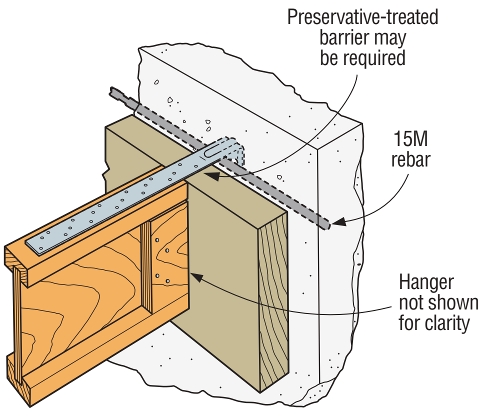
All cells grouted with 15 MPa ⅜" aggregate grout. Grout shall be vibrated per the Code. Rebar quantities, sizes and lengths are minimum requirements and may be increased per any additional wall design requirements.



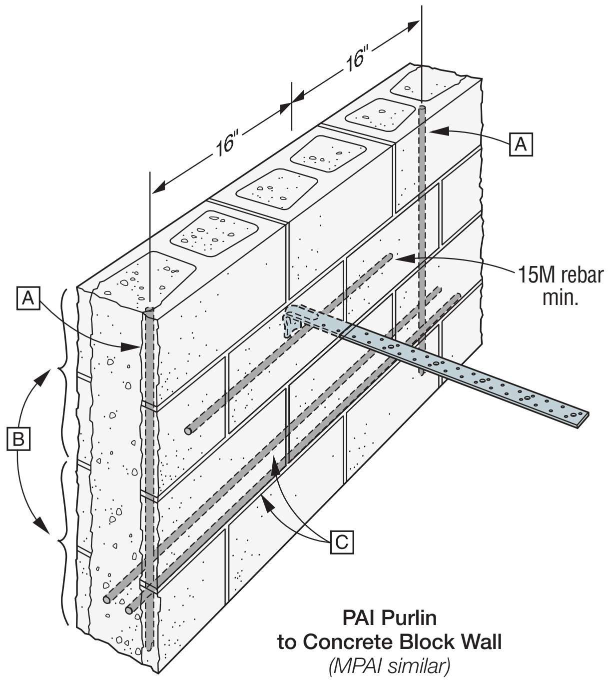
PAI



MPAI



PAI Purlin to Concrete Wall
(MPAI similar)



PAI Purlin to Concrete Block Wall
(MPAI similar)

SIMPSON Strong-Tie®

Purlin Anchors (cont.)

Model No.	L (in.)	Fasteners		Factored Tensile Resistance (K_D = 1.15)			
				D.Fir-L		S-P-F	
		Masonry	Concrete	Masonry	Concrete	Masonry	Concrete
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
No Ledger							
PAI18	18	(10) 10d x 1½"	(12) 10d x 1½"	2910	3490	2580	3095
				12.94	15.52	11.48	13.77
PAI23	23	(15) 10d x 1½"	(17) 10d x 1½"	3980	4945	3870	4385
				17.70	22.00	17.22	19.51
PAI28	29	(21) 10d x 1½"	(23) 10d x 1½"	3980	5215	3980	5215
				17.70	23.20	17.70	23.20
PAI35	35	(26) 10d x 1½"	(29) 10d x 1½"	3980	5215	3980	5215
				17.70	23.20	17.70	23.20
MPAI32	32	(16) 10d x 1½"	—	3920	—	3615	—
				17.44	—	16.08	—
MPAI44	44	(24) 10d x 1½"	—	4055	—	4055	—
				18.04	—	18.04	—
1¾" LVL and 2x Ledger							
PAI18	18	(9) 10d x 1½"	(11) 10d x 1½"	2620	3200	2320	2840
				11.65	14.23	10.32	12.63
PAI23	23	(14) 10d x 1½"	(16) 10d x 1½"	3980	4655	3610	4130
				17.70	20.71	16.06	18.37
PAI28	29	(20) 10d x 1½"	(22) 10d x 1½"	3980	5215	3980	5215
				17.70	23.20	17.70	23.20
PAI35	35	(16) 10d x 1½"	(28) 10d x 1½"	3980	5215	3980	5215
				17.70	23.20	17.70	23.20
MPAI32	32	(16) 10d x 1½"	—	3920	—	3615	—
				17.44	—	16.08	—
MPAI44	44	(24) 10d x 1½"	—	4055	—	4055	—
				18.04	—	18.04	—
2-2x and 4x Ledger							
PAI18	18	(7) 10d x 1½"	(9) 10d x 1½"	2035	2620	1805	2320
				9.05	11.65	8.03	10.32
PAI23	23	(12) 10d x 1½"	(14) 10d x 1½"	3490	3980	3095	3610
				15.52	17.70	13.77	16.06
PAI28	29	(18) 10d x 1½"	(20) 10d x 1½"	3980	5215	3980	5160
				17.70	23.20	17.70	22.95
PAI35	35	(24) 10d x 1½"	(26) 10d x 1½"	3980	5215	3980	5215
				17.70	23.20	17.70	23.20
MPAI32	32	(16) 10d x 1½"	—	3920	—	3615	—
				17.44	—	16.08	—
MPAI44	44	(24) 10d x 1½"	—	4055	—	4055	—
				18.04	—	18.04	—

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
2. Factored resistances are for horizontal installation into the side of a concrete or masonry wall.
3. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

Caps and Bases

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:

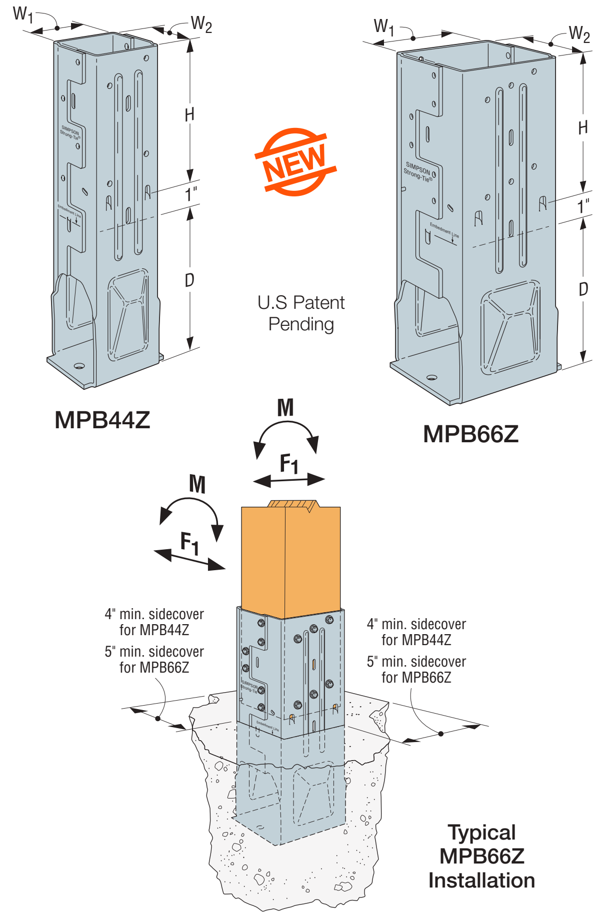
- Internal top-of-concrete tabs
- 1" standoff tabs
- Additional holes provided to attach trim material
- Weep hole provided for water drainage

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 resistance.)
- 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.



These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Factored Resistance												Download (K_D=1.00)		Rotational Stiffness K
	Concrete Anchorage						Wood (K_D=1.15)								
	Cracked			Uncracked			D.Fir-L			S-P-F			D.Fir-L	S-P-F	
	Uplift	F_1	M_r	Uplift	F_1	M_r	Uplift	F_1	M_r	Uplift	F_1	M_r			
	lb.	lb.	lb.-ft.	lb.	lb.	lb.-ft.	lb.	lb.	lb.-ft.	lb.	lb.	lb.-ft.	lb.	lb.	lb.-in./rad
	kN	kN	kN-m	kN	kN	kN-m	kN	kN	kN-m	kN	kN	kN-m	kN	kN	kN-mm/rad
Wind and Seismic $I_EF_aS_a(0.2)<0.35$															
MPB44Z	5925	1900	1545	8464	2710	2205	7620	4835	2490	6250	3830	1885	10240	8625	2510000
	26.36	8.45	2.10	37.65	12.06	2.99	33.90	21.51	3.38	27.80	17.04	2.56	45.55	38.37	283602
MPB66Z	10795	3685	2905	15420	5265	4150	11845	7990	5590	10105	6050	4235	15360	12935	3950000
	48.02	16.39	3.94	68.59	23.42	5.63	52.69	35.54	7.58	44.95	26.91	5.74	68.33	57.54	446307
Seismic $I_EF_aS_a(0.2)\geq0.35$															
MPB44Z	4445	1425	1160	6350	2035	1655	7620	4835	2490	6250	3830	1885	10240	8625	2510000
	19.77	6.34	1.57	28.25	9.05	2.24	33.90	21.51	3.38	27.80	17.04	2.56	45.55	38.37	283602
MPB66Z	8095	2765	2180	11565	3950	3110	11845	7990	5590	10105	6050	4235	15360	12935	3950000
	36.01	12.30	2.96	51.45	17.57	4.22	52.69	35.54	7.58	44.95	26.91	5.74	68.33	57.54	446307

1. Factored Wood Uplift, F_1 and M_r values have been increased 15% for short term loading. Reduce where other load durations govern.
2. Factored Download resistances cannot be increased for short term loading. Reduce where long term load durations govern.
3. For Uplift, F_1 and M_r, the factored resistance shall be the lower of the tabulated Concrete Anchorage or the Wood values shown.
4. Concrete shall have a minimum compressive strength f'_c=2500 psi (17.25 MPa).
5. For wet service conditions, multiply the Wood factored resistance or the Download by K_{SF}=0.67.
6. 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.
7. Factored resistances shown may be limited by the design capacity of the post.
8. Foundation dimensions are for MPBZ anchorage only. Foundation design (size and reinforcement) is the responsibility of the designer.
9. For loading simultaneously in more than one direction, the factored resistance must be evaluated using the following equation: (Factored uplift / Uplift resistance + Factored F_1 / F_1 resistance + Factored moment / M_r) ≤ 1.0.

ABA/ABU/ABW

Adjustable and Standoff Post Bases

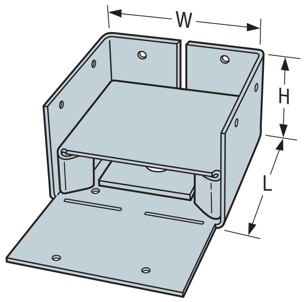
Post Bases provide tested capacity. They feature 1" standoff height above concrete floors. They reduce the potential for decay at post and column ends.

Material: See table

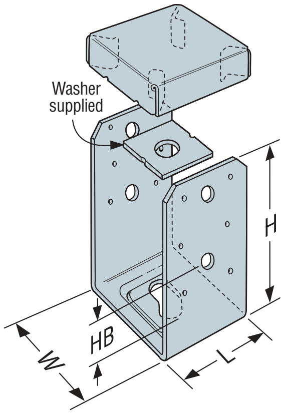
Finish: Galvanized. Most available in ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

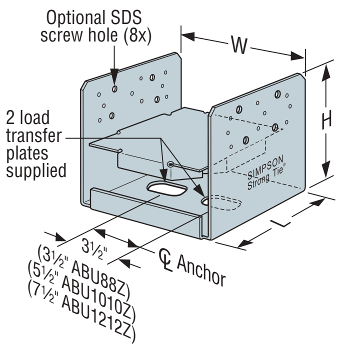
- Use all specified fasteners; see General Notes.
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-top-supported installations (such as fences or unbraced carports).
- Can be used with cast-in-place anchors. See pp. 71–72 for post-installed anchorage solutions. Anchor diameter shown in table. Install required washer, which is not included for ABAs.
- Maintain a minimum 2" side cover from the base to the edge of concrete.



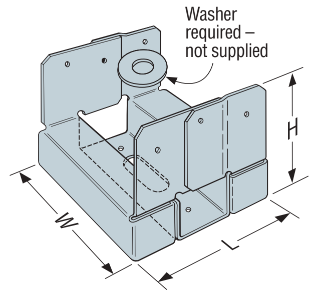
ABWZ



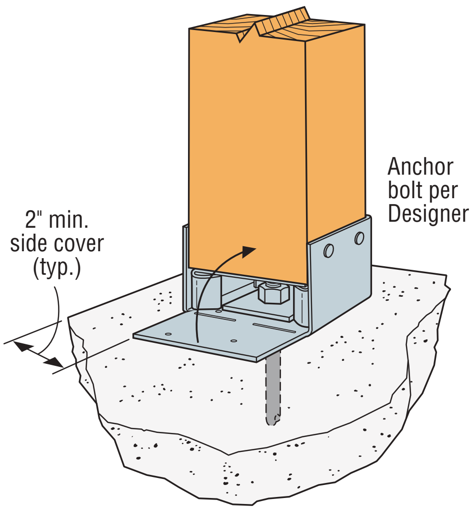
ABU44Z
(other sizes similar)



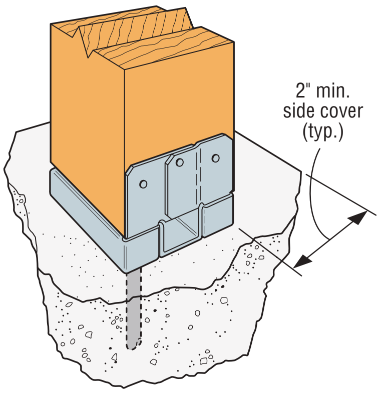
ABU88Z
(other sizes similar)



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. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Nominal Post Size	Material (ga.) Base	Material (ga.) Strap	Dimensions (in.) W	Dimensions (in.) L	Dimensions (in.) H	Fasteners: Anchor Dia. (in.)	Fasteners: Nails	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	D.Fir-L Normal (K_D = 1.00)	S-P-F Uplift (K_D = 1.15)	S-P-F Normal (K_D = 1.00)
									lb.	lb.	lb.	lb.
									kN	kN	kN	kN
ABA44Z	4x4	16	16	3 9/16	3⅜	3 1/16	½	(6) 10d	1030	10375	730	8610
									4.58	46.15	3.25	38.30
ABW44Z	4x4	16	16	3 9/16	3 9/16	2¼	½	(8) 10d	1635	9965	1160	8260
									7.27	44.33	5.16	36.74
ABU44Z	4x4	16	12	3 9/16	3	5½	⅝	(12) 16d	2955	10940	2095	9070
									13.15	48.67	9.32	40.35
ABA44RZ	RGH 4x4	16	16	4 1/16	3⅛	2 13/16	½	(6) 10d	925	10630	655	8810
									4.11	47.29	2.91	39.19
ABW44RZ	RGH 4x4	16	16	4	4 1/16	1 15/16	½	(8) 10d	1280	9965	905	8260
									5.69	44.33	4.03	36.74
ABA46Z	4x6	14	14	3 9/16	5 3/16	3⅛	⅝	(8) 16d	990	17200	705	14290
									4.40	76.51	3.14	63.57
ABW46Z	4x6	12	16	3 9/16	5 9/16	3	½	(10) 10d	1415	6645	1005	5500
									6.29	29.56	4.47	24.47
ABU46Z	4x6	12	12	3 9/16	5	7	⅝	(12) 16d	3490	20190	2480	16765
									15.52	89.81	11.03	74.58
ABA46RZ	RGH 4x6	14	14	4 1/16	5 3/16	2⅞	⅝	(8) 16d	990	15090	705	12515
									4.40	67.13	3.14	55.67
ABW46RZ	RGH 4x6	14	16	4	6	2 13/16	½	(10) 10d	1305	6645	925	5500
									5.81	29.56	4.11	24.47
ABA66Z	6x6	14	14	5½	5⅜	3⅛	⅝	(8) 16d	1020	17635	725	13055
									4.54	78.45	3.23	58.07
ABW66Z	6x6	12	14	5½	5 9/16	3	½	(12) 10d	1985	18860	1410	13810
									8.83	83.01	6.27	61.43
ABU66Z	6x6	12	10	5½	5	6 1/16	⅝	(12) 16d	3590	24880	2550	18445
									15.97	110.68	11.34	82.05
ABA66RZ	RGH 6x6	14	14	6	5 3/16	2⅞	⅝	(8) 16d	1020	17635	725	13055
									4.54	78.45	3.23	58.07
ABW66RZ	RGH 6x6	12	14	6	6	2 13/16	½	(12) 10d	1780	18660	1265	13810
									7.92	83.01	5.63	61.43
ABU88Z	8x8	12	14	7½	7	7	2 ⅝	(18) 16d	3555	28275	2525	20805
									15.81	125.78	11.23	92.55
ABU88RZ	RGH 8x8	12	14	8	7	7	2 ⅝	(18) 16d	3555	28275	2525	20805
									15.81	125.78	11.23	92.55
ABU1010Z	10x10	12	12	9½	9	7¼	2 ⅝	(22) 16d	3055	44950	2170	37025
									13.59	199.96	9.65	164.70
ABU1010RZ	RGH 10x10	12	12	10	9	7	2 ⅝	(22) 16d	3055	44950	2170	37025
									13.59	199.96	9.65	164.70
ABU1212Z	12x12	12	12	11½	11	7¼	2⅝	(22) 16d	5010	49345	3555	40615
									22.28	219.49	15.81	180.67
ABU1212RZ	RGH 12x12	12	12	12	11	7	2⅝	(22) 16d	5010	49345	3555	40615
									22.28	219.49	15.81	180.67

1. Uplift resistances have been increased 15% for short term loading; no further increase is allowed.
2. Factored normal resistances may not be increased for short term loading.
3. Specifier to design concrete for applied loads.
4. ABU88Z, ABU88RZ, ABU1010Z, ABU1010RZ, ABU1212Z and ABU1212RZ may be installed with (8) Strong-Drive® ¼" x 3" SDS Heavy-Duty Connector screws for same tabulated values.
5. Factored resistances shown assume No.1/No.2 for 4x4 and 4x6 and No.2 for 6x6, 8x8, 10x10 and 12x12.
6. Factored resistances shown assume a minimum concrete compressive strength of 15 MPa with a concrete surface area of four times the bearing area of the connector. See 10.8.1 CSA A23.3-14.
7. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 for wet service conditions.
8. 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.
9. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

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; PBS44A, PBS46 — 14 gauge strap, 12 gauge standoff; PBS66 — 12 gauge

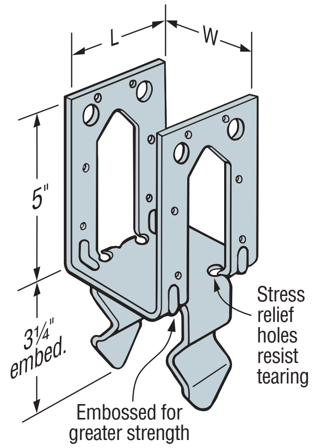
Finish: Galvanized. Some products available in ZMAX® or HDG coating; see Corrosion Information, pp. 20–24.

Installation:

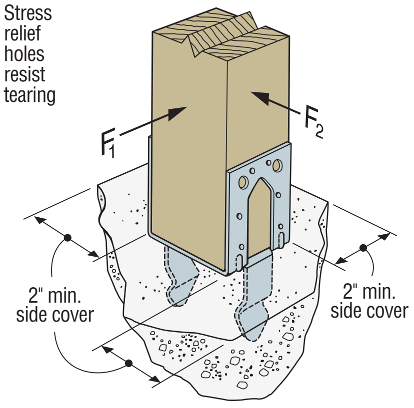
- Use all specified fasteners; see General Notes.
- Install either nails or bolts (see p. 16 note d).
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-top-supported installations (such as fences or unbraced carports).
- Holes are provided for installation with either 16d commons or ½" bolts. A 2" minimum sidecover is required to obtain the full capacity.
- 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 capacity. Holes in the bottom of the straps allow for free concrete flow.

Options:

- PBS available in rough sizes, contact Simpson Strong-Tie



PB

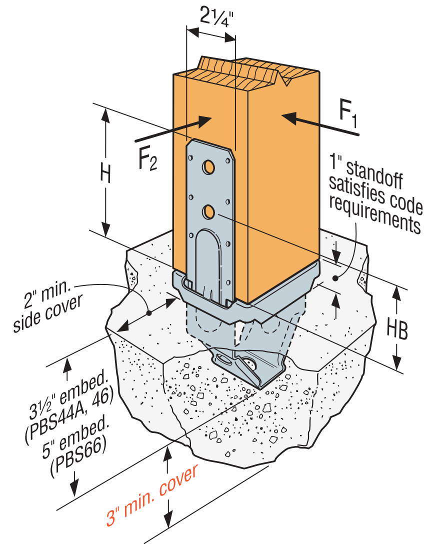


Typical PB Installation

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in.) W	Dimensions (in.) L	Dimensions (in.) H	Fasteners Nails	Bolts Qty.	Bolts Dia. (in.)	Factored Resistance (K_D = 1.15) D.Fir-L Uplift	D.Fir-L F_1	D.Fir-L F_2	S-P-F Uplift	S-P-F F_1	S-P-F F_2
							lb.	lb.	lb.	lb.	lb.	lb.
							kN	kN	kN	kN	kN	kN
PB44	3⁹⁄₁₆	3¼	5	(12) 16d	2	½	1935	1445	1655	1375	1025	1655
							8.61	6.43	7.36	6.12	4.56	7.36
PB44R	4	3¼	5	(12) 16d	2	½	1935	1445	1655	1375	1025	1655
							8.61	6.43	7.36	6.12	4.56	7.36
PB46	5½	3¼	5	(12) 16d	2	½	1935	1445	1655	1375	1025	1655
							8.61	6.43	7.36	6.12	4.56	7.36
PB66	5½	5¼	5	(12) 16d	2	½	1935	1445	1655	1375	1025	1655
							8.61	6.43	7.36	6.12	4.56	7.36
PB66R	6	5¼	5	(12) 16d	2	½	1935	1445	1655	1375	1025	1655
							8.61	6.43	7.36	6.12	4.56	7.36

1. Uplift and lateral resistances have been increased 15% for short term load duration; no further increase is allowed.
2. Download capacity is the lower of the concrete or post capacity per CSA A23.3-14 or CSA O86-14.
3. Structural composite lumer columns have sides that show either the wide face or the edges of the lumber strands/veneers. For SCL columns, the fasteners should be installed through the wide face.
4. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 for wet service conditions.
5. Factored resistances shown assume a minimum of f'_c = 15 MPa.
6. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.



Typical PBS44A Installation

SIMPSON Strong-Tie®

PB/PBS

Regular and Standoff Post Bases (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Dimensions (in.)			Fasteners			Factored Resistance							
							D.Fir-L				S-P-F			
	W	L	H	Nails	Bolts		Uplift (K_D = 1.15)	F_1 (K_D = 1.15)	F_2 (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	F_1 (K_D = 1.15)	F_2 (K_D = 1.15)	Normal (K_D = 1.00)
					Qty.	Dia. (in.)	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
PBS44A	3 9/16	3½	6¼	(14) 16d	2	½	2745	1650	1345	10920	1950	1170	955	9125
							12.21	7.34	5.98	48.58	8.67	5.20	4.25	40.59
PBS46	3 9/16	5 7/16	6 9/16	(14) 16d	2	½	2745	1650	1345	15835	1950	1170	955	13155
							12.21	7.34	5.98	70.44	8.67	5.20	4.25	58.52
PBS66	5½	5⅜	6½	(14) 16d	2	½	2745	1650	1345	15835	1950	1170	955	13155
							12.21	7.34	5.98	70.44	8.67	5.20	4.25	58.52

1. Uplift and lateral resistances have been increased 15% for short term load duration. No further increase is allowed.
2. Structural composite lumer columns have sides that show either the wide face or the edges of the lumber strands/veneers. For SCL columns, the fasteners should be installed through the wide face.
3. Specifier shall design concrete for shear capacity.
4. Normal loads (gravity) may not be increased for short term load duration.
5. PBS66 factored uplift resistance is 4650 lb. (20.68 kN) D.Fir-L and 3720 lb. (16.55 kN) S-P-F when installed with two ½"-diameter bolts.
6. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 for wet service conditions.
7. Factored resistances shown assume a minimum of f'_c = 15MPa.
8. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

EPS4Z

Column Bases

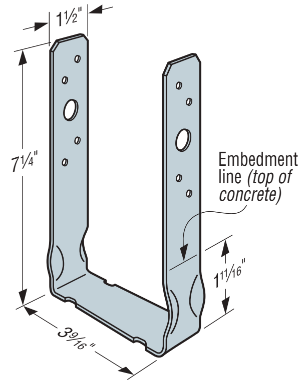
The EPS4Z provides a light-duty connector for attachment of posts to concrete.

Material: 14 gauge

Finish: ZMAX® coating; see Corrosion Information, pp. 20–24

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 capacity.
- Posts shall be preservative-treated wood to meet building code requirements.

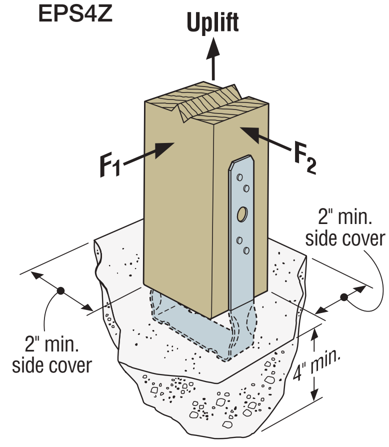


EPS4Z

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Fasteners	Factored Resistance (K_D = 1.15)					
		D.Fir-L			S-P-F		
		Uplift	F_1	F_2	Uplift	F_1	F_2
		lb.	lb.	lb.	lb.	lb.	lb.
		kN	kN	kN	kN	kN	kN
EPS4Z	(8) 10d x 1½"	1765	965	815	1255	685	580
		7.85	4.29	3.63	5.58	3.05	2.58

1. Uplift and lateral resistances have been increased 15% for short term loading; no further increase is allowed.
2. Download capacity is the lower of the concrete or post capacity per CSA A23.3-14 or CSA O86-14.
3. Structural composite lumer columns have sides that show either the wide face or the edges of the lumber strands/veneers. For SCL columns, the fasteners should be installed through the wide face.
4. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 under wet service conditions.
5. f'_c shall be 15 MPa minimum.
6. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



Typical EPS4Z Installation

Caps and Bases

CPTZ

Concealed Post Tie

The CPTZ post base incorporates a knife plate with a standoff base. It achieves a clean, concealed look while providing a 1"-standoff height above concrete. The CPTZ is installed with ½"-diameter galvanized dowels (supplied). The 1"-standoff height is code-required when supporting permanent structures that are exposed to weather or water splash, or in basements. The standoff reduces the potential for decay at post or column ends.

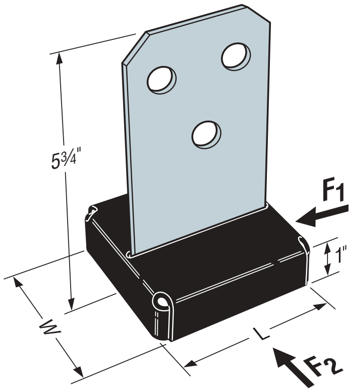
The anchorage for the CPTZ can be either cast-in-place or retrofit with adhesive or mechanical anchors. See our *Anchoring and Fastening Systems for Concrete and Masonry* catalogue for additional information concerning retrofit solutions.

Material: 10 gauge

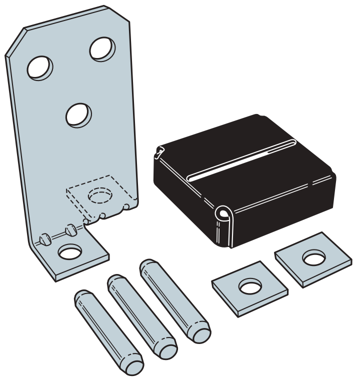
Finish: ZMAX® coating

Installation:

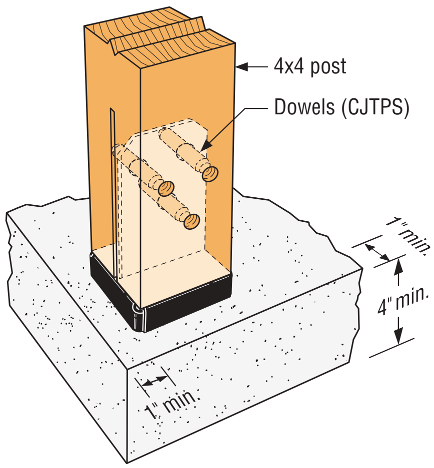
- Use all specified fasteners; see General Notes.
- Use knife blade portion of CPTZ as a template to mark dowel/bolt locations on post
- Drill ½"-diameter holes perpendicular to post at marked locations
- Cut a 3⁄16"-wide slot in the end of the post. Cut slot on face adjacent to the one with the holes. If using a circular saw cut the slot roughly 6½" up the post. Test that the knife blade slides freely in the slot.
- Install the knife blade portion of the connector on the anchor bolts and then place the supplied washers over top of the connector's tabs and on the anchor bolt. Use nuts to attach the knife blade and washers to the anchors.
- The Designer must specify anchor bolt type, length and embedment.
- Slide the stand off base on to the knife blade assembly.
- Stand the post on the knife blade and drive in the dowels supplied with the connector.
- See flier F-C-CPTZ at **strongtie.com** for additional installation information and details.
- 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).



CPT44Z
(others similar)



CPTZ Components



Typical CPT44Z Installation

CPTZ

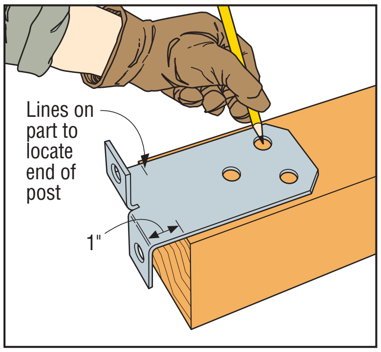
Concealed Post Tie (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

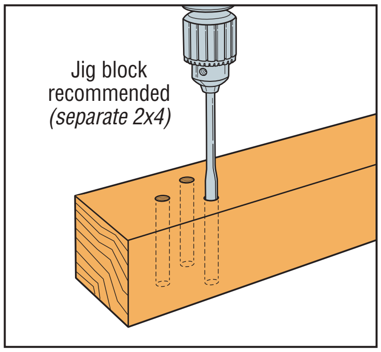
Model No.	Post Size	Dimensions (in.)			Fasteners				Factored Resistance							
									D.Fir-L				S-P-F			
					Anchor		Post		(K_D = 1.15)			Normal[7] (K_D = 1.00)	(K_D = 1.15)			Normal[7] (K_D = 1.00)
		W	L	H					Uplift	F_1	F_2		Uplift	F_1	F_2	
					Qty.	Dia.	Qty.	Type	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
									kN	kN	kN	kN	kN	kN	kN	kN
CPT66Z	6x6 6x6 RGH	5⅜	5⅜	5¾	2	½"	3	½" x 4¾" dowel	4300	1095	1120	30465	3680	995	1120	22695
									19.13	4.87	4.98	135.52	16.37	4.43	4.98	100.96
CPT88Z	8x8 8x8 RGH	7¼	7¼	5¾	2	½"	3	½" x 4¾" dowel	4600	1235	1800	30465	3680	1120	1800	30465
									20.46	5.49	8.01	135.52	16.37	4.98	8.01	135.52

1. Uplift resistances have been increased 15% for short term loading; no further increase is allowed.
2. Factored normal resistances may not be increased for short term loading.
3. Factored resistances shown assume No.2 grade minimum.
4. Factored resistances shown assume a minimum concrete compressive strength of 20 MPa.
5. Factored resistances shown assume seasoned lumber under dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 for wet service conditions.
6. ½"-diameter ASTM A307 Grade A bolts may be substituted for the ½" x 4¾" dowels with no reduction in capacity. Standard cut washers are required between the head/nut and the wood.
7. Factored normal resistances for installation flush with the corner edge of concrete is 14975 lb. (66.61 kN) for all applications.
8. Factored resistances assume ½"-diameter cast-in-place hex head anchor bolts with 4" embedment. Contact Simpson for post-install solutions.
9. When anchoring to a round concrete pier, a minimum 12" diameter is required to achieve tabulated uplift and lateral capacities.

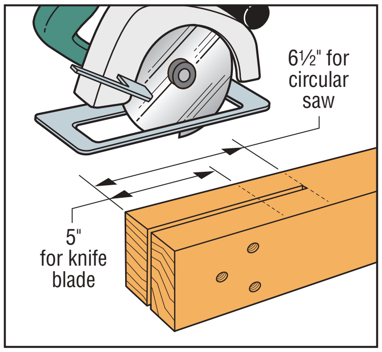
Installation Sequences



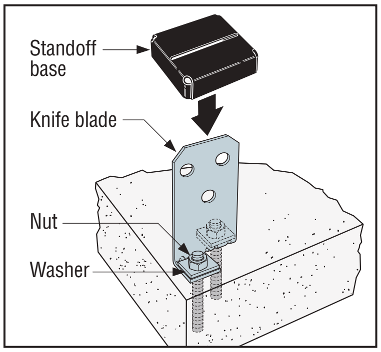
1. Using parts as template



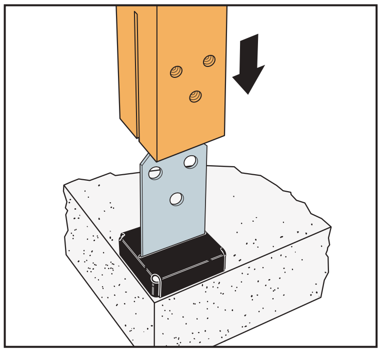
2. Drilling holes



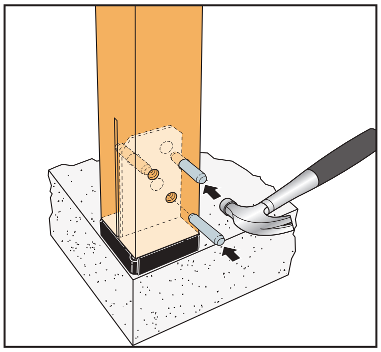
3. Cutting slot



4. Installing CPTZ on concrete



5. Installing post on CPTZ



6. Installing dowels

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.

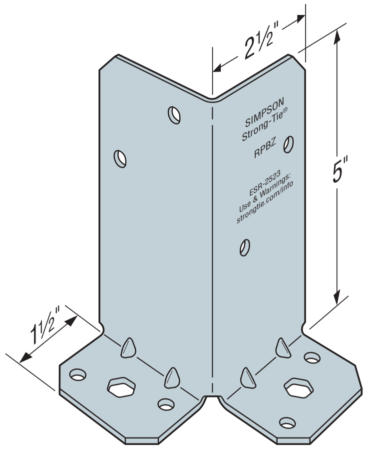
Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws install easily and provide excellent holding strength for post-to-flange connections. Additionally, the RPBZ can be purposed as a temporary base fixture for posts when shoring beams. RPBZ comes standard in ZMAX® finish to meet exposure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

Material: 12 gauge

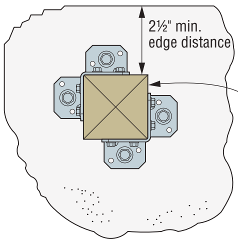
Finish: ZMAX coating

Installation:

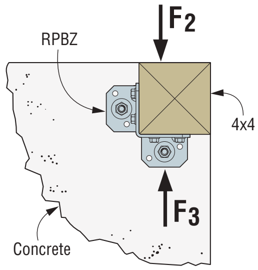
- Use all specified fasteners; see General Notes.
- Simpson Strong-Tie ¼" x 1½" Strong-Drive SDS Heavy-Duty Connector and base connection fasteners are not provided with RPBZ. Simpson Strong-Tie CPS series Composite Post Stand-Off sold separately.
- Post bases do not provide adequate resistance to prevent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



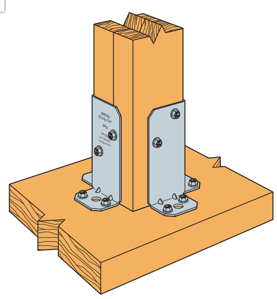
RPBZ

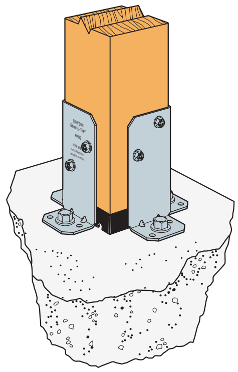


RPBZ Installation Away From Edge on Concrete



RPBZ Corner Installation Post Flush To Edge


RPBZ Installation on Wood


RPBZ Installation With CPS Away From Edge on Concrete

These products are available with additional corrosion protection. For more information, see p. 24.

RPBZ Connector Resistances

Model No.	Post Size	Part Qty.	Fasteners		Factored Resistance (K_D=1.15)					
					D.Fir-L			S-P-F		
			Base	Post	Uplift	F_2	F_3	Uplift	F_2	F_3
					lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
Connection to Wood Framing										
RPBZ	4x or 6x	1	(4) ¼" x 1 ½" SDS	(4) ¼" x 1 ½" SDS	1125	560	660	855	505	475
					5.00	2.49	2.94	3.80	2.25	2.11
			(4) ¼" x 3" SDS	(4) ¼" x 1 ½" SDS	1860	560	660	1700	505	475
					8.27	2.49	2.94	7.56	2.25	2.11
		2	(8) ¼" x 1 ½" SDS	(8) ¼" x 1 ½" SDS	2255	1965	1965	1710	1415	1415
					10.03	8.74	8.74	7.61	6.29	6.29
			(8) ¼" x 3" SDS	(8) ¼" x 1 ½" SDS	3715	1965	1965	3155	1415	1415
					16.53	8.74	8.74	14.03	6.29	6.29

See footnotes beneath the following table.

Caps and Bases

RPBZ

These products are available with additional corrosion protection. For more information, see p. 24.

RPBZ Anchorage to Concrete Resistances

Model No.	Post Size	Part Qty.	Fasteners		Factored Resistance					
					Cracked Concrete			Uncracked Concrete		
			Base	Post	Uplift	F_2	F_3	Uplift	F_2	F_3
					lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN
Corner Condition — Post Flush to Edge										
RPBZ	4x or 6x	1	(2) ⅜"-dia. anchor	(4) ¼" x 1 ½" SDS	1730	1325	645	1500	1440	905
					7.70	5.89	2.87	6.67	6.41	4.03
Away From Edge										
RPBZ	4x or 6x	1	(2) ⅜"-dia. anchor	(4) ¼" x 1 ½" SDS	1975	1440	500	1720	1440	740
					8.79	6.41	2.22	7.65	6.41	3.29
		2	(4) ⅜"-dia. anchor	(8) ¼" x 1 ½" SDS	3335	1440	500	2900	1440	740
					14.84	6.41	2.22	12.90	6.41	3.29

1. Factored connector resistances have been increased 15% for wind or earthquake loading with no further increase allowed. Reduce where other load durations govern.
2. For anchorage to concrete applications, the factored resistance of the connection shall be the lower of the Anchorage to Concrete Resistance values and the Connector Resistance values.
3. Minimum 28 day concrete compressive strength (f'_c) shall be 20 MPa.
4. Away From Edge values require the face of the post to be a minimum of 2¾" from the edge of the concrete.
5. Factored anchorage to concrete resistances are based on CSA A23.3-14 Annex D. Values are applicable to low seismic ($I_E F_a S_a(0.2)<0.35$) or wind designs.
6. Minimum concrete anchor embedment depth shall be 3". Minimum concrete slab thickness shall be 5".
7. Threads on Strong-Drive SDS Heavy-Duty connector screws into wood framing must be fully engaged into a structural wood member.

UB/WUB

Post Brackets

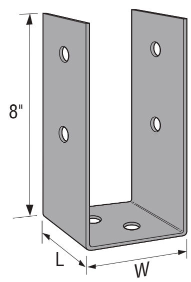
Saddle bracket for connecting post to concrete.

Material: 3 gauge

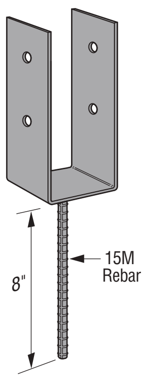
Finish: Hot-dip galvanized, use HDG fasteners

Installation:

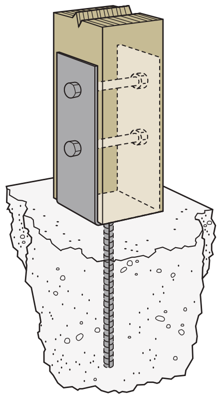
- Use all specified fasteners; see General Notes
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are not recommended for non-top-supported installations (such as fences or unbraced carports)



UB



WUB



Typical WUB Installation

Model No.	Post Size	Dimensions (in.)		Fasteners
		W	L	Post
UB44HDG	4x4	3⅝	3	(2) ½" MB
UB44RHDG	4x4R	4⅛	3	(2) ½" MB
UB66HDG	6x6	5⅝	4	(2) ½" MB
UB66RHDG	6x6R	6⅛	4	(2) ½" MB
WUB44HDG	4x4	3⅝	3	(2) ½" MB
WUB44RHDG	4x4R	4⅛	3	(2) ½" MB
WUB66HDG	6x6	5⅝	3	(2) ½" MB
WUB66RHDG	6x6R	6⅛	3	(2) ½" MB

1. Provide notched out area to accommodate the anchor bolts into the wood post for UB series only. Holes sized for ½" diameter anchor bolts.
2. WUBs do not require fasteners into concrete. Refer to the application drawing for installation.

SIMPSON Strong-Tie®

Elevated Post Base

The EPB44A is a single-piece, non-welded elevated post base. The EPB44PHDG can be used both for pier block and cast-in-place installations for 4x4 posts.

Material: EPB44A — 14 gauge; EPB44, EPB46, EPB66 — 12 gauge base plate, 1¹⁄₁₆" OD x 8" pipe; EPB44PHDG — 12 gauge base plate, ¾" x 6" threaded rod support (nut and washer are shipped assembled)

Finish: EPB44A — Galvanized; EPB44, EPB46, EPB66 — Simpson Strong-Tie® gray paint (may be ordered HDG); EPB44PHDG — Hot-dip galvanized, see Corrosion Information, pp. 20–24.

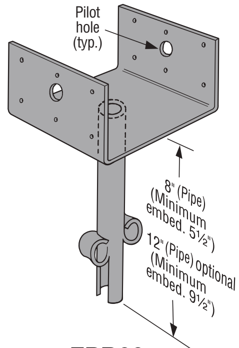
Installation:

- Use all specified fasteners; see General Notes.
- Allows 1" to 2½" clearance above concrete, 2" for EPB44A. Insert EPB into concrete after screeding.
- 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).
- Provide a minimum side cover of 3" for EPB44PHDG and 4" for all others.

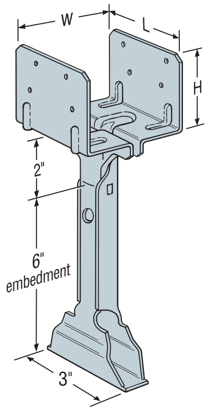
EPB44PHDG

- Secured with epoxy— Drill a ⅞"-diameter hole 4" deep minimum and fill the hole halfway with SET epoxy or drill a ¹³⁄₁₆"-diameter hole 4" deep minimum and fill the hole halfway with AT adhesive. Insert the EPB44PHDG and adjust to the desired height. The threaded rod shall be embedded a minimum of 3½".
- Supported by a nut — Drill a 1"-diameter hole 3½" deep minimum. Insert the EPB44PHDG and adjust to the desired height.
- Embedded in wet concrete — Embed the ¾"-diameter rod a minimum of 3½". Ensure nut and washer are flush with the top of the concrete.
- Fully engage at least three threads in the base.

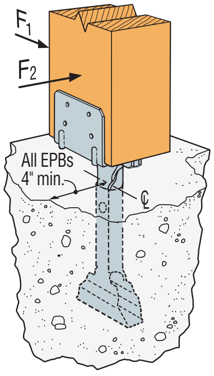
Options: 12" long pipe available for EPB44, EPB46, EPB66; specify "-12" after model number.



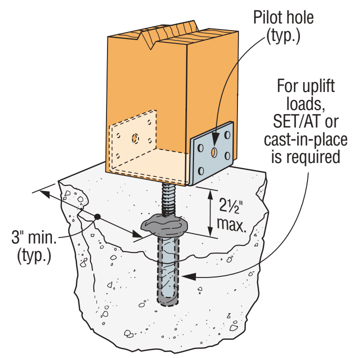
EPB66
(EPB44 and EPB46 similar)



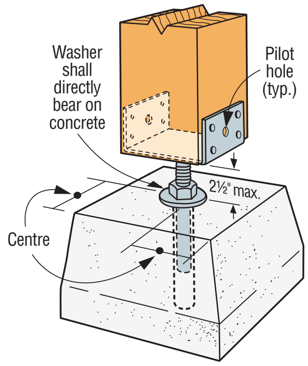
EPB44A



Typical EPB44A Installation



Typical EPB44PHDG Installed with SET Epoxy or AT Adhesive



Typical EPB44PHDG Pier Block Installation
(supported by a nut)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Dimensions (in.) W	L	H	Nails	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	D.Fir-L F_1 (K_D = 1.15)	D.Fir-L F_2 (K_D = 1.15)	D.Fir-L Down (K_D = 1.00)	S-P-F Uplift (K_D = 1.15)	S-P-F F_1 (K_D = 1.15)	S-P-F F_2 (K_D = 1.15)	S-P-F Down (K_D = 1.00)
					lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
EPB44PHDG	3⁹⁄₁₆	3¼	2¼	(8) 16d	1045[3]	—	—	5660	1045[3]	—	—	5660
					4.65	—	—	25.18	4.65	—	—	25.18
EPB44A	3⁹⁄₁₆	3	2⅜	(8) 16d	1965	1340	1530	4370	1395	950	1085	3640
					8.74	5.96	6.81	19.44	6.21	4.23	4.83	16.19
EPB44	3⁹⁄₁₆	3¼	2⁵⁄₁₆	(8) 16d	1270	1945	1700	8465	900	1380	1205	6995
					5.65	8.65	7.56	37.66	4.00	6.14	5.36	31.12
EPB46	5½	3⁹⁄₁₆	3	(12) 16d	1270	1390	1635	8465	900	990	1160	6980
					5.65	6.18	7.27	37.66	4.00	4.40	5.16	31.05
EPB66	5½	5½	3	(12) 16d	1570	1390	1635	8465	1115	990	1160	6225
					6.98	6.18	7.27	37.66	4.96	4.40	5.16	27.69

1. Uplift and lateral resistances have been increased 15% for short term loading; no further increase is allowed.
2. EPB44 and EPB46 have extra nail holes; only eight must be filled to achieve the resistances shown.
3. Uplift resistances for EPB44PHDG require the threaded rod to be set in wet concrete or attached to cured concrete with SET epoxy or AT adhesive. Uplift values do not apply to connection with pier block.
4. Specifier shall design concrete for applied loads.
5. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 under wet service conditions.
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.
7. Minimum f'_c shall be 15 MPa.
8. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

RCPS

Rebar Carport Saddles

The popular RCPS rebar carport saddle works as a cast in place or post-installed saddle for connecting posts to concrete. Now it has been redesigned with added features that offer greater installation flexibility and strength. Along with these design improvements, the RCPS is also available in a black powder-coat for applications that call for a more finished look.

Features:

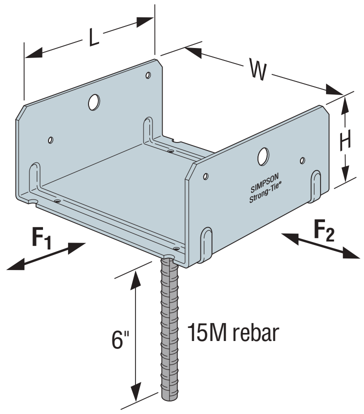
- Meets the intent of 9.23.6.2.1 of the National Building Code of Canada 2015 for resisting uplift and lateral movement
- Hot-dipped galvanization provides additional corrosion protection
- Chamfered corners create a sleeker-looking product
- Steel embossments provide added strength
- Drainage outlets help reduce the possibility of water accumulation that can potentially rot the post

Material RCPS — 14 gauge;
RCPS7.5HDG, RCPS8HDG — 12 gauge

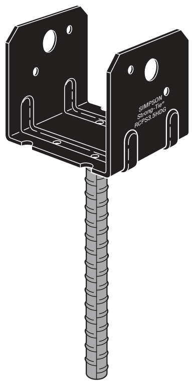
Finish: RCPS — HDG; RCPSxxHDGPC — Black, powder-coat finish over HDG; available in 3.5, 4, 5.5 and 6 sizes

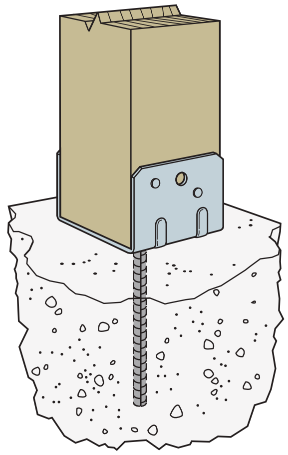
Installation:

- 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).



RCPS





Typical RCPS Installation

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in.) W	Dimensions (in.) L	Dimensions (in.) H	Fasteners	Factored Resistance (K_D = 1.15) D. Fir-L Uplift	D. Fir-L F_1	D. Fir-L F_2	S-P-F Uplift	S-P-F F_1	S-P-F F_2
					lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
RCPS3.5HDG	3⅝	3 7/16	3	(4) 16d	295	615	1050	210	570	960
					1.31	2.74	4.67	0.93	2.54	4.27
RCPS4HDG	4⅛	3 7/16	3	(4) 16d	295	615	1050	210	570	960
					1.31	2.74	4.67	0.93	2.54	4.27
RCPS46HDG	4⅛	5 7/16	3	(4) 16d	295	615	1050	210	570	960
					1.31	2.74	4.67	0.93	2.54	4.27
RCPS4.5HDG	4⅝	3 7/16	3	(4) 16d	295	615	1050	210	570	960
					1.31	2.74	4.67	0.93	2.54	4.27
RCPS5.5HDG	5⅝	5 7/16	3	(4) 16d	295	615	1050	210	570	960
					1.31	2.74	4.67	0.93	2.54	4.27
RCPS6HDG	6⅛	5 7/16	3	(4) 16d	295	615	1050	210	570	960
					1.31	2.74	4.67	0.93	2.54	4.27
RCPS7.5HDG	7⅝	7 7/16	3	(4) 16d	295	615	1050	210	570	960
					1.31	2.74	4.67	0.93	2.54	4.27
RCPS8HDG	8⅛	7 7/16	3	(4) 16d	295	615	1050	210	570	960
					1.31	2.74	4.67	0.93	2.54	4.27

1. Factored resistances have been increased 15% for seismic or wind loading 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 table reflect installation into the wide face (see technical bulletin T-SCLCLMCAN at **strongtie.com** for details).
3. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 under wet service conditions.
4. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

LCB/CB/CBGT

Column Bases

LCB — Low-cost column base for patios, carports, breezeways and porches.

CB — For columns that require high structural values and rugged performance.

Material: See table

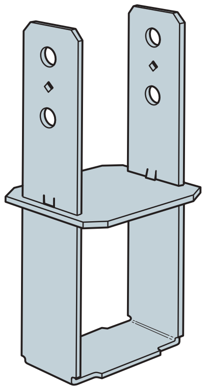
Finish: LCB, CB44, CB46, CB48, CB66, CB68, CB86 — galvanized; all other CB (including all CBGT) — Simpson Strong-Tie® gray paint or HDG. Some models available in stainless steel.

Installation:

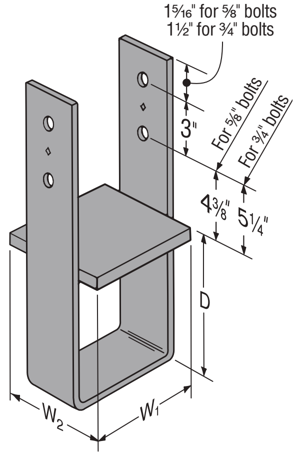
- Use all specified fasteners; see General Notes
- For full loads, minimum side cover required is 3" for CB, 2" for LCB
- Install all models with bottom of base plate flush with concrete
- Post bases do not provide adequate resistance to prevent members from rotating about the base and therefore are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

Options:

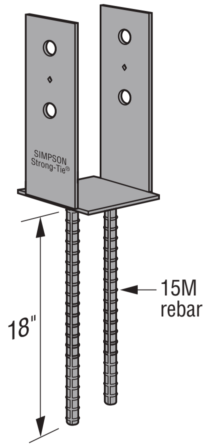
- The LCB may be shipped unassembled; specify "Disassembled".
- LCB and CB are available in rough size. Other sizes available for CB specify W_1 and W_2 dimensions. Consult Simpson Strong-Tie for bolt sizes and factored resistances. See PBS.
- For rebar option add "GT" to the model name, i.e., CBGT44. (Base plate comes 3 ga. for all CBGTs)



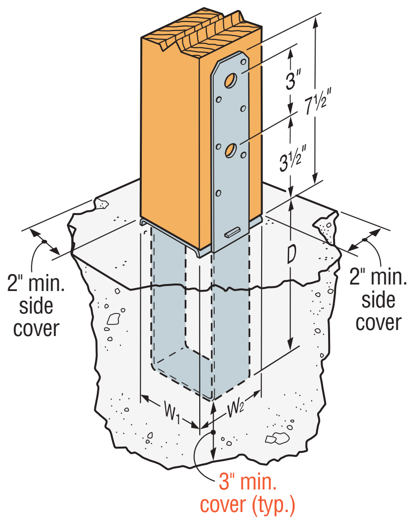
CB44
(CB46, CB66, CB88, CB610 similar)



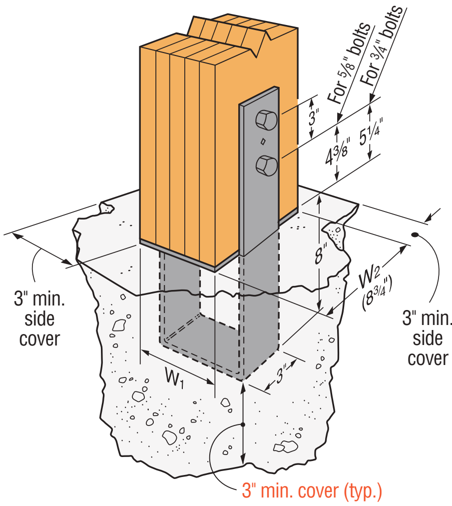
Configuration of all other CB sizes



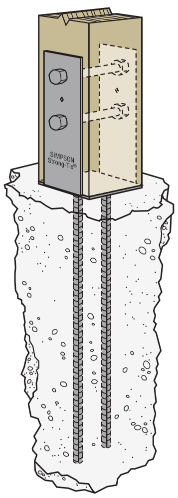
CBGT



LCB



CB9
(CB5, CB7 similar)
for Glulam Column



Typical CBGT Installation

LCB/CB/CBGT

Column Bases (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

	Model No.	Nominal Column Size	Material: Strap (ga. x W)	Material: Base (ga.)	Dimensions (in.): W1	Dimensions (in.): W2	Dimensions (in.): D	Column Bolts: Qty.	Column Bolts: Dia. (in.)	Factored Uplift Resistance (K_D = 1.15): D.Fir-L lb.	D.Fir-L kN	S-P-F lb.	S-P-F kN
	LCB44	4x4	12 ga. x 2	16	3 9/16	3½	6½	2	½	5175	23.02	4085	18.17
SS	CB44	4x4	7 ga. x 2	7	3 9/16	3 9/16	8	2	⅝	5582	24.83	4407	19.60
	LCB46	4x6	12 ga. x 2	16	3 9/16	5½	6½	2	½	5175	23.02	4085	18.17
SS	CB46	4x6	7 ga. x 2	7	3 9/16	5½	8	2	⅝	5582	24.83	4407	19.60
	CB48	4x8	7 ga. x 2	7	3 9/16	7½	8	2	⅝	5582	24.83	4407	19.60
	CB5-4.5	Glulam	7 ga. x 3	7	4½	5⅛	8	2	⅝	5940	26.42	4690	20.86
	CB5-6	Glulam	7 ga. x 3	7	6	5⅛	8	2	⅝	5940	26.42	4690	20.86
	CB64	6x4	7 ga. x 3	7	5½	3 9/16	8	2	⅝	5940	26.42	4690	20.86
	LCB66	6x6	12 ga. x 2	16	5½	5½	5½	2	½	5175	23.02	4085	18.17
SS	CB66	6x6	7 ga. x 3	7	5½	5½	8	2	⅝	5940	26.42	4690	20.86
	CB6-7	6x	7 ga. x 3	7	5½	7	8	2	⅝	5940	26.42	4690	20.86
	CB68	6x8	7 ga. x 3	7	5½	7½	8	2	⅝	5940	26.42	4690	20.86
	CB610	6x10	7 ga. x 3	7	5½	9½	8	2	⅝	5940	26.42	4690	20.86
	CB612	6x12	7 ga. x 3	7	5½	11½	8	2	⅝	5940	26.42	4690	20.86
	CB7-6	Glulam	3 ga. x 3	7	6	6¾	8	2	¾	9410	41.86	7530	33.50
	CB7-7.5	Glulam	3 ga. x 3	7	7½	6¾	8	2	¾	9410	41.86	7530	33.50
	CB7-9	Glulam	3 ga. x 3	7	9	6¾	8	2	¾	9410	41.86	7530	33.50
	CB7-10.5	Glulam	3 ga. x 3	7	10½	6¾	8	2	¾	9410	41.86	7530	33.50
	CB7⅛-4	PSL	3 ga. x 3	7	7⅛	3½	8	2	¾	8470	37.68	—	—
	CB7⅛-6	PSL	3 ga. x 3	7	7⅛	5½	8	2	¾	8470	37.68	—	—
	CB7⅛-7	PSL	3 ga. x 3	7	7⅛	7	8	2	¾	9410	41.86	—	—
	CB86	8x6	3 ga. x 3	7	7½	5½	8	2	¾	9410	41.86	7530	33.50
	CB88	8x8	3 ga. x 3	7	7½	7½	8	2	¾	9410	41.86	7530	33.50
	CB9-6	Glulam	3 ga. x 3	7	6	8¾	8	2	¾	9410	41.86	7530	33.50
	CB9-7.5	Glulam	3 ga. x 3	7	7½	8¾	8	2	¾	9410	41.86	7530	33.50
	CB9-9	Glulam	3 ga. x 3	7	9	8¾	8	2	¾	9410	41.86	7530	33.50
	CB9-10.5	Glulam	3 ga. x 3	7	10½	8¾	8	2	¾	9410	41.86	7530	33.50
	CB1010	10x10	3 ga. x 3	3	9½	9½	8	2	¾	9410	41.86	7530	33.50
	CB1012	10x12	3 ga. x 3	3	9½	11½	8	2	¾	9410	41.86	7530	33.50
	CB1212	12x12	3 ga. x 3	3	11½	11½	8	2	¾	9410	41.86	7530	33.50

1. Factored uplift resistances have been increased 15% for earthquake or wind loading, with no further increase allowed; reduce where other loads govern.
2. PSL is parallel strand lumber.
3. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 for uplift under wet service conditions.
4. Factored uplift resistance for CBGT option is 4350 lb. (19.35 kN).
5. LCB products must be installed with bolts to achieve table values.
6. Designer is responsible for concrete design.
7. 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.
8. f'_c shall be 20 MPa minimum.
9. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

Column Bases

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

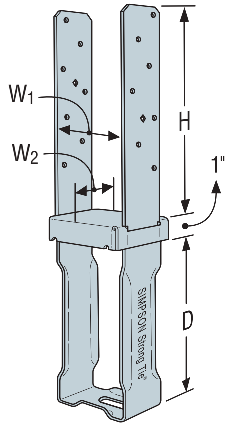
The CBSQ uses Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws, which allow for fast installation, reduced reveal and high capacity, provides a greater net section area of the column compared to bolts.

Material: See table

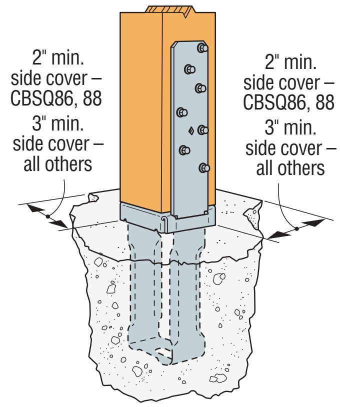
Finish: Galvanized; available in HDG

Installation:

- Use all specified fasteners; see General Notes.
- CBSQ installs with 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.)
- Minimum of 3" side cover on concrete is required.
- 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).



CBSQ-SDS2



Typical CBSQ-SDS2 Installation

These products are available with additional corrosion protection. For more information, see p. 24.

	Model No.	Nominal Column Size	Material Base (ga.)	Material Strap (ga. x W)	Dimensions (in.) W1	W2	D	H	Number of Simpson Strong-Tie ¼" x 2" SDS Screws	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	D.Fir-L Normal (K_D = 1.00)	S-P-F Uplift (K_D = 1.15)	S-P-F Normal (K_D = 1.00)
										lb.	lb.	lb.	lb.
										kN	kN	kN	kN
SS	CBSQ44-SDS2	4x4	12	10 ga. x 2¼"	3⁹⁄₁₆	3½	7¹⁄₁₆	8⅜	14	7310	16195	5265	11660
										32.56	72.14	23.45	51.94
SS	CBSQ46-SDS2	4x6	12	10 ga. x 3"	3⁹⁄₁₆	5⁵⁄₁₆	7¾	8¹¹⁄₁₆	14	7310	21280	5265	15320
										32.56	94.79	23.45	68.24
SS	CBSQ66-SDS2	6x6	12	10 ga. x 3"	5½	5½	6⅞	8¾	14	7310	21280	5265	15320
										32.56	94.79	23.45	68.24
	CBSQ86-SDS2	6x8	12	7 ga. x 3"	7½	5⅜	6⅛	8¹¹⁄₁₆	12	6220	25140	4475	18100
										27.71	111.98	19.93	80.62
	CBSQ88-SDS2	8x8	12	7 ga. x 3"	7½	7⅜	6⅛	8¹¹⁄₁₆	12	6730	26545	4845	19115
										29.98	118.24	21.58	85.14

1. For higher factored normal resistances, solidly pack grout under 1"-standoff plate before installing CBSQ into concrete. Base factored normal resistances on column or concrete, according to the code.
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.
3. Designer is responsible for concrete and column design.
4. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 under wet service conditions.
5. Minimum f'_c shall be 20 MPa.

CBQGT

SIMPSON Strong-Tie®

Column Bases

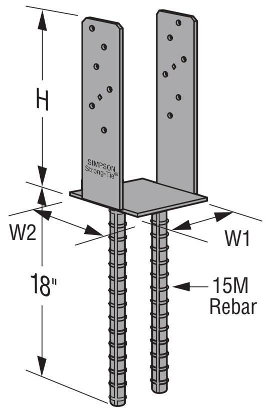
The CBQGT uses Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws, which allows for fast installation, reduced reveal, high capacity and provides a greater net section area of the column compared to bolts.

Material: See table

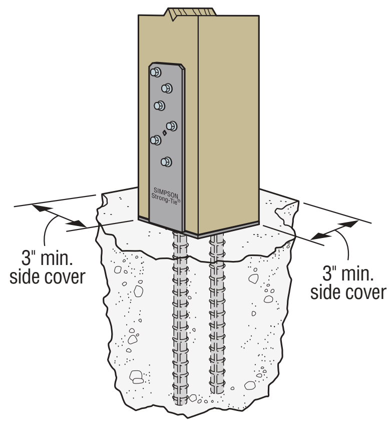
Finish: Simpson Strong-Tie® gray paint, available in HDG

Installation:

- Use all specified fasteners; see General Notes.
- 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.)
- Minimum 3" side cover on concrete is required.
- 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).
- Other sizes available. Check with Simpson Strong-Tie for details.



CBQGT



Typical CBQGT-SDS2 Installation

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Nominal Post Size	Material		Dimensions (in.)			Number of Simpson Strong-Tie ¼" x 2" SDS Screws	Factored Uplift Resistance (K_D = 1.15)	
		Base (ga.)	Strap (ga. x W)	W_1	W_2	H		D.Fir-L	S-P-F
								lb.	lb.
								kN	kN
CBQGT44-SDS2	4x4	7	7 ga. x 2"	3 9/16	3 9/16	8 11/16	12	4350	4350
								19.35	19.35
CBQGT46-SDS2	4x6	7	7 ga. x 2"	3 9/16	5½	8 11/16	12	4350	4350
								19.35	19.35
CBQGT66-SDS2	6x6	7	7 ga. x 3"	5½	5½	8 11/16	12	4350	4350
								19.35	19.35

1. Factored uplift resistances have been increased 15% for earthquake or wind loading, 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.
3. Designer is responsible for concrete design.
4. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 under wet service conditions.
5. Minimum f'_c shall be 20 MPa.

PPBZ

Porch Post Base

The PPBZ porch post base is designed to be installed once and will support permanent porch framing throughout all stages of construction. This design eliminates the need for temporary support of the porch roof structure and provides full access to installers/inspectors. Install the PPBZ to the cured grade beam with two Simpson Strong-Tie® Titen® screws just prior to rough framing. Designed to withstand vertical construction loads prior to embedment in concrete, the PPBZ will support most framed porches and overhangs. Finally, the concrete contractor is able to complete their last phase of the porch slab without the interference of temporary support. Depending upon the slab thickness, either a 4" or 6" slab of concrete is poured up to the bottom of the 1" standoff.

Features:

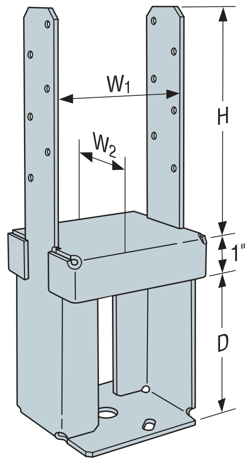
- Stiffened embedded side stirrups provide temporary vertical download support without being embedded into concrete
- 1" stand-off reduces the potential for decay at post or column ends
- Two available sizes provide both 4"- and 6"-slab thicknesses
- Pre-pour installation eliminates temporary support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

Material: 12 gauge

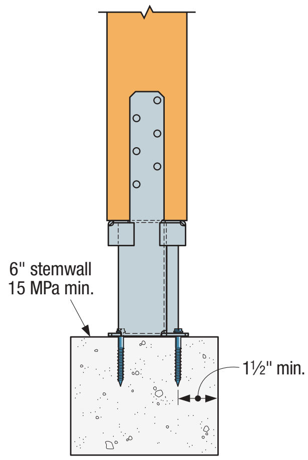
Finish: ZMAX® coating

Installation:

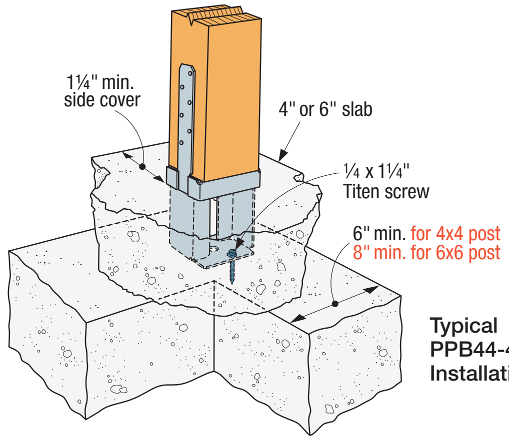
- Use all specified fasteners; see General Notes
- Titen® screws (model no: TTN25114H) are not provided with the base
- See p. 43–46 for Titen screw information and installation instructions
- Minimum 1¼" side cover on concrete is required
- Post bases do not provide adequate resistance to prevent members from rotating about the base, and are not recommended for non-top-supported installations (i.e. fences or carports)



PPB44-4Z
(other sizes similar)



Typical PPB44-4Z Installation
(before slab is poured)



Typical PPB44-4Z Installation

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Nominal Post Size	Dimensions (in.) W1	W2	D	H	Fasteners Foundation	Post	Factored Resistance Prior to Pour Uplift (K_D = 1.15)	Prior to Pour Normal (K_D = 1.00)	Embedded into Concrete Uplift (K_D = 1.15)	Embedded into Concrete Normal (K_D = 1.00)
								lb.	lb.	lb.	lb.
								kN	kN	kN	kN
PPB44-4Z	4x4	3⅝	3 9/16	4	5¾	(2) ¼" x 1¼" Titen	(12) 10d x 1½"	350	6610	1540	10970
								1.55	29.40	6.85	48.80
PPB44-6Z	4x4	3⅝	3 9/16	6	5¾	(2) ¼" x 1¼" Titen	(12) 10d x 1½"	350	6020	1765	14715
								1.55	26.78	7.85	65.46
PPB66-4Z	6x6	5⅝	5 9/16	4	5¾	(2) ¼" x 1¼" Titen	(12) 10d x 1½"	265	7695	1540	10970
								1.18	34.23	6.85	48.80
PPB66-6Z	6x6	5⅝	5 9/16	6	5¾	(2) ¼" x 1¼" Titen	(12) 10d x 1½"	265	7185	1765	14715
								1.18	31.96	7.85	65.46

1. Factored uplift resistances for Embeded into Concrete installation have been increased 15% for wind loading with no further increase allowed; reduce where other loads govern.
2. Tablulated factored resistances apply to both D.Fir-L and S-P-F posts.
3. The minimum 28-day concrete compressive strength (f'c) shall be 2200 psi (15 MPa) for Prior to Pour, and 4650 psi (32 MPa) for Embedded into Concrete.
4. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Uplift values in the table reflect installation fastener installation into the wide face.
5. Designer is responsible for concrete and column design.
6. Factored resistances shown assume dry service conditions (K_{SF} = 1.00). Multiply uplift values by 0.67 for wet service conditions.
7. For slab thickness not shown between 4"–6", use PPB44X and specify slab thickness (D). Factored resistances may be interpolated.
8. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. Use hot-dip galvanized nails. See pp. 27–28 for other nail sizes and information.

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:

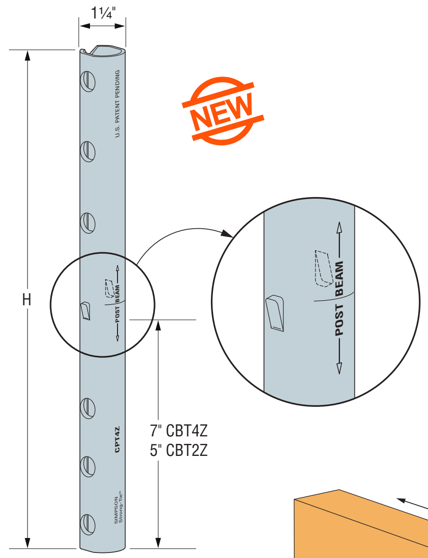
- Flattened sides assist installer while using the CBTZ as a template
- Locator tabs provide proper dimensional layout
- Required dowel pins included
- Orientation markings distinguish which end installs into the post and which end goes into the beam

Material: 12 gauge

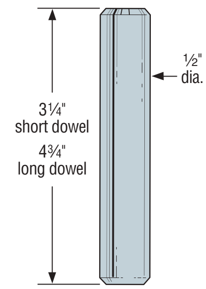
Finish: CBT — ZMAX® coating; the ½"-diameter drift dowels are mechanically galvanized in accordance with ASTM B695, Class 55

Installation:

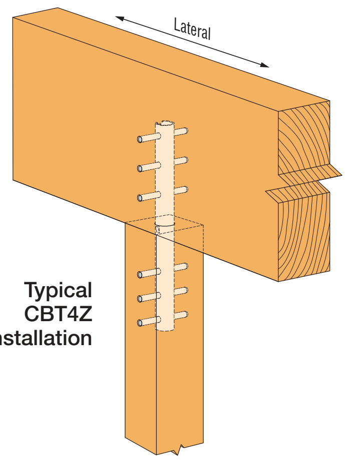
- Use all specified fasteners; see General Notes
- ½" dowels included
- CBT2Z requires a minimum 4x10 nominal beam
- CBT4Z requires a minimum 6x12 nominal beam.
- For step-by-step installation instructions, see technical bulletin T-C-CBTZINS or view our video on **strongtie.com**



CBT4Z
(CBT2Z similar)
U.S. Patent Pending



Chamfered Steel Dowel
(galvanized)



Typical CBT4Z Installation

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Nominal Post Size (min)	Nominal Beam Size (min)	Dimensions (in.) D	Dimensions (in.) H	Fasteners Quantity Post	Fasteners Quantity Beam	Fasteners Type	D.Fir-L Uplift (K_D=1.15) lb. / kN	D.Fir-L Lateral (K_D=1.15) lb. / kN	D.Fir-L Down (K_D=1.00) lb. / kN	S-P-F Uplift (K_D=1.15) lb. / kN	S-P-F Lateral (K_D=1.15) lb. / kN	S-P-F Down (K_D=1.00) lb. / kN
Continuous Beam													
CBT2Z	4x4	4x10	1¼	10	2	2	½" x 3 ¼" dowel	1395	1215	8950	1100	980	6775
								6.21	5.40	39.81	4.89	4.36	30.14
CBT4Z	6x6	6x12	1¼	14	3	3	½" x 4 ¾" dowel	2335	2040	23565	1870	1635	17835
								10.39	9.07	104.83	8.32	7.26	79.34
End of Beam													
CBT2Z	4x4	4x10	1¼	10	2	2	½" x 3 ¼" dowel	1395	925	8950	1100	825	6775
								6.21	4.11	39.81	4.89	3.67	30.14
CBT4Z	6x6	6x12	1¼	14	3	3	½" x 4 ¾" dowel	2335	1980	23565	1870	1585	17835
								10.39	8.81	104.83	8.32	7.05	79.34

1. Factored lateral and uplift resistances have been increased 15% for wind or earthquake loading. Reduce where other load durations govern.
2. Factored lateral resistances are for loads applied in the plane parallel to the beam.
3. ½" diameter ASTM A307 bolts may be substituted for the specified dowels and achieve full tabulated values.
4. Lag screws or carriage bolts are not permitted.

BC/HBC/BCS

Post Caps

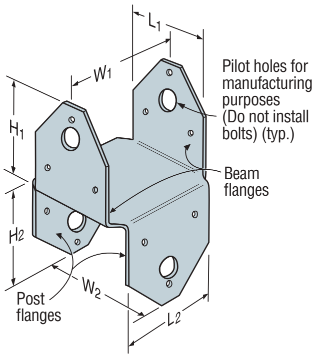
The BCS allows for the connection of (2) 2x's to a 4x post or (3) 2x's to a 6x post. Double shear nailing between beam and post gives added strength. The BC/HBC series offers dual purpose post cap/base for light cap or base connections.

Material: HBC — 14 gauge; all others — 18 gauge

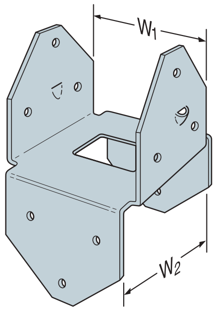
Finish: HBC — HDG; all others — galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

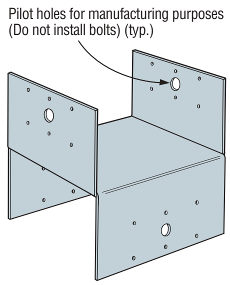
- Use all specified fasteners; see General Notes
- Do not install bolts into pilot holes
- BCS — install dome nails on beam; drive nails at an angle through the beam into the post below to achieve the table values
- BC — install with 16d commons or 16d x 2½" nails
- Post bases do not provide adequate 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)



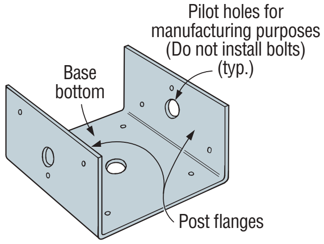
BC4 Cap/Base
(BC46, BC6 similar)



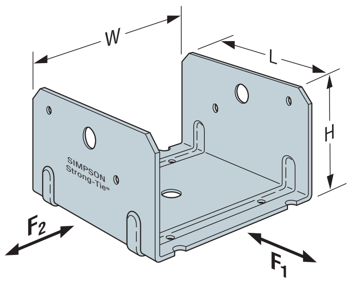
BCS2-2/4
U.S. Patent 5,603,580



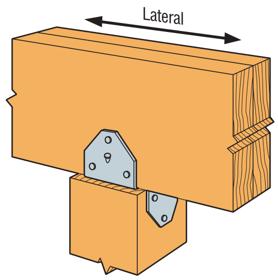
BC8 Cap/Base
(BC4R, BC6R similar)



BC60 Half Base
(other similar)



HBC



Typical BCS Installation

Caps and Bases

BC/HBC/BCS

Post Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Dimensions (in.)						Fasteners			Factored Resistance (K_D = 1.15)			
										D.Fir-L		S-P-F	
	W_1	W_2	L_1	L_2	H_1	H_2	Beam	Post	Base Bottom	Uplift lb. / kN	Lateral lb. / kN	Uplift lb. / kN	Lateral lb. / kN
Caps													
BC4	3 9/16	3 9/16	2⅞	2⅞	3	3	(6) 16d	(6) 16d	—	875	1495	620	1060
										3.90	6.66	2.76	4.72
BC46	3 9/16	5½	4⅞	2⅞	3½	2½	(12) 16d	(6) 16d	—	1415	1495	1005	1060
										6.30	6.66	4.48	4.72
BC4R	4	4	4	4	3	3	(12) 16d	(12) 16d	—	875	1495	620	1060
										3.90	6.66	2.76	4.72
BC6	5½	5½	4⅜	4⅜	3⅜	3⅜	(12) 16d	(12) 16d	—	1450	3145	1030	2765
										6.46	14.01	4.59	12.32
BC6R	6	6	6	6	3	3	(12) 16d	(12) 16d	—	1560	3145	1110	2765
										6.94	14.01	4.94	12.32
BC8	7½	7½	7½	7½	4	4	(12) 16d	(12) 16d	—	2545	3145	1810	2765
										11.34	14.01	8.06	12.32
BCS2-2/4	3⅛	3 9/16	2⅞	2⅞	2 15/16	2 15/16	(8) 10d	(6) 10d	—	1190	1560	845	1370
										5.30	6.95	3.76	6.09
BCS2-3/6	4⅝	5 9/16	4⅜	2⅞	3 9/16	2 15/16	(12) 16d	(6) 16d	—	1370	2445	970	1735
										6.10	10.89	4.32	7.73
Bases													
BC40	3 9/16	—	3¼	—	2¼	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28
HBC40HDG	3 9/16	—	3¼	—	2¼	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28
BC40R	4	—	4	—	3	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28
BC460	5½	—	3⅜	—	3	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28
BC60	5½	—	5½	—	3	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28
HBC60HDG	5½	—	5½	—	3	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28
BC60R	6	—	6	—	3	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28
BC80	7½	—	7½	—	4	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28
BC80R	8	—	8	—	4	—	(6) 16d	—	(4) 16d	510	1050	360	960
										2.27	4.68	1.60	4.28

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
2. Uplift values shown for BCO are only applicable for short-term loading. Do not use these products for other load durations.
3. Uplift resistances do not apply where Bases are nailed into the end grain of post as per 12.9.3.4 CSA O86-14.
4. 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-SCLCLMCAN at **strongtie.com** for details).
5. Factored resistances shown assume dry service condition (K_{SF} = 1.00). Multiply table values by 0.67 under wet service conditions.
6. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

AC/ACE/LPCZ/LCE

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.

The AC max. design allows for higher load capacity to match comparable post bases.

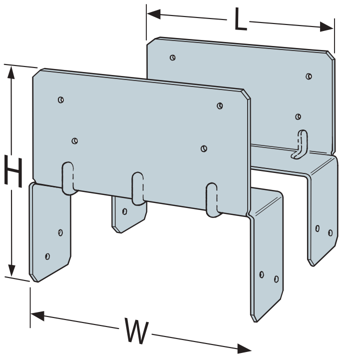
LPCZ — Adjustable design allows greater connection versatility.

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

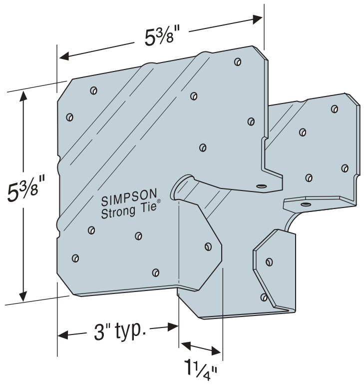
Finish: Galvanized. Some products available in ZMAX® coating and stainless steel; see Corrosion Information, pp. 20–24.

Installation:

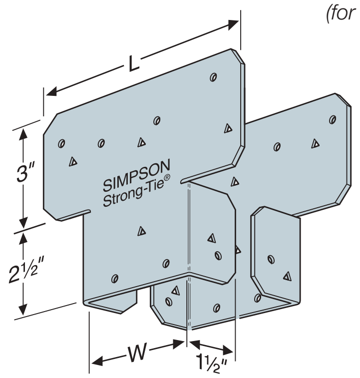
- Use all specified fasteners; see General Notes
- Install all models in pairs



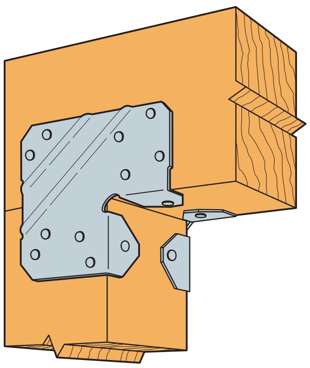
LPCZ



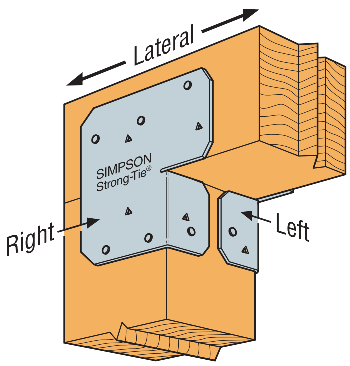
LCE4
(for 4x or 6x lumber)



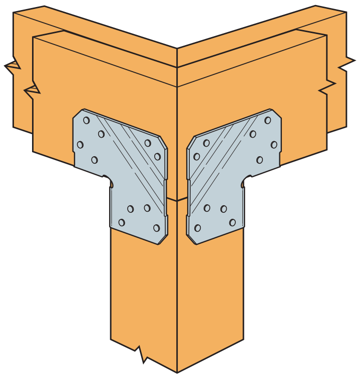
AC



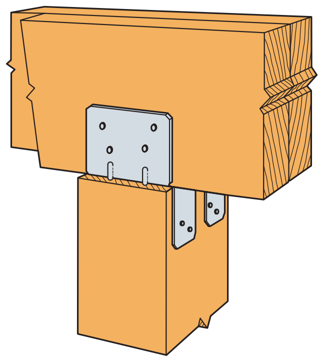
Typical LCE4 Installation



Typical ACE Installation



Typical LCE4 Corner Installation
(see note 6)



Typical LPCZ Installation

SIMPSON Strong-Tie®

Post Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Dimensions (in.)		Fasteners		Factored Resistance (K_D = 1.15)			
					D.Fir-L		S-P-F	
	W	L	Beam	Post	Uplift	Lateral	Uplift	Lateral
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
LPC4Z	3⁹⁄₁₆	3½	(8) 10d	(8) 10d	1225	460	870	325
					5.46	2.05	3.88	1.45
LCE4	—	5⅜	(14) 16d	(10) 16d	2560	2300	2315	1910
					11.40	10.24	10.31	8.51
AC4 (Min.)	3⁹⁄₁₆	6½	(8) 16d	(8) 16d	2095	2290	1920	1625
					9.33	10.20	8.55	7.24
AC4 (Max.)	3⁹⁄₁₆	6½	(14) 16d	(14) 16d	3670	2850	3360	2025
					16.35	12.69	14.97	9.02
ACE4 (Min.)	—	4½	(6) 16d	(6) 16d	1570	695	1220	495
					6.99	3.10	5.43	2.20
ACE4 (Max.)	—	4½	(10) 16d	(10) 16d	2225	900	1580	640
					9.91	4.01	7.04	2.85
AC4RZ (Min.)	4	7	(8) 16d	(8) 16d	2095	2290	1920	1625
					9.33	10.20	8.55	7.24
AC4RZ (Max.)	4	7	(14) 16d	(14) 16d	3670	2850	3360	2025
					16.35	12.69	14.97	9.02
LPC6Z	5⁹⁄₁₆	5½	(8) 10d	(8) 10d	1040	695	735	495
					4.63	3.10	3.27	2.20
AC6 (Min.)	5½	8½	(8) 16d	(8) 16d	2095	1925	1855	1365
					9.33	8.57	8.26	6.08
AC6 (Max.)	5½	8½	(14) 16d	(14) 16d	3670	3670	3030	2845
					16.35	16.35	13.50	12.67
ACE6 (Min.)	—	6½	(6) 16d	(6) 16d	1570	1300	1440	1070
					6.99	5.79	6.41	4.77
ACE6 (Max.)	—	6½	(10) 16d	(10) 16d	2620	2075	2400	1800
					11.67	9.24	10.69	8.02
AC6RZ (Min.)	6	9	(8) 16d	(8) 16d	2095	1925	1920	1365
					9.33	8.57	8.55	6.08
AC6RZ (Max.)	6	9	(14) 16d	(14) 16d	3670	3670	3360	2845
					16.35	16.35	14.97	12.67

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
2. Resistances apply only when used in pairs.
3. LPCZ lateral resistance is in the direction parallel to the beam.
4. Min. nailing quantity and resistances — fill all round holes; Max. nailing quantities and resistances — fill round and triangle holes.
5. Uplift values do not apply to splice conditions.
6. LCE4 uplift capacity for mitered corner conditions is 1615 lb. (7.18 kN) D.Fir-L and 1145 lb. (5.09 kN) S-P-F. Lateral resistances do not apply.
7. 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-SCLCLMCAN at **strongtie.com** for values on the narrow face (edge).
8. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

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

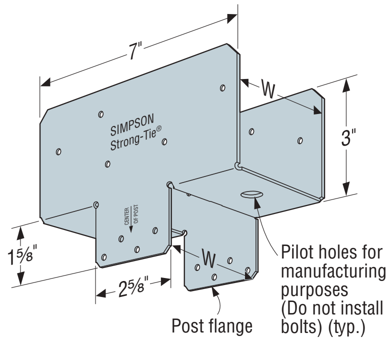
Finish: ZMAX coating

Installation:

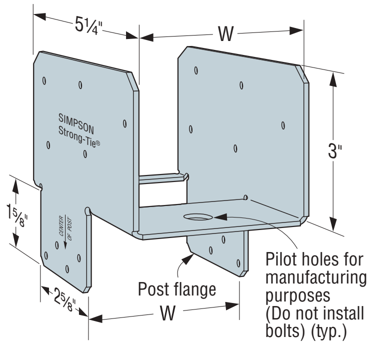
- Use all specified fasteners; see General Notes
- Do not install bolts into pilot holes

Options:

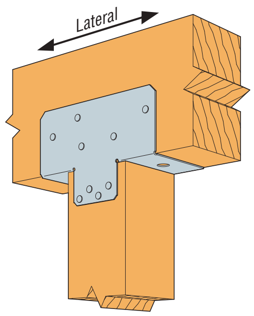
- For end conditions, specify EPCZ post caps
- For heavy-duty applications, see CCQ and CC Series



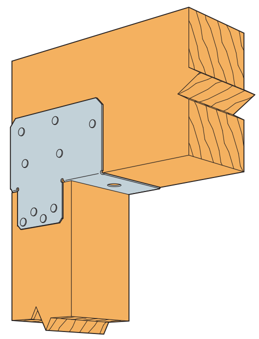
PCZ



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. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model	W (in.)	Fasteners		Factored Resistance (K_D = 1.15)			
				D.Fir-L		S-P-F	
		Beam	Post	Uplift	Lateral	Uplift	Lateral
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
PC4Z	3 9/16	(10) 10d	(8) 10d	1920	1920	1785	1515
				8.54	8.54	7.94	6.74
EPC4Z	3 9/16	(10) 10d	(8) 10d	1920	1795	1450	1315
				8.54	7.98	6.45	5.85
PC4RZ	4	(10) 10d	(8) 10d	1920	1920	1785	1515
				8.54	8.54	7.94	6.74
EPC4RZ	4	(10) 10d	(8) 10d	1920	1795	1450	1315
				8.54	7.98	6.45	5.85
PC6Z	5½	(10) 10d	(8) 10d	1920	1920	1785	1515
				8.54	8.54	7.94	6.74
EPC6Z	5½	(10) 10d	(8) 10d	1920	1795	1485	1315
				8.54	7.98	6.61	5.85
PC6RZ	6	(10) 10d	(8) 10d	1920	1920	1785	1515
				8.54	8.54	7.94	6.74
EPC6RZ	6	(10) 10d	(8) 10d	1920	1795	1485	1315
				8.54	7.98	6.61	5.85
PC8Z	7½	(10) 10d	(8) 10d	1920	1920	1785	1515
				8.54	8.54	7.94	6.74
EPC8Z	7½	(10) 10d	(8) 10d	1920	1795	1485	1315
				8.54	7.98	6.61	5.85
PC8RZ	8	(10) 10d	(8) 10d	1920	1920	1785	1515
				8.54	8.54	7.94	6.74
EPC8RZ	8	(10) 10d	(8) 10d	1920	1795	1485	1315
				8.54	7.98	6.61	5.85

1. Factored resistances have been increased 15% for earthquake or wind loading. No further increase is permitted. Reduce where other load durations govern.
2. Factored uplift resistances do not apply to beams spliced over the column.
3. Spliced conditions must be detailed by the Designer to transfer tension loads between spliced members by means other than the post cap.
4. Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the table are only applicable to installation into the wide face of the post.
5. 10d nails may be substituted with Strong-Drive® SD #9 x 1½" Connector screws for full capacities shown.
6. Multiply the tablulated values x 0.67 for wet service conditions.
7. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.
Screws: SD #9 x 1½" = 0.131" dia. x 1½" long (SD9112).

CCQ/ECCQ

Column Caps

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

This design uses Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws to provide faster installation. The Strong-Drive SDS Heavy-Duty Connector screws provide for a lower profile compared to standard through bolts.

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

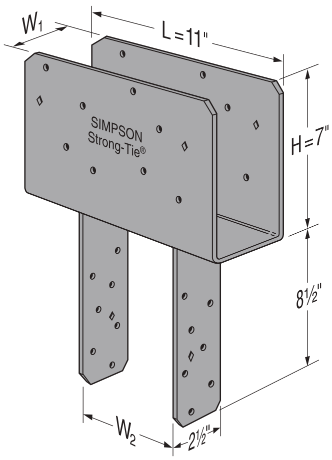
Finish: Simpson Strong-Tie® gray paint, available in HDG and stainless steel; CCOQ, ECCOQ — uncoated

Installation:

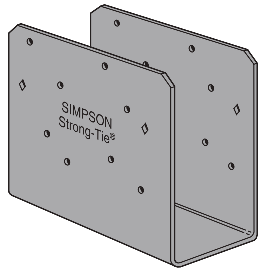
- Fasteners provided; see General Notes.
- Install ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws, which are provided with the column cap. (Lag screws will not achieve the same load.) Install stainless-steel Strong-Drive screws with stainless-steel connectors.

Options:

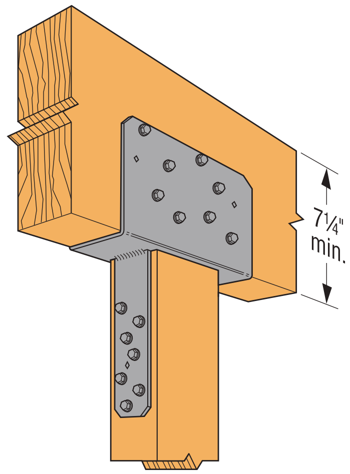
- Straps may be rotated 90° where $W_1 \geq W_2$.
- CCOQ — may be ordered for field welding to pipe or other columns (no loads apply).
- Custom sizes are available. Contact Simpson Strong-Tie for more information.
- See p. 116 for CCCQ, CCTQ and ECCLQ options.



CCQ46SDS2.5

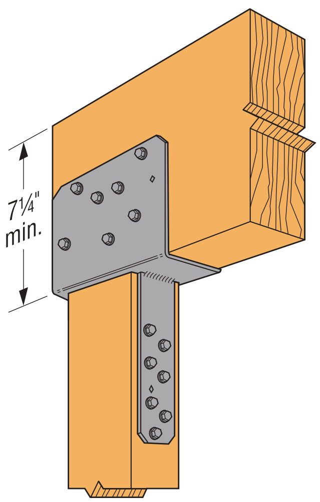


CCOQ4-SDS2.5

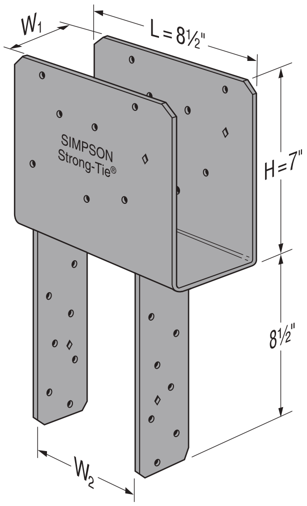


Typical CCQ46SDS2.5 Installation

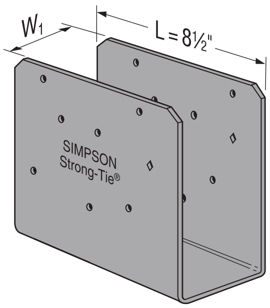
Note: Structural composite lumber columns have sides that show either the wide face or the edges of the lumber strands/veneers. Values in the tables reflect installation into the wide face.



Typical ECCQ46SDS2.5 Installation



ECCQ46SDS2.5



ECCOQ

Column Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in.) W1	Dimensions (in.) W2	No. of ¼" x 2½" SDS Screws Beam	No. of ¼" x 2½" SDS Screws Post	Factored Resistance Uplift (K_D = 1.15) D.Fir-L lb. / kN	Uplift (K_D = 1.15) S-P-F lb. / kN	Normal (K_D = 1.00) D.Fir-L lb. / kN	Normal (K_D = 1.00) S-P-F lb. / kN	Normal (K_D = 1.00) SCL lb. / kN
CCQ3-4SDS2.5	3¼	3⅝	16	14	9500	7705	23075	18955	—
					42.26	34.27	102.65	84.32	—
CCQ3-6SDS2.5	3¼	5½	16	14	9500	8855	27915	22545	—
					42.26	39.39	124.18	100.29	—
CCQ44SDS2.5	3⅝	3⅝	16	14	9500	7705	25845	21230	39100
					42.26	34.27	114.97	94.44	173.93
CCQ46SDS2.5	3⅝	5½	16	14	9500	8855	31260	23660	42040
					42.26	39.39	139.06	105.25	187.01
CCQ48SDS2.5	3⅝	7½	16	14	9500	8855	31260	23660	42040
					42.26	39.39	139.06	105.25	187.01
CCQ4.62-3.62SDS2.5	4⅝	3⅝	16	14	9500	7705	33230	27295	—
					42.26	34.27	147.82	121.42	—
CCQ4.62-4.62SDS2.5	4⅝	4⅝	16	14	9500	7705	40195	30420	—
					42.26	34.27	178.80	135.32	—
CCQ4.62-5.5SDS2.5	4⅝	5½	16	14	9500	8855	40195	30420	—
					42.26	39.39	178.80	135.32	—
CCQ5-4SDS2.5	5¼	3⅝	16	14	10700	7705	37845	31090	—
					47.60	34.27	168.35	138.30	—
CCQ5-6SDS2.5	5¼	5½	16	14	13285	9500	45775	36975	—
					59.10	42.26	203.63	164.48	—
CCQ5-8SDS2.5	5¼	7½	16	14	13285	9500	45775	37885	—
					59.10	42.26	203.63	168.53	—
CCQ64SDS2.5	5½	3⅝	16	14	9500	7705	40615	33360	58660
					42.26	34.27	180.67	148.40	260.94
CCQ66SDS2.5	5½	5½	16	14	9500	8855	49125	37175	63065
					42.26	39.39	218.53	165.37	280.54
CCQ6-7.1SDS2.5	5½	7⅛	16	14	9500	8855	49125	37175	63065
					42.26	39.39	218.53	165.37	280.54
CCQ68SDS2.5	5½	7½	16	14	9500	8855	49125	37175	63065
					42.26	39.39	218.53	165.37	280.54
CCQ74SDS2.5	6⅞	3⅝	16	14	10700	7705	49845	40940	—
					47.60	34.27	221.73	182.12	—
CCQ76SDS2.5	6⅞	5½	16	14	13285	9500	60290	48695	—
					59.10	42.26	268.19	216.61	—
CCQ77SDS2.5	6⅞	6⅞	16	14	13285	9500	60290	49895	—
					59.10	42.26	268.19	221.95	—
CCQ78SDS2.5	6⅞	7½	16	14	13285	9500	60290	49895	—
					59.10	42.26	268.19	221.95	—
CCQ7.1-4SDS2.5	7⅛	3⅝	16	14	10700	7705	—	—	78205
					47.60	34.27	—	—	347.89
CCQ7.1-6SDS2.5	7⅛	5½	16	14	13285	9500	—	—	84085
					59.10	42.26	—	—	374.04
CCQ7.1-7.1SDS2.5	7⅛	7⅛	16	14	13285	9500	—	—	84085
					59.10	42.26	—	—	374.04
CCQ7.1-8SDS2.5	7⅛	7½	16	14	13285	9500	—	—	84085
					59.10	42.26	—	—	374.04
CCQ84-SDS2.5	7½	3⅝	16	14	13285	9500	53540	43970	—
					59.10	42.26	238.16	195.60	—
CCQ86-SDS2.5	7½	5½	16	14	13285	9500	66990	50695	—
					59.10	42.26	298.00	225.51	—
CCQ88-SDS2.5	7½	7½	16	14	13285	9500	66990	50695	—
					59.10	42.26	298.00	225.51	—
CCQ94-SDS2.5	8⅞	3⅝	16	14	13285	9500	64615	53070	—
					59.10	42.26	287.43	236.08	—
CCQ96-SDS2.5	8⅞	5½	16	14	13285	9500	75920	61320	—
					59.10	42.26	337.72	272.78	—
CCQ98-SDS2.5	8⅞	7½	16	14	13285	9500	75920	62830	—
					59.10	42.26	337.72	279.49	—
CCQ106-SDS2.5	9½	5½	16	14	13285	9500	84855	64215	—
					59.10	42.26	377.47	285.65	—

1. Factored down resistances are determined using ϕF_{cp} equal to: 812 psi (5.6 MPa) for D.Fir-L and 672 psi (4.64 MPa) for Spruce-Pine glulam sizes; 1,092 psi (7.53 MPa) for SCL sizes; reduce where end grain bearing or buckling capacity of post governs.
2. Spliced conditions must be detailed by the Designer to transfer tension loads between spliced members by means other than the column cap.
3. Factored uplift resistances do not apply to splice conditions.
4. Post sides are assumed to lie in the same vertical plane as the beam sides.
5. Loads may not be increased for short-term loading.
6. Uplift loads have been increased 15% for earthquake or wind loading; reduce for other loading conditions in accordance with the code.
7. Designer to design beam for factored uplift resistance based on effective shear depth as per 12.2.1.4 CSA O86-14.
8. SCL assumes SG = 0.50.
9. Beam depth must be greater than 7¼".
10. For uplift values when using SCL, use either D.Fir-L or S-P-F factored resistances based on SCL manufacturers recommendations.

Column Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in.)		No. of ¼" x 2½" SDS Screws		Factored Resistance				
					Uplift (K_D = 1.15)		Normal (K_D = 1.00)		
					D.Fir-L	S-P-F	D.Fir-L	S-P-F	SCL
	W_1	W_2	Beam	Post	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN
ECCQ3-4SDS2.5	3¼	3⅝	14	14	6965	5015	8880	7350	—
					30.98	22.31	39.50	32.70	—
ECCQ3-6SDS2.5	3¼	5½	14	14	7615	5480	13955	11550	—
					33.87	24.38	62.08	51.38	—
ECCQ44SDS2.5	3⅝	3⅝	14	14	6965	5015	9945	7530	13375
					30.98	22.31	44.24	33.50	59.50
ECCQ46SDS2.5	3⅝	5½	14	14	7615	5480	15630	11830	21020
					33.87	24.38	69.53	52.62	93.51
ECCQ48SDS2.5	3⅝	7½	14	14	7615	5480	21315	16130	28665
					33.87	24.38	94.82	71.75	127.51
ECCQ4.62-3.62SDS2.5	4⅝	3⅝	14	14	6965	5015	12790	9680	—
					30.98	22.31	56.90	43.06	—
ECCQ4.62-4.62SDS2.5	4⅝	4⅝	14	14	6965	5015	16445	12445	—
					30.98	22.31	73.15	55.36	—
ECCQ4.62-5.5SDS2.5	4⅝	5½	14	14	7615	5480	20095	15210	—
					33.87	24.38	89.39	67.66	—
ECCQ5-4SDS2.5	5¼	3⅝	14	14	6965	5015	14565	12055	—
					30.98	22.31	64.79	53.63	—
ECCQ5-6SDS2.5	5¼	5½	14	14	7835	5640	22890	18490	—
					34.85	25.09	101.82	82.25	—
ECCQ5-8SDS2.5	5¼	7½	14	14	7835	5640	31210	25830	—
					34.85	25.09	138.83	114.90	—
ECCQ64SDS2.5	5½	3⅝	14	14	6965	5015	15630	11830	20065
					30.98	22.31	69.53	52.62	89.26
ECCQ66SDS2.5	5½	5½	14	14	7615	5480	24565	18590	30100
					33.87	24.38	109.27	82.70	133.90
ECCQ6-7.1SDS2.5	5½	7⅛	14	14	7615	5480	31260	23660	40130
					33.87	24.38	139.06	105.25	178.51
ECCQ68SDS2.5	5½	7½	14	14	7615	5480	33495	25350	43000
					33.87	24.38	149.00	112.77	191.28
ECCQ74SDS2.5	6⅞	3⅝	14	14	6965	5015	19185	15875	—
					30.98	22.31	85.34	70.62	—
ECCQ76SDS2.5	6⅞	5½	14	14	7835	5640	30145	24950	—
					34.85	25.09	134.10	110.99	—
ECCQ77SDS2.5	6⅞	6⅞	14	14	7835	5640	36995	30620	—
					34.85	25.09	164.57	136.21	—
ECCQ78SDS2.5	6⅞	7½	14	14	7835	5640	41110	34020	—
					34.85	25.09	182.87	151.33	—
ECCQ7.1-4SDS2.5	7⅛	3⅝	14	14	6965	5015	—	—	26755
					30.98	22.31	—	—	119.02
ECCQ7.1-6SDS2.5	7⅛	5½	14	14	7835	5640	—	—	40130
					34.85	25.09	—	—	178.51
ECCQ7.1-7.1SDS2.5	7⅛	7⅛	14	14	7835	5640	—	—	53510
					34.85	25.09	—	—	238.03
ECCQ7.1-8SDS2.5	7⅛	7½	14	14	7835	5640	—	—	57330
					34.85	25.09	—	—	255.03
ECCQ84-SDS2.5	7½	3⅝	14	14	7835	5640	21315	16130	—
					34.85	25.09	94.82	71.76	—
ECCQ86-SDS2.5	7½	5½	14	14	7835	5640	33495	25350	—
					34.85	25.09	149.00	112.77	—
ECCQ88-SDS2.5	7½	7½	14	14	7835	5640	45675	34565	—
					34.85	25.09	203.18	153.76	—
ECCQ94-SDS2.5	8⅞	3⅝	14	14	7835	5640	24155	19990	—
					34.85	25.09	107.46	88.93	—
ECCQ96-SDS2.5	8¾	5½	14	14	7835	5640	37960	31415	—
					34.85	25.09	168.86	139.75	—
ECCQ98-SDS2.5	8¾	7½	14	14	7835	5640	51765	42840	—
					34.85	25.09	230.27	190.57	—
ECCQ106-SDS2.5	9½	5½	14	14	7835	5640	42425	32110	—
					34.85	25.09	188.72	142.84	—

1. Factored down resistances are determined using ϕF_{cp} equal to: 812 psi (5.6 MPa) for D.Fir-L and 672 psi (4.64 MPa) for Spruce-Pine glulam sizes; 1092 psi (7.53 MPa) for SCL sizes; reduce where end grain bearing or buckling capacity of post governs.
2. Spliced conditions must be detailed by the Designer to transfer tension loads between spliced members by means other than the column cap.
3. Factored uplift resistances do not apply to splice conditions.
4. Post sides are assumed to lie in the same vertical plane as the beam sides.
5. Loads may not be increased for short-term loading.
6. Uplift loads have been increased 15% for earthquake or wind loading; reduce for other loading conditions in accordance with the code.
7. ECCQ downloads assume a post of W_1 x W_2.
8. Designer to design beam for factored uplift resistance based on effective shear depth as per 12.2.1.4 CSA O86-14.
9. SCL assumes SG = 0.50.
10. Beam depth must be greater than 7¼".
11. For uplift values when using SCL, use either D.Fir-L or S-P-F factored resistances based on SCL manufacturers recommendations.

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:

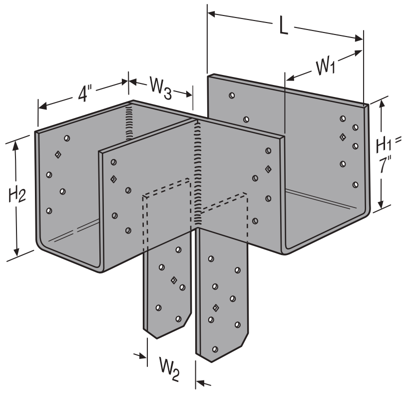
- Install ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws, which are provided, in all round holes. (Lag screws will not achieve the same load.)
- No additional welding is allowed.

Options:

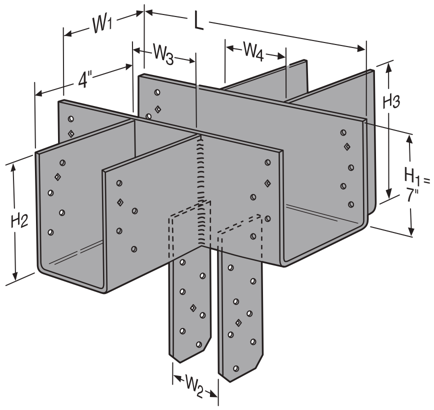
- Many combinations of beam and post sizes can be manufactured. Refer to worksheet T-CCQLTC-WS at **strongtie.com**.
- Available in widths up to 8" wide.
- ECCLQ is available in left or right side beam orientations. Specify ECCLLQ or ECCLRQ.
- Straps may be rotated where $W_1 > W_2$.
- Column caps may be ordered without the column straps for field welding to a steel column. Specify CCCOQ/CCTOQ/ECCLOQ. Welding shall be per 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: End condition with a 4x main beam, 4x side beam and 4x post oriented to the left is an ECCLLQ44.



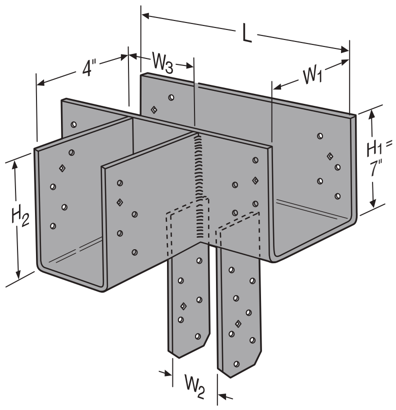
ECCLLQ-SDS2.5
(Left direction shown)
Order ECCLRQ-SDS2.5 for right direction



CCCQ-SDS2.5

Model No.	Factored Uplift Resistance (K_D = 1.15)					
	Main Beam		Side Beam		Total	
	D.Fir-L	S-P-F	D.Fir-L	S-P-F	D.Fir-L	S-P-F
	lb.	lb.	lb.	lb.	lb.	lb.
	kN	kN	kN	kN	kN	kN
ECCLQ-SDS2.5	5345	3845	3075	2215	6335	4560
	23.78	17.10	13.68	9.85	28.18	20.28
CCCQ-SDS2.5	7200	5185	3920	2825	7200	5185
	32.03	23.06	17.44	12.57	32.03	23.06
CCTQ-SDS2.5	8140	5900	3920	2825	8875	6390
	36.21	26.25	17.44	12.57	39.48	28.43

1. Factored resistances are per seat. Side beams must be loaded symmetrically for the CCCQ.
2. The combined uplift loads applied to all beams in the connector must not exceed the total factored resistance listed in the table.
3. The combined factored download for all of the carried beams shall not exceed the factored normal resistance for the unmodified product on pp. 114–115 (CCQ value for CCCQ and CCTQ, or ECCQ value for ECCLQ). The maximum factored download for each side beam shall not exceed 35% of the maximum factored normal resistance for the unmodified product or 11100 lb. (49.38 kN).



CCTQ-SDS2.5

CC/ECC/ECCU

Column Caps

The industry standard column caps. Precision factory gang-punched holes speed installation on this product line.

Material: CC3¼, CC44, CC4.62, CC6, ECC3¼, ECC4, ECC4.62, ECC6 — 7 gauge; all others — 3 gauge

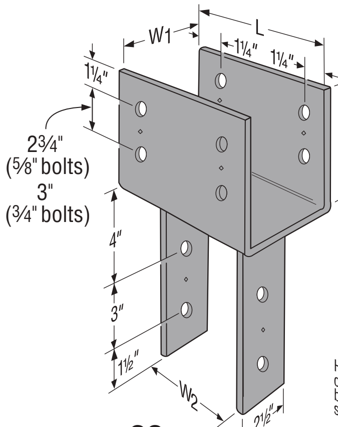
Finish: Simpson Strong-Tie® gray paint; may be ordered HDG or some in stainless steel; CCO, ECCO — no coating

Installation:

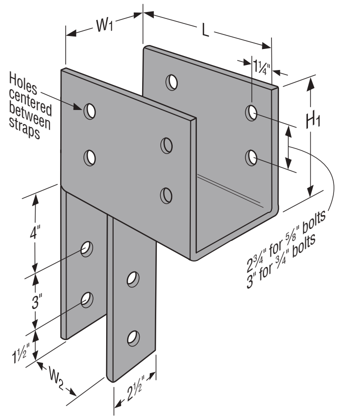
- Use all specified fasteners; see General Notes
- Bolt holes shall be a minimum of 1/32" to a maximum of 1/16" larger than the bolt diameter (per 12.4.1.2 CSA O86-14)
- Contact engineered wood manufacturer for connections that are not through the wide face

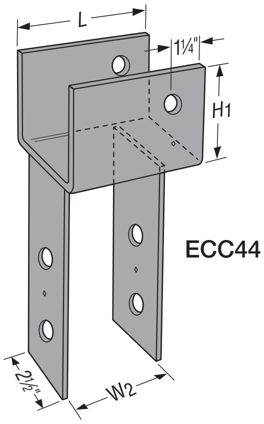
Options:

- Straps may be rotated 90° where $W_1 \geq W_2$ (see illustration).
- For special, custom, or 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).
- CCO/ECCO — Column cap only (no straps) may be ordered for field-welding to pipe or other columns. No resistances apply. 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 tabulated resistances; the resistance is no greater than that of the lesser element employed.
- ECCU — Order when uplift resistance is required for end column cap applications.
- See p. 120 for CCC, CCT and ECCL options.



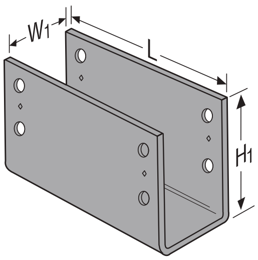
CC



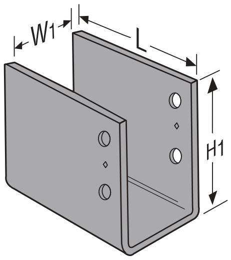


ECC44

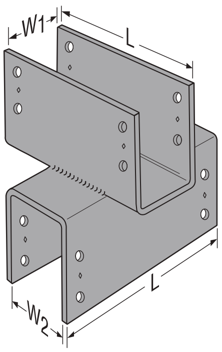
ECCU
(ECCU44 has only 2 bolts to beam)



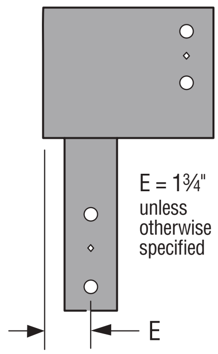
CCO



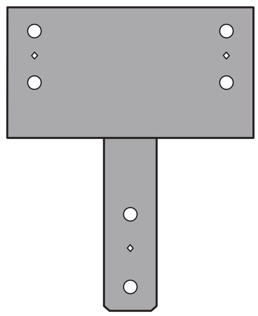
ECCO



CCOB



Optional ECC with Straps Rotated 90°



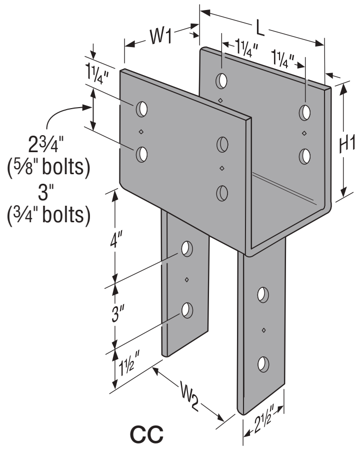
Optional CC with Straps Rotated 90°

CC/ECC/ECCU

Column Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in.)				Fasteners				Factored Normal Resistance (K_D = 1.00)		
					Beam		Post		D.Fir-L	S-P-F	SCL
	W_1	W_2	L	H_1	Qty.	Dia. (in.)	Qty.	Dia. (in.)	lb. / kN	lb. / kN	lb. / kN
SS CC3¼-4	3¼	3⅝	11	6½	4	⅝	2	⅝	23080	18955	—
									102.67	84.32	—
CC3¼-6	3¼	5½	11	6½	4	⅝	2	⅝	27915	23100	—
									124.18	102.76	—
SS CC44	3⅝	3⅝	7	4	2	⅝	2	⅝	19895	15055	26755
									88.50	66.97	119.02
CC46	3⅝	5½	11	6½	4	⅝	2	⅝	31260	23660	42040
									139.06	105.25	187.01
CC48	3⅝	7½	11	6½	4	⅝	2	⅝	31260	23660	42040
									139.06	105.25	187.01
CC4.62-3.62	4⅝	3⅝	11	6½	4	⅝	2	⅝	33235	27295	—
									147.84	121.42	—
CC4.62-4.62	4⅝	4⅝	11	6½	4	⅝	2	⅝	40195	30420	—
									178.80	135.32	—
CC4.62-5.5	4⅝	5½	11	6½	4	⅝	2	⅝	40195	30420	—
									178.80	135.32	—
CC5¼-4	5¼	3⅝	13	8	4	¾	2	¾	37850	31085	—
									168.37	138.28	—
CC5¼-6	5¼	5½	13	8	4	¾	2	¾	51810	36980	—
									230.47	164.50	—
CC5¼-8	5¼	7½	13	8	4	¾	2	¾	54100	44770	—
									240.66	199.15	—
CC64	5½	3⅝	11	6½	4	⅝	2	⅝	40620	33360	58655
									180.69	148.40	260.92
SS CC66	5½	5½	11	6½	4	⅝	2	⅝	49125	37175	63065
									218.53	165.37	280.54
CC6-7⅛	5½	7⅛	11	6½	4	⅝	2	⅝	49125	37175	63065
									218.53	165.37	280.54
CC68	5½	7½	11	6½	4	⅝	2	⅝	49125	37175	63065
									218.53	165.37	280.54
CC74	6⅞	3⅝	13	8	4	¾	2	¾	49850	40940	—
									221.75	182.12	—
CC76	6⅞	5½	13	8	4	¾	2	¾	68235	48710	—
									303.54	216.68	—
CC77	6⅞	6⅞	13	8	4	¾	2	¾	71255	58970	—
									316.97	262.32	—
CC78	6⅞	7½	13	8	4	¾	2	¾	71255	58970	—
									316.97	262.32	—
CC7⅛-4	7⅛	3⅝	13	8	4	¾	2	¾	—	—	78205
									—	—	347.89
CC7⅛-6	7⅛	5½	13	8	4	¾	2	¾	—	—	99370
									—	—	442.04
CC7⅛-7⅛	7⅛	7⅛	13	8	4	¾	2	¾	—	—	99370
									—	—	442.04
CC86	7½	5½	13	8	4	¾	2	¾	75820	54120	—
									337.28	240.75	—
CC88	7½	7½	13	8	4	¾	2	¾	79170	59915	—
									352.18	266.53	—
CC96	8⅞	5½	13	8	4	¾	2	¾	85925	61335	—
									382.23	272.84	—
CC98	8⅞	7½	13	8	4	¾	2	¾	89725	74255	—
									399.13	330.32	—
CC106	9½	5½	13	8	4	¾	2	¾	96035	68550	—
									427.20	304.94	—



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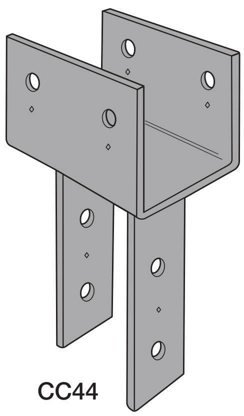


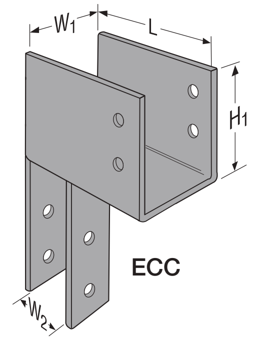
CC44

1. Post sides are assumed to lie in the same vertical plane as the beam sides.
2. Factored resistances may not be increased for short-term load duration.
3. Factored resistances are determined using ϕF_{cp} equal to: 812 psi (5.6 MPa) for D.Fir-L and 672 psi (4.64 MPa) for Spruce-Pine glulam sizes; 1092 psi (7.53 MPa) for SCL sizes; reduce where end grain bearing or buckling capacity of post governs.
4. Spliced conditions must be detailed by the Designer to transfer tension loads between spliced members by means other than the column cap.
5. SCL assumes SG = 0.50.
6. Beam depth must be greater than H_1.
7. Contact Simpson Strong-Tie for uplift resistances.

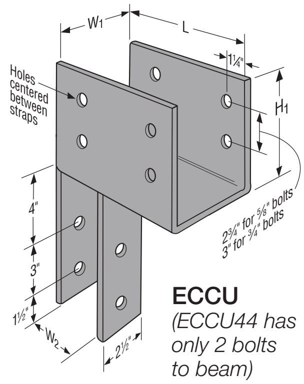
Column Caps (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

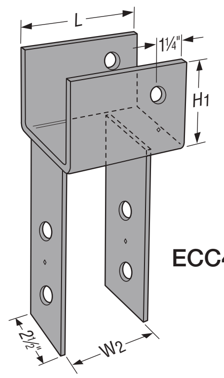
	Model No.	Dimensions (in.) W1	W2	L ECC	L ECCU	H1	Fasteners Beam Qty. ECC	Beam Qty. ECCU	Beam Dia. (in.)	Post Qty.	Post Dia. (in.)	Factored Normal Resistance (K_D = 1.00) D.Fir-L lb. / kN	S-P-F lb. / kN	SCL lb. / kN
SS	ECC3¼-4	3¼	3⅝	7½	9½	6½	2	4	⅝	2	⅝	8880	7350	—
												39.50	32.70	—
SS	ECC3¼-6	3¼	5½	7½	9½	6½	2	4	⅝	2	⅝	13955	11550	—
												62.08	51.38	—
	ECC44	3⅝	3⅝	5½	6½	4	1	2	⅝	2	⅝	9945	7530	13375
												44.24	33.50	59.50
	ECC46	3⅝	5½	8½	9½	6½	2	4	⅝	2	⅝	15630	11830	21020
												69.53	52.62	93.51
	ECC48	3⅝	7½	8½	9½	6½	2	4	⅝	2	⅝	21315	16130	28665
												94.82	71.75	127.51
	ECC4.62-3.62	4⅝	3⅝	8½	9½	6½	2	4	⅝	2	⅝	12780	9680	—
												56.85	43.06	—
	ECC4.62-4.62	4⅝	4⅝	8½	9½	6½	2	4	⅝	2	⅝	16445	12445	—
												73.15	55.36	—
	ECC4.62-5.5	4⅝	5½	8½	9½	6½	2	4	⅝	2	⅝	20095	15210	—
												89.39	67.66	—
	ECC5¼-4	5¼	3⅝	9½	10½	8	2	4	¾	2	¾	14565	12055	—
												64.79	53.63	—
	ECC5¼-6	5¼	5½	9½	10½	8	2	4	¾	2	¾	22890	18940	—
												101.82	84.25	—
	ECC5¼-8	5¼	7½	9½	10½	8	2	4	¾	2	¾	31210	25830	—
												138.83	114.90	—
	ECC64	5½	3⅝	7½	9½	6½	2	4	⅝	2	⅝	15630	11830	20065
												69.53	52.62	89.26
SS	ECC66	5½	5½	7½	9½	6½	2	4	⅝	2	⅝	24565	18590	30100
												109.27	82.70	133.90
	ECC6-7⅛	5½	7⅛	9½	9½	6½	2	4	⅝	2	⅝	31260	23660	40130
												139.06	105.25	178.51
	ECC68	5½	7½	9½	9½	6½	2	4	⅝	2	⅝	33495	25350	43000
												149.00	112.77	191.28
	ECC74	6⅞	3⅝	10½	10½	8	2	4	¾	2	¾	19185	15875	—
												85.34	70.62	—
	ECC76	6⅞	5½	10½	10½	8	2	4	¾	2	¾	30145	24950	—
												134.10	110.99	—
	ECC77	6⅞	6⅞	10½	10½	8	2	4	¾	2	¾	36995	30620	—
												164.57	136.21	—
	ECC78	6⅞	7½	10½	10½	8	2	4	¾	2	¾	41110	34020	—
												182.87	151.33	—
	ECC7⅛-4	7⅛	3⅝	10½	10½	8	2	4	¾	2	¾	—	—	26755
												—	—	119.02
	ECC7⅛-6	7⅛	5½	10½	10½	8	2	4	¾	2	¾	—	—	42040
												—	—	187.01
	ECC7⅛-7⅛	7⅛	7⅛	10½	10½	8	2	4	¾	2	¾	—	—	53510
												—	—	238.03
	ECC86	7½	5½	10½	10½	8	2	4	¾	2	¾	33495	25350	—
												149.00	112.77	—
	ECC88	7½	7½	10½	10½	8	2	4	¾	2	¾	45675	34565	—
												203.18	153.76	—
	ECC96	8⅞	5½	10½	10½	8	2	4	¾	2	¾	37960	31415	—
												168.86	139.75	—
	ECC98	8⅞	7½	10½	10½	8	2	4	¾	2	¾	51765	42840	—
												230.27	190.57	—
	ECC106	9½	5½	10½	10½	8	2	4	¾	2	¾	42425	32110	—
												188.72	142.84	—



ECC



ECCU
(ECCU44 has only 2 bolts to beam)



ECC44

1. Post sides are assumed to lie in the same vertical plane as the beam sides.
2. Factored resistances may not be increased for short-term load duration.
3. Factored resistances are determined using ϕF_{cp} equal to: 812 psi (5.6 MPa) for D.Fir-L and 672 psi (4.64 MPa) for Spruce-Pine glulam sizes; 1092 psi (7.53 MPa) for SCL sizes; reduce where end bearing or buckling capacity of post governs.
4. ECC downloads assume a post of W_1 x W_2.
5. SCL assumes SG = 0.50.
6. Beam depth must be greater than H_1.
7. Contact Simpson Strong-Tie for uplift resistances.

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:

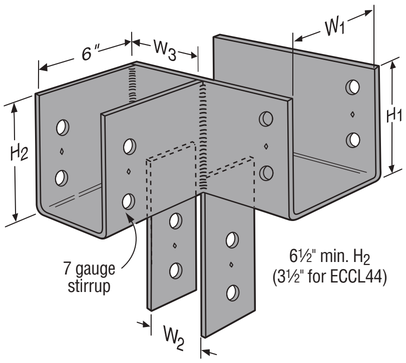
- Use all specified fasteners; see General Notes
- Bolt holes shall be a minimum of 1⁄32" to a maximum of 1⁄16" larger than bolt diameter (per 12.4.1.2 CSA O86-14)

Options:

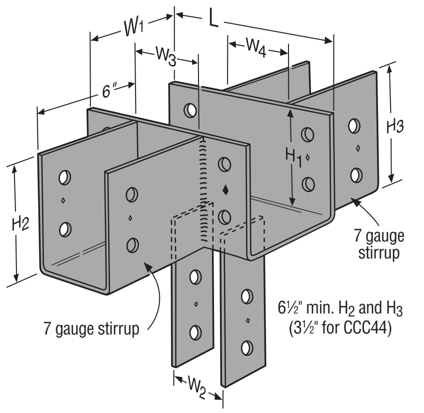
- Many combinations of beam and post sizes can be manufactured. Refer to worksheet T-C-CCQLTC at **strongtie.com**.
- The factored resistance shall be determined from the capacity for the unmodified product (see pp. 118–119). The side beam can take a maximum of 40% of the download and shall not exceed 13640 lb. (60.68 kN). The sum of the loads for the side beam(s) and main beam can not exceed the tabulated values.
- Uplift resistances do not apply for ECCL caps. For CCC and CCT, uplift resistances 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 6½" (3½" 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. Welding shall be per Designer.

Ordering Examples:

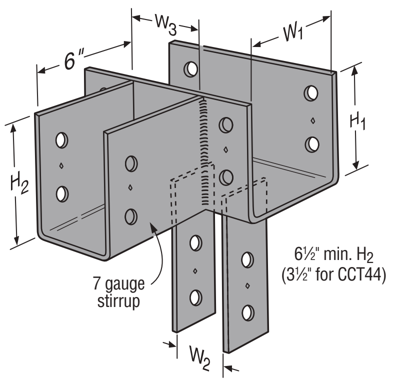
- A CCC66 with W_3 = 5½", H_2 and H_3 = 6½" is a CC66 column cap with 5½" beams on each side with all beam seats flush.
- An ECCLR66 with W_3 = 3⅝", H_2 = 7½" is an ECC66 end column cap with a 4x beam on the right side (specify direction left (which is shown) or right for stirrup) and stirrup seat 1" below the cap seat.



ECCLL
(Left direction shown)
Order ECCLR for right direction



CCC

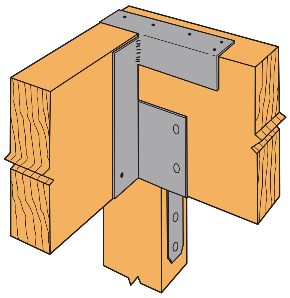


CCT

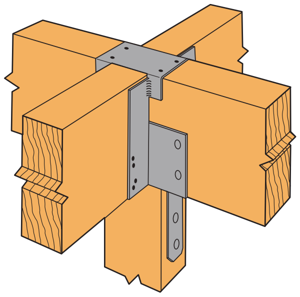
ECCL/CCC/CCT

Column Caps (cont.)

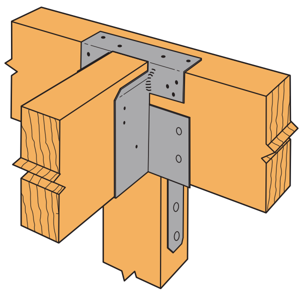
There are cost-effective alternatives for replacing column caps by using a combinationof connectors. Designer must specify the options required. For column cap clearance, allow 3" for the hanger flange depth.



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 128–167

- Face Mount 130–140
- Top Flange 141–167

Glulam Beam Connectors 168–181

- Top Flange............................... 169–175
- Face Mount................................. 176–181

Engineered Wood and Structural Composite Lumber Connectors 182–255

- Face Mount 185–201
- Top Flange 202–255

Plated Truss Connectors 256–299

SIMPSON Strong-Tie®

Hanger Load Table Explanation

This icon identifies products approved for installation with the Simpson Strong-Tie® Strong-Drive® SD Connector screw. See pp. 32–34 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 factored resistance.

Load Duration: Assumed duration factor used to determine the factored resistance.

Factored Resistances: The maximum resistance 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 values.

Uplift

Normal

Joist Size	Model No.	Ga.	Dimensions (in.)				Fasteners			Factored Resistance				Installed Cost Index
										D.Fir-L		S-P-F		
			W	H	B	de[6]	Min./ Max.	Header	Joist	Uplift (KD = 1.15) lb. kN	Normal (KD = 1.00) lb. kN	Uplift (KD = 1.15) lb. kN	Normal (KD = 1.00) lb. kN	
Sawn Lumber Sizes														
DBL 2x6	LU26-2L	20	3⅛	5	1⅝	4¹⁹⁄₃₂	—	(6) 10d	(4) 10d x 1½"	760 3.38	1605 7.14	680 3.02	1140 5.07	Lowest
	LUS26-2	18	3⅛	4⅞	2	4¹⁄₃₂	—	(4) 16d	(4) 16d	1720 7.65	2595 11.54	1545 6.87	1920 8.54	+24%
	U26-2	16	3⅛	5	2	3¹³⁄₁₆	—	(8) 10d	(4) 10d	960 4.27	2675 11.90	890 3.96	2475 11.01	+124%
	HU26-2/ HUC26-2	14	3⅛	5⅜	2½	5	Min.	(8) 16d	(4) 10d	1055 4.69	3420 15.21	980 4.36	2845 12.66	+358%
							Max.	(12) 16d	(6) 10d	1580 7.03	4415 19.64	1470 6.54	3135 13.95	+372%

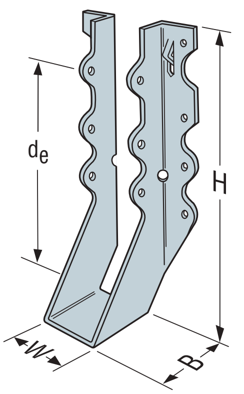
This icon identifies products that are available with additional corrosion protection. See pp. 27–28 for additional information.

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

Nails: 10d = 0.148" dia. x 3" long,
16d = 0.162" dia. x 3½" long,
10d x 1½" = 0.148" dia. x 1½" long.
See pp. 27–28 for other nail sizes and information.

Throughout this catalogue a footnote will typically be provided indicating the required nail diameter and length.

All installations should be designed only in accordance with the factored resistance values set forth in this catalogue.



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 catalogue.

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.

Resistances: For multiple modifications on the same connector, use the single multiplier factor that yields the lowest factored resistance.

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°)** *(SLU = Seat Up)*	**Skewed Left (20°)** *(SKR = Skewed Right)*	**Top Flange Down Left (20°)** *(TFDR = Top Flange Down Right)*	**Top Flange Open (20°)** *(TFC = Top Flange Closed)*	**Offset Top Flange Right** *(OSL = Offset Top Flange Left)*

X = Modification

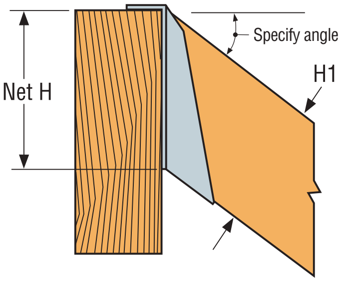
Height for Sloped Hangers

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.



SIMPSON Strong-Tie®

Face-Mount Hanger Option Matrix

Base Model Series	Hanger Modification Options						Applications	Hanger Option Page(s)
	Skewed Seat							
	Allowable Skew (Skewable)	Square Cut Joist Allowed (Butt Cut)	Sloped Seat (Slopeable)	Skewed and Sloped Seat (Slopeable and Skewable)	Concealed Flange(s) (Concealed)	Alternate Widths	Uplift Weldability (Uplift, Weldable)	
Face-Mount Hangers								
DHU	≤ 45°	●			◉		U	252
HGU	≤ 45°	7" wide			◉	●	U	178, 200
HGUM	≤ 45°	7" wide			●	●	U	335
HGUS	≤ 45°	◉					U	132, 176, 188
HHGU					●	●	U	178, 200
HHUS	≤ 45°		≤ 45°	●			U	132, 188
HSUL/HSUR	45° Std.	●			◉		U	—
HSULC/HSURC	45° Std.	●			Std.		U	—
HTU	≤ 67½°	●					U	260
HU[3]	≤ 67½°	●	≤ 45°	●	◉	◉	U, W	130, 176, 186
HUC	≤ 45°	●	≤ 45°		Std.		U, W	130, 176, 333
HUCQ					Std.		U	—
HUSC					Std.		U	—
IUS							U	—
LGU	≤ 45°	●			●	●	U	178, 200
LGUM	≤ 45°	●					U	335
LSU/LSSU	Field skewable and slopeable to 45° available for some models						U	—
LTHJA							U	—
LU							U	—
LUC					Std.		U	—
LUS							U	—
MGU	≤ 45°	●			◉	●	U	178, 200
MIU							U	—
MTHM							U	—
SUL/SUR	45° Std.	●					U	—
SULC/SURC	45° Std.	●			Std.		U	—
THGB/THGBH/ THGBV/THGBHV	≤ 45°	7" wide					U	283, 285
THGQH	45°	●					U	280
THJA							U	—
THJU						●	U	268
U[3]	≤ 67½°	●	≤ 45°	●			U	130, 186

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. See p. 131 for limitations on skew angles for U/HU hangers.

● = 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: Skewed Seat – Allowable Skew	Skewed Seat – Square Cut Joist Allowed	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	Applications: Uplift Nailers Weldability	Hanger Option Page(s)
	Skewable	Butt Cut	Slopeable	Slopeable and Skewable	Concealed		Sloped Top Flange	Open Top Flange	Closed Top Flange	Offset Top Flange	Saddle Hanger	Ridge Hanger	Uplift / Nailer / Weldable	
Top-Flange Hangers														
B	≤ 45°		≤ 45°	●		●	●	●	●		●		U, N, W	141, 149
BA													U, N, W	—
DHUTF	≤ 45°	●			○								U	252
EG	≤ 45°		≤ 45°										—	174
EGQ	≤ 45°		≤ 45°										U	217
GB			≤ 45°								●		U, W	171, 175, 209
GLS	≤ 50°		≤ 45°	●			●			●	●		U, W	169
GLT	≤ 50°		≤ 45°	●			●			●			U, W	179
GLTV	≤ 50°		≤ 45°	●			●			●			U, N, W	214
HB	≤ 45°		≤ 45°	●		●	●	●	●		●		U, N, W	206
HGB			≤ 45°								●		U	175
HGLS	≤ 50°		≤ 45°				●			●	●		U, W	169
HGLT	≤ 50°		≤ 45°				●			●			U, W	169
HGLTV	≤ 50°		≤ 45°				●			●			U, W	214
HHB			≤ 45°			●					●		U, W	141, 175
HIT													U, N	—
HUSCTF					Std.								—	—
HW/HWI	≤ 84°	○	≤ 45°	●			●	●		●	●	○	N, W	144, 210
HWU	≤ 45° ○		≤ 45°	○									U, N, W	144, 210
ITS													U, N	—
LB													U, N, W	—
LBV	≤ 45°		≤ 45°	●		●	●	●	●		●		U, N, W	206
LEG	≤ 45°	●	≤ 45°							●			—	174
MEG	≤ 45°	7" wide	≤ 45°							●			—	174
MIT													U, N	—
MSC	20°–45° ○	●	≤ 45°	●		○							—	—
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	144, 210
WMU	≤ 84°	○	≤ 45°							●			—	144, 210
WNP/WP/WPI	≤ 84°	○	≤ 45°	●			●	●	●	●	●	○	N, W	144, 210
WPU/WNPU	≤ 45° ○		≤ 45°	○									U, N, W	144, 210

See foonotes on p. 126.

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

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.

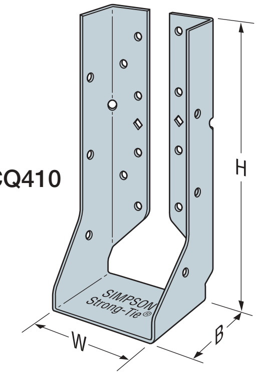
Material: 14 gauge

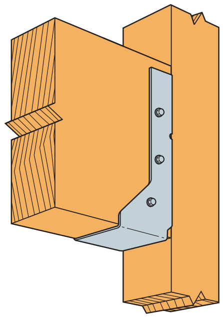
Finish: Galvanized. Most models available in stainless steel or ZMAX® coating.

Installation:

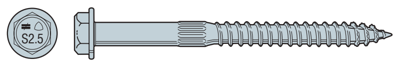
- Use all specified fasteners; see General Notes
- Strong-Drive SDS Heavy-Duty Connector screws supplied
- For use on solid sawn wood members

HUCQ410

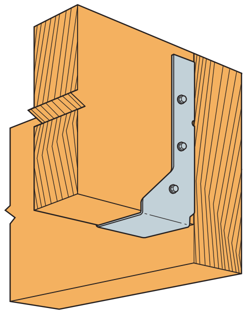




Typical HUCQ Installation on a Post



Strong-Drive® ¼" x 2½" SDS Heavy-Duty Connector Screw
(See p. 35 for more information)



Typical HUCQ Installation on a Beam

SS These products are available with additional corrosion protection. For more information, see p. 24.

	Model No.	Dimensions (in.)			Fasteners		Factored Resistance			
							D.Fir-L		S-P-F	
		W	H	B	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
SS	HUCQ310-SDS	2 9/16	9	3	(8) ¼" x 2½" SDS	(4) ¼" x 2½" SDS	2120	5675	1525	5375
							9.43	25.24	6.78	28.91
SS	HUCQ210-2-SDS	3¼	9	3	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	3210	6825	2900	6825
							14.28	30.36	12.09	30.36
SS	HUCQ410-SDS	3 9/16	9	3	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	3210	6825	2900	6825
							14.28	30.36	12.90	30.36
SS	HUCQ412-SDS	3 9/16	11	3	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	3210	9090	2900	7645
							14.28	40.43	12.90	34.01
SS	HUCQ210-3-SDS	4⅝	9	3	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	3210	6825	2900	6825
							14.28	30.36	12.90	30.36
SS	HUCQ610-SDS	5½	9	3	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	3210	7270	2900	6825
							14.28	32.34	12.90	30.36
SS	HUCQ612-SDS	5½	11	3	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	3210	9090	2900	7645
							14.28	40.43	12.90	34.01

1. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading such as cantilever construction.
2. When using structural composite lumber columns, Strong-Drive® SDS Heavy-Duty Connector screws must be applied to the wide face of the column.

Joist Factored Shear Resistances

The maximum capacity of a horizontal joist or rafter may be limited by its factored shear resistance (V_r). This table gives the capacity for common sizes.

Joist or Rafter	Factored Shear Resistance (V_r)			
	D.Fir-L		S-P-F	
	(K_D = 1.00) lb. / kN	(K_D = 1.15) lb. / kN	(K_D = 1.00) lb. / kN	(K_D = 1.15) lb. / kN
2x4	1470	1695	1160	1335
	6.54	7.54	5.18	5.95
2x6	1900	2200	1505	1730
	8.51	9.79	6.71	7.71
2x8	2150	2475	1695	1945
	9.59	11.02	7.54	8.67
2x10	2515	2895	1985	2280
	11.21	12.89	8.83	10.16
2x12	2785	3205	2195	2525
	12.41	14.27	9.78	11.25

1. Factored shear resistances shown assume a single member system factor (K_H = 1.00). Resistances may be increased as per 6.4.4 CSA O86-14 for Case 1 and Case 2 systems.
2. Resistances shown are for No. 1/No. 2 grades.

Face-Mount Hangers LUCZ/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. 134–140. See Hanger Options on p. 126 for hanger modifications, which may result in reduced resistances.

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 factored resistances.

HU/HUC — Most models have triangle and round holes. To achieve maximum resistances, 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. 134–140

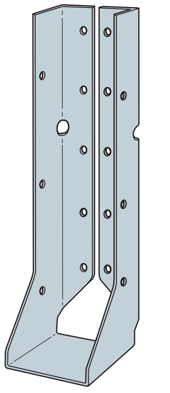
Finish: Galvanized. Some products available in ZMAX® coating.

Installation:

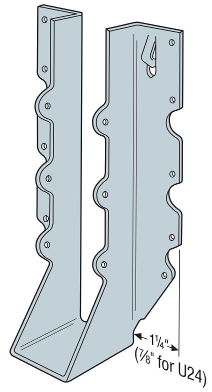
- Use all specified fasteners; see General Notes.
- HU — Can be installed filling round holes only, or filling round and triangle holes for maximum values.
- Joists sloped up to ¼:12 achieve tabulated values.
- For installations to masonry or concrete see p. 333–334.
- HU hangers can be welded to a steel member. Refer to technical bulletin T-C-HUHUC-W at **strongtie.com**.

Options:

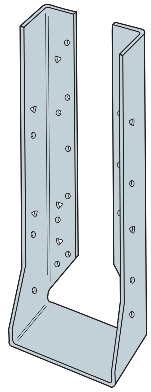
- HU hangers available with the header flanges turned in for $2\frac{5}{16}$" width and larger, with no reduction in resistances — order HUC hanger.
- HU only — rough beam sizes available by special order.
- See p. 140 for stocked U hanger rough sizes tables. Rough sizes are not available in 8x.
- Also see LUS and HUS series.



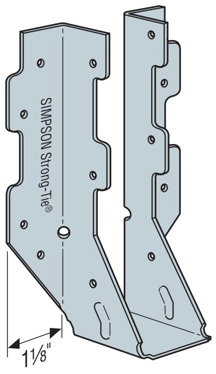
LUC210Z
(LUC26Z similar)



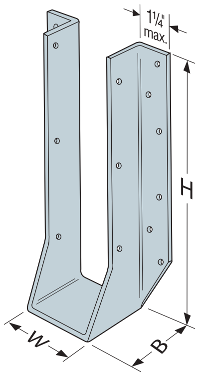
U210



HUC412
Concealed flanges

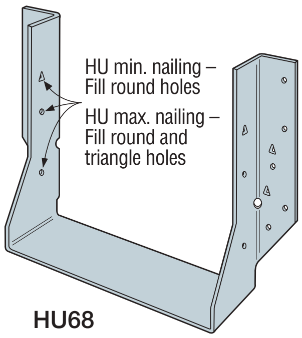


LU28L
(except LU roughs)

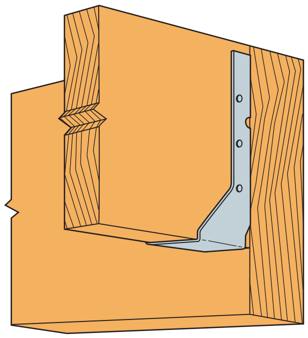


HU214
Projection seat on most models for maximum bearing and section economy.

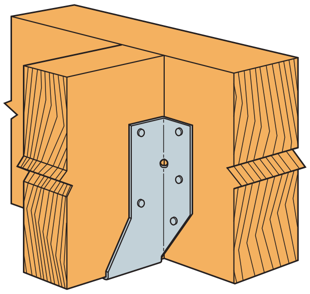
Model configurations may differ from those shown. Some HU models do not have triangle holes. Contact Simpson Strong-Tie.



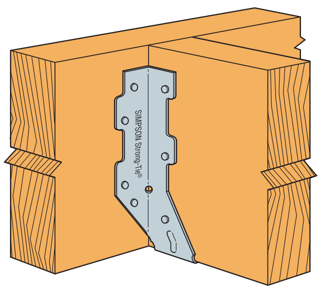
HU68



Typical LUCZ Installation



Typical HU Installation



Typical LU28L Installation

Face-Mount Hangers LUCZ/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]	HU with Straight A Flanges	16d Stainless-Steel Nails	Other Fastener Substitutions
1.00	0.65	0.65	1.00	HU is available with the A flanges straight at 0.70 of the table values if W ≥ 3½". If W < 3", use N10 nails at 0.50 of the table value. If W ≥ 3", use 10d nails at 0.50 of the table value. Do not use with end-grain nailing.	Ring shank (all conditions) 1.00 Smooth shank (normal seat) 0.80 Smooth shank (modified seat[1]) 0.43	16d → 16d x 2½" 1.00 16d → 10d 0.83 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 2⁵⁄₁₆". To order ask for HUCXXX. For skewed HUC, only flange on acute side is concealed.
3. Skews over 50° require a square-cut joist.
4. HU1.81/5 can be skewed to a maximum of 50°.
5. Skewed hangers may have joist nails on one side.

Reduction Factor Instructions

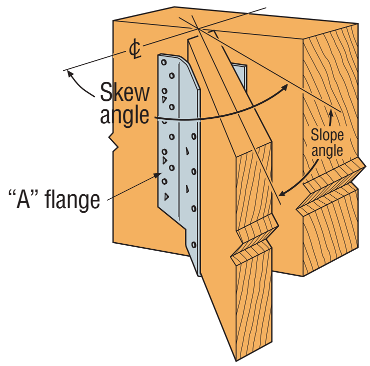
Factored Down Resistance = Seat x Flange x Stainless Steel Nails x Other Fastener Substitutions x (Table Value)

Factored Uplift Resistance = 0.75 x Face Fastener Type x (Table Value) for skewed or sloped
1.00 x Face Fastener Type x (Table Value) for non-skewed or sloped

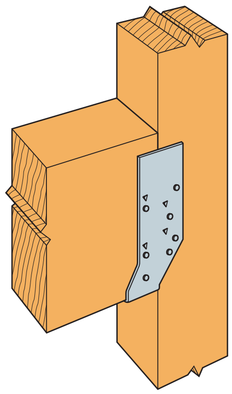
Maximum Skew Degree for Skewed HUC Hangers

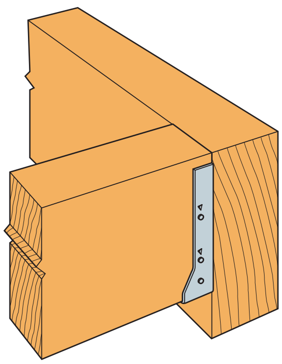
Hanger Width (in.)	Maximum Skew (degree)
2⁵⁄₁₆	31
2⅜	31
2⁹⁄₁₆	34
2¾	37
3⅛	41
3¼	42

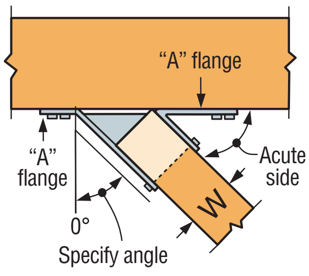
1. Widths greater than 3¼" maximum skew is 45°.



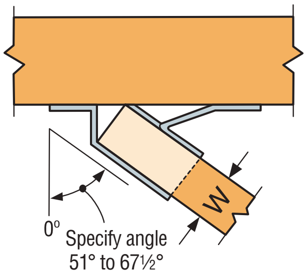
Typical HU Sloped Down, Skewed Right Installation


Typical HU Installation Manufactured with Flanges Straight

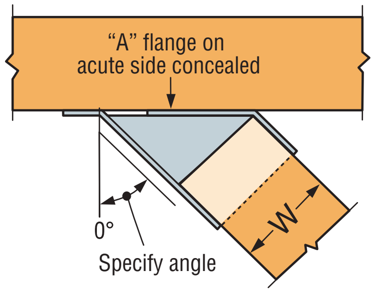

Typical HUC Installed on a Beam



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



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



Top View HUC Concealed Hanger Skewed Right
(square cut)

Face-Mount Hangers LUS/HUS/HHUS/HGUS

Double-Shear Joist Hangers

VALUE ENGINEERED

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

See Hanger tables on pp. 134–140. See Hanger Options on p. 126 for hanger modifications, which may result in reduced resistances.

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

Material: See tables, pp. 134–140

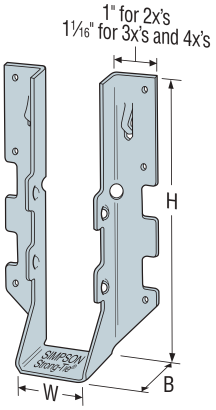
Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

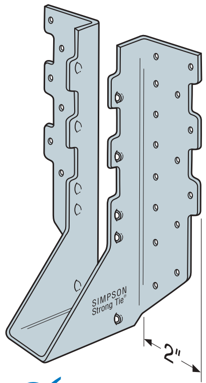
- Use all specified fasteners; see General Notes.
- Nails must be driven at an angle through the joist or truss into the header to achieve the tabulated resistances.
- Not designed for welded or nailer applications.
- Where 16d commons are specified, 10d commons may be used at 0.83 of the tabulated resistances.
- For HUS, HHUS and HGUS with a single 2x carrying member, use 10d x 1½" nails into the header and 10d commons into the joist, reduce the resistance to 0.64 of the table value.

Options:

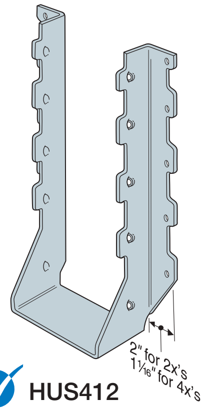
- LUS and HUS hangers cannot be modified.
- See Hanger Options, p. 126.



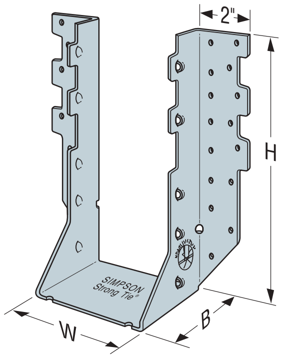
LUS28



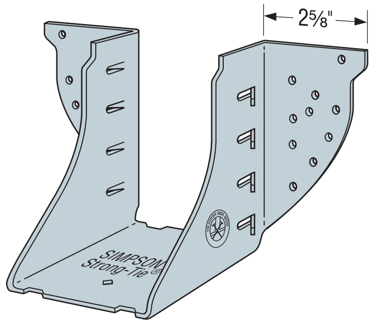
HUS210
(HUS26 and HUS28 similar)



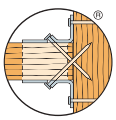
HUS412



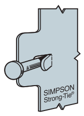
HHUS410



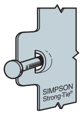
HGUS46



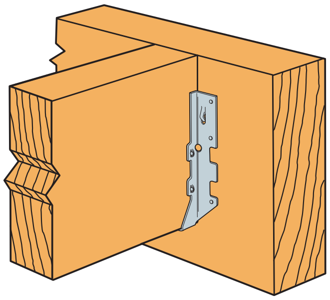
Double-Shear Nailing Top View



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



Typical LUS28 Installation
Standard LUS28 installation use 0.148 x 3" (10d common)

Face-Mount Hangers LUS/HUS/HHUS/HGUS

Double-Shear Joist Hangers (cont.)

HHUS/HGUS

See Hanger Options information on pp. 126.

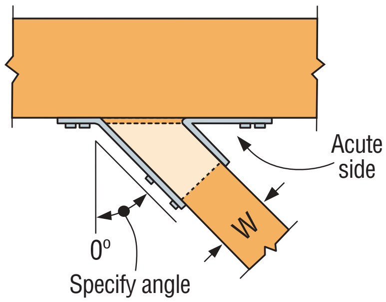
HHUS — Sloped and/or Skewed Seat

- HHUS hangers can be skewed to a maximum of 45° and/or sloped to a maximum of 45°
- For skew only, maximum factored down resistance is 0.85 of the table value
- For sloped only or sloped and skewed hangers, the maximum factored down resistance is 0.72 of the table value
- Uplift resistances for sloped/skewed conditions are 0.62 of the table value
- 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°. Factored resistances are:

HGUS Seat Width	Joist	Download	Uplift
W < 2"	Bevel or square cut	0.62 of table value	0.46 of table value
2" < W < 6"	Bevel cut	0.67 of table value	0.41 of table value
2" < W < 6"	Square cut	0.46 of table value	0.41 of table value
W > 6"	Bevel cut	0.75 of table value	0.41 of table value



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

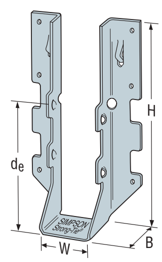
These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	d_e[6]	Min./Max.	Fasteners Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN	Installed Cost Index
Sawn Lumber Sizes														
2x4	LU24L	22	1 9/16	3⅛	1⅝	2 11/16	—	(4) 10d	(2) 10d x 1½"	360	1020	320	725	Lowest
										1.60	4.54	1.42	3.22	
	LUS24	18	1 9/16	3⅛	1¾	2¼	—	(4) 10d	(2) 10d	710	1625	645	1155	+11%
										3.16	7.23	2.87	5.14	
	U24	16	1 9/16	3⅛	1½	1 13/16	—	(4) 10d	(2) 10d x 1½"	450	1340	355	1030	+90%
										2.00	5.96	1.58	4.58	
	HU26	14	1 9/16	3 1/16	2¼	1 1/16	—	(4) 16d	(2) 10d x 1½"	490	1525	450	1080	+490%
										2.18	6.78	2.00	4.80	
DBL 2x4	LUS24-2	18	3⅛	3⅛	2	1 17/32	—	(4) 16d	(2) 16d	835	2020	590	1435	Lowest
										3.71	8.99	2.62	6.38	
	U24-2	16	3⅛	3	2	1 15/16	—	(4) 10d	(2) 10d	480	1340	445	1030	+59%
										2.14	5.96	1.98	4.58	
	HU24-2/ HUC24-2	14	3⅛	3 1/16	2½	2 11/16	—	(4) 16d	(2) 10d	525	1710	490	1585	+244%
										2.34	7.61	2.18	7.05	
2x6	LU26L	22	1 9/16	5	1⅝	4 19/32	—	(6) 10d	(4) 10d x 1½"	720	1605	645	1140	Lowest
										3.20	7.14	2.87	5.07	
	LUS26	18	1 9/16	4¾	1¾	3 25/32	—	(4) 10d	(4) 10d	1420	2170	1290	1630	+10%
										6.32	9.65	5.74	7.25	
	U26	16	1 9/16	4¾	2	3 15/16	—	(6) 10d	(4) 10d x 1½"	895	2005	780	1860	+70%
										3.98	8.92	3.47	8.27	
	LUC26Z	18	1 9/16	4¾	1¾	4	—	(6) 10d	(4) 10d x 1½"	830	1605	710	1140	+74%
										3.69	7.14	3.16	5.07	
	HUS26	16	1⅝	5⅜	3	3 15/16	—	(14) 16d	(6) 16d	2705	4940	2065	3875	+320%
										12.03	21.97	9.20	17.24	
DBL 2x6	LU26-2L	20	3⅛	5	1⅝	4 19/32	—	(6) 10d	(4) 10d x 1½"	760	1605	680	1140	Lowest
										3.38	7.14	3.02	5.07	
	LUS26-2	18	3⅛	4⅞	2	4 1/32	—	(4) 16d	(4) 16d	1720	2595	1545	1920	+24%
										7.65	11.54	6.87	8.54	
	U26-2	16	3⅛	5	2	3 13/16	—	(8) 10d	(4) 10d	960	2675	890	2475	+124%
										4.27	11.90	3.96	11.01	
	HU26-2/ HUC26-2	14	3⅛	5⅜	2½	5	Min.	(8) 16d	(4) 10d	1055	3420	980	2845	+358%
										4.69	15.21	4.36	12.66	
							Max.	(12) 16d	(6) 10d	1580	4415	1470	3135	+372%
										7.03	19.64	6.54	13.95	
TPL 2x6	LUS26-3	18	4⅝	4⅛	2	3 3/32	—	(4) 16d	(4) 16d	1720	2595	1545	2340	Lowest
										7.65	11.54	6.87	10.41	
	U26-3	16	4⅝	4¼	2	3 11/16	—	(8) 10d	(4) 10d	960	2675	890	2475	+87%
										4.27	11.90	3.96	11.01	
	HU26-3/ HUC26-3	14	4 11/16	4⅝	2½	5	Min.	(8) 16d	(4) 10d	1055	3420	980	2845	+193%
										4.69	15.21	4.36	12.66	
							Max.	(12) 16d	(6) 10d	1580	4415	1470	3135	+198%
										7.03	19.64	6.54	13.95	

1. 10d common nails may be used instead of the specified 16d nails at 0.83 of the tabulated value.
2. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading such as in cantilever construction.
3. Min. nailing quantity and factored resistances — fill all round holes; max. nailing quantity and factored resistances — fill all round and triangle holes.
4. D.Fir-L factored resistances can be used for most LVL. Verify with manufacturer prior to selecting hanger.
5. See p. 28 for hangers with reduced capacity due to installation with different nails.
6. d_e is the distance from the bearing seat to the top joist nail.
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. 27–28 for other nail sizes and information.

**Hangers do not have an Installed Cost Index.*



Face-Mount Hangers — Solid Sawn Lumber

SIMPSON Strong-Tie®

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.)				Fasteners			Factored Resistance				Installed Cost Index
			W	H	B	d_e[6]	Min./ Max.	Header	Joist	D.Fir-L		S-P-F		
										Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	
										lb. / kN	lb. / kN	lb. / kN	lb. / kN	
Sawn Lumber Sizes														
2x8	LU26L	22	1 9/16	5	1⅝	4 19/32	—	(6) 10d	(4) 10d x 1½"	720	1605	645	1140	Lowest
										3.20	7.14	2.87	5.07	
	LUS26	18	1 9/16	4¾	1¾	3 25/32	—	(4) 10d	(4) 10d	1420	2170	1290	1630	+10%
										6.32	9.65	5.74	7.25	
	LU28L	20	1 9/16	6¾	1⅝	5⅞	—	(8) 10d	(6) 10d x 1½"	1140	2185	1020	1550	+29%
										5.07	9.72	4.54	6.89	
	LUS28	18	1 9/16	6⅝	1¾	3 25/32	—	(6) 10d	(4) 10d	1420	2520	1290	1790	+42%
										6.32	11.21	5.74	7.96	
	U26	16	1 9/16	4¾	2	3 15/16	—	(6) 10d	(4) 10d x 1½"	895	2005	780	1860	+70%
										3.98	8.92	3.47	8.27	
	LUC26Z	18	1 9/16	4¾	1¾	4	—	(6) 10d	(4) 10d x 1½"	830	1605	710	1140	+70%
										3.69	7.14	3.16	5.07	
	HU28	14	1 9/16	5¼	2¼	4⅞	—	(6) 16d	(4) 10d x 1½"	980	2565	905	2380	+415%
										4.36	11.41	4.03	10.59	
	HUS28	16	1⅝	7 3/32	3	6 3/32	—	(22) 16d	(8) 16d	3605	5365	2675	4345	+457%
										16.04	23.86	11.90	19.33	
DBL 2x8	LUS26-2	18	3⅛	4⅞	2	4 1/32	—	(4) 16d	(4) 16d	1720	2595	1545	1920	Lowest
										7.65	11.54	6.87	8.54	
	LU28-2L	20	3⅛	6¾	1⅝	5⅞	—	(8) 10d	(6) 10d x 1½"	1140	2185	1020	1550	+5%
										5.07	9.72	4.54	6.89	
	LUS28-2	18	3⅛	7	2	4 1/32	—	(6) 16d	(4) 16d	1720	3325	1545	2575	+10%
										7.65	14.79	6.87	11.45	
	U26-2	16	3⅛	5	2	3 13/16	—	(8) 10d	(4) 10d	960	2675	890	2475	+84%
										4.27	11.90	3.96	11.01	
	HUS28-2	14	3⅛	7 3/16	2	5 15/16	—	(6) 16d	(6) 16d	2540	3620	1805	2570	+214%
										11.30	16.10	8.03	11.43	
	HU28-2/ HUC28-2	14	3⅛	7	2½	6⅝	Min.	(10) 16d	(4) 10d	1055	4270	980	3135	+296%
										4.69	18.99	4.36	13.95	
							Max.	(14) 16d	(6) 10d	1580	5780	1470	4225	+307%
										7.03	25.71	6.54	18.79	
TPL 2x8	LUS28-3	18	4⅝	6¼	2	3 9/32	—	(6) 16d	(4) 16d	1720	3325	1545	2375	Lowest
										7.65	14.79	6.87	10.56	
	HU26-3/ HUC26-3	14	4 11/16	4⅝	2½	5	—	(8) 16d	(4) 10d	1055	3420	980	2845	+192%
										4.69	15.21	4.36	12.66	
QUAD 2x8	HU28-4/ HUC28-4	14	6⅛	7	2½	6 7/16	Min.	(10) 16d	(4) 16d	1230	4270	1140	3135	*
										5.47	18.99	5.07	13.95	
							Max.	(14) 16d	(6) 16d	1840	5780	1710	4225	*
										8.18	25.71	7.61	18.79	
2x10	LU28L	20	1 9/16	6⅜	1½	5½	—	(8) 10d	(6) 10d x 1½"	1140	2185	1020	1550	Lowest
										5.07	9.72	4.54	6.89	
	LUS28	18	1 9/16	6⅝	1¾	3 25/32	—	(6) 10d	(4) 10d	1420	2520	1290	1790	+10%
										6.32	11.21	5.74	7.96	
	LU210L	20	1 9/16	8	1⅝	7 15/32	—	(10) 10d	(6) 10d x 1½"	1140	2495	1020	1770	+18%
										5.07	11.10	4.54	7.87	
	LUS210	18	1 9/16	7 13/16	1¾	3⅞	—	(8) 10d	(4) 10d	1420	2785	1290	2210	+23%
										6.32	12.39	5.74	9.83	
	LUC210Z	18	1 9/16	7¾	1¾	5½	—	(10) 10d	(6) 10d x 1½"	1240	2495	1130	1770	+85%
										5.52	11.10	5.03	7.87	
	U210	16	1 9/16	7 13/16	2	5¾	—	(10) 10d	(6) 10d x 1½"	1345	2755	1235	1955	+92%
										5.98	12.25	5.49	8.70	
	HU210	14	1 9/16	7⅛	2¼	6¾	—	(8) 16d	(4) 10d x 1½"	980	3420	905	2865	+300%
										4.36	15.21	4.03	12.74	
	HUS210	16	1⅝	9 3/32	3	7 31/32	—	(30) 16d	(10) 16d	4505	5795	4010	4740	+472%
										20.04	25.78	17.84	21.08	

See footnotes on p. 134.

Solid Sawn Joist Hangers

Face-Mount Hangers — Solid Sawn Lumber

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	d_e [6]	Fasteners Min./Max.	Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN	Installed Cost Index
Sawn Lumber Sizes														
DBL 2x10	LUS28-2	18	3 1/8	7	2	4 1/32	—	(6) 16d	(4) 16d	1720	3325	1545	2575	Lowest
										7.65	14.79	6.87	11.45	
	LU210-2L	20	3 1/8	8	1 5/8	7 15/32	—	(10) 10d	(6) 10d x 1½"	1140	2495	1020	1770	+16%
										5.07	11.10	4.54	7.87	
	LUS210-2	18	3 1/8	9	2	6 1/32	—	(8) 16d	(6) 16d	2580	4500	2320	3195	+30%
										11.48	20.02	10.32	14.21	
	U210-2	16	3 1/8	8 1/2	2	6 11/16	—	(14) 10d	(6) 10d	1440	4355	1340	3090	+99%
										6.41	19.37	5.96	13.75	
	HUS210-2	14	3 1/8	9 3/16	2	7 15/16	—	(8) 16d	(8) 16d	3795	5690	3450	4570	+252%
										16.88	25.31	15.35	20.33	
	HU210-2/ HUC210-2	14	3 1/8	8 13/16	2 1/2	8 7/16	Min.	(14) 16d	(6) 10d	1580	5780	1470	4225	+339%
										7.03	25.71	6.54	18.79	
							Max.	(18) 16d	(10) 10d	2635	5780	2450	4690	+352%
										11.72	25.71	10.90	20.86	
	HHUS210-2	14	3 5/16	9 3/16	3	8	—	(30) 16d	(10) 16d	4745	9660	4310	7000	+385%
										21.11	42.97	19.17	31.14	
TPL 2x10	LUS28-3	18	4 5/8	6 1/4	2	3 9/32	—	(6) 16d	(4) 16d	1720	3325	1545	2375	Lowest
										7.65	14.79	6.87	10.56	
	LUS210-3	18	4 5/8	8 3/16	2	5 9/16	—	(8) 16d	(6) 16d	2580	3345	2320	2375	+9%
										11.48	14.88	10.32	10.56	
	U210-3	16	4 5/8	7 3/4	2	5 3/4	—	(14) 10d	(6) 10d	1440	4355	1340	3090	+130%
										6.41	19.37	5.96	13.75	
	HU210-3/ HUC210-3	14	4 11/16	8 1/16	2 1/2	8 7/16	Min.	(14) 16d	(6) 10d	1580	5780	1470	4225	+296%
										7.03	25.71	6.54	18.79	
							Max.	(18) 16d	(10) 10d	2635	5780	2450	4690	+303%
										11.72	25.71	10.90	20.86	
	HHUS210-3	14	4 11/16	9	3	7 15/16	—	(30) 16d	(10) 16d	4670	9670	4235	6865	+690%
										20.77	43.02	18.84	30.54	
Quad 2x10	HU210-4/ HUC210-4	14	6 1/8	8 9/16	2 1/2	8 3/8	Min.	(14) 16d	(6) 16d	1840	5780	1710	4225	Lowest
										8.18	25.71	7.61	18.79	
							Max.	(18) 16d	(8) 16d	2455	5780	2280	4690	+3%
										10.92	25.71	10.14	20.86	
	HHUS210-4	14	6 1/8	8 7/8	3	7 13/16	—	(30) 16d	(10) 16d	4670	10155	4235	7210	+275%
										20.77	45.17	18.84	32.07	
2x12	LU210L	20	1 9/16	7 13/16	1 5/8	7 15/32	—	(10) 10d	(6) 10d x 1½"	1140	2495	1020	1770	Lowest
										5.07	11.10	4.54	7.87	
	LUS210	18	1 9/16	7 13/16	1 3/4	3 7/8	—	(8) 10d	(4) 10d	1420	2785	1290	2210	+5%
										6.32	12.39	5.74	9.83	
	SS LUC210Z	18	1 9/16	7 3/4	1 3/4	5 1/2	—	(10) 10d	(6) 10d x 1½"	1240	2495	1130	1770	+56%
										5.52	11.10	5.03	7.87	
	U210	16	1 9/16	7 13/16	2	5 3/4	—	(10) 10d	(6) 10d x 1½"	1345	2755	1235	1955	+63%
										5.98	12.25	5.49	8.70	
	HUS210	16	1 5/8	9 3/32	3	7 31/32	—	(30) 16d	(10) 16d	4505	5795	4010	4740	+384%
										20.04	25.78	17.84	21.08	
	HU212	14	1 9/16	9	2 1/4	8 5/8	—	(10) 16d	(6) 10d x 1½"	1470	4020	1360	3135	+487%
										6.54	17.88	6.05	13.95	

See footnotes on p. 134.

SIMPSON Strong-Tie®

Face-Mount Hangers — Solid Sawn Lumber

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.)				Fasteners			Factored Resistance				Installed Cost Index
										D.Fir-L		S-P-F		
										Uplift	Normal	Uplift	Normal	
										(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)	
			W	H	B	de[6]	Min./ Max.	Header	Joist	lb. kN	lb. kN	lb. kN	lb. kN	
Sawn Lumber Sizes														
DBL 2x12	LU210-2L	20	3 1/8	8	1 5/8	7 15/32	—	(10) 10d	(6) 10d x 1½"	1140 5.07	2495 11.10	1020 4.54	1770 7.87	Lowest
DBL 2x12	SS LUS210-2	18	3 1/8	9	2	6 1/32	—	(8) 16d	(6) 16d	2580 11.48	4500 20.02	2320 10.32	3195 14.21	+12%
DBL 2x12	U210-2	16	3 1/8	8 1/2	2	6 11/16	—	(14) 10d	(6) 10d	1440 6.41	4355 19.37	1340 5.96	3090 13.75	+72%
DBL 2x12	LUS214-2	18	3 1/8	10 15/16	2	6 1/16	—	(10) 16d	(6) 16d	2580 11.48	5355 23.82	2320 10.32	3875 17.24	+110%
DBL 2x12	HUS210-2	14	3 1/8	9 3/16	2	7 15/16	—	(8) 16d	(8) 16d	3795 16.88	5690 25.31	3450 15.35	4570 20.33	+203%
DBL 2x12	HUS212-2	14	3 1/8	10 3/4	2	9 7/8	—	(10) 16d	(10) 16d	4745 21.11	7015 31.20	3650 16.24	4980 22.15	+235%
DBL 2x12	HU212-2/ HUC212-2	14	3 1/8	10 9/16	2 1/2	10 3/16	Min.	(16) 16d	(6) 10d	1580 7.03	5780 25.71	1470 6.54	4225 18.79	+333%
							Max.	(22) 16d	(10) 10d	2635 11.72	5780 25.71	2450 10.90	4690 20.86	+347%
TPL 2x12	LUS210-3	18	4 5/8	8 3/16	2	5 9/16	—	(8) 16d	(6) 16d	2580 11.48	3345 14.88	2320 10.32	2375 10.56	Lowest
TPL 2x12	U210-3	16	4 5/8	7 3/4	2	5 3/4	—	(10) 10d	(6) 10d	1440 6.41	4355 19.37	1340 5.96	3090 13.75	+112%
TPL 2x12	HU212-3/ HUC212-3	14	4 11/16	9 13/16	2 1/2	9 15/16	Min.	(16) 16d	(6) 10d	1580 7.03	5780 25.71	1470 6.54	4225 18.79	+378%
							Max.	(22) 16d	(10) 10d	2635 11.72	5780 25.71	2450 10.90	4690 20.86	+386%
Quad 2x12	HHUS210-4	14	6 1/8	8 7/8	3	7 13/16	—	(30) 16d	(10) 16d	4670 20.77	10155 45.17	4235 18.84	7210 32.07	*
3x4	U34	16	2 9/16	3 3/8	2	2 3/8	—	(4) 10d	(2) 10d x 1½"	450 2.00	1340 5.96	355 1.58	1030 4.58	Lowest
3x4	HU34/ HUC34	14	2 9/16	3 3/8	2 1/2	3	—	(4) 16d	(2) 10d x 1½"	490 2.18	1710 7.61	455 2.02	1585 7.05	+101%
3x6	U36	16	2 9/16	5 3/8	2	4 5/16	—	(8) 10d	(4) 10dx1½"	895 3.98	2675 11.90	780 3.47	2475 11.01	Lowest
3x6	LUS36	18	2 9/16	5 1/4	2	4 5/16	—	(4) 16d	(4) 16d	1720 7.65	2290 10.19	1545 6.87	1630 7.25	+26%
3x6	HU36/ HUC36	14	2 9/16	5 3/8	2 1/2	5	—	(8) 16d	(4) 10d x 1½"	980 4.36	3420 15.21	905 4.03	2845 12.66	+185%
3x8	U36	16	2 9/16	5 3/8	2	4 15/16	—	(8) 10d	(4) 10d x 1½"	895 3.98	2675 11.90	780 3.47	2475 11.01	Lowest
3x8	HU38/ HUC38	14	2 9/16	7 1/8	2 1/2	6 3/4	—	10-16d	(4) 10d x 1½"	980 4.36	4270 18.99	905 4.03	3135 13.95	+153%
3x10	LUS310	18	2 9/16	7 1/4	2	4 5/16	—	(6) 16d	(4) 16d	1720 7.65	3325 14.79	1545 6.87	2575 11.45	Lowest
3x10	U310	16	2 9/16	8 7/8	2	5 3/4	—	(14) 10d	(6) 10d x 1½"	1345 5.98	4355 19.37	1235 5.49	3090 13.75	+39%
3x10	HU310/ HUC310	14	2 9/16	8 7/8	2 1/2	8 1/2	—	(14) 16d	(6) 10d x 1½"	1470 6.54	5780 25.71	1360 6.05	4225 18.79	+151%
3x12	U310	16	2 9/16	8 7/8	2	5 3/4	—	(14) 10d	(6) 10d x 1½"	1345 5.98	4355 19.37	1235 5.49	3090 13.75	Lowest
3x12	HU312/ HUC312	14	2 9/16	10 5/8	2 1/2	10 1/4	—	(16) 16d	(6) 10d x 1½"	1470 6.54	5780 25.71	1360 6.05	4225 18.79	+114%

See footnotes on p. 134.

Solid Sawn Joist Hangers

Face-Mount Hangers — Solid Sawn Lumber

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.)				Fasteners			Factored Resistance				Installed Cost Index.
										D.Fir-L		S-P-F		
			W	H	B	de[6]	Min./Max.	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	
Sawn Lumber Sizes														
4x4	LUS44	18	3 9/16	3	2	1 23/32	—	(4) 16d	(2) 16d	835	2020	590	1435	Lowest
										3.71	8.99	2.62	6.38	
	U44	16	3 9/16	2⅞	2	1 11/16	—	(4) 10d	(2) 10d	480	1340	445	1030	+34%
										2.14	5.96	1.98	4.58	
	HU44/ HUC44	14	3 9/16	2⅞	2½	2½	—	(4) 16d	(2) 10d	525	1710	490	1585	+180%
										2.34	7.61	2.18	7.05	
4x6	LUS46	18	3 9/16	4¾	2	3 13/16	—	(4) 16d	(4) 16d	1720	2595	1545	1920	Lowest
										7.65	11.54	6.87	8.54	
	U46	16	3 9/16	4⅞	2	3 13/16	—	(8) 10d	(4) 10d	960	2675	890	2475	+40%
										4.27	11.90	3.96	11.01	
	HUS46	14	3 9/16	5	2	3⅝	—	(4) 16d	(4) 16d	1745	2845	1240	2570	+175%
										7.76	12.66	5.52	11.43	
	HU46/ HUC46	14	3 9/16	5 3/16	2½	4 13/16	Min.	(8) 16d	(4) 10d	1055	3420	980	2845	+186%
										4.69	15.21	4.36	12.66	
							Max.	(12) 16d	(6) 10d	1580	4415	1470	3135	+197%
										7.03	19.64	6.54	13.95	
4x8	LUS46	18	3 9/16	4¾	2	3 13/16	—	(4) 16d	(4) 16d	1720	2595	1545	1920	Lowest
										7.65	11.54	6.87	8.54	
	LUS48	18	3 9/16	6¾	2	3 13/16	—	(6) 16d	(4) 16d	1720	3325	1545	2575	+29%
										7.65	14.79	6.87	11.45	
	U46	16	3 9/16	4⅞	2	3 13/16	—	(8) 10d	(4) 10d	960	2675	890	2475	+38%
										4.27	11.90	3.96	11.01	
	HUS48	14	3 9/16	6 15/16	2	5¾	—	(6) 16d	(6) 16d	2540	3620	1805	2570	+199%
										11.30	16.10	8.03	11.43	
	HU48/ HUC48	14	3 9/16	6 13/16	2½	6 7/16	Min.	(10) 16d	(4) 10d	1055	4270	980	3135	+299%
										4.69	18.99	4.36	13.95	
							Max.	(14) 16d	(6) 10d	1580	5780	1470	4225	+250%
										7.03	25.71	6.54	18.79	
4x10	LUS48	18	3 9/16	6¾	2	3 13/16	—	(6) 16d	(4) 16d	1720	3325	1545	2575	Lowest
										7.65	14.79	6.87	11.45	
	LUS410	18	3 9/16	8¾	2	5 27/32	—	(8) 16d	(6) 16d	2580	4500	2320	3195	+22%
										11.48	20.02	10.32	14.21	
	U410	16	3 9/16	8⅜	2	6¼	—	(14) 10d	(6) 10d	1440	4355	1340	3090	+72%
										6.41	19.37	5.96	13.75	
	HUS410	14	3 9/16	8 15/16	2	7¾	—	(8) 16d	(8) 16d	3795	5690	3450	4570	+195%
										16.88	25.31	15.35	20.33	
	HU410/ HUC410	14	3 9/16	8⅝	2½	8¼	Min.	(14) 16d	(6) 10d	1580	5780	1470	4225	+228%
										7.03	25.71	6.54	18.79	
							Max.	(18) 16d	(10) 10d	2635	5780	2450	4690	+239%
										11.72	25.71	10.90	20.86	
4x12	LUS410	18	3 9/16	8¾	2	5 27/32	—	(8) 16d	(6) 16d	2580	4500	2320	3195	Lowest
										11.48	20.02	10.32	14.21	
	LUS414	18	3 9/16	10¾	2	5 9/11	—	(10) 16d	(6) 16d	2580	5355	2320	3875	+28%
										11.48	23.82	10.32	17.24	
	U410	16	3 9/16	8⅜	2	6¼	—	(14) 10d	(6) 10d	1440	4355	1340	3090	+47%
										6.41	19.37	5.96	13.75	
	HUS410	14	3 9/16	8 15/16	2	7¾	—	(8) 16d	(8) 16d	3795	5690	3450	4570	+142%
										16.88	25.31	15.35	20.33	
	HUS412	14	3 9/16	10½	2	9¾	—	(10) 16d	(10) 16d	4745	7015	3650	4980	+154%
										21.11	31.20	16.24	22.15	
	HU412/ HUC412	14	3 9/16	10 5/16	2½	9 15/16	Min.	(16) 16d	(6) 10d	1580	5780	1470	4225	+208%
										7.03	25.71	6.54	18.79	
							Max.	(22) 16d	(10) 10d	2635	5780	2450	4690	+220%
										11.72	25.71	10.90	20.86	

See footnotes on p. 134.

Solid Sawn Joist Hangers

SIMPSON Strong-Tie®

Face-Mount Hangers — Solid Sawn Lumber

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.)				Fasteners			Factored Resistance				Installed Cost Index.
										D.Fir-L		S-P-F		
			W	H	B	de[6]	Min./ Max.	Header	Joist	Uplift (KD = 1.15) lb. / kN	Normal (KD = 1.00) lb. / kN	Uplift (KD = 1.15) lb. / kN	Normal (KD = 1.00) lb. / kN	
Sawn Lumber Sizes														
6x6	U66	16	5½	5	2	4⅝	—	(8) 10d	(4) 10d	960	2675	890	2475	Lowest
										4.27	11.90	3.96	11.01	
	HU66/ HUC66	14	5½	4 3/16	2½	3 13/16	Min.	(8) 16d	(4) 16d	1230	3420	1140	2845	+37%
										5.47	15.21	5.07	12.66	
							Max.	(12) 16d	(6) 16d	1840	4415	1710	3135	+41%
										8.18	19.64	7.61	13.95	
6x8	U66	16	5½	5	2	4⅝	—	(8) 10d	(4) 10d	960	2675	890	2475	Lowest
										4.27	11.90	3.96	11.01	
	HU68/ HUC68	14	5½	5 13/16	2½	5 7/16	Min.	(10) 16d	(4) 16d	1230	4270	1140	3135	+41%
										5.47	18.99	5.07	13.95	
							Max.	(14) 16d	(6) 16d	1840	5780	1710	4225	+44%
										8.18	25.71	7.61	18.79	
6x10	U610	16	5½	8½	2	7 15/16	—	(14) 10d	(6) 10d	1440	4355	1340	3090	Lowest
										6.41	19.37	5.96	13.75	
	HU610/ HUC610	14	5½	7⅝	2½	7¼	Min.	(14) 16d	(6) 16d	1840	5780	1710	4225	+53%
										8.18	25.71	7.61	18.79	
							Max.	(18) 16d	(8) 16d	2455	5780	2280	4690	+56%
										10.92	25.71	10.14	20.86	
6x12	HU612/ HUC612	14	5½	9⅜	2½	9	Min.	(16) 16d	(6) 16d	1840	5780	1710	4225	*
										8.18	25.71	7.61	18.79	
							Max.	(22) 16d	(8) 16d	2455	5780	2280	4690	*
										10.92	25.71	10.14	20.86	
6x14	HU614/ HUC614	14	5½	11⅝	2½	11¼	Min.	(18) 16d	(8) 16d	2455	5780	2280	4690	*
										10.92	25.71	10.14	20.86	
							Max.	(24) 16d	(12) 16d	3685	7025	3420	6185	*
										16.39	31.25	15.21	27.51	
6x16	HU616/ HUC616	14	5½	12 11/16	2½	12 5/16	Min.	(20) 16d	(8) 16d	2455	5780	2280	4690	*
										10.92	25.71	10.14	20.86	
							Max.	(26) 16d	(12) 16d	3685	7025	3420	6185	*
										16.39	31.25	15.21	27.51	
8x8	HU88/ HUC88	14	7½	6⅝	2½	6¼	Min.	(10) 16d	(4) 16d	1230	4270	1140	3135	*
										5.47	18.99	5.07	13.95	
							Max.	(14) 16d	(6) 16d	1840	5780	1710	4225	*
										8.18	25.71	7.61	18.79	
8x10	HU810/ HUC810	14	7½	8⅜	2½	8	Min.	(14) 16d	(6) 16d	1840	5780	1710	4225	*
										8.18	25.71	7.61	18.79	
							Max.	(18) 16d	(8) 16d	2455	5780	2280	4690	*
										10.92	25.71	10.14	20.86	
8x12	HU812/ HUC812	14	7½	10⅛	2½	9¾	Min.	(16) 16d	(6) 16d	1840	5780	1710	4225	*
										8.18	25.71	7.61	18.79	
							Max.	(22) 16d	(8) 16d	2455	5780	2280	4690	*
										10.92	25.71	10.14	20.86	
8x14	HU814/ HUC814	14	7½	11⅞	2½	11½	Min.	(18) 16d	(8) 16d	2455	5780	2280	4690	*
										10.92	25.71	10.14	20.86	
							Max.	(24) 16d	(12) 16d	3685	7025	3420	6185	*
										16.39	31.25	15.21	27.51	
8x16	HU816/ HUC816	14	7½	13⅜	2½	13¼	Min.	(20) 16d	(8) 16d	2455	5780	2280	4690	*
										10.92	25.71	10.14	20.86	
							Max.	(26) 16d	(12) 16d	3685	7025	3420	6185	*
										16.39	31.25	15.21	27.51	

See footnotes on p. 134.

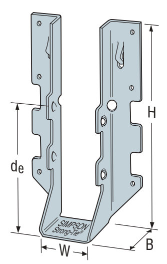
Solid Sawn Joist Hangers

Face-Mount Hangers — Rough Lumber

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	de[6]	Fasteners Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
2x4 (R)	LU24R-18	18	2	3¹¹⁄₁₆	1½	2½	(4) 10d	(2) 10d x 1½"	415	1020	355	725
									1.65	4.54	1.58	3.22
	U24R	16	2	3⅝	2	2⅝	(4) 16d	(2) 10d x 1½"	450	1340	355	1030
									2.00	5.96	1.58	4.58
2x6 (R)	LU26R-18	18	2	4⁹⁄₁₆	1½	3¹³⁄₁₆	(6) 10d	(4) 10d x 1½"	830	1605	710	1140
									3.69	7.14	3.16	5.07
	U26R	16	2	5⅝	2	4⅝	(8) 16d	(4) 10d x 1½"	895	2675	780	2475
									3.98	11.90	3.47	11.01
2x8 (R)	LU28R-18	18	2	6⅜	1½	5⅝	(8) 10d	(6) 10d x 1½"	1240	2185	1130	1550
									5.52	9.72	5.03	6.89
	U26R	16	2	5⅝	2	4⅝	(8) 16d	(4) 10d x 1½"	895	2675	780	2475
									3.98	11.90	3.47	11.01
2x10 (R)	LU210R-18	18	2	7⁹⁄₁₆	2	5⁹⁄₁₆	(10) 16d	(6) 10d x 1½"	1240	2495	1130	1770
									5.52	11.10	5.03	7.87
	U210R	16	2	9⅛	2	7¼	(14) 16d	(6) 10d x 1½"	1345	4355	1235	3090
									5.98	19.37	5.49	13.75
2x12 (R)	U210R	16	2	9⅛	2	7¼	(14) 16d	(6) 10d x 1½"	1345	4355	1235	3090
									5.98	19.37	5.49	13.75
2x14 (R)	U210R	16	2	9⅛	2	7¼	(14) 16d	(6) 10d x 1½"	1345	4355	1235	3090
									5.98	19.37	5.49	13.75
4x4 (R)	U44R	16	4	2⅝	2	1¹¹⁄₁₆	(4) 16d	(2) 16d	565	1340	520	1030
									2.51	5.96	2.31	4.58
4x6 (R)	U46R	16	4	4⅝	2	3¾	(8) 16d	(4) 16d	1130	3150	1045	2475
									5.03	14.01	4.65	11.01
4x8 (R)	U46R	16	4	4⅝	2	3¾	(8) 16d	(4) 16d	1130	3150	1045	2475
									5.03	14.01	4.65	11.01
4x10 (R)	U410R	16	4	8⅛	2	6¼	(14) 16d	(6) 16d	1695	4355	1495	3090
									7.54	19.37	6.65	13.75
4x12 (R)	U410R	16	4	8⅛	2	6¼	(14) 16d	(6) 16d	1695	4355	1495	3090
									7.54	19.37	6.65	13.75
6x6 (R)	U66R	16	6	5	2	3¹³⁄₁₆	(8) 16d	(4) 16d	1130	3150	1045	2475
									5.03	14.01	4.65	11.01
6x8 (R)	U66R	16	6	5	2	3¹³⁄₁₆	(8) 16d	(4) 16d	1130	3150	1045	2475
									5.03	14.01	4.65	11.01
6x10 (R)	U610R	16	6	8½	2	8	(14) 16d	(6) 16d	1695	4355	1495	3090
									7.54	19.37	6.65	13.75
6x12 (R)	U610R	16	6	8½	2	8	(14) 16d	(6) 16d	1695	4355	1495	3090
									7.54	19.37	6.65	13.75
6x14 (R)	U610R	16	6	8½	2	8	(14) 16d	(6) 16d	1695	4355	1495	3090
									7.54	19.37	6.65	13.75

1. 10d common nails may be used instead of the specified 16d nails at 0.83 of the tabulated value.
2. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading such as in cantilever construction.
3. D.Fir-L factored resistances can be used for most LVL. Verify with manufacturer prior to selecting hanger.
4. See p. 28 for for hangers with reduced capacity due to installation with different nails.
5. d_e is the distance from the bearing seat to the top joist nail.
6. HU rough beam sizes are available by special order. Contact Simpson Strong-Tie for more information.
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. 27–28 for other nail sizes and information.



Top-Flange Hangers JB/JBA/LB/LBA/LBAZ/BA/B/HHB

Purlin Hangers

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

The BA hanger is a cost-effective hanger 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.

The next-generation LBA and JBA hangers provide higher capacities for 2x10 and 2x12 members in 14-gauge and 18-gauge steel, respectively. The new nail locations on the JBA enable effective use with nailers.

See tables on pp. 149–153. See Hanger Options on p. 127 for hanger modifications, which may result in reduced resistances.

Material: See tables, pp. 149–153.
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: JB, LB, B and BA — Galvanized; HHB — all saddle hangers and all welded sloped and special hangers — Simpson Strong-Tie® gray paint. LB, BA, B and HHB may be ordered hot-dip galvanized; specify HDG.

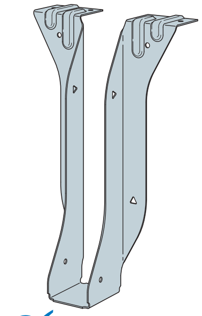
Installation:

- Use specified fasteners; see General Notes and nailer table notes.
- LB and B may be used for weld-on applications. The minimum required weld to the top flanges is ⅛" x 2" (⅛" x 1½" for LB) fillet weld to each side of each top-flange tab for 14 and 12 gauge and ³⁄₁₆" x 2" fillet weld to each side of each top-flange tab for 7 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. Weld-on applications produce the maximum factored down resistance listed. Uplift resistances do not apply to welded applications. (Contact Simpson Strong-Tie for uplift information.)
- Ledgers must be evaluated for each application separately. Check TF dimension, nail length and nail location on ledger.
- Bevel cut the carried member for skewed applications.

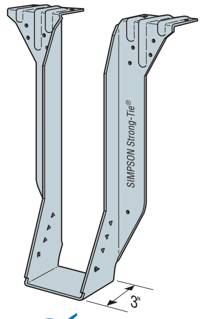
Options:

B and HHB

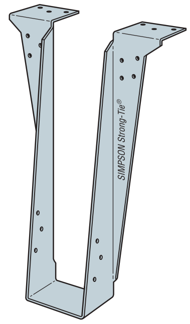
- Other widths are available; specify W dimension (the minimum W dimension is 1⁹⁄₁₆" for B and 2⅝" for HHB).
- Saddle hangers are made to order; add “D” to model (e.g. HHBD412); specify S (for saddle) dimension. They may be used for most conditions except at end wall locations, and are preferred for nailer applications.
- B dimensions may be increased on some models.
- See Hanger Options, p. 127.



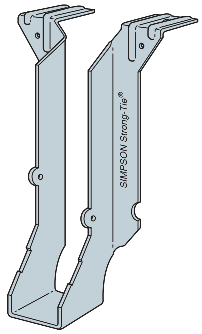
JBA
(LBAZ similar)



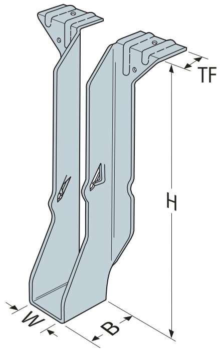
BA
U.S. Patent 7,334,372



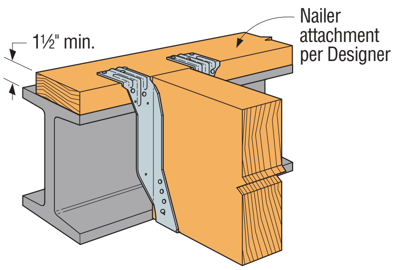
B
(HHB similar)



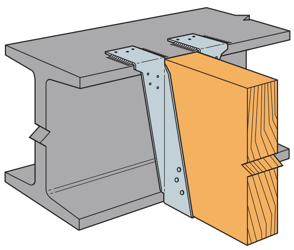
LB



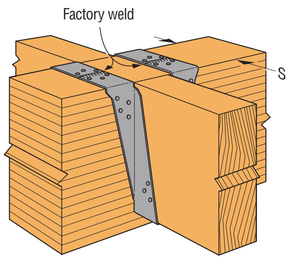
JB



Typical BA Installation on Wood Nailer
(LB, B similar)



LB, BA, B and HHB are acceptable for weld-on applications.
See Installation Information.



Typical BD Saddle Installation

Top-Flange Hangers JB/JBA/LB/LBA/LBAZ/BA/B/HHB

SIMPSON Strong-Tie®

Purlin Hangers (cont.)

B Series with Various Header Applications

Model Series	Fasteners			Factored Resistance				
	Top	Face	Joist	Uplift[1] (KD = 1.15)	Normal (K_D = 1.00)			
					D.Fir-L	S-P-F	LVL	PSL
				lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN
BA (Min.)	(6) 10d	(10) 10d	(2) 10d x 1½"	435	4470	3975	4695	5385
				1.94	19.88	17.68	20.91	23.95
	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385
				1.94	22.23	19.44	25.99	23.95
BA (Max.)	(6) 10d	(10) 10d	(8) 10d x 1½"	1960	5265	4035	5825	5945
				8.72	23.42	17.95	25.91	26.44
	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075
				8.72	26.42	19.44	28.87	31.47
B	(6) 10d	(8) 10d	(6) 10d x 1½"	1650	5265	3590	5825	5230
				7.34	23.42	15.97	25.91	23.26
	(6) 16d	(8) 16d	(6) 16d x 2½"	1650	5940	3910	6490	5230
				7.34	26.46	17.39	28.87	23.26

1. Factored uplift resistances shown are for D.Fir-L. Multiply tabulated loads x 0.71 for either SPF joist or header.
2. Factored resistances shown are for header connection only. The Designer must ensure the joist is capable of generating the factored resistances shown.
3. 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 column.
4. **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. 27–28 for other nail sizes and information.

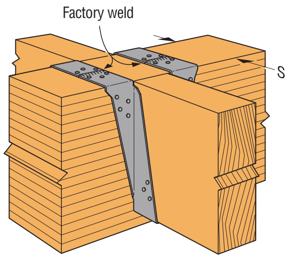
Nailer Table

This table also applies to sloped-seat hangers.

Model No.	Nailer	Header Fasteners	Factored Resistance (K_D = 1.00)	
			D.Fir-L	S-P-F
			lb.	lb.
			kN	kN
LB/JB	2x	(4) 10d x 1½"	1420	855
			6.32	3.80
JBA	2x	(6) 10d x 1½"	1785	1395
			7.94	6.21
LBA	2x	(6) 10d x 1½"	1835	1545
			8.16	6.87
BA	2x	(10) 10d x 1½"	3220	2870
			14.32	12.77
	(2) 2x	(14) 10d	3915	3660
			17.41	16.28
	3x	(14) 16d x 2½"	4055	—
			18.04	—
	4x	(14) 16d	4055	—
			18.04	—
	Steel	(6) 0.157" x ⅝" PAT	4700	4700
			20.91	20.91
B	2x	(10) 10d x 1½"	2835	2340
			12.63	10.42
	(2) 2x	(14) 10d	3915	3660
			17.41	16.28
	3x	(14) 16d x 2½"	4055	—
			18.04	—
	4x	(14) 16d	4055	—
			18.04	—

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 3⁹⁄₁₆". Minimum supporting member width is 3½". Minimum nailer thickness apply. Saddle hangers achieve factored resistances listed. Saddle hangers on stud walls do not achieve factored resistances listed.



Typical BD Saddle Installation

1. Maximum factored uplift resistance (K_D = 1.15) is the lesser of the value shown in the adjoining table or 385 lb (1.71kN).
2. Steel nailer factored resistances apply to steel header material with thickness between ¼" and ¾" with minimum F_y = 250 MPa. Design of steel header by Designer.
3. 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. 204.
4. **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. 27–28 for other nail sizes and information.

Solid Sawn Joist Hangers

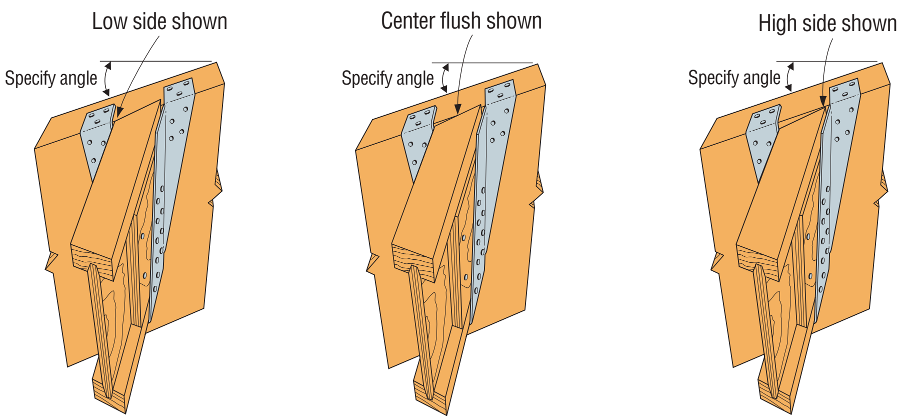
Top-Flange Hangers JB/JBA/LB/LBA/LBAZ/BA/B/HHB

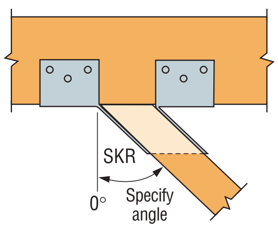
Purlin Hangers (cont.)

Reduction Factors for Modified Hangers[1]

Hanger Series	Condition		Sloped Down	Sloped Up	Skewed Only	Sloped Down and Skewed		Sloped Up and Skewed		TF Down	TF Open/ Closed
	Angle Limit		45	45	45	45		45		35	30
LBV	Minimum height		6	6	6	9¼	14	9¼	14	11¼	9¼
	All widths	Download	0.98	0.68	1.00	0.97	1.00	1.00	0.68	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	1.00
B	Minimum height		6	6	6	9¼	14	9¼	14	14	9¼
	Less than 2½" wide	Download	0.64	0.49	0.70	0.64	0.86	0.49	0.49	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	0.95	1.00	1.00	0.76	0.76	1.00	1.00
	2½" and wider	Download	0.80	0.97	0.81	0.75	1.00	0.97	0.49	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	0.95	1.00	1.00	0.76	0.76	1.00	1.00
HB	Minimum height		8	8	8	11¼	14	11¼	14	14	11¼
	Less than 2½" wide	Download	0.69	0.51	0.95	0.55	0.52	0.51	0.51	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	0.53	0.82	1.00	0.53	0.53	1.00	1.00
	2½" and wider	Download	0.87	0.79	0.95	0.60	1.00	0.79	0.79	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	0.53	1.00	1.00	0.53	0.53	1.00	1.00
HHB GB HGB	Minimum height		9¼	—	—	—	—	—	—	—	—
	All widths	Download	0.60	—	—	—	—	—	—	—	—
		Uplift	1.00	—	—	—	—	—	—	—	—

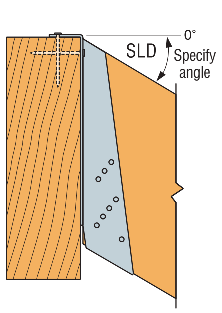
1. B and HB hangers less than 2½" wide are assumed to use 10d x 1½" joist nails.
2. B and HB hangers 2½" or wider are assumed to use 16d x 2½" or 16d common nails in the joist.
3. For B and HB hangers with TF Down that are less than 5⅜" in width, minimum hanger height is 11¼".
4. In the table the term "x" refers to the angle of the modification.
5. For top flange closed option, install upper nails slightly angled downward to avoid interference with top flange.



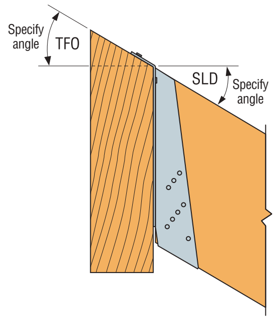


Top View B Hanger Skewed Right

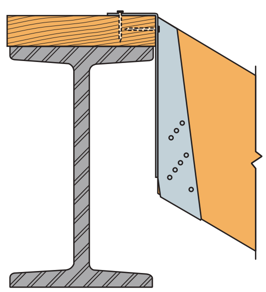
B hanger sloped down and skewed left with sloped top flange installation. When ordering, specify low side flush, centre flush or high side flush.



Typical B Sloped Down Installation with Full Backing



Typical B Sloped Down with Top Flange Open



Typical B Sloped Down on Nailer Non-Backed

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.

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

Material: See tables on pp.149–153; W — 12 ga. top flange and stirrup; WMU — 12 ga. top flange and stirrup; WNP, 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, contact Simpson Strong-Tie

Factored Resistances: For hanger heights exceeding the joist height, the factored resistance is 0.50 of the tabulated resistance.

Installation:

- Use all specified fasteners. WMU — two 16d duplex nails must be installed into the top flange and embedded into the grouted wall for mid-wall applications. Verify that the grouted wall can take the required fasteners specified in the table.
- Hangers may be welded to steel headers with weld size to match material thickness (approximate thickness shown) 1/8" for W, 3/16" for WNP/WPU and 1/4" for HW/HWU, by 1½"-fillet welds located at each end of the top flange. Weld-on applications produce maximum factored resistance listed. Uplift resistances do not apply to this application. (Contact Simpson Strong-Tie for uplift information.)
- 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.
- H dimensions are sized to account for normal joist shrinkage. W dimensions are for dressed timber widths.
- Embed WMU into block with a minimum of one course above and one course below the top flange with one 15M vertical rebar minimum 24" long in each cell. Minimum grout strength is 15 MPa.
- See Hanger Options, p. 127 for hanger modifications and associated load reductions.

Options:

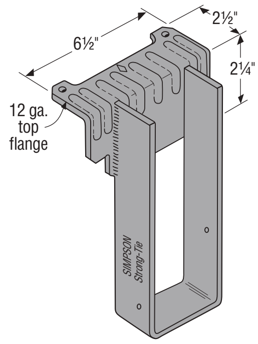
- See Hanger Options General Notes on pp. 124–125.
- Refer to technical bulletin T-C-SLOPEJST at **strongtie.com** for information regarding load reductions on selected hangers which can be used without modification to support joists which have shallow slopes (≤3/4:12).
- Some model configurations may 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 3½".
- 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 centre of joist will be flush with the top of the header (see illustration).
- Uplift resistances are not available for open/closed TF, TF sloped and offset options.

Saddle Hanger

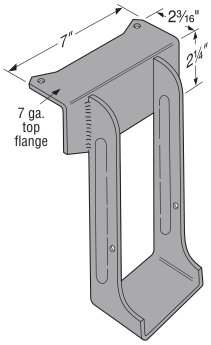
- To order, add D to model and specify S dimension (see illustration).
- Saddle hangers achieve catalogue load listed. Saddle hangers on stud walls do not achieve catalogue loads.
- Recommended S dimension is 1/16" oversized for carrying members 2½" wide and less or 1/8" oversized for greater than 2½" wide.
- Saddle versions are available on some W, WNP and HW models.

Ridge Hanger (not available for uplift models)

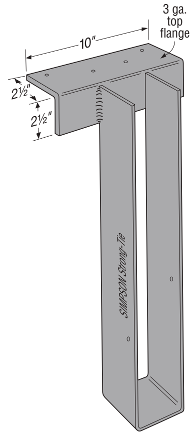
- Top flange may be sloped to a maximum of 35° to accommodate a ridge (see illustration). Specify angle of the slope. Reduce factored resistance using straight-line interpolation. See Open/Closed example.



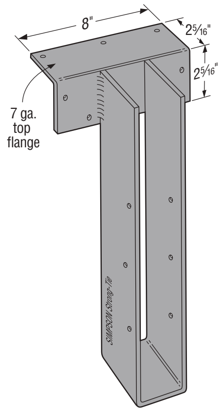
W



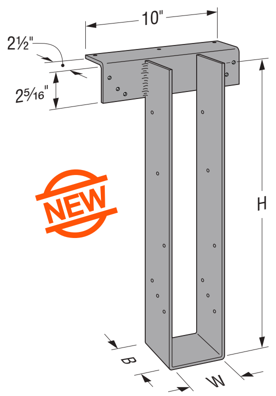
WNP412
and WNP414



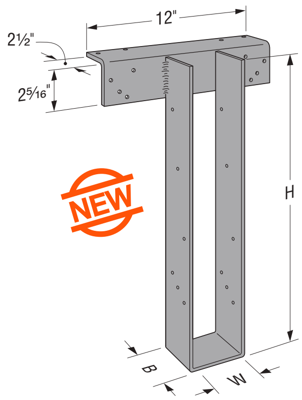
HW
(HWU similar)



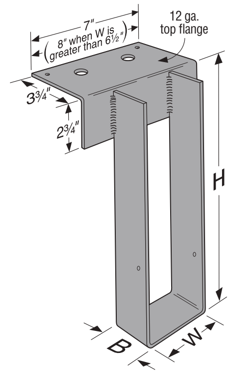
WPU



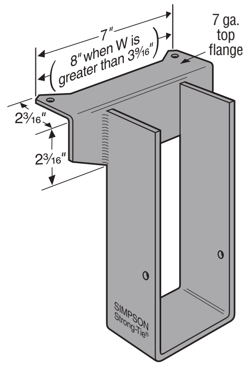
HWP



HWPH



WM
(WMU similar)



WP

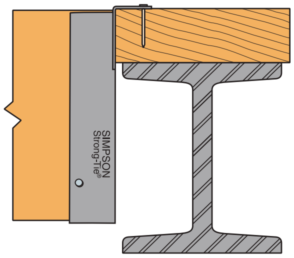
SIMPSON Strong-Tie®

W Series with Various Header Applications

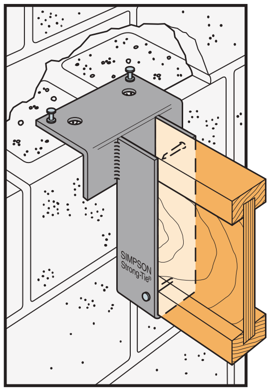
Model No.	Joist Width (in.)	Joist Depth (in.)	Fasteners Top	Fasteners Face	Fasteners Joist	Factored Resistance Uplift[1] (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	Masonry
						lb.	lb.	lb.	lb.	lb.	lb.	lb.
						kN	kN	kN	kN	kN	kN	kN
W	1½ to 4	3½ to 30	(2) 10d x 1½"	—	(2) 10d x 1½"	—	2455	2375	2675	2850	—	—
						—	10.92	10.56	11.90	12.68	—	—
	1½ to 4	3½ to 30	(2) 10d	—	(2) 10d x 1½"	—	2920	2375	3425	3305	—	—
						—	12.99	10.56	15.24	14.70	—	—
	1½ to 4	3½ to 30	(2) 16d	—	(2) 10d x 1½"	—	2955	2375	3820	3190	—	—
						—	13.15	10.56	16.99	14.19	—	—
WMU	1½ to 1¾	9 to 28	(2) 16d DPLX	(4) ¼" x 1¾" Titen	(6) 10d x 1½"	860	Mid-Wall Installation					5300
						3.83						23.58
	2½ to 7½	9 to 28	(2) 16d DPLX	(4) ¼" x 1¾" Titen	(6) 10d x 1½"	860						6060
						3.83						26.96
	1½ to 7½	9 to 28	(2) ¼" x 1¾" Titen	(4) ¼" x 1¾" Titen	(6) 10d x 1½"	745	Top-of-Wall Installation					5300
						3.31						23.58
WP/ WNP	1½ to 7½	3½ to 30	(3) 10d x 1½"	—	(2) 10d x 1½"	—	4095	3345	4695	4720	—	—
						—	18.22	14.88	20.89	21.00	—	—
	1½ to 7½	3½ to 30	(3) 10d	—	(2) 10d x 1½"	—	4095	3550	3885	4720	5980	—
						—	18.22	15.79	17.28	21.00	26.60	—
	1½ to 7½	3½ to 30	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
						—	19.71	17.15	26.47	24.15	26.60	—
WPU/ WNPU	1¾ to 5½	7¼ to 18	(3) 16d	(4) 16d	(6) 10d x 1½"	1665	6390	6390	6825	7085	5980	—
						7.41	28.43	28.43	30.36	31.52	26.60	—
	1¾ to 5½	18½ to 28	(3) 16d	(4) 16d	(6) 10d x 1½"	595	6390	6390	6825	7085	5980	—
						2.65	28.43	28.43	30.36	31.52	26.60	—
HWP	1½ to 7	6 to 15⅝	(3) 16d	(6) 16d	(10) 10d x 1½"	2125	5210	5210	5210	5870	5675	—
						9.45	23.18	23.18	23.18	26.11	25.24	—
	1½ to 7	15¾ to 28	(3) 16d	(6) 16d	(12) 10d x 1½"	2145	5210	5210	5210	5870	5675	—
						9.54	23.18	23.18	23.18	26.11	25.24	—
HW	1½ to 7½	3½ to 32	(4) 10d	—	(2) 10d x 1½"	—	6900	5285	4695	5810	—	—
						—	30.69	23.51	20.89	25.85	—	—
	1½ to 7½	3½ to 32	(4) 16d	—	(2) 10d x 1½"	—	6900	5285	7695	5810	6870	—
						—	30.69	23.51	34.23	25.85	30.56	—
HWU	1¾ to 3½	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1775	10170	8875	10170	8325	8925	—
						7.90	45.24	39.48	45.24	37.03	39.70	—
	1¾ to 3½	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	1490	10170	8875	10170	8325	8925	—
						6.63	45.24	39.48	45.24	37.03	39.70	—
	1¾ to 3½	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	1520	10170	8875	10170	8325	8925	—
						6.76	45.24	39.48	45.24	37.03	39.70	—
	4½ to 7⅛	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1775	8250	8250	8250	8250	8250	—
						7.90	36.70	36.70	36.70	36.70	36.70	—
	4½ to 7⅛	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	1490	8250	8250	8250	8250	8250	—
						6.63	36.70	36.70	36.70	36.70	36.70	—
	4½ to 7⅛	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	1520	8250	8250	8250	8250	8250	—
						6.76	36.70	36.70	36.70	36.70	36.70	—
HWPH	2½ to 7	6 to 15⅝	(4) 16d	(8) 16d	(10) 10d x 1½"	2740	7905	5970	8310	8850	7910	—
						12.19	35.16	26.56	36.97	39.37	35.19	—
	2½ to 7	15¾ to 32	(4) 16d	(8) 16d	(12) 10d x 1½"	2815	7905	5970	8310	8850	7910	—
						12.52	35.16	26.56	36.97	39.37	35.19	—

1. Factored uplift resistances shown are for D.Fir-L. Multiply tablulated values x 0.71 for either SPF joist or header.
2. Factored resistances shown are for header connection only. The Designer must ensure the joist is capable of generating the factored resistances shown.
3. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase allowed. Reduce by 15% for standard term loading like cantilever construction.
4. Titen® ¼" x 1¾" installed on top of wall after grout has cured.
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. 27–28 for other nail sizes and information.

Top-Flange Hangers W/WPU/WNP/WMU/HW/HWU/HWP/HWPH



Installation on Wood Nailer



WM Mid-Wall Installation

Nailer Table

The table indicates the maximum factored normal resistances 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. This table also applies to sloped-seat hangers.

Model	Nailer	Top Flange Nailing	Factored Resistance (K_D = 1.00)		
			D.Fir-L	S-P-F	LSL
			lb.	lb.	lb.
			kN	kN	kN
W	2x	(2) 10d x 1½"	2470	2470	—
			11.00	11.00	—
	(2) 2x	(2) 10d	2730	2730	—
			12.14	10.61	—
	3x	(2) 16d x 2½"	2895	2855	—
			12.88	12.70	—
	4x	(2) 10d	3025	2855	—
			13.46	12.70	—
WP/ WNP	2x	(2) 10d x 1½"	3665	3630	4900
			16.30	16.15	21.82
	(2) 2x	(2) 10d	4475	3760	—
			19.91	16.75	—
	3x	(2) 16d x 2½"	4110	3760	—
			18.28	16.75	—
	4x	(2) 10d	4475	3760	—
			19.91	16.75	—
NEW HWP	(2) 2x	(9) 10d	6020	—	—
			26.78	—	—
	3x	(9) 16d x 2½"	6020	—	—
			26.78	—	—
	4x	(9) 16d x 2½"	6580	—	—
			29.27	—	—
WPU/ WNPU	(2) 2x	(7) 10d	4475	3760	—
			19.91	16.75	—
	3x	(7) 16d x 2½"	4110	3760	—
			18.28	16.75	—
	4x	(7) 10d	4475	3760	—
			19.91	16.75	—
HW	(2) 2x	(4) 10d	7600	—	—
			33.81	—	—
	3x	(4) 16d x 2½"	7600	—	—
			33.81	—	—
	4x	(4) 16d	7670	—	—
			34.16	—	—
NEW HWPH	(2) 2x	(12) 16d x 2½"	8270	—	—
			36.79	—	—
	3x	(12) 16d x 2½"	8360	—	—
			37.19	—	—
	4x	(12) 16d	8360	—	—
			37.19	—	—
HWU	(2) 2x	(8) 16d x 2½"	7880	—	—
			35.05	—	—
	3x	(8) 16d x 2½"	7880	—	—
			35.05	—	—
	4x	(8) 16d	7880	—	—
			35.05	—	—

Top-Flange Hangers W/WPU/WNP/WMU/HW/HWU/HWP/HWPH

Modifications and Associated Reduction Factors for W/WP/WPU/WMU/HW/HWU

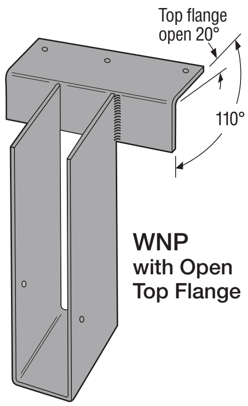
Model	Seat			Top Flange				Joist Height
	Seat Sloped Up or Down 45° Max.	Seat Skewed Left or Right 84° Max.[1]	Seat Sloped and Skewed	Top Flange[2] Sloped 30° Max.	Top Flange Bent[2] Open or Closed 30° Max.	Top Flange Offset	Top Flange Offset and Skewed Seat	Joist Shorter Than Hanger
W/WP/HW	1.00	1.00	1.00	(90–x) / 90	(90–a) / 90 HW cannot be bent closed	0.50	Use the lower of the factor or max. load 0.42 or 2,905 lb. (12.92 kN) max.	By more than ½" 0.50 By ½" or less 1.00
WPU/HWU	0.50	0.50	0.50					

1. WPU, WNPU, HWU have a maximum skew of 45° and/or maximum slope of 45° and can only be skewed and/or sloped when W ≤ 3⁹⁄₁₆"
2. For straight-line interpolation, "a" is the specified angle.
3. Reduction factors are not cumulative. Use the lowest factor that applies.

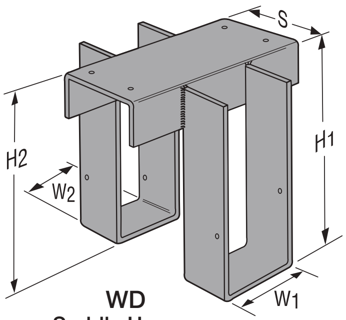
Reduction Factor Instructions

Factored Down Resistance = (lowest of Seat, Top Flange, or Joist Height) × (Table Value)

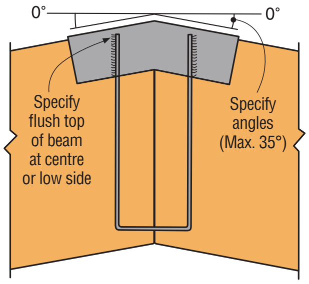
Factored Uplift Resistance = (lowest of Top Flange or Joist Height) × (Table Value),
but not available when the Top Flange is open/closed, sloped or offset



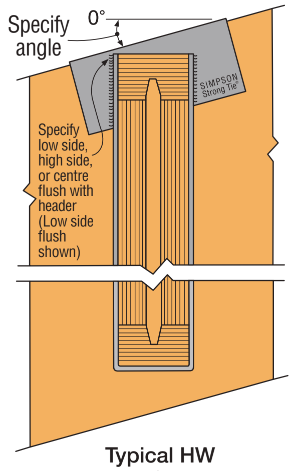
WNP with Open Top Flange



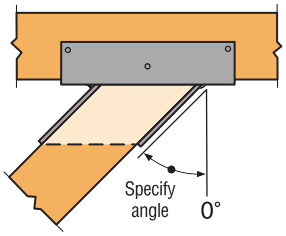
WD Saddle Hanger



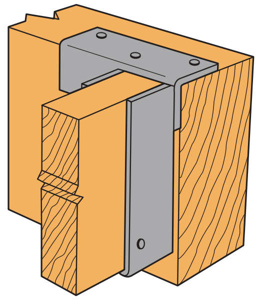
Typical W Ridge Installation
(Reduce factored resistance using straight-line interpolation. Not available for uplift models.)



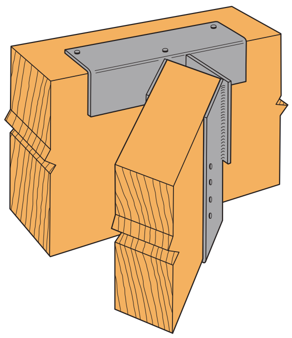
Typical HW Top Flange Sloped Down Left with Low Side Flush



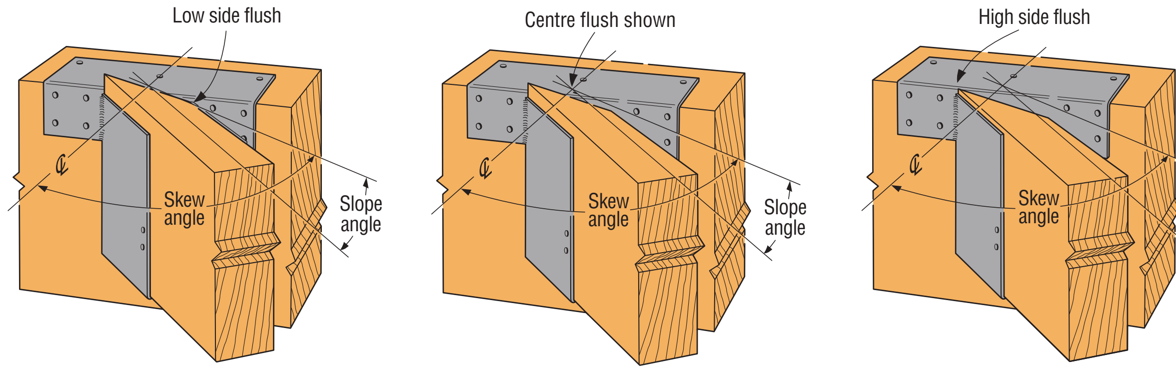
Typical W Top View Skewed Left Type A Hanger
(bevel cut joist shown)



Typical W Top Flange Offset Left



Typical W Skewed Left Type B Hanger
(square cut joist shown)



Typical HW sloped down, skewed right with type A hanger (Joist end must be bevel cut). When ordering, specify low side flush, centre flush or high side flush.

HUSTF

Heavy-Duty and Double-Shear Joist Hangers

See table on pp. 149–151 for dimensions, material and capacities.

HUSTF has the double shear nailing advantage — distributing the joist load through two points on each nail for greater strength.

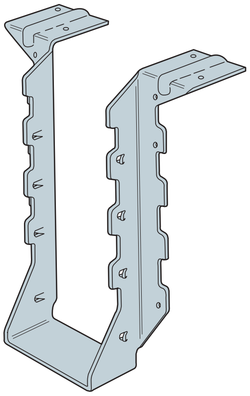
Finish: Galvanized. Some products available with ZMAX® coating. See Corrosion Information, pp. 20–24.

Installation:

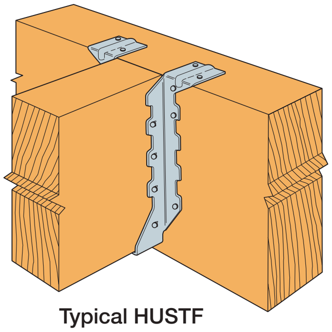
- Use all specified fasteners; see General Notes
- Not acceptable for nailer or welded applications; see W and B hangers
- HUSTF — With 3x carrying members, use 16d x 2½" nails into the header and 16d commons into the joist

Options:

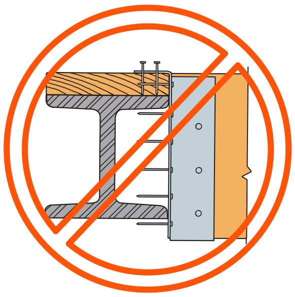
- These hangers cannot be modified.



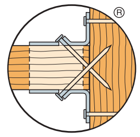
HUSTF



Typical HUSTF Installation



Nailer application is not acceptable. Fasteners cannot be installed.



Double-Shear Nailing Top View

SIMPSON Strong-Tie®

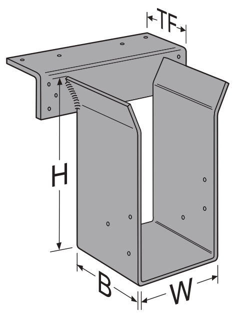
Top-Flange Hangers — Solid Sawn Lumber

These products are available with additional corrosion protection. For more information, see p. 24.

Joist Size	Model No.	Ga.	Dimensions (in.) W	Dimensions (in.) H	Dimensions (in.) B	Dimensions (in.) TF	Fasteners Header	Fasteners Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	Factored Resistance D.Fir-L Normal (K_D = 1.00)	Factored Resistance S-P-F Uplift (K_D = 1.15)	Factored Resistance S-P-F Normal (K_D = 1.00)	Installed Cost Index
									lb.	lb.	lb.	lb.	
									kN	kN	kN	kN	
2x6	JB26	18	1 9/16	5 3/8	1½	1 5/16	(4) 10d	(2) PRONG	—	1555	—	1385	Lowest
									—	6.92	—	6.16	
	LB26	14	1 9/16	5 3/8	1½	1½	(4) 16d	(2) 10d x 1½"	490	2080	455	1405	+79%
									2.18	9.25	2.02	6.26	
	W26	12	1 9/16	5 3/8	2½	2½	(2) 10d	(2) 10d x 1½"	—	2920	—	2375	+710%
									—	13.00	—	10.58	
DBL 2x6	HUS26-2TF	14	3 1/8	5 3/8	2	1¾	(6) 16d	(4) 16d	1745	5130	1240	3645	Lowest
									7.76	22.82	5.51	16.21	
	WNP26-2	12	3 1/8	5 3/8	2½	2 3/16	(2) 10d	(2) 10d	—	4095	—	3550	+31%
									—	18.24	—	15.81	
2x8	JB28	18	1 9/16	7¼	1½	1 5/16	(4) 10d	(2) PRONG	—	1555	—	1385	Lowest
									—	6.92	—	6.16	
	LB28	14	1 9/16	7¼	1½	1½	(4) 16d	(2) 10d x 1½"	490	2080	455	1405	+69%
									2.18	9.25	2.02	6.26	
	W28	12	1 9/16	7 1/8	2½	2½	(2) 10d	(2) 10d x 1½"	—	2895	—	2385	+541%
									—	12.88	—	10.61	
DBL 2x8	HUS28-2TF	14	3 1/8	7¼	2	1 7/8	(8) 16d	(6) 16d	2540	6825	1805	4480	Lowest
									11.30	26.91	8.03	19.93	
	WNP28-2	12	3 1/8	7 1/8	2½	2 3/16	(2) 10d	(2) 10d	—	4095	—	3550	+30%
									—	18.22	—	15.81	
2x10	JB210A	18	1 9/16	9 3/16	2	1 7/16	(6) 16d	(2) 10d x 1½"	415	2430	370	1725	Lowest
									1.85	10.81	1.65	7.67	
	LB210AZ	14	1 9/16	9 3/16	2	1 7/16	(6) 16d	(2) 10d x 1½"	490	2710	490	1935	+28%
									2.18	12.06	2.18	8.61	
	W210	12	1 9/16	9 1/8	2½	2½	(2) 10d	(2) 10d x 1½"	—	2920	—	2375	+327%
									—	13.00	—	10.58	
DBL 2x10	HUS210-2TF	14	3 1/8	9¼	2	1½	(10) 16d	(8) 16d	3795	6755	3450	5435	Lowest
									16.88	30.05	15.35	24.18	
	WNP210-2	12	3 1/8	9 1/8	2½	2 3/16	(2) 10d	(2) 10d	—	4095	—	3550	+ 32%
									—	18.22	—	15.79	
2x12	JB212A	18	1 9/16	11 1/8	2	1 7/16	(6) 16d	(2) 10d x 1½"	415	2430	370	1725	Lowest
									1.85	10.81	1.65	7.67	
	LB212AZ	14	1 9/16	11 1/8	2	1 7/16	(6) 16d	(2) 10d x 1½"	490	2710	455	1935	+ 29%
									2.18	12.06	2.02	8.61	
	W212	12	1 9/16	11	2½	2½	(2) 10d	(2) 10d x 1½"	—	2920	—	2375	+ 331%
									—	12.99	—	10.56	

1. N54A fasteners are supplied with hangers. Specify height required.
2. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading such as in cantilever construction.
3. **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. 27–28 for other nail sizes and information.

Hangers do not have an Installed Cost Index.



SIMPSON Strong-Tie®

Top-Flange Hangers — Solid Sawn Lumber

These products are available with additional corrosion protection. For more information, see p. 24

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN	Installed Cost Index
DBL 2x12	HUS212-2TF	14	3⅛	11⅛	2	2¼	(10) 16d	(8) 16d	3765	6755	2675	5435	Lowest
									16.75	30.05	11.90	24.18	
	WNP212-2	12	3⅛	11	2½	2 3/16	(2) 10d	(2) 10d	—	4095	—	3550	+ 20%
									—	18.22	—	15.79	
3x6	W36	12	2 9/16	5⅜	2	2½	(2) 10d	(2) 10d x 1½"	—	2920	—	2375	*
									—	12.99	—	10.56	
3x8	B38	12	2 9/16	7⅛	2½	2½	(14) 16d	(6) 16d x 2½"	1650	5940	1170	3910	Lowest
									7.34	26.42	5.20	17.39	
	W38	12	2 9/16	7⅛	2	2½	(2) 10d	(2) 10d x 1½"	—	2920	—	2375	+ 38%
									—	12.99	—	10.56	
3x10	B310	12	2 9/16	9⅛	2½	2½	(14) 16d	(6) 16d x 2½"	1650	5940	1170	3910	Lowest
									7.34	26.42	5.20	17.39	
	W310	12	2 9/16	9⅛	2	2½	(2) 10d	(2) 10d x 1½"	—	2920	—	2375	+ 46%
									—	12.99	—	10.56	
3x12	B312	12	2 9/16	11	2½	2½	(14) 16d	(6) 16d x 2½"	1650	5940	1170	3910	Lowest
									7.34	26.42	5.20	17.39	
	WNP312	12	2 9/16	11	2½	2 3/16	(2) 10d	(2) 10d x 1½"	—	4095	—	3550	+ 41%
									—	18.22	—	15.79	
4x6	HUS46TF	14	3 9/16	5⅜	2	1½	(6) 16d	(4) 16d	1745	5130	1240	3645	Lowest
									7.76	22.82	5.52	16.21	
	W46	12	3 9/16	5⅜	2½	2½	(2) 10d	(2) 10d	—	2920	—	2375	+ 41%
									—	12.99	—	10.56	
	HW46	11	3 9/16	5⅜	2½	2½	(4) 10d	(2) 10d	—	6040	—	5285	+ 177%
									—	30.69	—	23.51	
4x8	BA48 (Min.)	14	3 9/16	7⅛	3	2½	(16) 16d	(2) 10d x 1½"	435	4990	310	4370	Lowest
									1.94	22.20	1.38	19.44	
	BA48 (Max.)	14	3 9/16	7⅛	2½	2½	(16) 16d	(8) 10d x 1½"	1960	5940	1565	4370	+ 4%
									8.72	26.42	6.96	19.44	
	B48	12	3 9/16	7⅛	2½	2½	(14) 16d	(6) 16d	1650	5940	1170	3910	+ 71%
									7.34	26.42	5.20	17.39	
	HUS48TF	14	3 9/16	7¼	2	1 11/16	(8) 16d	(6) 16d	2540	6285	1805	4480	+ 76%
									11.30	27.96	8.03	19.93	
	W48	12	3 9/16	7⅛	2½	2½	(2) 10d	(2) 10d	—	2920	—	2375	+ 105%
									—	12.99	—	10.56	
	HW48	11	3 9/16	7⅛	2½	2½	(4) 10d	(2) 10d	—	6090	—	5285	+ 300%
									—	30.69	—	23.51	

See footnotes on p. 149.

Top-Flange Hangers — Solid Sawn Lumber

These products are available with additional corrosion protection. For more information, see p. 24

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN	Installed Cost Index
4x10	BA410 (Min.)	14	3 9/16	9¼	3	2½	(16) 16d	(2) 10d x 1½"	435	4990	310	4370	Lowest
									1.94	22.20	1.38	19.44	
	BA410 (Max.)	14	3 9/16	9¼	3	2½	(16) 16d	(8) 10d x 1½"	1960	5940	1565	4370	+ 4%
									8.72	26.42	6.96	19.44	
	HUS410TF	14	3 9/16	9¼	2	1½	(10) 16d	(8) 16d	3795	6755	3450	5435	+ 59%
									16.88	30.05	15.35	24.18	
	B410	12	3 9/16	9⅛	2½	2½	(14) 16d	(6) 16d	1650	5940	1170	3910	+ 72%
									7.34	26.42	5.20	17.39	
	W410	12	3 9/16	9⅛	2½	2½	(2) 10d	(2) 10d	—	2920	—	2375	+ 91%
									—	12.99	—	10.56	
	HW410	11	3 9/16	9⅛	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	+ 270%
									—	30.69	—	23.51	
	GLT4[1]	7	3 9/16	7½ Min.	5	2½	(10) N54A	(6) N54A	2905	9625	2060	5225	*
									12.92	42.82	9.16	23.24	
	HGLT4[1]	7	3 9/16	7½ Min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830	*
									12.92	66.21	9.16	43.73	
4x12	BA412 (Min.)	14	3 9/16	11	3	2½	(16) 16d	(2) 10d x 1½"	435	4990	310	4370	Lowest
									1.94	22.20	1.38	19.44	
	BA412 (Max.)	14	3 9/16	11	3	2½	(16) 16d	(8) 10d x 1½"	1960	5940	1565	4370	+ 3%
									8.72	26.42	6.96	19.44	
	HUS412TF	14	3 9/16	11⅛	2	2	(10) 16d	(8) 16d	3795	6755	2675	5435	+ 28%
									16.88	30.05	11.90	24.18	
	B412	12	3 9/16	11	2½	2½	(14) 16d	(6) 16d	1650	5940	1170	3910	+ 72%
									7.34	26.42	5.20	17.39	
	WNP412	12	3 9/16	11	2½	2 3/16	(2) 10d	(2) 10d	—	4095	—	3550	+ 100%
									—	18.22	—	15.79	
	HW412	11	3 9/16	11	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	+ 248%
									—	30.69	—	23.51	
	GLT4[1]	7	3 9/16	7½ Min.	5	2½	(10) N54A	(6) N54A	2905	9625	2060	5225	*
									12.92	42.82	9.16	23.24	
	HGLT4[1]	7	3 9/16	7½ Min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830	*
									12.92	66.21	9.16	43.73	
6x6	WNP66	12	5½	5⅜	2½	2 5/16	(3) 10d	(2) 10d	—	4095	—	3550	Lowest
									—	18.22	—	15.79	
	HW66	11	5½	5⅜	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	+ 51%
									—	30.69	—	23.51	
	WM66	12	5½	5⅜	2½	3¾	(2) 16d DPLX	(2) 10d	—	6060	—	6060	*
									—	26.96	—	26.96	

See footnotes on p. 149.

Solid Sawn Joist Hangers

Top-Flange Hangers — Solid Sawn Lumber

These products are available with additional corrosion protection. For more information, see p. 24

Joist Size	Model No.	Ga.	Dimensions (in.)				Fasteners		Factored Resistance				Installed Cost Index
									D.Fir-L		S-P-F		
									Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	
			W	H	B	TF	Header	Joist	lb.	lb.	lb.	lb.	
									kN	kN	kN	kN	
6x8	B68	12	5½	7⅛	2½	2½	(14) 16d	(6) 16d	1650	5940	1170	3910	Lowest
									7.34	26.42	5.20	17.39	
	WNP68	12	5½	7⅛	2½	2 5/16	(3) 10d	(2) 10d	—	4095	—	3550	+ 52%
									—	18.22	—	15.79	
	HW68	11	5½	7⅛	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	+ 134%
									—	30.69	—	23.51	
6x10	B610	12	5½	9⅛	2½	2½	(14) 16d	(6) 16d	1650	5940	1170	3910	Lowest
									7.34	26.42	5.20	17.39	
	WNP610	12	5½	9⅛	2½	2 5/16	(3) 10d	(2) 10d	—	4095	—	3550	+ 34%
									—	18.22	—	15.79	
	HW610	11	5½	9⅛	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	+ 125%
									—	30.69	—	23.51	
	GLT6[1]	7	5 9/16	7½ Min.	5	2½	(10) N54A	(6) N54A	2905	9625	2060	5225	*
									12.92	42.82	9.16	23.24	
	HGLT6[1]	7	5 9/16	7½ Min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830	*
									12.92	66.21	9.16	43.73	
6x12	B612	12	5½	11	2½	2½	(14) 16d	(6) 16d	1650	5940	1170	3910	Lowest
									7.34	26.42	5.20	17.39	
	HW612	11	5½	11	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	+ 125%
									—	30.69	—	23.51	
	HHB612	7	5½	11	3	2½	(10) N54A	(6) N54A	3340	8570	—	—	*
									14.86	38.12	—	—	
	GLT6[1]	7	5 9/16	7½ Min.	5	2½	(10) N54A	(6) N54A	2905	9625	2060	5225	*
									12.92	42.82	9.16	23.24	
	HGLT6[1]	7	5 9/16	7½ Min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830	*
									12.92	66.21	9.16	43.73	
6x14	B614	12	5½	13	2½	2½	(14) 16d	(6) 16d	1650	5940	1170	3910	Lowest
									7.34	26.42	5.20	17.39	
	HW614	11	5½	13	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	+ 98%
									—	30.69	—	23.51	
	HHB614	7	5½	13	3	2½	(10) N54A	(6) N54A	3340	8570	—	—	+ 192%
									14.86	38.12	—	—	
	GLT6[1]	7	5 9/16	7½ Min.	5	2½	(10) N54A	(6) N54A	2905	9625	2060	5225	*
									12.92	42.82	9.16	23.24	
	HGLT6[1]	7	5 9/16	7½ Min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830	*
									12.92	66.21	9.16	43.73	

See footnotes on p. 149.

Top-Flange Hangers — Solid Sawn Lumber

SIMPSON Strong-Tie®

These products are available with additional corrosion protection. For more information, see p. 24

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN	Installed Cost Index
6x16	B616	12	5½	15	2½	2½	(14) 16d	(6) 16d	1650	5940	1170	3910	Lowest
									7.34	26.42	5.20	17.39	
	HW616	11	5½	15	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	+ 89%
									—	30.69	—	23.51	
	HHB616	7	5½	15	3	2½	(10) N54A	(6) N54A	3340	8570	—	—	+ 174%
									14.86	38.12	—	—	
	GLT6[1]	7	5-9/16	7½ Min.	5	2½	(10) N54A	(6) N54A	2905	9625	2060	5225	*
									12.92	42.82	9.16	23.24	
	HGLT6[1]	7	5-9/16	7½ Min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830	*
									12.92	66.21	9.16	43.73	
8x6	HW86	7	7½	5⅜	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	*
									—	30.69	—	23.51	
8x8	HW88	7	7½	7⅛	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	*
									—	30.69	—	23.51	
8x10	HW810	7	7½	9⅛	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	*
									—	30.69	—	23.51	
8x12	HW812	7	7½	11	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	Lowest
									—	30.69	—	23.51	
	HHB812	7	7½	11	3	2½	(10) N54A	(6) N54A	3340	8570	—	—	+ 92%
									14.86	38.12	—	—	
8x14	HW814	7	7½	13	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	Lowest
									—	30.69	—	23.51	
	HHB814	7	7½	13	3	2½	(10) N54A	(6) N54A	3340	8570	—	—	+ 87%
									14.86	38.12	—	—	
8x16	HW816	7	7½	15	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285	Lowest
									—	30.69	—	23.51	
	HHB816	7	7½	15	3	2½	(10) N54A	(6) N54A	3340	8570	—	—	83%
									14.86	38.12	—	—	

See footnotes on p. 149.

SUR/SUL/HSUR/HSUL

Skewed 45° Hangers

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

The SUR/L and HSUR/L 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

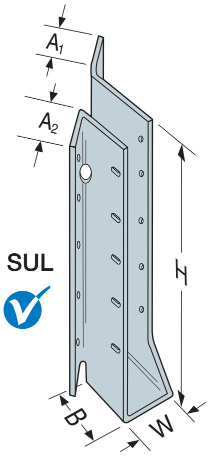
Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

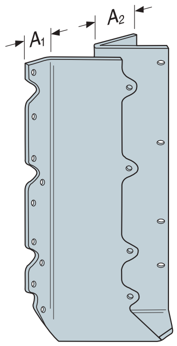
- Use all specified fasteners; see General Notes
- These hangers will normally accommodate a 40° to 50° skew
- Illustration shows left and right skews SUR/L (SUR = skewed right; SUL = skewed left)
- The joist end may be square cut or bevel cut

Options:

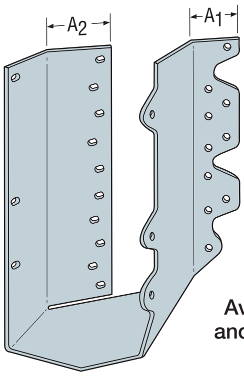
- Available with the A2 flange turned in on the 2-2x and 4x models only (see illustration)
- To order, add “C” (for concealed) to the product name
- For example, specify HSURC46, HSULC46, SURC46, or SULC46



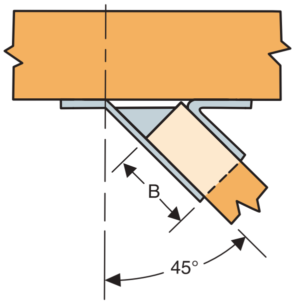
SUL



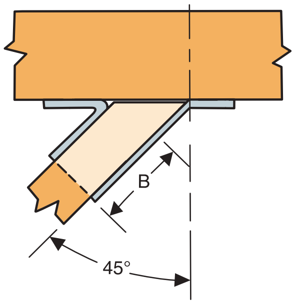
HSUR



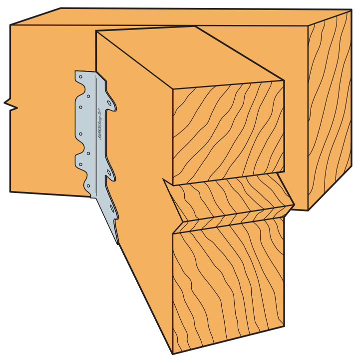
HSULC
Available for 2-2x and 4x models only



Typical SUR Installation with Square Cut Joist
(HSUR similar)



Typical SUL Installation with Bevel Cut Joist
(HSUL similar)



Typical SUR410 Installation

SUR/SUL/HSUR/HSUL

Skewed 45° Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Joist Size	Model No.	Dimensions (in.) W	H	B	A_1	A_2	Fasteners Face	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
2x4	SUR/L24	1 9/16	3½	2	1⅛	1¼	(4) 16d	(4) 10d x 1½"	850	1210	600	860
									3.78	5.38	2.67	3.83
2x6, 8	SUR/L26	1 9/16	5	2	1⅛	1 5/16	(6) 16d	(6) 10d x 1½"	1255	2130	890	1530
									5.58	9.47	3.96	6.81
2x10, 12	SUR/L210	1 9/16	8⅛	2	1⅛	1 5/16	(10) 16d	(10) 10d x 1½"	2085	3820	1480	2710
									9.27	16.99	6.58	12.05
2x12, 14	SUR/L214	1 9/16	10	2	1⅛	1 5/16	(12) 16d	(12) 10d x 1½"	2690	4585	2175	3255
									11.97	20.40	9.67	14.48
3x10, 12	SUR/L2.56/9	2 9/16	8 13/16	3 3/16	1⅛	2⅛	(14) 16d	(2) 10d x 1½"	385	3950	275	2805
									1.71	17.57	1.22	12.48
(2) 2x6, 8	SUR/L26-2	3⅛	4 15/16	2⅝	1 7/16	2⅜	(8) 16d	(4) 16d x 2½"	1130	2035	1045	1380
									5.03	9.05	4.65	6.14
	HSUR/L26-2	3⅛	4 15/16	2 7/16	1¼	2 3/16	(12) 16d	(4) 16d x 2½"	1230	2750	1090	1955
									5.47	12.23	4.85	8.70
(2) 2x10, 12	SUR/L210-2	3⅛	8 11/16	2⅝	1 7/16	2⅜	(14) 16d	(6) 16d x 2½"	1695	4065	1540	2875
									7.54	18.08	6.85	12.81
	HSUR/L210-2	3⅛	8 11/16	2 7/16	1¼	2 3/16	(20) 16d	(6) 16d x 2½"	1840	5270	1540	3745
									8.18	23.44	6.85	16.66
4x6, 8	SUR/L46	3 9/16	4¾	2⅝	1	2⅜	(8) 16d	(4) 16d	1130	2035	1045	1380
									5.03	9.05	4.65	6.14
	HSUR/L46	3 9/16	4¾	2 7/16	1	2 3/16	(12) 16d	(4) 16d	1230	2750	1090	1955
									5.47	12.23	4.85	8.70
4x10, 12	SUR/L410	3 9/16	8½	2 7/16	1	2 3/16	(14) 16d	(6) 16d	1695	4065	1540	2875
									7.54	18.08	6.85	12.81
	HSUR/L410	3 9/16	8½	2 7/16	1	2 3/16	(20) 16d	(6) 16d	1840	5270	1540	3745
									8.18	23.44	6.85	16.66

1. Factored uplift resistances have been increased by 15% for earthquake or wind loading with no further increase allowed; reduce for other load durations as required by code.
2. **Nails:** 16d = 0.162" dia. x 3½" long, 16d x 2½" = 0.162" dia. x 2½" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

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:

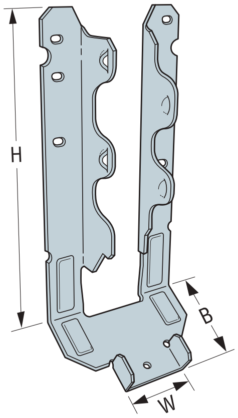
- The open design and ability to field-adjust the slope makes the LRUZ ideal for both retrofit or new applications.
- Accommodates roof pitches from 0:12 to 14:12.
- Slopes up or down to 45° (12:12). For slopes greater than 45° up to 49° (14:12), factored resistance is 0.85 of table values.
- For added 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. C_1" dimension).
- Can be installed using nails or Simpson Strong-Tie® Strong-Drive® SD Connector screws.

Material: 18 gauge

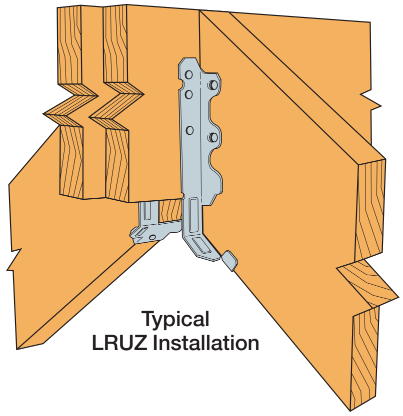
Finish: ZMAX® coating

Installation:

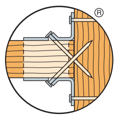
- Use all specified fasteners; see General Notes
- Joist fasteners must be installed at an angle through the rafter or joist into the header to achieve the table values
- See alternate installation on p. 157 for retrofit applications



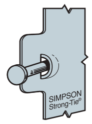
LRU28Z
(other models similar)



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. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Standard Installation[1,2,3]

Model No.	Dimensions (in.)				Fasteners[4,5]		Factored Resistance			
							D.Fir-L		S-P-F	
							Uplift	Normal	Uplift	Normal
							(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)
	W	H	B	Max. C_1	Header	Joist	lb.	lb.	lb.	lb.
							kN	kN	kN	kN
LRU26Z	1⅝	5¼	1 15/16	1¾	(4) 10d	(5) 10d	945	1360	670	965
							4.20	6.05	2.98	4.29
					(4) 16d	(5) 16d	1130	1985	800	1410
							5.03	8.83	3.56	6.27
LRU28Z	1⅝	6 15/16	1 15/16	2⅝	(6) 10d	(5) 10d	1180	1360	840	965
							5.25	6.05	3.74	4.29
					(6) 16d	(5) 16d	1180	1985	840	1410
							5.25	8.83	3.74	6.27
LRU210Z	1⅝	8 3/16	1 15/16	1¾	(6) 10d	(7) 10d	1610	2095	1145	1485
							7.16	9.32	5.09	6.61
					(6) 16d	(7) 16d	1610	2375	1145	1685
							7.16	10.56	5.09	7.50
LRU212Z	1⅝	10 11/16	1 15/16	3½	(6) 10d	(7) 10d	1910	2095	1355	1485
							8.50	9.32	6.03	6.61
					(6) 16d	(7) 16d	1910	2805	1355	1990
							8.50	12.48	6.03	8.85

1. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase is allowed. Reduce where other load durations govern.
2. Factored resistances shown are applicable for roof slopes up to and including 45° (12:12). For roof slopes greater than 45° up to and including 49° (14:12) multiply the tabulated resistances by 0.85.
3. LRUZ's may be installed using Strong-Drive® SD #10 x 1½" Connector screws into the header and Strong-Drive SD #10 x 2½" Connector screws into the joist at full 16d capacity.
4. For single 2x headers, use 10d x 1½" nails into the header and 10d commons into the joist. Multiply the tablulated 10d capacity x 0.77. Alternately, install Strong-Drive SD Connector screws (see footnote 3 above).
5. For alternate installation under retrofit applications, Strong-Drive SD #10 x 2½" Connector screws may be installed sloped upwards to match the roof slope (45° max.). Multiply the tabulated 16d values x 0.73. See Alternate Installation for Retrofit Applications detail on p. 157.
6. **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. 27–28 for other nail sizes and information.
7. **Screws:** SD #10 x 2½" (SD10212) = 0.161" dia. x 2½" long; SD #10 x 1½" (SD10112) = 0.161" dia. x 1½" long.

Rafter Hanger (cont.)

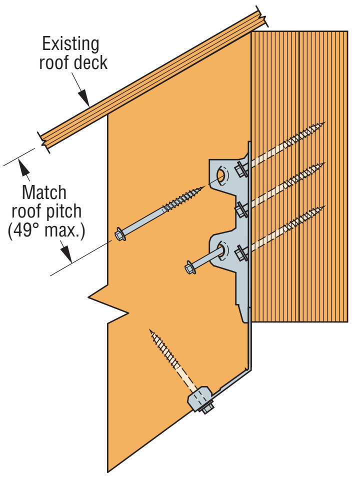
Alternate Installation for Retrofit Applications

When an existing roof deck prevents the horizontal installation of fasteners, Strong-Drive® #10 x 2½" SD Connector screws may be installed sloped upward to match the roof pitch (45° max.). Use table values for an installation with 16d nails x 0.73 (see footnote 5) when SD screws are sloped. Nails may not be installed sloped upward.

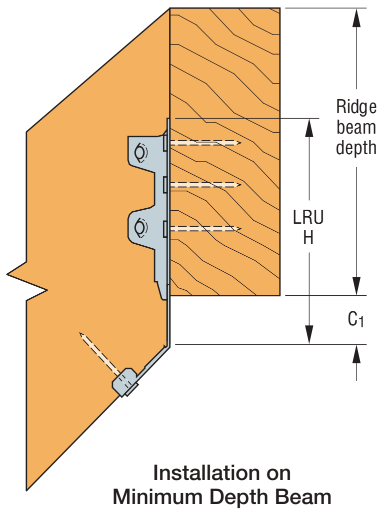
Minimum Ridge Beam Depth (in.)

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	3⅞	5⅝	—	5½	7¼	—	7⅝	9⅝	—	9¼
3:12	3⅞	5¾	—	5½	7¼	—	7¾	9⅞	—	9¼
4:12	4	5⅞	—	5½	7¼	—	8	10⅛	—	9¼
5:12	4¼	6⅛	—	5½	7⅜	—	8¼	10½	—	9¼
6:12	4⅜	6⅜	—	5½	7¾	—	8⅝	10⅞	—	9¼
7:12	4⅝	6⅝	—	5¾	8⅛	6⅝	9	11¼	—	9½
8:12	4⅞	7	—	6⅛	8½	7	9⅜	11¾	7⅝	10
9:12	5⅛	7⅜	—	6½	9	7⅜	9⅞	12⅜	8⅛	10⅝
10:12	5⅜	7¾	4½	6⅞	9⅜	7¾	10¼	12⅞	8½	11⅛
11:12	5¾	8⅛	4⅞	7¼	9⅞	8⅛	10¾	13½	9	11¾
12:12	6	8½	5⅛	7⅝	10½	8½	11⅜	14⅛	9⅝	12⅜
13:12	6⅜	9	5½	8⅛	11⅛	9	12	14⅞	10¼	13⅛
14:12	6¾	9½	5⅞	8⅝	11⅝	9½	12½	15⅝	10¾	13⅞

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. C_1 dimension for the LRU is not exceeded. Deeper ridge beams may be required to support the rafter loads as determined by the Designer.



Alternate Installation for Retrofit Applications



Installation on Minimum Depth Beam

LSU/LSSU

Adjustable Light Slopeable/Skewable U Hangers

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

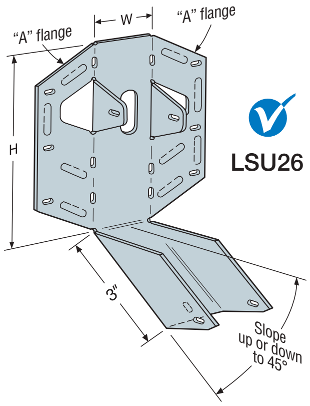
The LSU and LSSU series of hangers may be sloped and skewed in the field, offering a versatile solution for attaching joists and rafters. These hangers may be sloped up or down and skewed left or right, up to 45°.

Material: See table

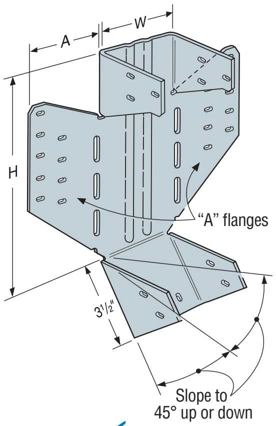
Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

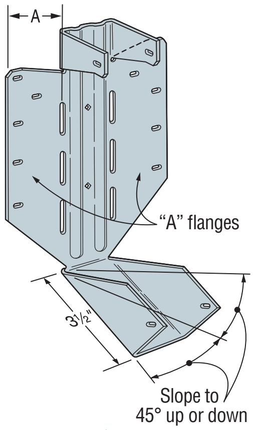
- Use all specified fasteners; see General Notes
- Attach the sloped joist at both ends so that the horizontal force developed by the slope is fully supported by the supporting members
- To see an installation video on this product, visit **strongtie.com**
- 10d x 1½" nails cannot be substituted for the specified face nails when skewed or sloped and skewed combinations



LSU26



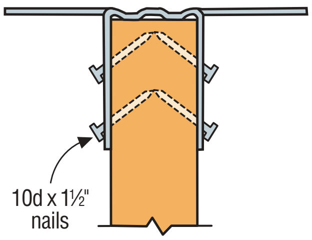
LSSU410
(LSSU210-2 similar)



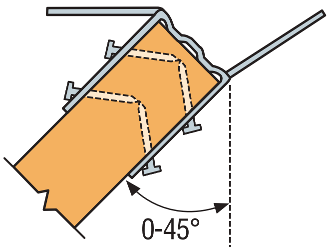
LSSU28

LSU and LSSU Installation Sequence

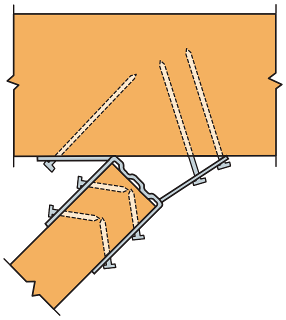
(For skewed or sloped/skewed applications)



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. Install nails at an angle.

LSU/LSSU

Adjustable Light Slopeable/Skewable U Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Joist Width (in.)	Model No.	Ga.	Dimensions (in.)			Fasteners		Factored Resistance			
								D.Fir-L		S-P-F	
								Uplift	Normal	Uplift	Normal
								(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)
			W	H	A	Face	Joist	lb.	lb.	lb.	lb.
								kN	kN	kN	kN
Sloped Only Hangers											
1½	LSU26	18	1 9/16	4⅞	1½	(6) 10d	(5) 10d x 1½"	830	1255	715	895
								3.69	5.58	3.18	3.98
1½	LSSU28	18	1 9/16	7⅛	1½	(10) 10d	(5) 10d x 1½"	800	3000	565	2130
								3.56	13.34	2.51	9.47
1½	LSSU210	18	1 9/16	8½	1⅝	(10) 10d	(7) 10d x 1½"	1240	3090	1130	2325
								5.52	13.75	5.03	10.34
2½	LSSUH310	16	2 9/16	8½	3⅛	(18) 16d	(12) 10d x 1½"	1625	3675	1155	2780
								7.23	16.35	5.14	12.37
3	LSSU210-2	16	3⅛	8½	2⅞	(18) 16d	(12) 10d x 1½"	1625	3675	1155	2780
								7.23	16.35	5.14	12.37
3½	LSSU410	16	3 9/16	8½	2⅝	(18) 16d	(12) 10d x 1½"	1625	4520	1155	3210
								7.23	20.11	5.14	14.28
Skewed Hangers or Sloped and Skewed											
1½	LSU26	18	1 9/16	4⅞	1½	(6) 10d	(5) 10d x 1½"	830	1255	715	895
								3.69	5.58	3.18	3.98
1½	LSSU28	18	1 9/16	7⅛	1½	(9) 10d	(5) 10d x 1½"	735	1360	525	965
								3.27	6.05	2.34	4.29
1½	LSSU210	18	1 9/16	8½	1⅝	(9) 10d	(7) 10d x 1½"	1240	2090	910	1485
								5.52	9.30	4.05	6.61
2½	LSSUH310	16	2 9/16	8½	3⅛	(14) 16d	(12) 10d x 1½"	1625	2345	1155	1665
								7.23	10.43	5.14	7.41
3	LSSU210-2	16	3⅛	8½	2⅞	(14) 16d	(12) 10d x 1½"	1625	2345	1155	1665
								7.23	10.43	5.14	7.41
3½	LSSU410	16	3 9/16	8½	2⅝	(14) 16d	(12) 10d x 1½"	1625	2345	1155	1665
								7.23	10.43	5.14	7.41

1. Factored uplift resistances include a 15% increase for earthquake or wind loading; no further increase is allowed; reduce when other loads govern.
2. **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. 29–28 for other nail sizes and information.

LSSJZ

Adjustable Light Slopeable/Skewable Jack Hanger

This product is preferable to similar connectors because of a) easier installation, b) higher capacities, 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:

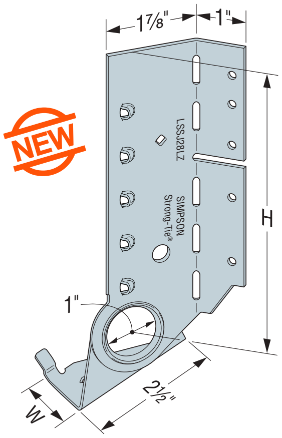
- Hanger installs from one side with all fastener holes easily accessible
- Can be installed as a retrofit
- Seat grip makes setting the hanger quick and easy
- Accommodates roof pitches from 0:12 to 12:12
- Swivel seat adjusts easily and provides more support to joist, allowing for a higher load than fasteners alone

Material: 18 gauge

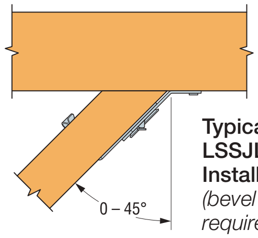
Finish: ZMAX® coating (G-185)

Installation:

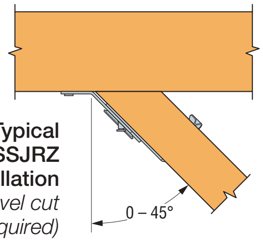
- Use all specified fasteners; see General Notes
- Joist end needs to be bevel cut
- Table and illustration shows left and right skews LSSJR/L (LSSJR = skewed right; LSSJL = skewed left)



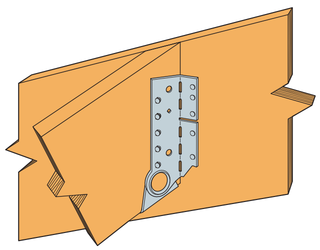
LSSJ28LZ
(others similar)
U.S. Patent Pending



Typical LSSJLZ Installation *(bevel cut required)*



Typical LSSJRZ Installation *(bevel cut required)*



Typical LSSJ28LZ Installation with 2x10 Header *(installation with 4x10 header similar)*

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in.)		Fasteners		Factored Resistance			
					D.Fir-L		S-P-F	
	W	H	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
0°–19° Skew								
LSSJ26LZ LSSJ26RZ	1 9/16	4 3/4	(4) 10d x 1 1/2"	(4) 10d x 1 1/2"	575 2.56	500 2.22	410 1.82	355 1.58
LSSJ28LZ LSSJ28RZ	1 9/16	6	(5) 10d x 1 1/2"	(5) 10d x 1 1/2"	950 4.23	825 3.67	715 3.18	725 3.23
LSSJ210LZ LSSJ210RZ	1 9/16	8	(6) 10d x 1 1/2"	(6) 10d x 1 1/2"	1140 5.07	990 4.40	970 4.31	840 3.74
20°–45° Skew								
LSSJ26LZ LSSJ26RZ	1 9/16	4 3/4	(4) 10d	(4) 10d	1100 4.89	955 4.25	780 3.47	680 3.02
LSSJ28LZ LSSJ28RZ	1 9/16	6	(5) 10d	(5) 10d	1590 7.07	1385 6.16	1205 5.36	1050 4.67
LSSJ210LZ LSSJ210RZ	1 9/16	8	(6) 10d	(6) 10d	1910 8.50	1660 7.38	1375 6.12	1195 5.32

1. Factored uplift resistances have been increased 15% for wind or earthquake loading with no further increase allowed.
2. For skews 20° and greater, the specified 10d nails may be substituted with 10d x 1 1/2". Use the tabulated values for 0°–19° Skew.
3. LSSJ26Z installed with an extra 10d x 1 1/2" nail in the under side of the seat has a factored normal resistance of 630 lb. (2.8kN) D.Fir-L and 445 lb. (1.98 kN) S-P-F.
4. **Nails:** 10d = 0.148" diameter x 3" long, 10d x 1 1/2" = 0.148" diameter x 1 1/2" long.

VPA

Variable Pitch Connector

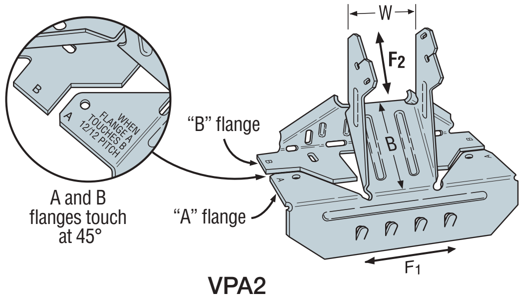
The VPA may be sloped in the field, offering a versatile solution for attaching rafters to the top plate. It will adjust to accommodate slopes between 3:12 and 12:12, making it a complement to the versatile LSSU. This connector eliminates the need for notched rafters, beveled top plates and toe nailing.

Material: 18 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes

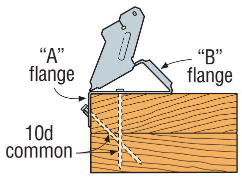


VPA2

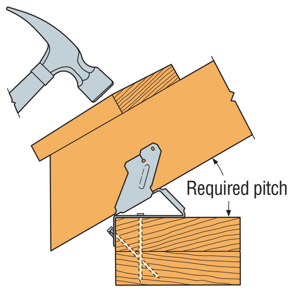
Model No.	Actual Joist Width (in.)	W (in.)	Fasteners		Factored Resistance							
					D.Fir-L				S-P-F			
					Wind/Earthquake (K_D = 1.15)			Normal (K_D = 1.00)	Wind/Earthquake (K_D = 1.15)			Normal (K_D = 1.00)
			Carrying Member	Carried Member	Uplift	F_1	F_2		Uplift	F_1	F_2	
					lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN	kN	kN
VPA2	1½	1 9/16	(8) 10d	(2) 10d x 1½"	405	695	405	1695	370	615	370	1555
					1.80	3.09	1.80	7.54	1.65	2.74	1.65	6.92
VPA3	2½	2 9/16	(9) 10d	(2) 10d x 1½"	405	695	405	2050	370	615	370	1855
					1.80	3.09	1.80	9.12	1.65	2.74	1.65	8.25
VPA4	3½	3 9/16	(11) 10d	(2) 10d x 1½"	405	695	405	2050	370	615	370	1855
					1.80	3.09	1.80	9.12	1.65	2.74	1.65	8.25

1. Factored uplift and lateral resistances have been increased 15% for earthquake or wind loading; no further increase is allowed.
2. Resistances may not be increased for short-term load duration.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

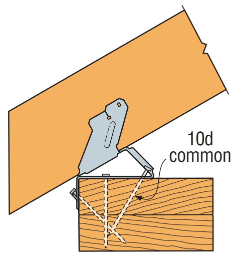
VPA Installation Sequence



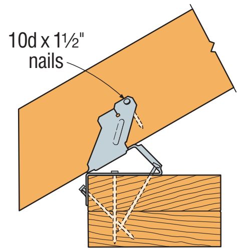
Step 1
Install top nails and face PAN nails in "A" flange to outside wall top plate.



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
Install 10d x 1½" nail into tab nail hole. Hammer nail in at a slight angle to prevent splitting.

HRC/HHRC

SIMPSON Strong-Tie®

Hip Ridge Connectors

The HRC series are 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°.

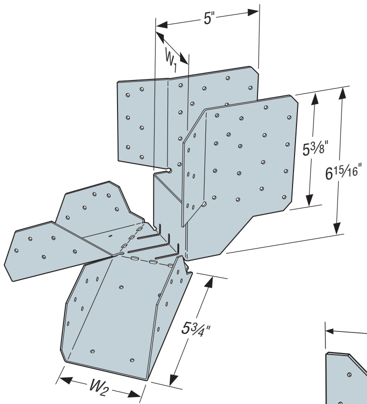
HHRC accommodates higher loads and uses Simpson Strong-Tie® Strong-Drive® SD Connector screws.

Material: HRC22, HRC42 — 16 gauge; HRC44 — 14 gauge; HHRC — 12 gauge

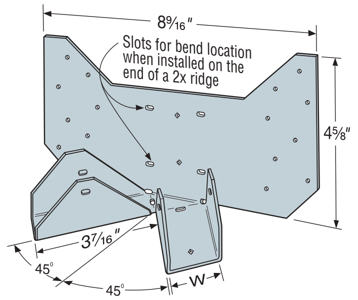
Finish: Galvanized

Installation:

- Use all specified fasteners (included with HHRC); see General Notes.
- On end of ridge — use optional diamond holes on HRC22 and HRC42 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.
- See p. 248 for SCL sizes.



HHRC44
(others similar)



HRC22

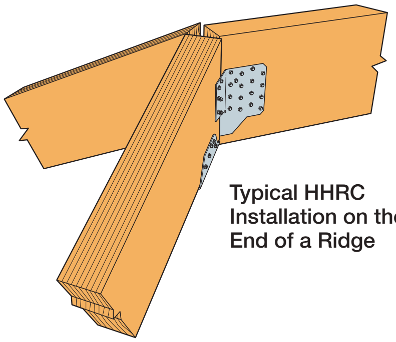
HHRC Factored Resistances

Model	Member Width (in)		Dimensions (in)		Fasteners		Factored Resistance per Hip			
							D.Fir-L		S-P-F	
							Uplift (KD = 1.15)	Normal (KD = 1.00)	Uplift (KD = 1.15)	Normal (KD = 1.00)
	Ridge	Hip	W1	W2	Ridge	Each Hip	lb. / kN	lb. / kN	lb. / kN	lb. / kN
NEW HHRC2-2	3	3	3⅛	3⅛	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3365	3480	2530	2470
							14.97	15.48	11.25	10.99
NEW HHRC42	3½	1½	3⅝	1⁹⁄₁₆	(40) SD#10 x 2½"	(22) SD#10 x 1½"	2180	3620	1550	2570
							9.70	16.10	6.90	11.43
NEW HHRC42-2	3½	3	3⅝	3⅛	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3365	3480	2530	2470
							14.97	15.48	11.25	10.99
HHRC44	3½	3½	3⅝	3⅝	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3365	4185	2530	2970
							14.97	18.62	11.25	13.21
HHRC64	5½	3½	5⅝	3⅝	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3930	4205	2790	2985
							17.48	18.71	12.41	13.28
NEW HHRC66	5½	5½	5⅝	5⅝	(40) SD#10 x 2½"	(27) SD#10 x 2½"	3930	4485	2790	3185
							17.48	19.95	12.41	14.17

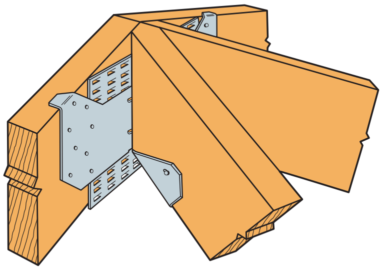
1. Factored resistances shown are per hip, the total load carried by the connector is double this number. Load must be equally distributed to both hips.
2. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase is allowed. Reduce where other load durations govern.
3. Factored resistances shown are applicable for roof slopes up to and including 45° (12:12).
4. Do not attach HHRC to columns or studs.
5. **Screws**: SD#10 x 2½" (SD10212) = 0.161" dia. X 2½" long

HRC/HHRC

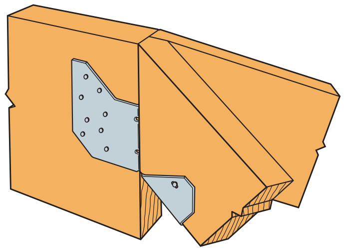
Hip Ridge Connectors (cont.)



Typical HHRC Installation on the End of a Ridge



Optional Installation for HRC22 Only



Typical HRC22 Installation on the End of a Ridge

HRC Factored Resistances

Model No.	Member Size (in.)		Fasteners		Factored Resistance			
					D.Fir-L		S-P-F	
	W	Ridge	Carrying Member	Each Hip	Uplift (K$_D$ = 1.15)	Down (K$_D$ = 1.00)	Uplift (K$_D$ = 1.15)	Down (K$_D$ = 1.00)
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
HRC22	1⁹⁄₁₆	2x or 1¾"	(16) 10d x 1½"	(2) 10d x 1½"	445	1340	400	950
					1.98	5.96	1.78	4.23

1. Factored resistances shown are for each hip. Total resistance carried by the connector is double this number.
2. Factored uplift resistances include a 15% increase for earthquake or wind loading; no further increase allowed; reduce where other loads govern.
3. **Nails:** 16d = 0.162" dia. x 3½" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

HCP

Hip Corner Plate

The HCP connects a rafter or joist to double top plates at a 45° angle.

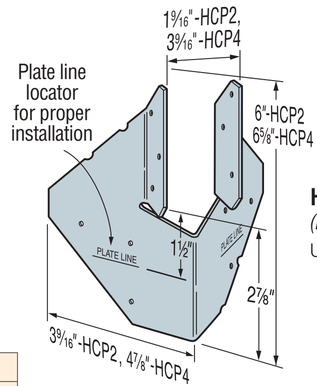
Material: 18 gauge

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 values.
- Install rafter and complete nailing. Rafter may be sloped to 45°.

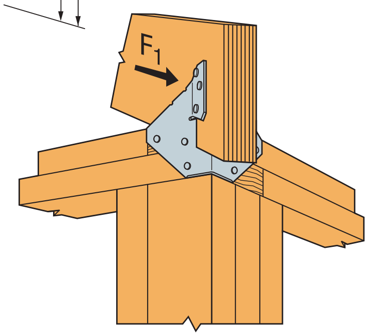
These products are available with additional corrosion protection. For more information, see p. 24.



HCP2
(HCP4Z similar)
U.S. Patent 5,380,115

Model No.	Hip Size	Fasteners		Factored Resistance			
				D.Fir-L		S-P-F	
		To Hip	To Plates	Uplift (K$_D$ = 1.15)	F$_1$ (K$_D$ = 1.00)	Uplift (K$_D$ = 1.15)	F$_1$ (K$_D$ = 1.00)
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
HCP2	2x	(6) 10d x 1½"	(6) 10d x 1½"	1020	355	890	325
				4.54	1.58	3.96	1.45
HCP4Z	4x	(8) 10d	(8) 10d	1485	435	1300	310
				6.61	1.94	5.78	1.38

1. The HCP can be installed on the inside and the outside of the wall with a flat bottom chord truss and achieve twice the factored resistance.
2. Factored uplift resistances include a 15% increase for earthquake or wind loading; no further increase allowed.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



Typical HCP Installation

SIMPSON Strong-Tie®

THA/THAC

Adjustable Hangers

VALUE ENGINEERED

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

The THA series' extra long straps allow full nailing and can be field-formed to give top-flange hanger convenience.

Material: See table

Finish: Galvanized

Installation:

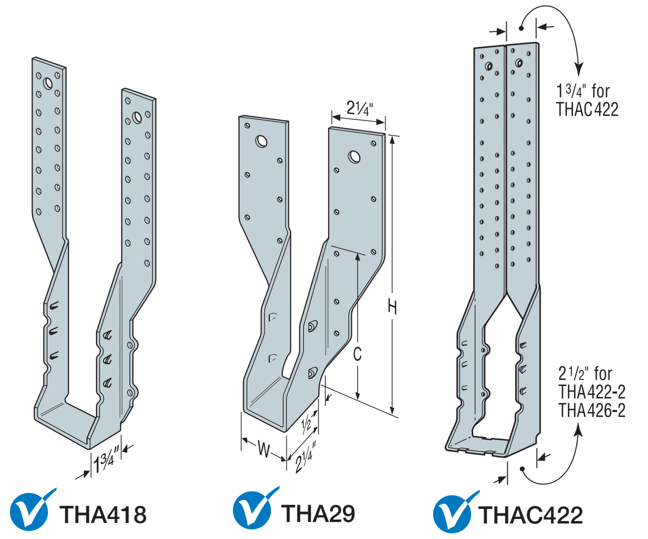
- Use all specified fasteners; see General Notes.

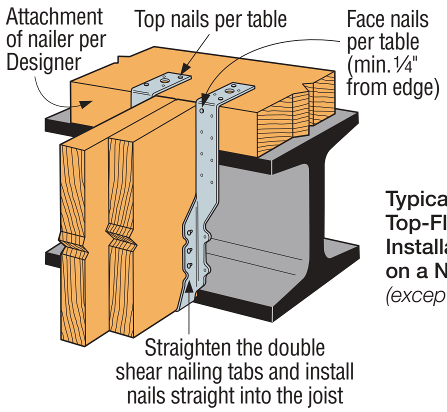
Two different installation methods may be used:

- **Face-Mount Installation**
  Install all face nails according to the table. 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. With single 2x carrying members, use 10d x 1½" nails into the carrying member, and 10d commons into the carried member, when 10d nails are specified and use 0.77 of the table value. When 16d nails are specified use 10d x 1½" nails into the carrying member and 10d commons into the carried member for 0.64 of the table value.
- **Top-Flange Installation:**
  For the THA29, the top-flange nailing schedule requires the use of joist double shear nailing as detailed above, and that the strap be field-formed over the header a minimum of 2½". A minimum of four top and four face nails must be used. For all models except the THA29, the top-flange nailing schedule may be followed where double shear nailing is not possible, provided the strap is field-formed over the top of the header a minimum of 1½" for the THA213 and THA413, and 2" for all others, and a minimum of four top and two face nails are used. The joist double shear nailing tabs are easily straightened so that the nails can be driven straight into the joist.
- **Uplift:**
  Lowest face nails must be installed to achieve uplift resistances.

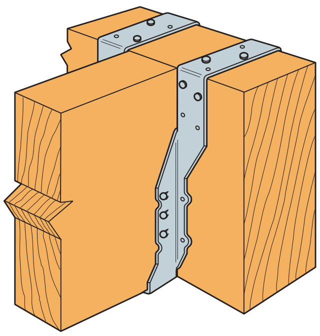
Options:

- THA hangers available with the header flanges turned in for 3⅝" (except THA413) and larger, with no reduction in capacity — order THAC hanger.

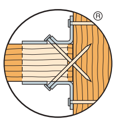




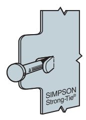
Typical THA Top-Flange Installation on a Nailer *(except THA29)*



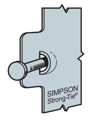
Typical THA Top-Flange Installation



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

Adjustable Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Min Joist Size	Model No.	Ga.	Dimensions (in.) W	H	C	Fasteners Header Top	Header Face	Joist Straight	Joist Slant	Factored Resistance D.Fir-L Uplift (KD = 1.15) lb. / kN	D.Fir-L Normal (KD = 1.00) lb. / kN	S-P-F Uplift (KD = 1.15) lb. / kN	S-P-F Normal (KD = 1.00) lb. / kN
Top-Flange Installation													
2x4	THA29	18	1⅝	9 11/16	5⅛	(4) 10d	(4) 10d	—	(4) 10d	1050	3450	750	2720
										4.67	15.35	3.34	12.10
2x6	THA213	18	1⅝	13 3/16	5½	(4) 10d	(2) 10d	(4) 10d x 1½"	—	—	2225	—	1760
										—	9.90	—	7.83
	THA218	18	1⅝	17 3/16	5½	(4) 10d	(2) 10d	(4) 10d x 1½"	—	—	2225	—	1760
										—	9.90	—	7.83
(2) 2x10	THA218-2	16	3⅛	17 11/16	8	(4) 16d	(2) 16d	(6) 16d x 2½"	—	—	2675	—	2405
										—	11.90	—	10.70
	THA222-2	16	3⅛	22 3/16	8	(4) 16d	(2) 16d	(6) 16d x 2½"	—	—	2675	—	2405
										—	11.90	—	10.70
4x6	THA413	18	3⅝	13 3/16	4½	(4) 10d	(2) 10d	(4) 10d	—	—	2225	—	1655
										—	9.90	—	7.36
4x10	THA418	16	3⅝	17½	7⅞	(4) 16d	(2) 16d	(6) 16d	—	—	2675	—	2405
										—	11.90	—	10.70
	THA422	16	3⅝	22	7⅞	(4) 16d	(2) 16d	(6) 16d	—	—	2675	—	2405
										—	11.90	—	10.70
	THA426	14	3⅝	26	7⅞	(4) 16d	(4) 16d	(6) 16d	—	—	3590	—	2660
										—	15.97	—	11.83
Face-Mount Installation													
2x4	THA29	18	1⅝	9 11/16	5⅛	—	(16) 10d	—	(4) 10d	1050	3440	750	2455
										4.67	15.30	3.34	10.92
2x6	THA213	18	1⅝	13 3/16	5½	—	(14) 10d	—	(4) 10d	1420	2785	1290	2210
										6.32	12.39	5.74	9.83
	THA218	18	1⅝	17 3/16	5½	—	(18) 10d	—	(4) 10d	1420	2785	1290	2210
										6.32	12.39	5.74	9.83
2-2x10	THA218-2	16	3⅛	17 11/16	8	—	(16) 16d	—	(6) 16d	2540	4765	1805	3385
										11.30	21.20	8.03	15.06
	THA222-2	16	3⅛	22 3/16	8	—	(22) 16d	—	(6) 16d	2540	5550	1805	4150
										11.30	24.69	8.03	18.46
4x6	THA413	18	3⅝	13 3/16	4½	—	(14) 10d	—	(4) 10d	1420	3555	1290	2525
										6.32	15.81	5.74	11.23
4x10	THA418	16	3⅝	17½	7⅞	—	(16) 16d	—	(6) 16d	2540	4765	1805	3385
										11.30	21.20	8.03	15.06
	THA422	16	3⅝	22	7⅞	—	(22) 16d	—	(6) 16d	2540	5850	1805	4150
										11.30	26.02	8.03	18.46
	THA426	14	3⅝	26	7⅞	—	(30) 16d	—	(6) 16d	2540	6295	1805	4545
										11.30	28.00	8.03	20.22

1. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
2. **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. 27–28 for other nail sizes and information.

HH

Header Hanger

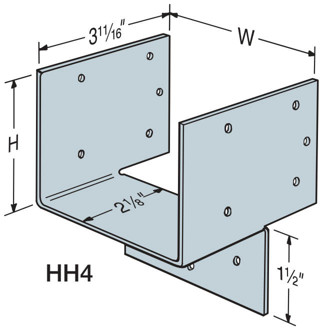
For fast, accurate installation of door and window headers and other cross members. HH header hangers can speed up the job, strengthen the frame, and eliminate the need for trimmers.

Material: 16 gauge

Finish: Galvanized

Installation:

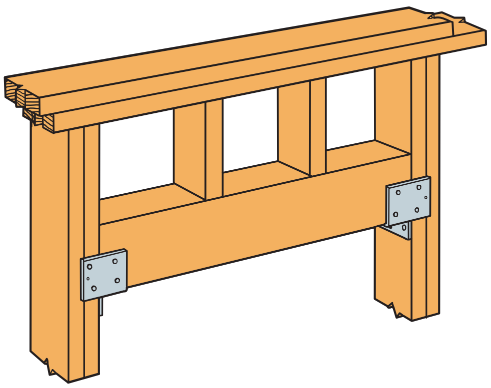
- Use all specified fasteners; see General Notes.
- Attachment to 2x studs will result in two round holes not being filled in the studs and reduction in capacity. See table for capacities and nailing requirements.



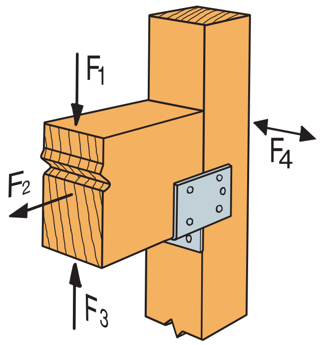
HH4

Model No.	Dimensions (in.) W	Dimensions (in.) H	Post Size	Fasteners: Post	Fasteners: Header	D.Fir-L F1 (K_D = 1.00)	D.Fir-L F2 (K_D = 1.15)	D.Fir-L F3 (K_D = 1.15)	D.Fir-L F4 (K_D = 1.15)	S-P-F F1 (K_D = 1.00)	S-P-F F2 (K_D = 1.15)	S-P-F F3 (K_D = 1.15)	S-P-F F4 (K_D = 1.15)
						lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
						kN	kN	kN	kN	kN	kN	kN	kN
HH4	3½	2 13/16	2x	(7) 10d x 1½"	(4) 10d x 1½"	1240	—	890	1370	1125	—	765	970
						5.52	—	3.96	6.09	5.00	—	3.40	4.31
			(2) 2x	(7) 16d x 2½"	(4) 16d x 2½"	1715	—	1125	1410	1580	—	965	1000
						7.63	—	5.00	6.27	7.03	—	4.29	4.45
			4x	(9) 16d	(4) 16d	2205	1125	1125	2140	2035	1040	965	1520
						9.81	5.00	5.00	9.52	9.05	4.63	4.29	6.76
HH6	5½	5⅛	2x	(10) 10d x 1½"	(6) 10d x 1½"	1930	—	1330	1930	1585	—	1155	1370
						8.59	—	5.92	8.59	7.05	—	5.14	6.09
			(2) 2x	(10) 16d x 2½"	(6) 16d x 2½"	2450	—	1690	2405	2260	—	1480	1705
						10.90	—	7.52	10.70	10.05	—	6.58	7.58
			4x	(12) 16d	(6) 16d	2940	1690	1690	2405	2710	1370	1510	1705
						13.08	7.52	7.52	10.70	12.06	6.09	6.72	7.58

1. F_2, F_3 and F_4 factored resistances have been increased 15% for earthquake or wind loading; no further increase is allowed.
2. **Nails:** 16d = 0.162" dia. x 3½" long, 16d x 2½" = 0.162" dia. x 2½" long, 10d x 1½" = 0.148" dia. x 1½" long.
   See pp. 27–28 for other nail sizes and information.



Typical HH Installation



HH Load Directions

Ridge Rafter Connector

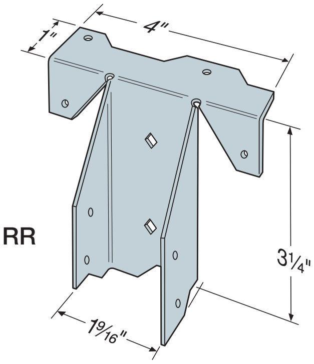
An interlock provides alignment control and correct nailing locations. For a rafter-to-face connector, flatten the top flange into the face plane. The RR may be used with any rafter sloped up to 30°.

Material: 18 gauge

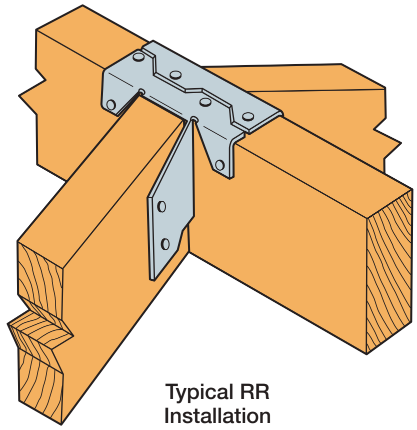
Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes



RR



Typical RR Installation

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Joist Size	Fasteners		Factored Resistance			
				D.Fir-L		S-P-F	
		Header	Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
RR	2x6	(4) 10d x 1½"	(4) 10d x 1½"	185	685	130	490
				0.82	3.05	0.58	2.18

1. Factored uplift resistances have been increased 15% for wind loading; no further increase is allowed.
2. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

Glulam Beam Connectors

Top-Flange Hangers GLS/HGLS/GLT/HGLT

Beam and Glulam Saddle Hangers

GLT and HGLT accommodate typical structural requirements for timber and glulam beams. Top flange depth allows installation on minimum 4x ledger (3½" net). Funnel flanges allow easy installation of beams. GLS and HGLS are heavy glulam saddle hangers.

Material: See table below

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.
- Fasteners are included.
- GLT may be attached to steel headers by ³⁄₁₆" 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 tabulated factored resistances. Factored uplift resistances do not apply to this weld-on application.

GLS/HGLS:

- N54A nails are included with the hangers.
- Minimum header width for saddle hangers is 5¼".
- Factored resistances listed are per stirrup.

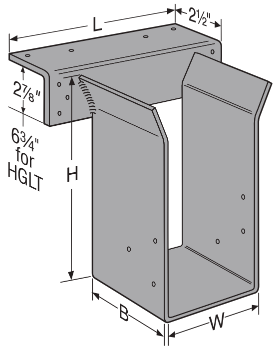
To Order:

- GLS/HGLS — Specify H_1, H_2 and S dimensions (see illustrations).

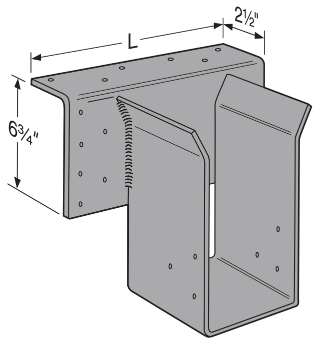
Options:

- See Hanger Options General Notes on p. 127.

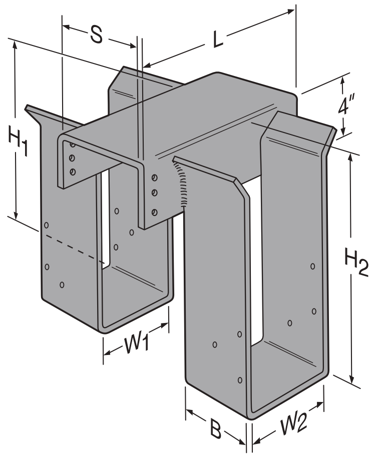
Model	Top Flange Ga.	Stirrup Width (W) (in.)	Top Flange Length (L) (in.)
GLT	3	2⅝ – 5½	10
		5⁹⁄₁₆ – 6⅞	12
HGLT	3	2⅝ – 8¼	12
		8⅞	14
GLS	3	3¼	6
		5¼	9
		6⅞	12
HGLS	3	5¼ – 8⅞	12



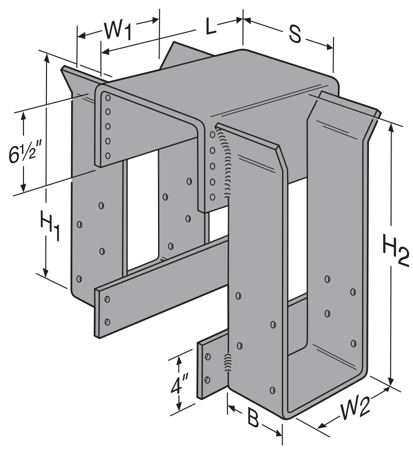
GLT
(fasteners included)



HGLT
(fasteners included)



GLS
(fasteners included)



HGLS
(fasteners included)

Beam and Glulam Saddle Hangers (cont.)

Hanger Options

- See Hanger Options General Notes on p. 127.

Installation:

- Bevel-cut the carried beam for skewed hangers.

Hanger Height

- For hangers exceeding the joist height by ½", the factored resistance is 50% of the table value.

Sloped and/or Skewed Seat

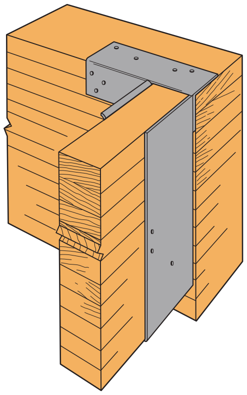
- GLT/HGLT and GLS/HGLS series may be skewed to a maximum of 50° or sloped to a maximum of 45°.
- For skews greater than 15°, multiply the tabulated factored uplift resistance by 0.50.
- For sloped only, multiply the table value by 0.78 for GLT/GLS to a maximum of 8135 lb. For HGLT/HGLS multiply the table value by 0.85 to a maximum of 12605 lb.
- For skewed only, multiply the table value by 0.87 for GLT/GLS to a maximum of 9510 lb. For HGLT/HGLS multiply the table value by 0.73 to a maximum of 10890 lb.
- For sloped and skewed GLT/GLS configurations, multiply the table values by 0.78 to a maximum of 8130 lb. Sloped and skewed combinations are not allowed for the HGLT/HGLS.

Sloped Top Flange

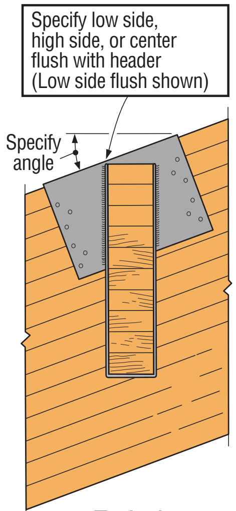
- A top flange may be sloped down left or down right to 30° with or without a sloped and/or skewed seat (see illustration). Reduce tabulated factored resistances using straight-line interpolation.
- Example: For a top flange sloped 30°, reduce resistance to [(90–30)/90] x table value.

Offset Top Flange

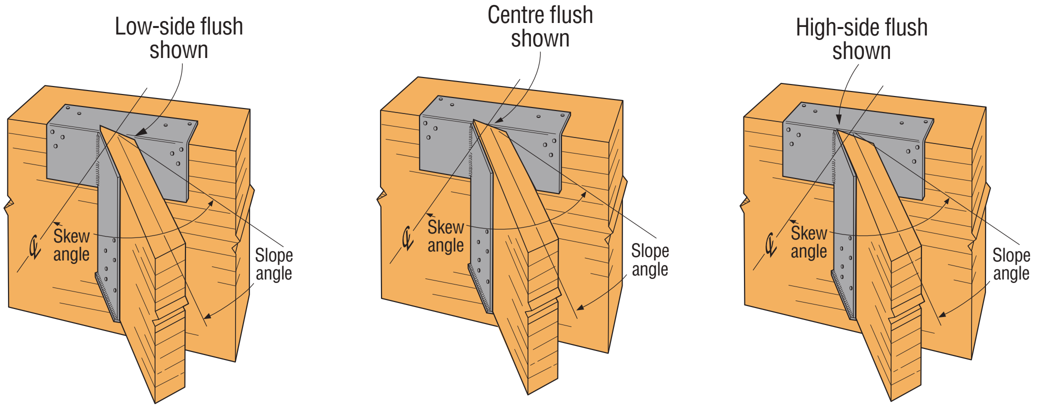
- The top flange may be offset left or right for placement at the end of a header. Minimum seat width 3¼". The maximum factored resistance is 0.50 of the table value for the GLT/GLS and 0.45 for the HGLT/HGLS.
- For skewed and offset top-flange hangers, the maximum factored resistance is 5085 lb.
- No uplift resistance.



Typical GLT Top Flange Offset Left
(HGLT similar)



Typical HGLT Top Flange Sloped Down Left with Low Side Flush



Typical GLT Sloped Down, Skewed Right
When ordering, specify Low-Side Flush, Centre Flush or High-Side Flush

Glulam Beam Connectors

SIMPSON Strong-Tie®

Top-Flange Hangers – Glulam Beam

These products are available with additional corrosion protection. For more information, see p. 24.

Joist or Purlin Size (in.)	Model No.	Ga.	Dimensions (in.)				Fasteners		Factored Resistance			
									D.Fir-L Glulam		Spruce-Pine Glulam	
			W	H	B	TF[9]	Header	Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
									lb.	lb.	lb.	lb.
									kN	kN	kN	kN
3⅛ LAM	GLT3	7	3¼	7½ min.	5	2½	(10) N54A	(6) N54A	2905	9625	2060	5225
									12.92	42.82	9.16	23.24
	HGLT3	7	3¼	7½ min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830
									12.92	66.21	9.16	43.73
	GLS3-5	7	3¼	8½ min.	5	5¼	(6) N54A	(6) N54A	2905	16740	2060	13195
									12.92	74.47	9.16	58.70
	GLS3-7	7	3¼	8½ min.	5	6⅞	(6) N54A	(6) N54A	2905	16740	2060	13195
									12.92	74.47	9.16	58.70
	GLS3-9	7	3¼	8½ min.	5	8⅞	(6) N54A	(6) N54A	2905	16740	2060	13195
									12.92	74.47	9.16	58.70
	HW3.25	11	3¼	5 min.	4	2½	(4) 10d	(2) 10d	—	6900	—	5285
									—	30.69	—	23.51
	HHB3	7	3¼	7½ min.	3	2½	(10) N54A	(6) N54A	3340	8575	2370	6085
									14.86	38.15	10.54	27.07
	GB3	7	3¼	7½ min.	3½	2½	(14) N54A	(6) N54A	3340	12935	2370	9710
									14.86	57.54	10.54	43.19
5⅛ LAM	GLT5	7	5¼	7½ min.	5	2½	10-N54A	(6) N54A	2905	9625	2060	5225
									12.92	42.82	9.16	23.24
	HGLT5	7	5¼	7½ min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830
									12.92	66.21	9.16	43.73
	GLS5-5	7	5¼	8½ min.	5	5¼	(6) N54A	(6) N54A	2905	20190	2060	14365
									12.92	89.81	9.16	63.90
	GLS5-7	7	5¼	8½ min.	5	6⅞	(6) N54A	(6) N54A	2905	20190	2060	14365
									12.92	89.81	9.16	63.90
	HGLS5	7	5¼	10½ min.	6	SPEC	(14) N54A	(8) N54A	4095	27570	2905	19575
									18.22	122.64	12.92	87.08
	HW5.25	11	5¼	5 min.	2½	2½	(4) 10d	(2) 10d	—	6900	—	5285
									—	30.69	—	23.51
	HHB5	7	5¼	7½ min.	3	2½	(10) N54A	(6) N54A	3340	8575	2370	6085
									14.86	38.15	10.54	27.07
	GB5	7	5¼	7½ min.	3½	2½	(14) N54A	(6) N54A	3340	13675	2370	9710
									14.86	60.83	10.54	43.19
	HGB5	7	5¼	7½ min.	4	2½	(14) N54A	(6) N54A	3340	16050	2370	11395
									14.86	71.40	10.54	50.69
6¾ LAM	HHB7	7	6⅞	7½ min.	3	2½	(10) N54A	(6) N54A	3340	8575	2370	6085
									14.86	38.15	10.54	27.07
	GB7	7	6⅞	7½ min.	3½	2½	(14) N54A	(6) N54A	3340	13675	2370	9710
									14.86	60.83	10.54	43.19
	HGB7	7	6⅞	7½ min.	4	2½	(14) N54A	(6) N54A	3340	16050	2370	11395
									14.86	71.40	10.54	50.69
	GLT7	7	6⅞	7½ min.	5	2½	(10) N54A	(6) N54A	2905	9625	2060	5225
									12.92	42.82	9.16	23.24
	HGLT7	7	6⅞	7½ min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830
									12.92	66.21	9.16	43.73
	GLS7-7	7	6⅞	8½ min.	5	6⅞	(6) N54A	(6) N54A	2905	20190	2060	14365
									12.92	89.81	9.16	63.90
	GLS7-9	7	6⅞	8½ min.	5	8⅞	(6) N54A	(6) N54A	2905	20190	2060	14365
									12.92	89.81	9.16	63.90
	HGLS7	7	6⅞	10½ min.	6	SPEC	(14) N54A	(8) N54A	4095	27570	2905	19575
									18.22	122.64	12.92	87.08
8¾ LAM	HGLT9	7	8⅞	7½ min.	6	2½	(18) N54A	(6) N54A	2905	14885	2060	9830
									12.92	66.21	9.16	43.73
	HGLS9	7	8⅞	10½ min.	6	SPEC	(14) N54A	(8) N54A	4095	27570	2905	19575
									18.22	122.64	12.92	87.08

1. N54A fasteners are supplied with hangers.
2. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading (K_D = 1.00) such as in cantilever construction.
3. GLT, HGLT, GLS, HGLS uplift resistances only apply when "H" is 28" or less.
4. Factored resistances for glulam sizes are based on 812 psi (5.6 MPa) D.Fir-L and 672 psi (4.64 MPa) Spruce-Pine wood bearing (ϕF_{cp}).
5. GLS and HGLS loads must be distributed evenly on each side of the header, as they are saddle-style hangers.
6. GLS and HGLS fasteners listed are for one side only. Fasteners supplied are for both sides of the saddle.
7. For attachment to SCL, see GLTV/HGLTV on p. 214.
8. Resistances shown are for each side of the hanger for GLS and HGLS.
9. For saddle hangers dimension shown is "S". Minimum "S" is 5¼".
10. **Nails:** 10d = 0.148" dia. x 3" long, N54A = 0.250" dia. x 2½" long — annular ring. See pp. 27–28 for other nail sizes and information.

Top-Flange Hangers WPU/WNP/HW/HWU

SIMPSON Strong-Tie®

Purlin Hangers

The WPU, HWU and HW series purlin hangers offer the greatest design flexibility and versatility.

Material: WNP/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.

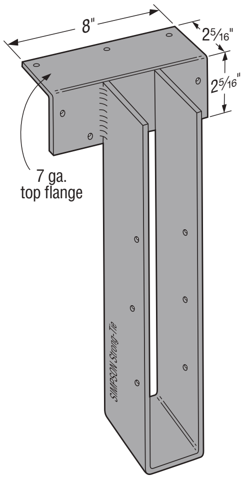
Factored Resistances: For hanger heights exceeding the joist height, the factored resistance is 0.50 of the tabulated resistance

Installation:

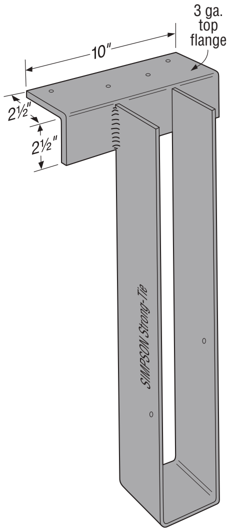
- Hangers may be welded to steel headers with 3⁄16" for WPU/WNP/WP, and ¼" for HW/HWU, by 1½" fillet welds located at each end of the top flange. Weld-on applications produce maximum factored resistance listed. Uplift resistances do not apply to this application.
- Hangers can support multi-ply carried members; the individual members must be secured together to work as a single unit before installation into the hanger.
- H dimensions are sized to account for normal joist shrinkage. W dimensions are for dressed timber widths.

Options:

- See Hanger Options, p. 127 for hanger modifications and associated load reductions. Refer to Solid Sawn Lumber p. 147.



WPU



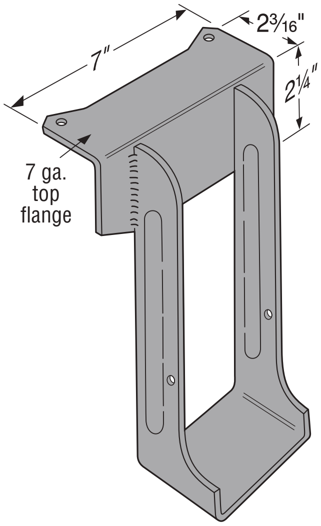
HW
(HWU similar)

Some model configurations may differ from those shown. Contact Simpson Strong-Tie for details.

Nailer Table

The table indicates the maximum factored normal resistances for WP/WNP hanger used on wood nailers. Nailers are wood members attached to the top of a steel I-beam, concrete or masonry wall. This table also applies to sloped-seat hangers.

Model	Nailer	Top Flange Nailing	Factored Resistance (K_D = 1.00)		
			D.Fir-L	S-P-F	LSL
			lb.	lb.	lb.
			kN	kN	kN
WP/ WNP	2x	(2) 10d x 1½"	3665	3630	4900
			16.30	16.15	21.82
	(2) 2x	(2) 10d	4475	3760	—
			19.91	16.75	—
	3x	(2) 16d x 2½"	4110	3760	—
			18.28	16.75	—
	4x	(2) 10d	4475	3760	—
			19.91	16.75	—
WPU	(2) 2x	(7) 10d	4475	3760	—
			19.91	16.75	—
	3x	(7) 16d x 2½"	4110	3760	—
			18.28	16.75	—
	4x	(7) 10d	4475	3760	—
			19.91	16.75	—
HW	(2) 2x	(4) 10d	7600	—	—
			33.81	—	—
	3x	(4) 16d x 2½"	7600	—	—
			33.81	—	—
	4x	(4) 16d	7670	—	—
			34.16	—	—
HWU	(2) 2x	(8) 10d	7880	—	—
			35.05	—	—
	3x	(8) 16d x 2½"	7880	—	—
			35.05	—	—
	4x	(8) 16d	7880	—	—
			35.05	—	—



WNP412 and WNP414

Top-Flange Hangers WPU/WNP/HW/HWU

Purlin Hangers (cont.)

Model No.	Joist (in.)		Fasteners			Factored Resistance					
	Width	Depth	Top	Face	Joist	Uplift[1] (K_D = 1.15)	Normal (K_D = 1.00)				
							D.Fir-L	S-P-F	LVL	PSL	LSL
						lb.	lb.	lb.	lb.	lb.	lb.
						kN	kN	kN	kN	kN	kN
WP/ WNP	1½ to 7½	3½ to 30	(3) 10d x 1½"	—	(2) 10d x 1½"	—	4095	3345	4695	4720	—
						—	18.22	14.88	20.89	21.00	—
	1½ to 7½	3½ to 30	(3) 10d	—	(2) 10d x 1½"	—	4095	3550	3665	4720	5980
						—	18.22	15.79	16.30	21.00	26.60
	1½ to 7½	3½ to 30	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980
						—	19.71	17.15	26.47	24.15	26.60
WPU	1¾ to 5½	7¼ to 18	(3) 16d	(4) 16d	(6) 10d x 1½"	1665	6390	6390	6825	7085	5980
						7.41	28.43	28.43	30.36	31.52	26.60
	1¾ to 5½	18½ to 28	(3) 16d	(4) 16d	(6) 10d x 1½"	595	6390	6390	6825	7085	5980
						2.65	28.43	28.43	30.36	31.52	26.60
HW	1½ to 7½	3½ to 32	(4) 10d	—	(2) 10d x 1½"	—	6900	5285	4695	5810	—
						—	30.69	23.51	20.89	25.85	—
	1½ to 7½	3½ to 32	(4) 16d	—	(2) 10d x 1½"	—	6900	5285	7695	5810	6870
						—	30.69	23.51	34.23	25.85	30.56
HWU	1¾ to 3½	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1775	10170	8875	10170	8325	8925
						7.90	45.24	39.48	45.24	37.03	39.70
	1¾ to 3½	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	1490	10170	8875	10170	8325	8925
						6.63	45.24	39.48	45.24	37.03	39.70
	1¾ to 3½	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	1520	10170	8875	10170	8325	8925
						6.76	45.24	39.48	45.24	37.03	39.70
	4½ to 7⅛	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1775	8250	8250	8250	8250	8250
						7.90	36.70	36.70	36.70	36.70	36.70
	4½ to 7⅛	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	1490	8250	8250	8250	8250	8250
						6.63	36.70	36.70	36.70	36.70	36.70
	4½ to 7⅛	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	1520	8250	8250	8250	8250	8250
						6.76	36.70	36.70	36.70	36.70	36.70

1. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase allowed. Reduce by 15% for standard term loading (K_D = 1.00) like cantilever construction.
2. Factored uplift resistances shown are for D.Fir-L. Multiply tablulated loads x 0.71 for either S-P-F joist or header.
3. Factored resistances shown are for header connection only. The Designer must ensure the joist is capable of generating the factored resistances shown.
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 S-P-F column.
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. 27–28 for other nail sizes and information.

Top-Flange Hangers LEG/MEG/EG

SIMPSON Strong-Tie®

Beam and Glulam Hangers

See Hanger Options on p. 127 for hanger modifications, which may result in reduced capacities.

This whole series has precision fabrication which offers dimensional accuracy, and the funnel flanges which aid installation.

Material: See table

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

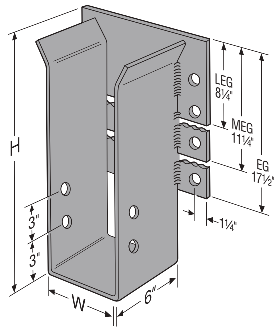
Installation:

- Use all specified fasteners; see General Notes
- Maintain minimum 4D end and edge distance from bolt to end of header or nearest loaded edge per CSA O86-14
- Bolt holes in wood shall be a minimum of 1⁄32" to a maximum of 1⁄16" larger than the bolt hole per 12.4.1.2 and CSA O86-14

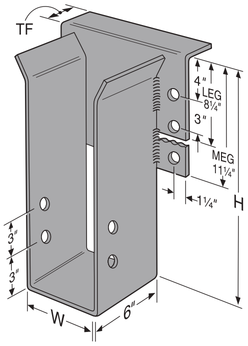
Options:

- See Hanger Options information, p. 127.
- Special models are available without top flanges; see table values

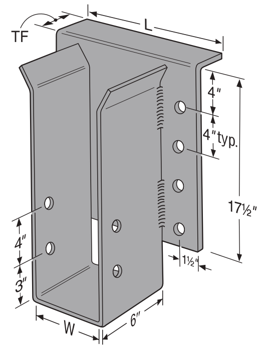
Model	Top Flange Ga.	Top Flange Length (L)
LEG/MEG	7	12
EG5	3	11¾
EG7		13½
EG9		15½



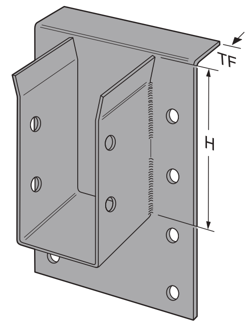
LEG/MEG/EG without Top Flange



LEG and MEG



EG



EG with "H" dimension less than the face plate height. The EG's back plate is always 17½", regardless of the stirrup height.

These products are available with additional corrosion protection. For more information, see p. 24.

Joist or Purlin Size (in.)	Model No.	Stirrup Ga.	Min. Header Depth (in.)	Dimensions (in.) W	Min. H	Max. H	TF	Bolts Header Qty.	Header Dia.	Joist Qty.	Joist Dia.	Factored Normal Resistance (K_D = 1.00) D.Fir-L Glulam No Top Flange lb. / kN	D.Fir-L Glulam Top Flange lb. / kN	Spruce-Pine Glulam No Top Flange lb. / kN	Spruce-Pine Glulam Top Flange lb. / kN
3⅛	LEG3	7	10½	3¼	9	33½	2½	4	¾	2	¾	5950	17510	5950	14490
												26.47	77.89	26.47	64.46
5⅛	LEG5	7	10½	5¼	9	32½	2½	4	¾	2	¾	5950	19960	5950	17545
												26.47	88.79	26.47	78.05
	MEG5	7	13	5¼	9	32½	2½	6	¾	2	¾	7780	21785	7780	19370
												34.61	96.91	34.61	86.17
	EG5	7	21	5¼	11	32½	2½	8	1	2	1	13590	27305	13590	23765
												60.45	121.46	60.45	105.72
6¾[4]	LEG7	7	10½	6⅞	9	31½	2½	4	¾	2	¾	5950	19960	5950	17545
												26.47	88.79	26.47	78.05
	MEG7	7	13	6⅞	9	31½	2½	6	¾	2	¾	7780	21785	7780	19370
												34.61	96.91	34.61	86.17
	EG7	7	21	6⅞	11	31½	2½	8	1	2	1	13590	29350	13590	26635
												60.45	130.56	60.45	118.48
8½[4]	EG9	7	21	8⅞	11	30½	2½	8	1	2	1	13590	31685	13590	28565
												60.45	140.95	60.45	127.07

1. Factored resistances assume a minimum carrying member thickness of 5⅛".
2. Specify hanger height "H". "Min. H" is the minimum height that may be ordered.
3. Minimum header depth below the lowest bolt hole is 3" for the LEG, MEG, and 4" for the EG.
4. For 6⅞" and 8½" beam widths add "X" to the end of the model number and specify the width required.

Glulam Beam Connectors

Top-Flange Hangers LEG/MEG/EG

Beam and Glulam Hangers (cont.)

Hanger Options

See Hanger Options General Notes on p. 127.

Skewed Seat — Top Flange Models Only

- The LEG/MEG/EG series can be skewed up to 45°. The maximum factored resistance is 13750 lb. D.Fir-L Glulam and 12090 lb. Spruce-Pine Glulam for LEG and MEG, 19710 lb. D.Fir-L Glulam and 18005 lb. Spruce-Pine Glulam for EG.

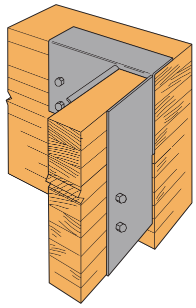
Sloped Seat — Top Flange Models Only

- The LEG/MEG/EG series can be sloped up to 45°. The maximum factored resistance is 15835 lb. D.Fir-L Glulam and 13920 lb. Spruce-Pine Glulam; see illustration.

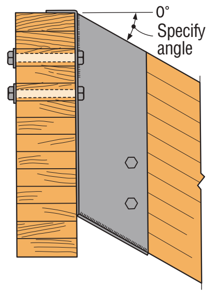
No Sloped and Skewed Combo Available.

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 factored resistance is 9280 lb. D.Fir-L Glulam and 8160 lb. Spruce-Pine Glulam (Min. H = 11" for MEG, 9" for LEG)
- No skews allowed on offset hangers.



Typical LEG/MEG Top Flange Offset Left



Typical LEG Sloped Down Installation
(MEG/EG similar)

Top-Flange Hangers HHB/GB/HGB

Beam and Purlin Hangers

Precision forming with manufacturing quality control provides dimensional accuracy and helps ensure proper bearing area and connection.

Material: See table on p. 181.

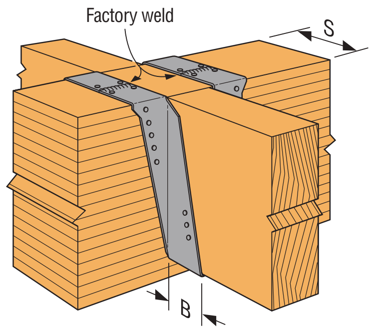
Finish: HHB, GB, HGB, all saddle hangers and all welded sloped and special hangers — Simpson Strong-Tie® gray paint. HHB may be ordered hot-dip galvanized; specify HDG.

Installation:

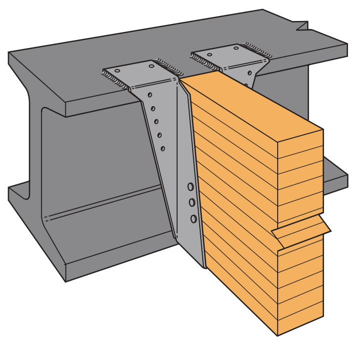
- Use specified fasteners; see General Notes and nailer table.
- HHB, GB and HGB may be used for weld-on applications. The minimum required weld to the top flanges is ⅛" x 2" fillet weld to each side of each top flange tab for 14 and 12 gauge and 3/16" x 2" fillet weld to each side of each top flange 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. Weld on applications produce the maximum factored resistance listed. Uplift resistances do not apply to welded applications.
- Ledgers must be evaluated for each application separately. Check TF dimension, nail length and nail location on ledger.

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 1/16" and ⅛" 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.
- See Hanger Options information, p. 127.
- Hangers may be sloped down to a maximum of 45°. Use 60% of table down values. Use 100% of table uplift values.



Typical HHB, GB and HGB Saddle Installation



HHB, GB and HGB are acceptable for weld-on applications. See Instruction for the Installer, p. 18, note m.

Face-Mount Hangers HU/HUCQ/HGUS

Glulam Beam and Double-Shear Joist Hangers

See Hanger Options on p. 126 for hanger modifications, which may result in reduced loads.

HU — Most models have triangle and round holes. To achieve maximum factored resistances, fill both round and triangle holes with common nails.

HGUS — The highest factored resistances available for nailed face mount hangers. 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.)

HUCQ — Heavy duty joist hangers that incorporate Simpson Strong-Tie® Strong Drive® SDS Heavy-Duty Connector screws (included).

Material: See tables

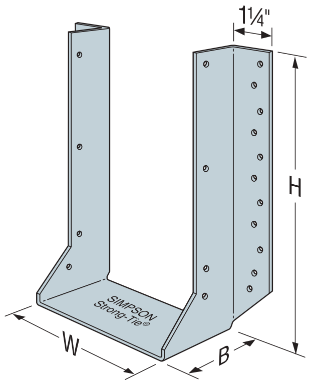
Finish: Galvanized. Some products available in ZMAX® or HDG coating; see Corrosion Information, pp. 20–24.

Installation:

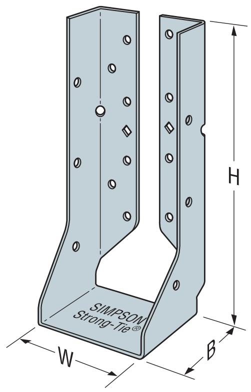
- Use all specified fasteners; see General Notes.
- HU — can be installed filling round holes only, or filling round and triangle holes for maximum values.
- HGUS — Nails must be driven at an angle through the joist or truss into the header to achieve the table values.
- HUCQ — Install ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws (provided) in all round holes. Lag screws will not achieve the same capacities.
- Not designed for nailer applications.
- Where 16d commons are specified, 10d commons may be used at 0.83 of the tabulated resistance.
- 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 reduction in resistances. 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 factored resistances to 0.64 of the table value.

Options:

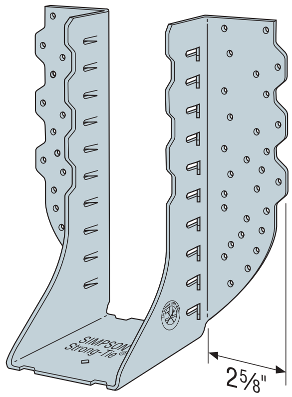
- HU hangers available with the header flanges turned in for 2⁵⁄₁₆" and larger widths, with no reduction in resistances — order HUC hanger.
- See Hanger Options on p. 126, for sloped and/or skewed HU models, and HUC (concealed flange) models. Refer to Solid Sawn Lumber p. 131.
- Concealed flanges are not available for HGUS.
- Other sizes available; contact Simpson Strong-Tie.



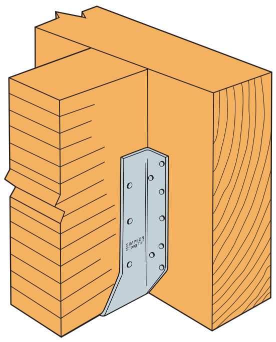
HU5.125/12



HUCQ5.25/9



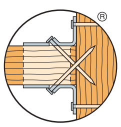
HGUS3.25/12



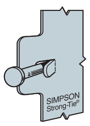
Typical HU Installation

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

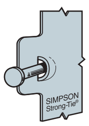
Model configurations may differ from those shown. Some HU models do not have triangle holes. Contact Simpson Strong-Tie for details.



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

Face-Mount Hangers HU/HUCQ/HGUS

SIMPSON Strong-Tie®

Glulam Beam and Double-Shear Joist Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	de[4]	Fasteners Face	Joist	Factored Resistance D.Fir-L Glulam Uplift (K_D = 1.15) lb. / kN	D.Fir-L Glulam Normal (K_D = 1.00) lb. / kN	Spruce-Pine Glulam Uplift (K_D = 1.15) lb. / kN	Spruce-Pine Glulam Normal (K_D = 1.00) lb. / kN
3⅛ Glulam	HU3.25/10.5 HUC3.25/10.5	14	3¼	10¼	2½	9⅞	(22) 16d	(10) 10d	2635 11.72	5780 25.75	2450 10.90	4690 20.86
	HU3.25/12 HUC3.25/12	14	3¼	11¾	2½	11⅜	(24) 16d	(12) 10d	3160 14.06	5780 25.75	2695 11.99	5780 25.75
	HU3.25/16 HUC3.25/16	14	3¼	13⅞	2½	13½	(26) 16d	(12) 10d	3160 14.06	5780 25.75	2695 11.99	5780 25.75
	HGUS3.25/10	12	3¼	8⅝	4	8¼	(46) 16d	(16) 16d	6840 30.47	14645 65.23	4855 21.60	10400 46.26
	HGUS3.25/12	12	3¼	10⅝	4	10¼	(56) 16d	(20) 16d	7640 33.98	14995 66.79	5425 24.13	10645 47.35
5⅛ Glulam	HUCQ5.25/9-SDS	14	5¼	9	3	8	(12) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	3210 14.28	7270 32.34	2900 12.90	7645 34.01
	HUCQ5.25/11-SDS	14	5¼	11	3	8	(14) ¼" x 2½" SDS	(6) ¼" x 2½" SDS	3210 14.28	9090 40.44	2900 12.90	7645 34.01
	HU5.125/12 HUC5.12/12	14	5¼	10¼	2½	9⅞	(22) 16d	(8) 16d	2455 10.92	5780 25.75	2280 10.14	4690 20.86
	HU5.125/13.5 HUC5.125/13.5	14	5¼	13¼	2½	12⅞	(26) 16d	(12) 16d	3685 16.39	7025 31.25	2615 11.63	6185 27.51
	HU5.125/16 HUC5.125/16	14	5¼	13⅞	2½	13½	(26) 16d	(12) 16d	3685 16.39	7025 31.25	2615 11.63	6185 27.51
	HGUS5.25/10	12	5¼	9¹⁄₁₆	4	8¼	(46) 16d	(16) 16d	6840 30.47	14645 65.23	4855 21.60	10400 46.26
	HGUS5.25/12	12	5¼	10⁹⁄₁₆	4	10³⁄₁₆	(56) 16d	(20) 16d	7640 33.98	14995 66.79	5425 24.13	10645 47.35

1. 10d common nails may be used instead of the specified 16d nails at 0.83 of the tabulated resistance value.
2. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading.
3. Min. nailing quantity and load values — fill all round holes; Max. nailing quantity and load values — fill all round and triangle holes.
4. de is the distance from the bearing seat to the top joist nail.
5. For proprietary non-standard glulam sizes, see pp. 196–198 for structural composite lumber.
6. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 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 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 predrilling required.

Material: See table

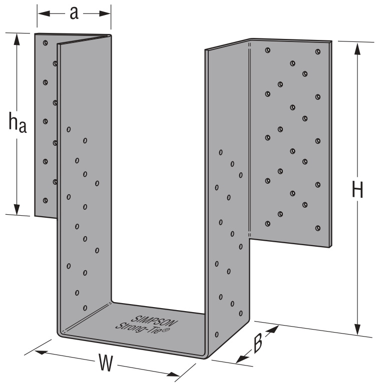
Finish: LGU/MGU — Galvanized,
HGU/HHGU — Simpson Strong-Tie® gray paint

Installation:

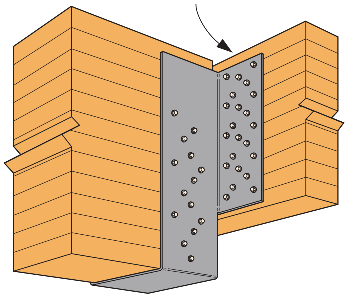
- Use all specified fasteners; see General Notes.
- Install with ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws, which are provided with the GUs. (Note: lag screws will not achieve the same loads.)
- All multiple members must be fastened together to act as a single unit.
- Multiple member headers may require additional fasteners at the hanger locations. The quantity and location of the additional fasteners must be determined by the Designer.

Options:

- LGU, MGU and HGU hangers may be skewed up to 45°
- One flange can be concealed for some sizes
- For proprietary non-standard glulam sizes, see pp. 200–201 for structural composite lumber



HHGU



Typical HHGU Installation

Hanger Options

See Hanger Options General Notes on p. 125.

Concealed Flange:

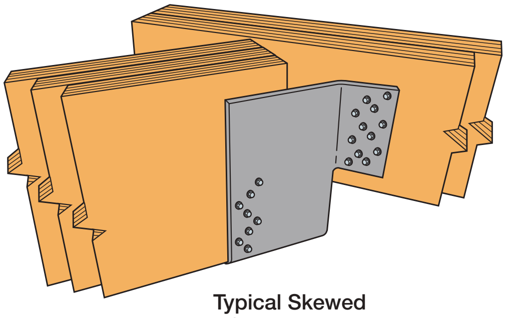
- LGU, MGU, HGU and HHGU hangers are available with one flange concealed. Specify flange to conceal.
- Factored resistances for one flange-concealed option:
  – LGU 0.83 of published value
  – HGU 0.70 of published value
  – MGU 0.65 of published value
  – HHGU 0.84 of published value
- MGU with W ≤ 4" and HGU with W ≤ 4¹¹⁄₁₆" flanges cannot be concealed.

Skewed:

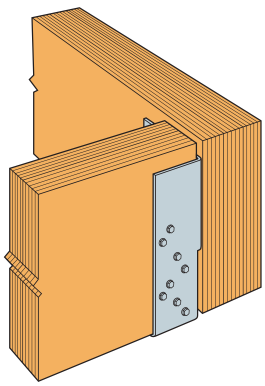
- LGU, MGU and HGU hangers are available skewed up to 45°.
- Concealed flanges are not available with skewed models.
- Apply the following reduction factors to table values:

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" ≤ 7.25" wide	Square cut < 7" wide	0.75	0.55
	Bevel cut	0.80	0.55



Typical Skewed MGU Installation
(skewed left shown)



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. 24.

Model No.	Ga.	Dimensions (in.)					Fasteners		Factored Resistance			
									D.Fir-L		S-P-F	
		W	B	Min. Height (H)	h_a	a	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
LGU3.25-SDS2.5	10	3¼	4½	8	7½	3¼	(16) ¼" x 2½" SDS	(12) ¼" x 2½" SDS	7730	10170	5565	7320
									34.39	45.24	24.76	32.56
LGU5.25-SDS2.5	10	5¼	4½	8	7½	3¼	(16) ¼" x 2½" SDS	(12) ¼" x 2½" SDS	7730	10170	5565	7320
									34.39	45.24	24.76	32.56
MGU5.25-SDS2.5	10	5¼	4½	9¼	8¾	4	24-¼" x 2½" SDS	(16) ¼" x 2½" SDS	10100	13140	7270	9460
									44.93	58.45	32.34	42.08
HGU5.25-SDS2.5	7	5¼	5¼	11	10⅜	4¾	36-¼" x 2½" SDS	(24) ¼" x 2½" SDS	14300	20320	10295	14630
									63.61	90.39	45.80	65.08
MGU7.00-SDS2.5	10	7	4½	9¼	8¾	4	(24) ¼" x 2½" SDS	(16) ¼" x 2½" SDS	10100	13140	7270	9460
									44.93	58.45	32.34	42.08
HGU7.00-SDS2.5	7	7	5¼	11	10⅜	4¾	(36) ¼" x 2½" SDS	(24) ¼" x 2½" SDS	14300	20320	10295	14630
									63.61	90.39	45.80	65.08
HHGU7.00-SDS2.5	3	7	5¼	13	12⅜	4¾	(44) ¼" x 2½" SDS	(28) ¼" x 2½" SDS	21740	26665	15655	19195
									96.71	118.62	69.64	85.39
HGU9.00-SDS2.5	7	9	5¼	11	10⅜	4¾	(36) ¼" x 2½" SDS	(24) ¼" x 2½" SDS	14300	20320	10295	14630
									63.61	90.39	45.80	65.08
HHGU9.00-SDS2.5	3	9	5¼	13	12⅜	4¾	(44) ¼" x 2½" SDS	(28) ¼" x 2½" SDS	21740	26665	15655	19195
									96.71	118.62	69.64	85.39
HHGU11.00-SDS2.5	3	11	5¼	13	12⅜	4¾	(44) ¼" x 2½" SDS	(28) ¼" x 2½" SDS	21740	26665	15655	19195
									96.71	118.62	69.64	85.39

1. Factored uplift resistances have been increased for earthquake and wind loading, with no further increase allowed.
2. Specify H dimension. The Designer should check the shear capacity of the carried member to make sure it matches the hanger's capacity. Maximum H = 30".
3. Header depth must exceed the ha dimension shown and is based on the size necessary to fit screw pattern. Use the next size up that meets the minimum depth requirement.

HCA

Hinge Connectors

HCAs offer single-piece side plates, for fewer welds and higher horizontal resistances.

Material: Side plates — 7 gauge; Top and bottom plates — varies.

Finish: Simpson Strong-Tie® gray paint

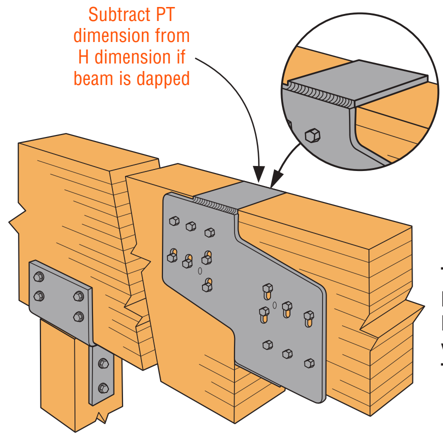
Installation:

- Use specified fasteners; see General Notes
- All bolts specified are ¾" MBs. Bolt holes shall be a minimum of 1⁄32" and a maximum of 1⁄16" larger than the bolt diameter. (per 12.4.1.2 CSA O86-14)
- Position bolts in slots away from bearing seat to allow for wood shrinkage.

Options:

- To order, add the width and bearing plate size designation after the model mension by the PT dimension for each dap.

Contact Simpson Strong-Tie for available sizes and factored resistances.



GLB/HGLB/GLBT

Beam Seats

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

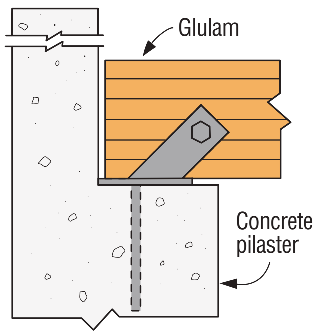
Finish: Simpson Strong-Tie® gray paint. Hot-dip galvanized available; specify HDG.

Installation:

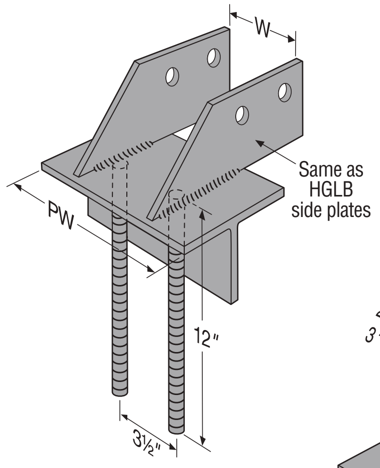
- Use all specified fasteners; see General Notes
- Bolt holes in wood shall be a minimum of 1⁄32" to a maximum of 1⁄16" larger than the bolt diameter (per 12.4.1.2 CSA O86-14).
- Check the rebar spacing requirements on all installations

Options:

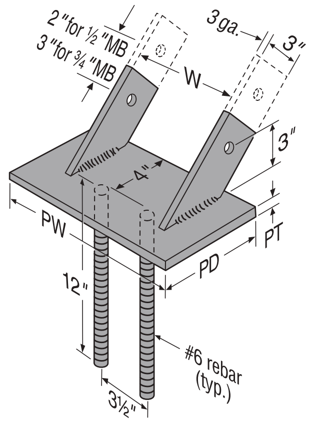
- Beam seats for sawn timber and other sizes may be ordered by specifying special dimensions; use the letter designations shown on the illustrations
- Specify if two-bolt GLB model is desired; see illustration



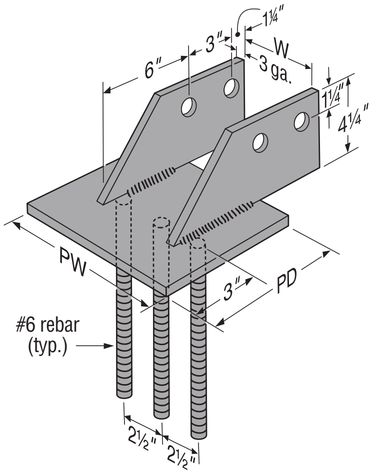
Typical GLB Installation



GLBT



GLB



HGLB

SIMPSON Strong-Tie®

GLB/HGLB/GLBT

Beam Seats (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

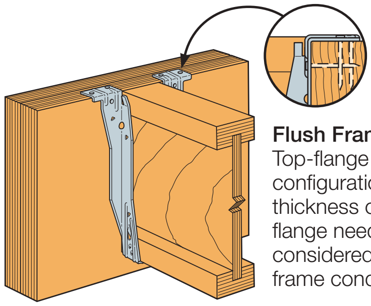
Model No.	Dimensions (in.)				Bolts		Factored Bearing Resistance (K_D = 1.00)				Factored Horizontal Resistance (K_D = 1.15)	
							Concrete Block Masonry[1]		Concrete[2]		D.Fir-L Glulam	Spruce-Pine Glulam
	W[6]	PD	PW	PT	Qty.	Dia. (in.)	Type N Mortar	Type S Mortar	D.Fir-L Glulam	Spruce-Pine Glulam		
							lb.	lb.	lb.	lb.	lb.	lb.
							kN	kN	kN	kN	kN	kN
GLB5A	5¼	5	7	3 ga.	1	½	7765	9700	23930	19805	—	—
							34.54	43.15	106.45	88.10	—	—
GLB5B	5¼	6	7	⅜	1	½	9320	11640	28715	23765	—	—
							41.46	51.78	127.74	105.72	—	—
GLB5C	5¼	7	7	⅜	1	½	10870	13580	33500	27725	—	—
							48.35	60.41	149.02	123.33	—	—
GLB5D	5¼	8	7	⅜	1	½	12425	15520	38285	31685	—	—
							55.27	69.04	170.31	140.95	—	—
GLB7A	6⅞	5	9	3 ga.	1	¾	9985	12475	31040	26565	—	—
							44.42	55.49	138.08	118.17	—	—
GLB7B	6⅞	6	9	⅜	1	¾	11980	14970	38520	31880	—	—
							53.29	66.59	171.35	141.81	—	—
GLB7C	6⅞	7	9	⅜	1	¾	13975	17465	44940	37190	—	—
							62.17	77.69	199.91	165.44	—	—
GLB7D	6⅞	8	9	⅜	1	¾	15975	19955	51360	42505	—	—
							71.06	88.77	228.47	189.08	—	—
HGLBA	3¼	5	10	⅜	2	¾	7625	9530	14590	12075	4680	4620
							33.92	42.39	64.90	53.71	20.82	20.55
	5¼	5	10	⅜	2	¾	9845	12300	23930	19805	4680	4680
							43.79	54.72	106.45	88.10	20.82	20.82
	7	5	10	⅜	2	¾"	11095	13860	32100	26565	4680	4680
							49.35	61.65	142.79	118.17	20.82	20.82
	8⅝	5	10	⅜	2	¾	11095	13860	39685	32845	4680	4680
							49.35	61.65	176.53	146.11	20.82	20.82
HGLBB	3¼	6	10	⅜	2	¾	9150	11435	17510	14490	5280	4620
							40.70	50.87	77.89	64.46	23.49	20.55
	5¼	6	10	⅜	2	¾	11815	14760	28715	23765	8580	7510
							52.56	65.66	127.74	105.72	38.17	33.41
	7	6	10	⅜	2	¾	13310	16630	38520	31880	11555	10110
							59.21	73.98	171.35	141.81	51.40	44.97
	8⅝	6	10	⅜	2	¾	13310	16630	47625	39415	14060	12420
							59.21	73.98	211.85	175.33	62.54	55.25
HGLBC	3¼	7	10	⅜	2	¾	10675	13340	20425	16905	5280	4620
							47.49	59.34	90.86	75.20	23.49	20.55
	5¼	7	10	⅜	2	¾	13780	17220	33500	27725	8580	7510
							61.30	76.60	149.02	123.33	38.17	33.41
	7	7	10	⅜	2	¾	15530	19405	44940	37190	11555	10110
							69.08	86.32	199.91	165.44	51.40	44.97
	8⅝	7	10	⅜	2	¾	15530	19405	55560	45980	14060	12420
							69.08	86.32	247.15	204.54	62.54	55.25
HGLBD	3¼	8	10	⅜	2	¾	12200	15245	23345	19320	5280	4620
							54.27	67.82	103.85	85.94	23.49	20.55
	5¼	8	10	⅜	2	¾	15750	19680	38285	31685	8580	7510
							70.06	87.54	170.31	140.95	38.17	33.41
	7	8	10	⅜	2	¾	17750	22175	51360	42505	11555	10110
							78.96	98.64	228.47	189.08	51.40	44.97
	8⅝	8	10	⅜	2	¾	17750	22175	63500	52550	14060	12420
							78.96	98.64	282.47	233.76	62.54	55.25
GLBT512[4]	—	5¼	12	5⁄16	2	¾	13975	17465	See foonote 3	See foonote 3	8580[8]	7510[8]
							62.17	77.69			38.17	33.14
GLBT612[4]	—	6½	12	⅜	2	¾	17305	21620			8580[8]	7510[8]
							76.98	96.17			38.17	33.14
GLBT516	—	5¼	16	5⁄16	2	¾	18635	23285			8580[8]	7510[8]
							82.90	103.58			38.17	33.14
GLBT616	—	6½	16	⅜	2	¾	23070	28825			8580[8]	7510[8]
							102.62	128.23			38.17	33.14
GLBT520	—	5¼	20	5⁄16	2	¾	23295	29105			8580[8]	7510[8]
							103.63	129.47			38.17	33.14
GLBT620	—	6½	20	⅜	2	¾	36035	28840			8580[8]	7510[8]
							160.30	128.29			38.17	33.14

1. Factored bearing resistances for concrete block masonry assume a compressive unit strength of 15.0 MPa (net area) using solid or grouted units as per Table 4 of CSA S304-14.
2. Factored bearing resistances for concrete assume a 28-day compressive strength (f'_c) of 20 MPa as per CSA A23.3-14.
3. Bearing resistance of wood member will govern for these applications. Calculate factored resistance in accordance with CSA O86-14.
4. Bearing resistances shown assume a glulam width of 10½". For smaller widths, ensure that the factored bearing resistance of the wood member does not govern.
5. The GLBT5 has a WT4x9 structural tee; the GLTB6 has a WT4x12 structural tee.
6. Specify "W" dimension when ordering HGLB and GLTB beam seats.
7. Factored horizontal resistances include a 15% increase for short term loading; reduce if masonry or concrete is limiting.
8. For beam widths greater than or equal to 6⅞", the factored horizontal resistance is 11025 lb. (49.04 kN).

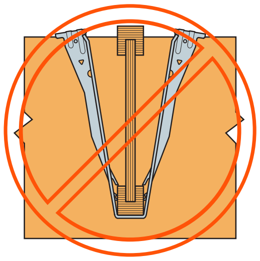
Engineered Wood and Structural Composite Lumber Connectors

General Connector Installation

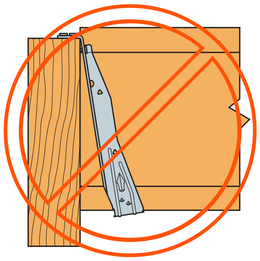
Top-Flange Hangers



Flush Framing
Top-flange configuration and thickness of top flange need to be considered for flush frame conditions.

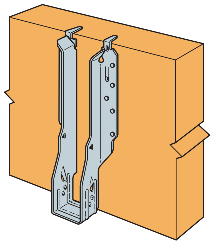


Hanger Over-Spread
If the hanger is over-spread, it can raise the I-joist above the header and may cause uneven surfaces and squeaky floors.

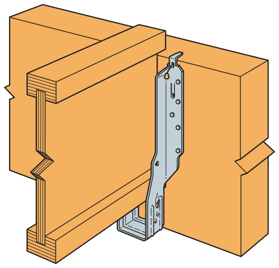


Hanger Not Plumb
A hanger "kicked-out" from the header can cause uneven surfaces and squeaky floors.

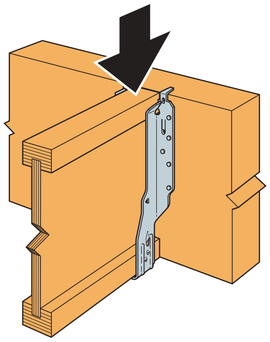
IUS Installation Sequences



Step 1
Attach the IUS to the header

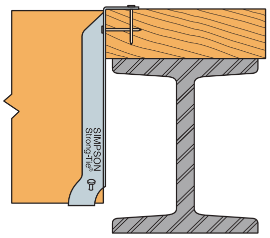


Step 2
Slide the I-joist downward into the IUS until it rests above the large teardrop.

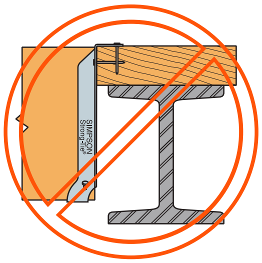


Step 3
Firmly push or snap I-joist fully into the seat of the IUS.

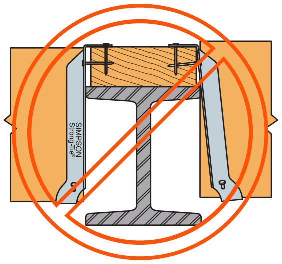
Wood Nailers



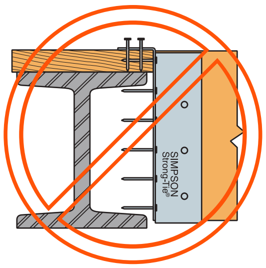
Correct Attachment



Nailer Too Wide
The loading may cause cross-grain bending. As a general rule, the maximum allowable overhang is ¼", depending on nailer thickness.

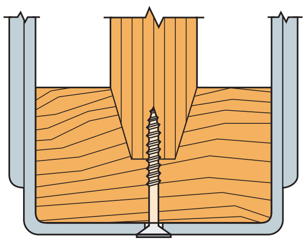


Nailer Too Narrow
Nailer should be full width.



Nailer Too Thin
Or the wrong hanger for the application.

LF and LT Installation

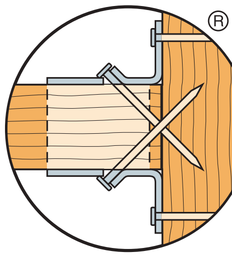


Use 8 gauge (0.164" diameter) x 1¼" wood screw (#8 x 1¼") to secure joist to hanger. (Two screws required for joist widths > 2½".)

To avoid stripping of the bottom chord screw hole, do not over tighten screw.

Use specified screw to seat joist into hanger (required only for LF and LT hangers).

Double-Shear Nailing



The nail is installed into joist and header, distributing load through two points on each nail for greater strength. Do not use hangers with double shear nailing with I-joists.

General Connector Installation

Wood I-Joists

Sloped Joists

For sloped joists up to ¼:12 there is no reduction in capacity. For slopes greater than ¼:12 see individual product pages.

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 1½". Nails into web stiffeners should not exceed 16d commons (0.162 dia.).

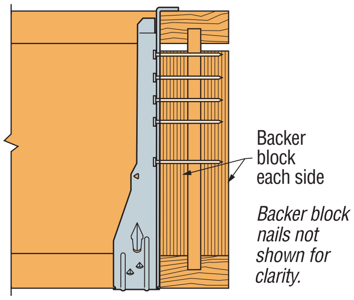
Eccentrically-Loaded I-Joists

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

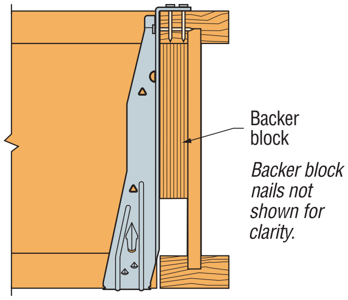
Joists may be skewed up to 2½ degrees in a non-skewed hanger without any reduction in capacity. Refer to individual hanger descriptions for information allowing any further skew applications.

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.

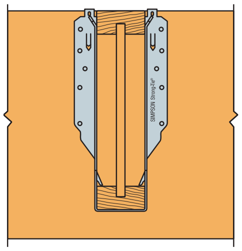


Top-Flange Hanger

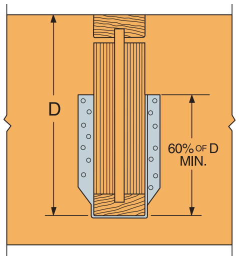
When top-flange hangers are attached to I-joist headers, a backer block must be installed to prevent the top flange from rotating under load. The backer blocks should be installed with a minimum of (10) 10d nails clinched. Check with the joist manufacturer for additional design considerations.

Prevent Rotation

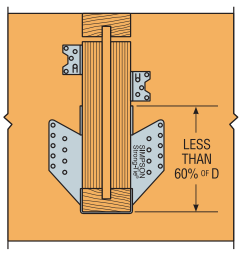
Hangers provide some joist rotation resistance; however, additional lateral restraint may be required for deep joists.



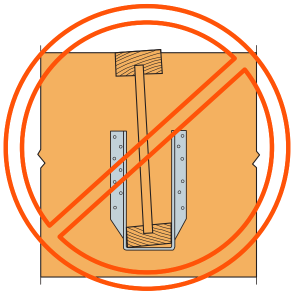
Rotation Prevented by Lateral Flange Support
Sides of hanger laterally support the top flange of the I-joist.
No web stiffeners required.



Rotation Prevented by Web Stiffeners
Hanger height should be at least 60% of the joist height.

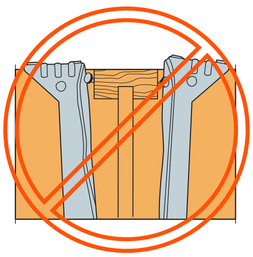


Rotation Prevented by Web Stiffeners
If hanger height is less than 60% of the joist height, add clips or blocking near the top.



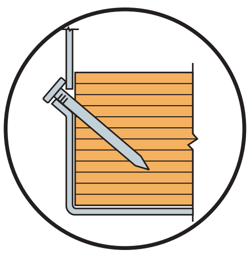
No Rotation Resistance
Lack of web stiffeners combined with short hanger allows unwanted rotation.

Toe-Nailing

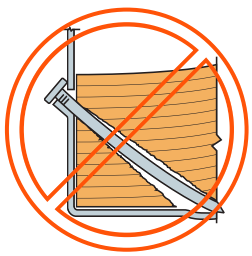


Toe nailing causes squeaks and improper hanger installations. Do not toe nail I-joists before installing top-flange or face-mount hangers.

Positive Angle Nailing



Correct Nailing Approx. 45° Angle



Nail Too Long

Nail at Wrong Angle

IUS/LF/MIU

I-Joist Hangers

This product is preferable to similar connectors because of a) easier installation, b) higher capacities, 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.

The LF series is ideal for applications not requiring web stiffeners. The economical LF series comes with a height designed to support the top flange of the I-joist. This feature reduces installation time as well as material costs.

Material: See table on pp. 189–198

Finish: Galvanized

Uplift Resistances:

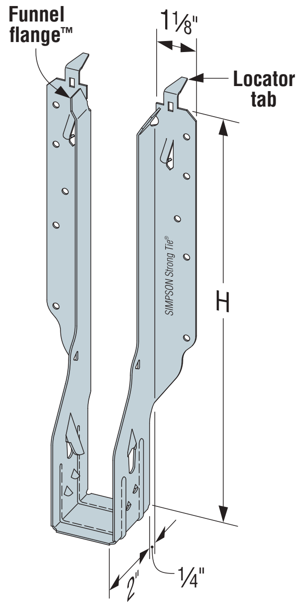
- Models have optional triangle joist nail holes for additional uplift. Properly attached web stiffeners are required.
- LF/IUS — add two additional 10d x 1½" joist nails for a total factored uplift resistance of 415 lb. D.Fir-L and 375 lb. S-P-F (K_D = 1.15).
- MIU — add four additional 10d x 1½" joist nails for a total factored uplift resistance of 1345 lb. D.Fir-L and 1175 lb. S-P-F (K_D = 1.15).

Installation:

- Use all specified fasteners. Verify that the header can take the required fasteners specified in the table. See pp. 183–184 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 — I-joists with web stiffeners or rectangular sections can be used with the installation of two 10d x 1½" nails into the optional triangle joist nails.
- Web stiffeners are not required with I-joists when the joist top flange is laterally supported by the sides of the hanger. I-joist manufacturers may require web stiffeners.

Options:

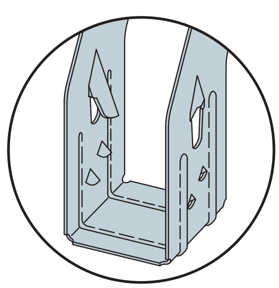
- These hangers cannot be modified. However, these models will normally accommodate a skew of up to 5°. For a sloping joist to ½ :12, tests show a 10% reduction in ultimate hanger strength. Local crushing of the bottom flange or excessive deflection may be limiting; check with joist manufacturer for specific limitations on bearing of this type.



IUS

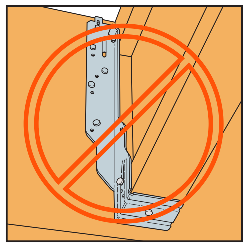
(some IUS models have triangle holes in header flanges for min./max. nailing)

U.S. Patent 6,523,321



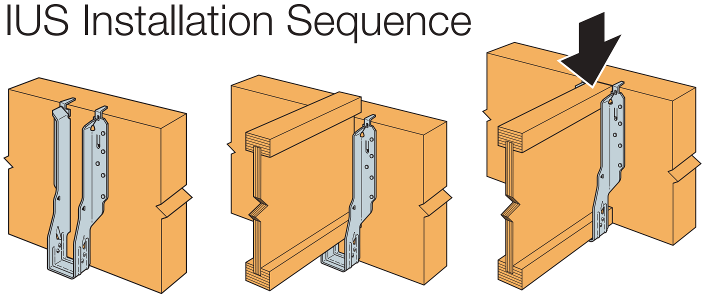
The Strong-Grip™ seat secures I-joists in position without joist nails.

Avoid a Misinstallation



Do not make your own holes. Do not nail the bottom flange.

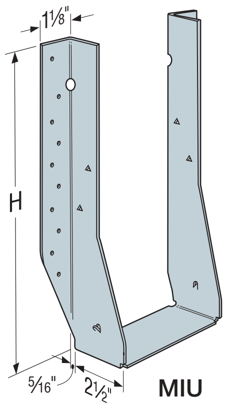
IUS Installation Sequence



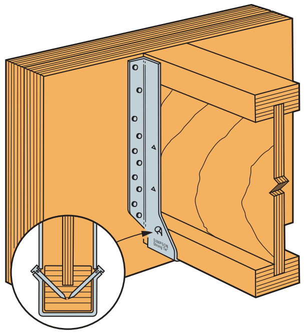
Step 1
Attach the IUS to the header.

Step 2
Slide the I-joist downward into the IUS until it rests above the large teardrop.

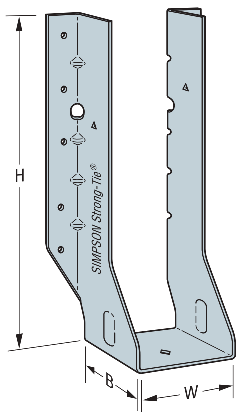
Step 3
Firmly push or snap I-joist fully into the seat of the IUS.



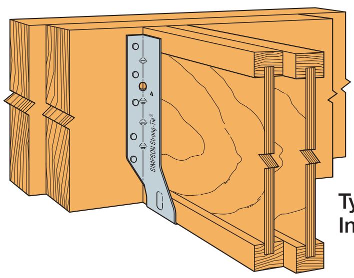
MIU



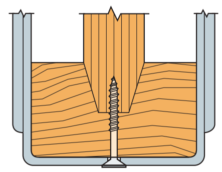
MIU with Correct PAN Installation



LF



Typical LF Installation



LF Installation
(two screws required for joist widths > 2½".)

I-Joist and Structural Composite Lumber Hangers

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

HU — Most models have triangle and round holes. To achieve maximum factored resistances, 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. 190–198

Finish: Galvanized

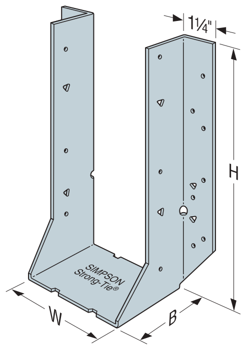
Installation:

- Use all specified fasteners; see General Notes
- HU — can be installed filling round holes only, or filling round and triangle holes for maximum values
- Web stiffeners are required for all I-joists used with these hangers

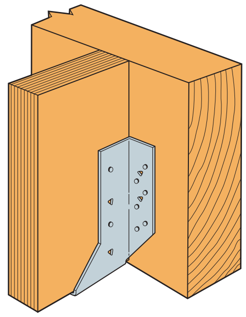
Options:

- HU hangers available with the header flanges turned in for 2⁵⁄₁₆" and larger widths, with no reduction in resistances — order HUC hanger
- See Hanger Options information on p. 127

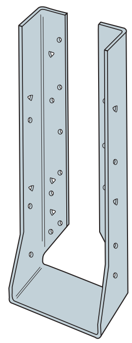
Model configurations may differ from those shown. Some HU models do not have triangle holes. Contact Simpson Strong-Tie for details.



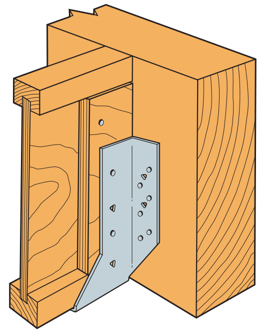
HU410



Typical HU7 Installation



HUC412
Concealed Flanges



Typical HU7 Installation

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]	HU with Straight A Flanges	16d Stainless-Steel Nails	Other Fastener Substitutions
1.00	0.65	0.65	1.00	HU is available with the A flanges straight at 0.70 of the table values if W ≥ 3½". If W < 3", use N10 nails at 0.50 of the table value. If W ≥ 3", use 10d nails at 0.50 of the table value. Do not use with end-grain nailing.	Ring shank (all conditions) 1.00 Smooth shank (normal seat) 0.80 Smooth shank (modified seat[1]) 0.43	16d → 16d x 2½" 1.00 16d → 10d 0.83 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 2⁵⁄₁₆". To order ask for HUCXXX. For skewed HUC, only flange on acute side is concealed.
3. Skews over 50° require a square-cut joist.
4. HU1.81/5 can be skewed to a maximum of 50°.
5. Skew hangers may have joist nails on one side.

Reduction Factor Instructions

Factored Down Resistance = Seat × Flange × Stainless Steel Nails × Other Fastener Substitutions × (Table Value)

Factored Uplift Resistance = 0.75 × Face Fastener Type × (Table Value) for skewed or sloped
1.00 × Face Fastener Type × (Table Value) for non-skewed or sloped

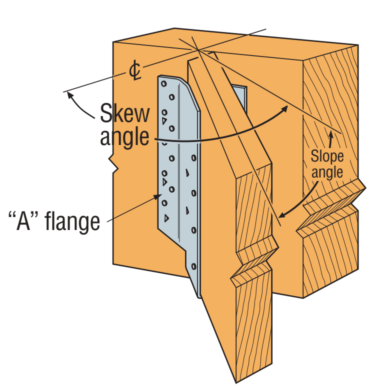
Face-Mount Hangers U/HU/HUC

I-Joist and Structural Composite Lumber Hangers (cont.)

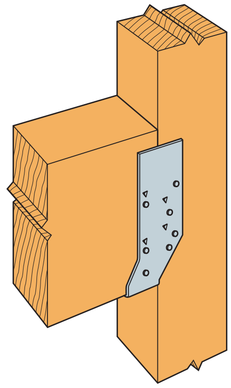
Maximum Skew Degree for Skewed HUC Hangers

Hanger Width (in.)	Maximum Skew (degree)
2 5/16	31
2 3/8	31
2 9/16	34
2 3/4	37
3 1/8	41
3 1/4	42

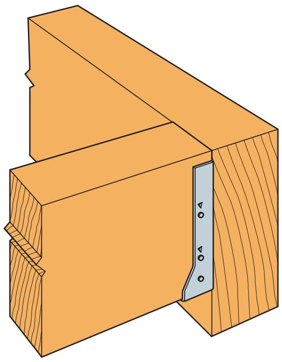
1. Widths greater than 3 1/4" maximum skew is 45°.



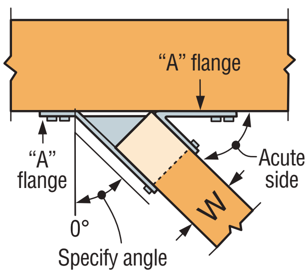
Typical HU Sloped Down, Skewed Right Installation



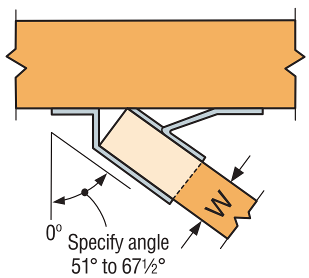
Typical HU Installation Manufactured with Flanges Straight



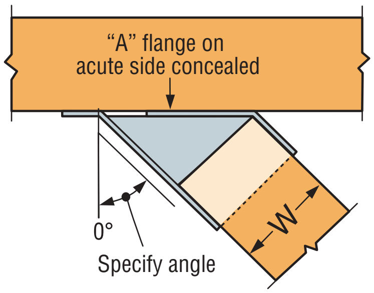
Typical HUC Installed on a Beam



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



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



Top View HUC Concealed Hanger Skewed Right
(square cut)

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 U.L. listed fire rating.

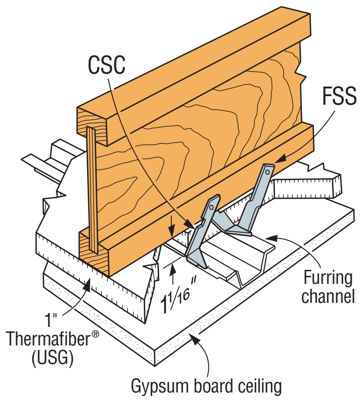
- UL-listed. See Underwriters Laboratory, Inc. Design No. L530 for USG gypsum board and Weyerhaeuser/TJI® joists.
- Check ICC-ES reports for individual I-joist manufacturer approvals.

Material: 24 gauge (minimum)

Finish: Galvanized

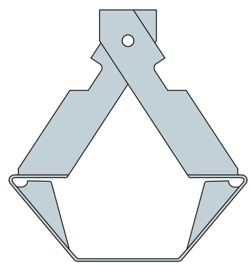
Installation:

- For CSC use one 8d x 1½" 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

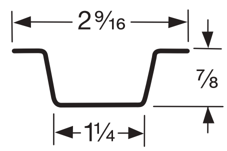


Typical CSC and FSS Installation

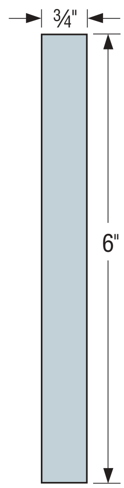
Thermafiber® and TJI® are registered trademarks of US Gypsum Company and Weyerhaeuser, respectively.



CSC



Furring Channel Detail



FSS
(see Installation Notes)

Face-Mount Hangers HUS/HHUS/HGUS

Double-Shear SCL Hangers

These hangers are designed for applications where higher factored resistances are needed.

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, pp. 196–198

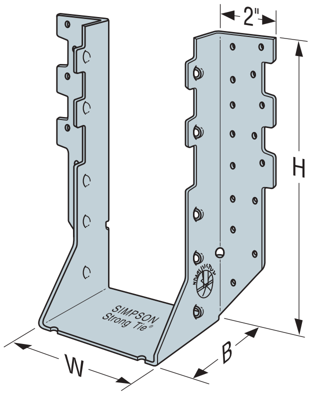
Finish: Galvanized. Some products available in stainless steel or ZMAX®; See corrosion Information, pp. 20–24

Installation:

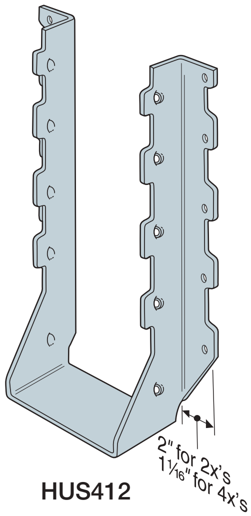
- Use all specified fasteners; see General Notes.
- Do not use double-shear hangers with I-joists.
- Nails must be driven at an angle through the joist into the header to achieve the tabulated values.
- Not designed for welded or nailer applications.
- Where 16d commons are specified, 10d commons may be used at 0.83 of the tabulated factored resistance.
- With 2x carrying members, use 10d x 1½" nails into the header and 10d commons into the joist, and reduce the tabulated factored resistance to 0.64 of the table value.

Options:

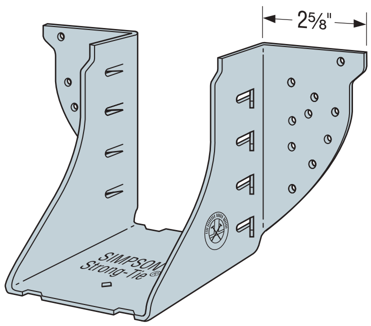
- Other sizes available; contact Simpson Strong-Tie for details.



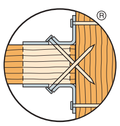
HHUS410



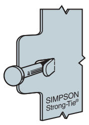
HUS412



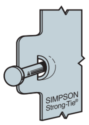
HGUS46



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

HGUS/HHUS

See Hanger Options information on pp. 125–126.

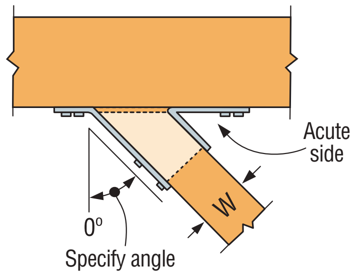
HHUS — Sloped and/or Skewed Seat

- HHUS hangers can be skewed to a maximum of 45° and/or sloped to a maximum of 45°
- For skew only, maximum factored down resistance is 0.85 of the table value
- For sloped only or sloped and skewed hangers, the maximum factored down resistance is 0.72 of the table value
- Uplift resistances for sloped/skewed conditions are 0.62 of the table value
- 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°. Factored resistances are:

HGUS Seat Width	Joist	Down Load	Uplift
W < 2"	bevel or square cut	0.62 of table value	0.46 of table value
2" < W < 6"	bevel cut	0.67 of table value	0.41 of table value
2" < W < 6"	square cut	0.46 of table value	0.41 of table value
W > 6"	bevel cut	0.75 of table value	0.41 of table value



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 – I-Joists

Joist Size (in.)	Model No.	Web Stiff Reqd.	Ga.	Dimensions (in.)			Fasteners			Factored Resistance			
										D.Fir-L		S-P-F	
				W	H	B	Min./Max.	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
1½ x 9¼ – 9½	LF159	—	18	1 9/16	9¼	2	—	(10) 10d	(1) #8 x 1¼" WS	105	2435	105	1845
										0.47	10.83	0.47	8.21
	MIU1.56/9	—	16	1 9/16	8 15/16	2½	—	(16) 16d	(2) 10d x 1½"	375	3045	375	2305
										1.67	13.56	1.67	10.27
1½ x 11¼ – 11⅞	LF1511	—	18	1 9/16	11¼	2	—	(12) 10d	(1) #8 x 1¼" WS	105	2435	105	1845
										0.47	10.83	0.47	8.21
	MIU1.56/11	—	16	1 9/16	11 1/16	2½	—	(20) 16d	(2) 10d x 1½"	375	3045	375	2305
										1.67	13.56	1.67	10.27
1¾ x 9½	IUS1.81/9.5	—	18	1⅞	9½	2	—	(8) 10d	—	175	2385	175	1690
										0.78	10.61	0.78	7.52
1¾ x 9¼ – 9½	LF179	—	18	1 13/16	9¼	2	—	(10) 10d	(1) #8 x 1¼" WS	105	2525	105	2155
										0.47	11.23	0.47	9.60
	MIU1.81/9	—	16	1 13/16	8 13/16	2½	—	(16) 16d	(2) 10d x 1½"	375	3555	375	2690
										1.67	15.84	1.67	11.98
1¾ x 11⅞	IUS1.81/11.88	—	18	1⅞	11⅞	2	—	(10) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
	LF1711	—	18	1 13/16	11¼	2	—	(12) 10d	(1) #8 x 1¼" WS	105	2845	105	2155
										0.47	12.66	0.47	9.60
	MIU1.81/11	—	16	1 13/16	11 1/16	2½	—	(20) 16d	(2) 10d x 1½"	375	3555	375	2690
										1.67	15.84	1.67	11.98
1¾ x 14	IUS1.81/14	—	18	1⅞	14	2	Min.	(12) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
							Max.	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
	LF1714	—	18	1 13/16	13½	2	—	(14) 10d	(1) #8 x 1¼" WS	105	2845	105	2155
										0.47	12.66	0.47	9.59
	MIU1.81/14	—	16	1 13/16	13 5/16	2½	—	(22) 16d	(2) 10d x 1½"	375	3555	375	2690
										1.67	15.84	1.67	11.98
1¾ x 16	IUS1.81/16	—	18	1⅞	16	2	—	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
	MIU1.81/16	—	16	1 13/16	15 5/16	2½	—	(24) 16d	(2) 10d x 1½"	375	3555	375	2690
										1.67	15.84	1.67	11.98
2 x 9½	IUS2.06/9.5	—	18	2⅛	9½	2	—	(8) 10d	—	175	2385	175	1690
										0.78	10.61	0.78	7.52

1. 10d common nails may be used instead of the specified 16d nails at 0.83 of the tabulated value.
2. Uplift loads have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading (K_D = 1.00) such as in cantilever construction.
3. Min. nailing quantity and load values — fill all round holes; Max. nailing quantity and load values — fill all round and triangle holes.
4. D-Fir.L factored resistances can be used for most LVL. Verify with manufacturer prior to selecting hanger.
5. Web stiffeners are required when top flange isn't supported laterally by the hanger.
6. Web stiffeners are required when supporting double I-joists with flanges less than 1 5/16" thick.
7. For 16 and 18 gauge, 3½" wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).
8. **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. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

Face-Mount Hangers – I-Joists

Joist Size (in.)	Model No.	Web Stiff Reqd.	Ga.	Dimensions (in.) W	H	B	Fasteners Min./Max.	Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
2 x 11⅞	IUS2.06/11.88	—	18	2⅛	11⅞	2	—	(10) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
2 x 14	IUS2.06/14	—	18	2⅛	14	2	Min.	(12) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
							Max.	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
2 x 16	IUS2.06/16	—	18	2⅛	16	2	—	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
2 1/16 x 9½	IUS2.06/9.5	—	18	2⅛	9½	2	—	(8) 10d	—	175	2385	175	1690
										0.78	10.61	0.78	7.52
	LF219	—	18	2⅛	8 15/16	2	—	(10) 10d	(1) #8 x 1¼" WS	105	2525	105	2155
										0.47	11.23	0.47	9.60
	HU2.1/9	✓	14	2⅛	9 3/16	2½	—	(14) 16d	(6) 10d x 1½"	1470	5465	1360	4225
										6.54	24.31	6.05	18.79
2 1/16 x 11⅞	IUS2.06/11.88	—	18	2⅛	11⅞	2	—	(10) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
	LF2111	—	18	2⅛	11¼	2	—	(12) 10d	(1) #8 x 1¼" WS	105	2880	105	2270
										0.47	12.81	0.47	10.11
	MIU2.1/11	—	16	2⅛	11 1/16	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU2.1/11	✓	14	2⅛	11	2½	—	(16) 16d	(6) 10d x 1½"	1470	5465	1360	4225
										6.54	24.31	6.05	18.79
2 1/16 x 14	IUS2.06/14	—	18	2⅛	14	2	Min.	(12) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
							Max.	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
	LF2114	—	18	2⅛	13 9/16	2	—	(14) 10d	(1) #8 x 1¼" WS	105	3235	105	2385
										0.47	14.39	0.47	10.61
2 1/16 x 16	IUS2.06/16	—	18	2⅛	16	2	—	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
2 5/16 x 9½	IUS2.37/9.5	—	18	2 7/16	9½	2	—	(8) 10d	—	175	2385	175	1690
										0.78	10.61	0.78	7.52
	LF239	—	18	2⅜	9¼	2	—	(10) 10d	(1) #8 x 1¼" WS	105	2525	105	2155
										0.47	11.23	0.47	9.60
	MIU2.37/9	—	16	2⅜	9	2½	—	(16) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	U3510/14	✓	16	2 5/16	9	2	—	(14) 16d	(6) 10d x 1½"	1345	4355	1235	3090
										5.98	19.37	5.49	13.75
	HU359 HUC359	✓	14	2⅜	8 15/16	2½	Min.	(14) 16d	(6) 10d x 1½"	1470	5780	1360	4225
										6.54	25.71	6.05	18.79
							Max.	(18) 16d	(10) 10d x 1½"	2450	5780	2265	4690
										10.90	25.71	10.08	20.86

See footnotes on p. 189.

Engineered Wood and Structural Composite Lumber Connectors

Face-Mount Hangers – I-Joists

Joist Size (in.)	Model No.	Web Stiff Reqd.	Ga.	Dimensions (in.)			Fasteners			Factored Resistance			
										D.Fir-L		S-P-F	
				W	H	B	Min./Max.	Header	Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
										lb.	lb.	lb.	lb.
										kN	kN	kN	kN
2 5/16 x 11⅞	IUS2.37/11.88	—	18	2 7/16	11⅞	2	—	(10) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
	LF2311	—	18	2⅜	11¼	2	—	(12) 10d	(1) #8 x 1¼" WS	105	2880	105	2270
										0.47	12.81	0.47	10.11
	MIU2.37/11	—	16	2⅜	11 1/16	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	U3516/20	✓	16	2 5/16	10 9/16	2	—	(16) 16d	(6) 10d x 1½"	1345	4355	1235	3095
										5.98	19.37	5.49	13.77
	HU3511 HUC3511	✓	14	2⅜	11 1/16	2½	Min.	(16) 16d	(6) 10d x 1½"	1470	5780	1360	4225
										6.54	25.71	6.05	18.79
							Max.	(22) 16d	(10) 10d x 1½"	2450	5780	2265	4690
										10.90	25.71	10.08	20.86
2 5/16 x 14	IUS2.37/14	—	18	2 7/16	14	2	Min.	(12) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
							Max.	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
	LF2314	—	18	2⅜	13½	2	—	(14) 10d	(1) #8 x 1¼" WS	105	3235	105	2385
										0.47	14.39	0.47	10.61
	MIU2.37/14	—	16	2⅜	13½	2½	—	(22) 16d	(2) 10d x 1½"	375	4695	375	3485
										1.67	20.91	1.67	15.52
	HU3514 HUC3514	✓	14	2⅜	13½	2½	Min.	(18) 16d	(8) 10d x 1½"	1960	5780	1810	4690
										8.72	25.71	8.05	20.86
							Max.	(24) 16d	(12) 10d x 1½"	2940	5780	2695	5780
										13.08	25.71	11.99	25.71
2 5/16 x 16	IUS2.37/16	—	18	2 7/16	16	2	—	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
	MIU2.37/16	—	16	2⅜	15½	2½	—	(24) 16d	(2) 10d x 1½"	375	4695	375	3485
										1.67	20.91	1.67	15.52
	HU3516/22	✓	14	2⅜	14¼	2½	—	(20) 16d	(8) 10d x 1½"	1960	5780	1810	4690
										8.72	25.71	8.05	20.86
2 5/16 x 18	MIU2.37/18	—	16	2⅜	17½	2½	—	(26) 16d	(2) 10d x 1½"	375	4695	375	3485
										1.67	20.91	1.67	15.52
	HU3524/30 HUC3524/30	✓	14	2 5/16	18	2½	Min.	(18) 16d	(2) 10d x 1½"	1960	5780	1810	4690
										8.72	25.71	8.05	20.86
							Max.	(24) 16d	(14) 10d x 1½"	3430	5780	2695	5780
										15.26	25.71	11.99	25.71
2 5/16 x 20	MIU2.37/20	—	16	2⅜	19½	2½	—	(28) 16d	(2) 10d x 1½"	375	4695	375	3485
										1.67	20.91	1.67	15.52
2 5/16 x 22 – 30	HU3524/30 HUC3524/30	✓	14	2 5/16	18	2½	Min.	(18) 16d	(8) 10d x 1½"	1960	5780	1810	4690
										8.72	25.71	8.05	20.86
							Max.	(24) 16d	(14) 10d x 1½"	3430	5780	2695	5780
										15.26	25.71	11.99	25.71
2½ x 9½	IUS2.56/9.5	—	18	2⅝	9½	2	—	(8) 10d	—	175	2385	175	1690
										0.78	10.61	0.78	7.52

See footnotes on p. 189.

Face-Mount Hangers – I-Joists

SIMPSON Strong-Tie®

These products are available with additional corrosion protection. For more information, see p. 24.

Joist Size (in.)	Model No.	Web Stiff Reqd.	Ga.	Dimensions (in.) W	H	B	Fasteners Min./Max.	Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
2½ x 9¼ – 9½	LF259	—	18	2 9/16	9¼	2	—	(10) 10d	(1) #8 x 1¼" WS	105	2525	105	2155
										0.47	11.23	0.47	9.60
	MIU2.56/9	—	16	2 9/16	8 15/16	2½	—	(16) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU310 HUC310	✓	14	2 9/16	8⅞	2½	—	(14) 16d	(6) 10d x 1½"	1470	5780	1360	4225
										6.54	25.71	6.05	18.79
2½ x 11⅞	IUS2.56/11.88	—	18	2⅝	11⅞	2	—	(10) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
2½ x 11¼ – 11⅞	LF2511	—	18	2 9/16	11¼	2	—	(12) 10d	(1) #8 x 1¼" WS	105	2880	105	2270
										0.47	12.81	0.47	10.11
	MIU2.56/11	—	16	2 9/16	11 1/16	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU312 HUC312	✓	14	2 9/16	10⅝	2½	—	(16) 16d	(6) 10d x 1½"	1470	5780	1360	4225
										6.54	25.71	6.05	18.79
2½ x 14	IUS2.56/14	—	18	2⅝	14	2	Min.	(12) 10d	—	175	2565	175	1820
										0.78	11.41	0.78	8.10
							Max.	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
	LF2514	—	18	2 9/16	13½	2	—	(14) 10d	(1) #8 x 1¼" WS	105	3235	105	2385
										0.47	14.39	0.47	10.61
	MIU2.56/14	—	16	2 9/16	13 7/16	2½	—	(22) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
	HU314 HUC314	✓	14	2 9/16	12⅜	2½	—	(18) 16d	(8) 10d x 1½"	1960	5780	1810	4690
										8.72	25.71	8.05	20.86
2½ x 16	IUS2.56/16	—	18	2⅝	16	2	—	(14) 10d	—	175	2725	175	1935
										0.78	12.12	0.78	8.61
	MIU2.56/16	—	16	2 9/16	15 7/16	2½	—	(24) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
	HU316 HUC316	✓	14	2 9/16	14⅛	2½	—	(20) 16d	(8) 10d x 1½"	1960	5780	1810	4690
										8.72	25.71	8.05	20.86
2½ x 18	MIU2.56/18		16	2 9/16	17 7/16	2½	—	(26) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
2½ x 20	MIU2.56/20	—	16	2 9/16	19 7/16	2½	—	(28) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
2½ x 22 – 26	MIU2.56/20	✓	16	2 9/16	19 7/16	2½	—	(28) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
3 x 9¼ – 9½	LF2-159	—	18	3⅛	9¼	2	—	(10) 10d	(2) #8 x 1¼" WS	105	2525	105	2150
										0.47	11.23	0.47	9.60
	MIU3.12/9	—	16	3⅛	9 1/16	2½	—	(16) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU210-2 HUC210-2	✓	14	3⅛	8 13/16	2½	Min.	(14) 16d	(6) 10d	1580	5780	1470	4225
										7.03	25.71	6.54	18.79
							Max.	(18) 16d	(10) 10d	2635	5780	2450	4690
										11.72	25.71	10.90	20.86

See footnotes on p. 189.

Engineered Wood and Structural Composite Lumber Connectors

Face-Mount Hangers – I-Joists

Joist Size (in.)	Model No.	Web Stiff Reqd.	Ga.	Dimensions (in.) W	H	B	Fasteners Min./Max.	Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
3 x 11¼ – 11⅞	LF2-1511	—	18	3⅛	11¼	2	—	(12) 10d	(2) #8 x 1¼" WS	105	2880	105	2270
										0.47	12.81	0.47	10.11
	MIU3.12/11	—	16	3⅛	11⅛	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU212-2 HUC212-2	✓	14	3⅛	10 9/16	2½	Min.	(16) 16d	(6) 10d	1580	5780	1470	4225
										7.03	25.71	6.54	18.79
							Max.	(22) 16d	(10) 10d	2635	5780	2450	4690
										11.72	25.71	10.90	20.86
3 x 14 – 20	HU214-2 HUC214-2	✓	14	3⅛	12 13/16	2½	Min.	(18) 16d	(8) 10d	2105	5780	1960	4690
										9.36	25.71	8.72	20.86
							Max.	(24) 16d	(12) 10d	3160	5780	2695	5780
										14.06	25.71	11.99	25.71
3½ x 9½	IUS3.56/9.5	✓[7]	18	3⅝	9½	2	—	(10) 10d	—	175	2370	175	1685
										0.78	10.54	0.78	7.50
3½ x 9¼ – 9½	LF359	✓[7]	18	3 9/16	9¼	2	—	(10) 10d	(2) #8 x 1¼" WS	105	2525	105	2155
										0.47	11.23	0.47	9.60
	MIU3.56/9	✓[7]	16	3 9/16	8 13/16	2½	—	(16) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
3½ x 11⅞	IUS3.56/11.88	✓[7]	18	3⅝	11⅞	2	—	(12) 10d	—	175	2370	175	1685
										0.78	10.54	0.78	7.50
3½ x 11¼ – 11⅞	LF3511	✓[7]	18	3 9/16	11¼	2	—	(12) 10d	(2) #8 x 1¼" WS	105	2880	105	2270
										0.47	12.81	0.47	10.11
	MIU3.56/11	✓[7]	16	3 9/16	11⅛	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
3½ x 14	IUS3.56/14	✓[7]	18	3⅝	14	2	—	(12) 10d	—	175	2370	175	1685
										0.78	10.54	0.78	7.50
	LF3514	✓[7]	18	3 9/16	13½	2	—	(14) 10d	(2) #8 x 1¼" WS	105	3235	105	2385
										0.47	14.39	0.47	10.61
	MIU3.56/14	✓[7]	16	3 9/16	13 5/16	2½	—	(22) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
3½ x 16	IUS3.56/16	✓[7]	18	3⅝	16	2	—	(14) 10d	—	175	2370	175	1685
										0.78	10.54	0.78	7.50
	MIU3.56/16	✓[7]	16	3 9/16	15 5/16	2½	—	(24) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
3½ x 18	MIU3.56/18	✓[7]	16	3 9/16	17 5/16	2½	—	(26) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
3½ x 20	MIU3.56/20	✓[7]	16	3 9/16	19 5/16	2½	—	(28) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
3½ x 22 – 30	MIU3.56/20	✓	16	3 9/16	19 5/16	2½	—	(28) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
4 x 9½	MIU4.12/9	—	16	4⅛	9	2½	—	(16) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU4.12/9 HUC4.12/9	✓	14	4⅛	8⅝	2½	Min.	(14) 16d	(6) 10d	1580	5780	1470	4225
										7.03	25.71	6.54	18.79
							Max.	(18) 16d	(10) 10d	2635	5780	2450	4690
										11.72	25.71	10.90	20.86

See footnotes on p. 189.

Face-Mount Hangers – I-Joists

Joist Size (in.)	Model No.	Web Stiff Reqd.	Ga.	Dimensions (in.)			Fasteners			Factored Resistance			
										D.Fir-L		S-P-F	
										Uplift	Normal	Uplift	Normal
										(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)
				W	H	B	Min./Max.	Header	Joist	lb.	lb.	lb.	lb.
										kN	kN	kN	kN
4 x 11⅞	MIU4.12/11	—	16	4⅛	11⅞	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU4.12/11 HUC4.12/11	✓	14	4⅛	10⁹⁄₁₆	2½	Min.	(16) 16d	(6) 10d	1580	5780	1470	4225
										7.03	25.71	6.54	18.79
							Max.	(22) 16d	(10) 10d	2635	5780	2450	4690
4 x 14	MIU4.12/14	—	16	4⅛	13½	2½	—	(22) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
4 x 16	MIU4.12/16	—	16	4⅛	15½	2½	—	(24) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
4⅛ x 9½	MIU4.28/9	—	16	4⁹⁄₃₂	9	2½	—	(16) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU4.28/9 HUC4.28/9	✓	14	4⁹⁄₃₂	9	2½	—	(18) 16d	(8) 10d	2105	5780	1960	4690
										9.36	25.71	8.72	20.86
4⅛ x 11⅞	MIU4.28/11	—	16	4⁹⁄₃₂	11⅛	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU4.28/11 HUC4.28/11	✓	14	4⁹⁄₃₂	11	2½	—	(22) 16d	(8) 10d	2455	5780	2280	4690
										10.92	25.71	10.14	20.86
4⅛ x 14	MIU4.28/14	—	16	4⁹⁄₃₂	13½	2½	—	(22) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
4⅛ x 16	MIU4.28/16	—	16	4⁹⁄₃₂	15½	2½	—	(24) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
4⅝ x 9¼ – 9½	MIU4.75/9	—	16	4¾	9¹⁄₁₆	2½	—	(16) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	U3510-2	✓	16	4¾	8¾	2	—	(14) 16d	(6) 10d	1440	4355	1340	3090
										6.41	19.37	5.96	13.75
	HU4.75/9 HUC4.75/9	✓	14	4¾	9	2½	—	(18) 16d	(8) 10d	2105	5780	1960	4690
										9.36	25.71	8.72	20.86
4⅝ x 11¼ – 11⅞	MIU4.75/11	—	16	4¾	11¹⁄₁₆	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	U3512-2	✓	16	4¾	11¼	2	—	(16) 16d	(6) 10d	1440	4355	1340	3095
										6.41	19.37	5.96	13.77
	HU4.75/11 HUC4.75/11	✓	14	4¾	11	2½	—	(22) 16d	(8) 10d	2455	5780	2280	4690
										10.92	25.71	10.14	20.86
4⅝ x 14	MIU4.75/14	—	16	4¾	13½	2½	—	(22) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
	HU3514-2 HUC3514-2	✓	14	4¾	13¼	2½	—	(18) 16d	(8) 10d	2105	5780	1960	4690
										9.36	25.71	8.72	20.86
4⅝ x 16	MIU4.75/16	—	16	4¾	15½	2½	—	(24) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
	HU3516-2 HUC3516-2	✓	14	4¾	15¼	2½	Min.	(20) 16d	(8) 10d	2105	5780	1960	4690
										9.36	25.71	8.72	20.86
							Max.	(26) 16d	(12) 10d	3160	5780	2695	5780
										14.06	25.71	11.99	25.71
4⅝ x 18	MIU4.75/18	—	16	4¾	17½	2½	—	(26) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52

See footnotes on p. 189.

Face-Mount Hangers – I-Joists

Joist Size (in.)	Model No.	Web Stiff Reqd.	Ga.	Dimensions (in.)			Fasteners			Factored Resistance			
										D.Fir-L		S-P-F	
				W	H	B	Min./Max.	Header	Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
										lb.	lb.	lb.	lb.
										kN	kN	kN	kN
4⅝ x 20	MIU4.75/20	—	16	4¾	19½	2½	—	(28) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
	HU3520-2 HUC3520-2	✓	14	4¾	19¼	2½	Min.	(20) 16d	(8) 10d	2105	5780	1960	4690
										9.36	25.71	8.72	20.86
							Max.	(26) 16d	(12) 10d	3160	5780	2695	5780
										14.06	25.71	11.99	25.71
4⅝ x 22 – 30	MIU4.75/20	✓	16	4¾	19½	2½	—	(28) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
	HU3520-2 HUC3520-2	✓	14	4¾	19¼	2½	Min.	(20) 16d	(8) 10d	2105	5780	1960	4690
										9.36	25.71	8.72	20.86
							Max.	(26) 16d	(12) 10d	3160	5780	2695	5780
										14.06	25.71	11.99	25.71
5 x 9¼ – 9½	MIU5.12/9	—	16	5⅛	8 13/16	2½	—	(16) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU310-2 HUC310-2	✓	14	5⅛	7⅞	2½	—	(14) 16d	(6) 10d	1580	5780	1470	4225
										7.03	25.71	6.54	18.79
5 x 11¼ – 11⅞	MIU5.12/11	—	16	5⅛	11⅛	2½	—	(20) 16d	(2) 10d x 1½"	375	4550	375	3230
										1.67	20.24	1.67	14.37
	HU312-2 HUC312-2	✓	14	5⅛	10⅝	2½	—	(16) 16d	(6) 10d	1580	5780	1470	4225
										7.03	25.71	6.54	18.79
5 x 14	MIU5.12/14	—	16	5⅛	13 5/16	2½	—	(22) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
5 x 16	MIU5.12/16	—	16	5⅛	15 5/16	2½	—	(24) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
5 x 18	MIU5.12/18	—	16	5⅛	17 5/16	2½	—	(26) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
5 x 20	MIU5.12/20	—	16	5⅛	19 5/16	2½	—	(28) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
5 x 22 – 30	MIU5.12/20	✓	16	5⅛	19 5/16	2½	—	(28) 16d	(2) 10d x 1½"	375	4930	375	3485
										1.67	21.96	1.67	15.52
7 x 9¼ – 9½	HU410-2 HUC410-2	✓	14	7⅛	8¾	2½	Min.	(14) 16d	(6) 16d	1840	5780	1710	4225
										8.18	25.71	7.61	18.79
							Max.	(18) 16d	(8) 16d	2455	5780	2280	4690
										10.92	25.71	10.14	20.86
7 x 11¼ – 11⅞	HU412-2 HUC412-2	✓	14	7⅛	10 13/16	2½	Min.	(16) 16d	(6) 16d	1840	5780	1710	4225
										8.18	25.71	7.61	18.79
							Max.	(22) 16d	(8) 16d	2455	5780	2280	4690
										10.92	25.71	10.14	20.86
7 x 14	HU414-2 HUC414-2	✓	14	7⅛	13⅞	2½	Min.	(20) 16d	(8) 16d	2455	5780	2280	4690
										10.92	25.71	10.14	20.86
							Max.	(26) 16d	(12) 16d	3685	7025	3420	5780
										16.39	31.25	15.21	25.71

See footnotes on p. 189.

Face-Mount Hangers – Structural Composite Lumber

Joist Size	Model No.	Ga.	Dimensions (in.)			Fasteners			Factored Resistance			
									D.Fir-L		S-P-F	
			W	H	B	Min./Max.	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
1¾ x 5½	HU1.81/5	14	1 13/16	5⅜	2½	Min.	(12) 16d	(4) 10d x 1½"	980	2785	905	1975
									4.36	12.39	4.03	8.79
						Max.	(16) 16d	(6) 10d x 1½"	1470	3715	1360	2635
									6.54	16.53	6.05	11.72
1¾ x 7¼	HU7	14	1 13/16	6 11/16	2½	Min.	(12) 16d	(4) 10d x 1½"	980	3775	905	2670
									4.36	16.82	4.03	11.89
						Max.	(16) 16d	(8) 10d x 1½"	1960	5445	1810	4225
									8.72	24.25	8.06	18.79
1¾ x 9½	HUS1.81/10	16	1 13/16	9	3	—	(30) 16d	(10) 16d	4505	6405	4010	5200
									20.05	28.48	17.84	23.13
	HU9	14	1 13/16	9 5/16	2½	Min.	(18) 16d	(6) 10d x 1½"	1470	4830	1360	3875
									6.54	21.48	6.05	17.24
						Max.	(24) 16d	(10) 10d x 1½"	2450	5685	2265	4660
									10.90	25.29	10.08	20.73
1¾ x 11¼ – 11⅞	HUS1.81/10	16	1 13/16	9	3	—	(30) 16d	(10) 16d	4505	6405	4010	5200
									20.05	28.48	17.84	23.13
	HU11	14	1 13/16	11 1/16	2½	Min.	(22) 16d	(6) 10d x 1½"	1470	4830	1360	3875
									6.54	21.48	6.05	17.24
						Max.	(30) 16d	(10) 10d x 1½"	2450	5685	2265	4660
									10.90	25.29	10.08	20.73
1¾ x 14	HUS1.81/10	16	1 13/16	9	3	—	(30) 16d	(10) 16d	4505	6405	4010	5200
									20.05	28.48	17.84	23.13
	HU14	14	1 13/16	13 11/16	2½	Min.	(28) 16d	(8) 10d x 1½"	1960	5255	1810	4265
									8.72	23.38	8.05	18.97
						Max.	(36) 16d	(14) 10d x 1½"	3430	5780	2695	5450
									15.26	25.71	11.99	24.24
3½ x 7¼	HU48 HUC48	14	3 9/16	6 13/16	2½	Min.	(10) 16d	(4) 10d	1055	4270	980	3135
									4.69	18.99	4.36	13.95
						Max.	(14) 16d	(6) 10d	1580	5780	1470	4225
									7.03	25.71	6.54	18.79
	HGUS48	12	3⅝	7 1/16	4	—	(36) 16d	(12) 16d	6070	12980	4310	9215
									27.00	57.74	19.17	40.99
3½ x 9¼ – 9½	U410	16	3 9/16	8⅜	2	—	(14) 16d	(6) 10d	1440	4355	1340	3090
									6.41	19.37	5.96	13.75
	HUS410	14	3 9/16	8 15/16	2	—	(8) 16d	(8) 16d	3795	5690	3450	4570
									16.88	25.31	15.35	20.33
	HU410 HUC410	14	3 9/16	8⅝	2½	Min.	(14) 16d	(6) 10d	1580	5780	1470	4225
									7.03	25.71	6.54	18.79
						Max.	(18) 16d	(10) 10d	2635	5780	2450	4690
									11.72	25.71	10.90	20.86
	HHUS410	14	3⅝	9	3	—	(30) 16d	(10) 16d	4670	9855	4235	7000
									20.77	43.84	18.84	31.14
	HGUS410	12	3⅝	9 1/16	4	—	(46) 16d	(16) 16d	6840	14015	4855	10270
									30.43	62.34	21.60	45.69

See footnotes on p. 189.

Face-Mount Hangers – Structural Composite Lumber

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	Fasteners Min./Max.	Header	Joist	Factored Resistance D.Fir-L Uplift ($K_D = 1.15$) lb. / kN	D.Fir-L Normal ($K_D = 1.00$) lb. / kN	S-P-F Uplift ($K_D = 1.15$) lb. / kN	S-P-F Normal ($K_D = 1.00$) lb. / kN
3½ x 11¼ – 11⅞	U410	16	3 9/16	8⅜	2	—	(14) 16d	(6) 10d	1440	4355	1340	3090
									6.41	19.37	5.96	13.75
	HUS412	14	3 9/16	10½	2	—	(10) 16d	(10) 16d	4745	7015	3650	4980
									21.11	31.20	16.24	22.15
	HU412 HUC412	14	3 9/16	10 5/16	2½	Min.	(16) 16d	(6) 10d	1580	5780	1470	4225
									7.03	25.71	6.54	18.79
						Max.	(22) 16d	(10) 10d	2635	5780	2450	4690
									11.72	25.71	10.90	20.86
	HGUS410	12	3⅝	9 1/16	4	—	(46) 16d	(16) 16d	6840	14015	4855	10270
									30.43	62.34	21.60	45.69
	HGUS412	12	3⅝	10 7/16	4	—	(56) 16d	(20) 16d	7640	14995	5425	10645
									33.98	66.70	24.13	47.35
3½ x 14	U414	16	3 9/16	10	2	—	(16) 16d	(6) 10d	1440	4355	1340	3095
									6.41	19.37	5.96	13.77
	HU416 HUC416	14	3 9/16	13⅝	2½	Min.	(20) 16d	(8) 10d	2105	5780	1960	4690
									9.36	25.71	8.72	20.86
						Max.	(26) 16d	(12) 10d	3160	5780	2695	5780
									14.06	25.71	11.99	25.71
	HGUS414	12	3⅝	12 7/16	4	—	(66) 16d	(22) 16d	10130	16400	7195	11645
									45.06	72.95	32.00	51.80
3½ x 16	HGUS414	12	3⅝	12 7/16	4	—	(66) 16d	(22) 16d	10130	16400	7195	11645
									45.06	72.95	32.00	51.80
3½ x 18	HGUS414	12	3⅝	12 7/16	4	—	(66) 16d	(22) 16d	10130	16400	7195	11645
									45.06	72.95	32.00	51.80
5¼ x 7¼	HGUS5.50/8	12	5½	7 3/16	4	—	(36) 16d	(12) 16d	6070	12980	4310	9215
									27.04	57.82	19.17	40.99
5¼ x 9¼ – 9½	HU610 HUC610	14	5½	7⅝	2½	Min.	(14) 16d	(6) 16d	1840	5780	1710	4225
									8.18	25.71	7.61	18.79
						Max.	(16) 16d	(8) 16d	2455	5780	2280	4690
									10.92	25.71	10.14	20.86
	HHUS5.50/10	14	5½	9	3	—	(30) 16d	(10) 16d	4670	10155	4235	7210
									20.77	45.17	18.84	32.07
	HGUS5.50/10	12	5½	8 15/16	4	—	(46) 16d	(16) 16d	6840	14645	4855	10400
									30.47	65.23	21.60	46.26
5¼ x 11¼ – 11⅞	HU612 HUC612	14	5½	9⅜	2½	Min.	(16) 16d	(6) 16d	1840	5780	1710	4225
									8.18	25.71	7.61	18.79
						Max.	(22) 16d	(8) 16d	2455	5780	2280	4690
									10.92	25.71	10.14	20.86
	HGUS5.50/12	12	5½	10½	4	—	(56) 16d	(20) 16d	7640	14995	5425	10645
									34.03	66.79	24.13	47.35
5¼ x 14	HU614 HUC614	14	5½	11⅝	2½	Min.	(18) 16d	(8) 16d	2455	5780	2280	4690
									10.92	25.71	10.14	20.86
						Max.	(24) 16d	(12) 16d	3685	7025	3420	6185
									16.39	31.25	15.21	27.51
	HGUS5.50/14	12	5½	12½	4	—	(66) 16d	(22) 16d	10130	16400	7195	11645
									45.12	73.05	32.00	51.80
5¼ x 16	HU616 HUC616	14	5½	12 11/16	2½	Min.	(20) 16d	(8) 16d	2455	5780	2280	4690
									10.92	25.71	10.14	20.86
						Max.	(26) 16d	(12) 16d	3685	7025	3420	6185
									16.39	31.25	15.21	27.51
	HGUS5.50/14	12	5½	12½	4	—	(66) 16d	(22) 16d	10130	16400	7195	11645
									45.12	73.05	32.00	51.80

See footnotes on p. 189.

SIMPSON Strong-Tie®

Face-Mount Hangers – Structural Composite Lumber

Joist Size	Model No.	Ga.	Dimensions (in.) W	H	B	Fasteners Min./Max.	Header	Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
5¼ x 18	HU616 HUC616	14	5½	12 11/16	2½	Min.	(20) 16d	(8) 16d	2455 10.92	5780 25.71	2280 10.14	4690 20.86
						Max.	(26) 16d	(12) 16d	3685 16.39	7025 31.25	3420 15.21	6185 27.51
	HGUS5.50/14	12	5½	12½	4	—	(66) 16d	(22) 16d	10130 45.12	16400 73.05	7195 32.00	11645 51.80
7 x 7¼	HGUS7.25/8	12	7¼	7 7/32	4	—	(36) 16d	(12) 16d	6070 27.04	12980 57.82	4310 19.17	9215 41.00
7 x 9¼ – 9½	HU410-2 HUC410-2	14	7⅛	9⅛	2½	Min.	(14) 16d	(6) 16d	1840 8.18	5780 25.71	1710 7.61	4225 18.79
						Max.	(18) 16d	(8) 16d	2455 10.92	5780 25.71	2280 10.14	4690 20.86
	HHUS7.25/10	14	7¼	9	3 5/16	—	(30) 16d	(10) 16d	4670 20.77	10155 45.17	3370 14.99	7210 32.07
	HGUS7.25/10	12	7¼	8⅝	4	—	(46) 16d	(16) 16d	6840 30.47	15760 70.20	4855 21.60	11190 49.78
7 x 11¼ – 11⅞	HU412-2 HUC412-2	14	7⅛	11⅛	2½	Min.	(16) 16d	(6) 16d	1840 8.18	5780 25.71	1710 7.61	4225 18.79
						Max.	(22) 16d	(8) 16d	2455 10.92	5780 25.71	2280 10.14	4690 20.86
	HGUS7.25/12	12	7¼	10⅝	4	—	(56) 16d	(20) 16d	7640 34.03	16110 71.76	5425 24.13	11435 50.87
7 x 14	HU414-2 HUC414-2	14	7⅛	13⅞	2½	Min.	(20) 16d	(8) 16d	2455 10.92	5780 25.71	2280 10.14	4690 20.86
						Max.	(26) 16d	(12) 16d	3685 16.39	7025 31.25	3420 15.21	6185 27.51
	HGUS7.25/14	12	7¼	12⅝	4	—	(66) 16d	(22) 16d	10130 45.06	18200 81.07	7195 32.00	12920 57.47
7 x 16	HU414-2 HUC414-2	14	7⅛	13⅞	2½	Min.	(20) 16d	(8) 16d	2455 10.92	5780 25.71	2280 10.14	4690 20.86
						Max.	(26) 16d	(12) 16d	3685 16.39	7025 31.25	3420 15.21	6185 27.51
	HGUS7.25/14	12	7¼	12 7/16	4	—	(66) 16d	(22) 16d	10130 45.06	18200 81.07	7195 32.00	12920 57.47
7 x 18	HU414-2 HUC414-2	14	7⅛	13⅞	2½	Min.	(20) 16d	(8) 16d	2455 10.92	5780 25.71	2280 10.14	4690 20.86
						Max.	(26) 16d	(12) 16d	3685 16.39	7025 31.25	3420 15.21	6185 27.51
	HGUS7.25/14	12	7¼	12 7/16	4	—	(66) 16d	(22) 16d	10130 45.06	18200 81.07	7195 32.00	12920 57.47

1. 10d common nails may be used instead of the specified 16d nails at 0.83 of the tabulated value.
2. Uplift loads have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading (K_D = 1.00) such as in cantilever construction.
3. Min. nailing quantity and load values — fill all round holes; Max. nailing quantity and load values — fill all round and triangle holes.
4. Structural composite lumber is LVL, LSL and Parallam® PSL.
5. D-Fir.L factored resistances can be used for most LVL. Verify with manufacturer prior to selecting hanger.
6. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

Parallam is registered trademark of iLevel® by Weyerhaeuser.

HUCQ

SIMPSON Strong-Tie®

Heavy-Duty Joist Hangers

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.

Material: 14 gauge

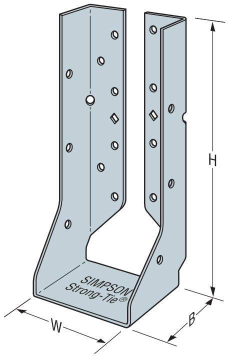
Finish: Galvanized

Installation:

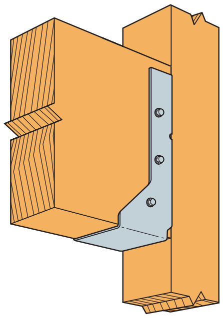
- Use all specified fasteners; see General Notes
- Strong-Drive SDS Heavy-Duty Connector screws supplied
- For use on solid sawn or engineered wood and structural composite lumber products

Options:

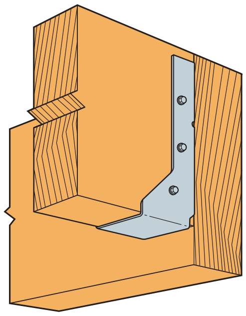
- HUCQ cannot be modified



HUCQ410



Typical HUCQ Installation on a Post



Typical HUCQ Installation on a Beam

SS These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in.) W	Dimensions (in.) H	Dimensions (in.) B	Fasteners Face	Fasteners Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	Factored Resistance D.Fir-L Normal (K_D = 1.00)	Factored Resistance S-P-F Uplift (K_D = 1.15)	Factored Resistance S-P-F Normal (K_D = 1.00)
						lb.	lb.	lb.	lb.
						kN	kN	kN	kN
SS HUCQ1.81/9-SDS1.75	1 13/16	9	3	(8) ¼" x 1¾" SDS	(4) ¼" x 1¾" SDS	1565	4350	1450	3300
						6.96	19.35	6.45	14.68
SS HUCQ1.81/11-SDS1.75	1 13/16	11	3	(10) ¼" x 1¾" SDS	(4) ¼" x 1¾" SDS	1565	5440	1450	3560
						6.96	24.20	6.45	15.84
SS HUCQ410-SDS2.5	3 9/16	9	3	(12) ¼"x 2½" SDS	(6) ¼"x 2½" SDS	3210	6825	2900	6825
						14.28	30.36	12.90	30.36
SS HUCQ412-SDS2.5	3 9/16	11	3	(14) ¼"x 2½" SDS	(6) ¼"x 2½" SDS	3210	9090	2900	7645
						14.28	40.43	12.90	34.01
SS HUCQ610-SDS2.5	5½	9	3	(12) ¼"x 2½" SDS	(6) ¼"x 2½" SDS	3210	6825	2900	6825
						14.28	30.36	12.90	30.36
SS HUCQ612-SDS2.5	5½	11	3	(14) ¼"x 2½" SDS	(6) ¼"x 2½" SDS	3210	9090	2900	7645
						14.28	40.43	12.90	34.01

1. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed. Reduce by 15% for standard term loading such as cantilever construction.
2. When using structural composite lumber columns, Strong-Drive® SDS Heavy-Duty Connector screws must be applied to the wide face of the column.

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 predrilling required.

Material: See table

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

Installation:

- Use all specified fasteners; see General Notes.
- Install with ¼" x 2½" Strong-Drive SDS Heavy-Duty Connector screws, which are provided with the hangers. (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.

Hanger Options

See Hanger Options information on pp. 125–126.

- Hot-dip galvanized available. Order as “X” version; specify HDG.
- Other seat widths available. Order as “X” version; specify width.
- LGU, MGU and HGU hangers are available skewed up to 45°.

Concealed Flange

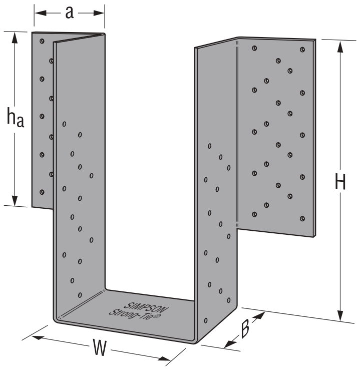
- LGU, MGU, HGU, and HHGU are available with one flange concealed. Specify flange to conceal.
- Factored resistance for one flange-concealed option:
  – LGU 0.83 of published value – HGU 0.70 of published value
  – MGU 0.65 of published value – HHGU 0.84 of published value
- MGU with W ≤ 4" or less and HGU with W ≤ 4¹¹⁄₁₆" or less, flanges cannot be concealed.

Skewed

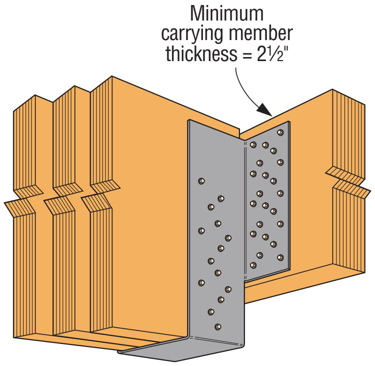
- LGU, MGU and HGU hangers are available skewed up to 45°.
- Concealed flanges are not available with skewed models.
- Apply the following reduction factors to table values:

Reduction Factors for Skewed LGU, MGU, HGU

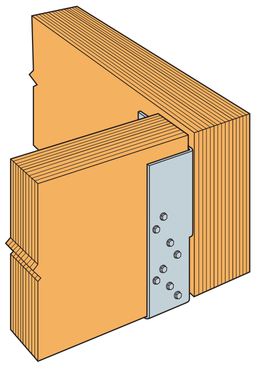
Model	Beam Cut	Download	Uplift
LGU	Square cut	0.90	0.60
	Bevel cut	0.90	0.60
MGU/HGU less than 6" wide	Square cut	0.75	0.65
	Bevel cut	0.80	0.65
MGU/HGU 6" ≤ 7.25" wide	Square cut < 7" wide	0.75	0.55
	Bevel cut	0.80	0.55



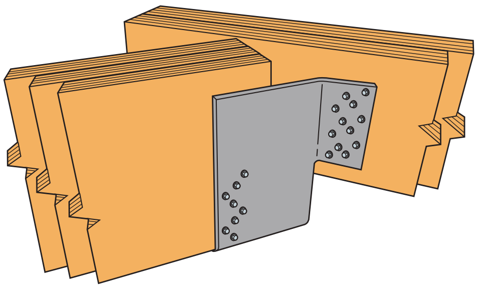
HHGU
(LGU, MGU, HGU similar)



Typical HHGU Installation



Typical MGU Installation with Right Flange Concealed



Typical Skewed MGU Installation

LGU/MGU/HGU/HHGU

High-Capacity Girder Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Ga.	Dimensions (in.)					Fasteners		Factored Resistance			
									D.Fir-L		S-P-F	
		W	B	Min. Height (H)	h_a	a	Header	Joist	Uplift	Normal	Uplift	Normal
									(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)
									lb.	lb.	lb.	lb.
									kN	kN	kN	kN
LGU3.63-SDS2.5	10	3⅝	4½	8	7⅜	3¼	(16) ¼"x 2½" SDS	(12) ¼"x 2½" SDS	7730	10170	5565	7320
									34.38	45.24	24.75	32.56
MGU3.63-SDS2.5	10	3⅝	4½	9¼	8⅝	4	(24) ¼"x 2½" SDS	(16) ¼"x 2½" SDS	10100	13140	7270	9460
									44.93	58.45	32.34	42.08
HGU3.63-SDS2.5	7	3⅝	5¼	11	10⅜	4¾	(36) ¼"x 2½" SDS	(24) ¼"x 2½" SDS	14300	20320	10295	14630
									63.61	90.39	45.79	65.08
MGU5.50-SDS2.5	10	5½	4½	9¼	8⅝	4	(24) ¼"x 2½" SDS	(16) ¼"x 2½" SDS	10100	13140	7270	9460
									44.93	58.45	32.34	42.08
HGU5.50-SDS2.5	7	5½	5¼	11	10⅜	4¾	(36) ¼"x 2½" SDS	(24) ¼"x 2½" SDS	14300	20320	10295	14630
									63.61	90.39	45.79	65.08
HHGU5.50-SDS2.5	3	5½	5¼	13	12⅜	4¾	(44) ¼"x 2½" SDS	(28) ¼"x 2½" SDS	21740	26665	15655	19195
									96.70	118.61	69.64	85.38
HGU7.25-SDS2.5	7	7¼	5¼	11	10⅜	4¾	(36) ¼"x 2½" SDS	(24) ¼"x 2½" SDS	14300	20320	10295	14630
									63.61	90.39	45.79	65.08
HHGU7.25-SDS2.5	3	7¼	5¼	13	12⅜	4¾	(44) ¼"x 2½" SDS	(28) ¼"x 2½" SDS	21740	26665	15655	19195
									96.70	118.61	69.64	85.38
HGU9.00-SDS2.5	7	9	5¼	11	10⅜	4¾	(36) ¼"x 2½" SDS	(24) ¼"x 2½" SDS	14300	20320	10295	14630
									63.61	90.39	45.80	65.08
HHGU9.00-SDS2.5	3	9	5¼	13	12⅜	4¾	(44) ¼"x 2½" SDS	(28) ¼"x 2½" SDS	21740	26665	15655	19195
									96.71	118.62	69.64	85.39

1. Factored uplift resistances have been increased for earthquake and wind loading, with no further increase allowed.
2. Specify H dimension. The Designer should check the shear capacity of the carried member to make sure it matches the hanger's capacity. Maximum H = 30".
3. Header depth must exceed the h_a dimension shown and is based on the size necessary to fit screw pattern. Use the next size up that meets the minimum depth requirement.

Top-Flange Hangers ITS/LT/MIT/HIT

Engineered Wood Product Hangers

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

A dedicated range of top-flange I-joist hangers meeting 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 1⅛" to 1½".

LT

The LT series of top-flange hangers is designed for use with wood I-joists. Installation is fast and easy. The hanger's top flange simplifies placement and the side flanges laterally support the I-joist top flange eliminating the need for web stiffeners. Securing the carried I-joist is simple with only one or two screws required into the bottom flange through the seat of the hanger.

MIT/HIT — Patented 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. 218–238.

Refer to Joist Manufacturer's literature or appropriate Simpson Strong-Tie Connector Selection Guide for actual joist sizes.

Material: ITS, LT — 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. 183–184 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 capacity. See load tables.
- MIT and LT — 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.

Factored Resistances:

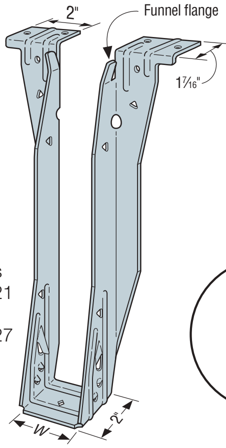
- The ITS, LT, MIT and HIT hangers have locations for optional nails if additional uplift is needed. Optional uplift nailing requires the addition of properly-secured web stiffeners. See the load tables for minimum required fasteners and uplift capacities.

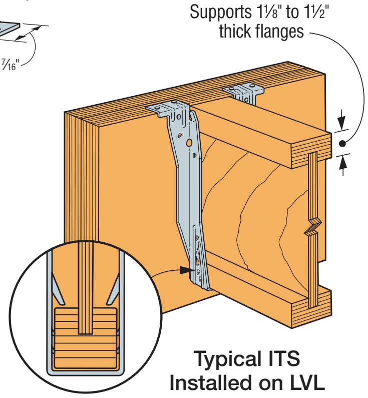
Options:

- Because these hangers are fully die-formed, they cannot be modified. However these models will normally accommodate a skew of up to 5°.

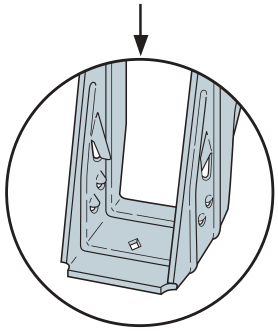
ITS

U.S. Patents 6,523,321 and 6,250,827



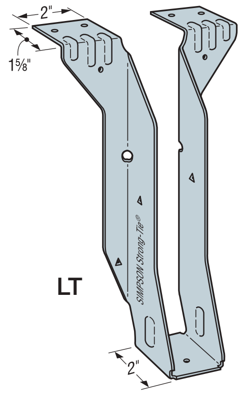


Typical ITS Installed on LVL

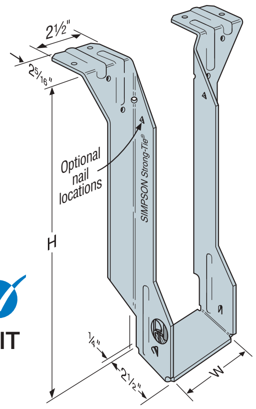


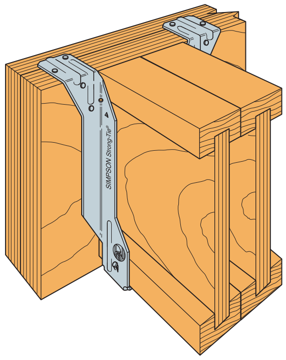
The Strong-Grip™ seat secures I-joists in position without joist nails

LT



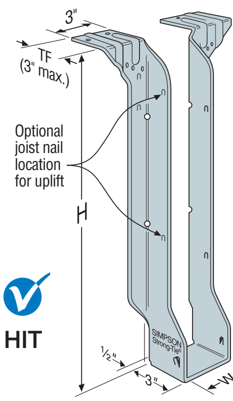
MIT

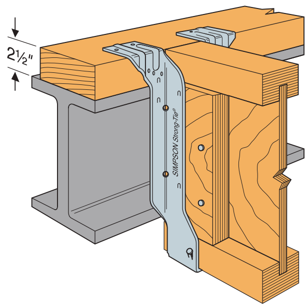




Typical MIT Installed on a Double LVL

HIT





HIT Installation on a 3x Nailer Mounted on a Steel Beam

Top-Flange Hangers ITS/LT/MIT/HIT

SIMPSON Strong-Tie®

Engineered Wood Product Hangers (cont.)

IT Series with Various Header Applications

Model	Fasteners			Factored Resistance							
				Uplift (K_D = 1.15)	Normal (K_D = 1.00)						
	Top	Face	Joist		D.Fir-L	S-P-F	LVL[4]	PSL	LSL	I-Joist[5]
				lb.	lb.	lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN	kN	kN
ITS series (Standard installation)	(4) 10d x 1½"	(2) 10d x 1½"	—	175	2115	1670	2050	1830	2385	1375
				0.78	9.41	7.43	9.12	8.14	10.61	6.12
	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	—
				0.78	9.94	7.52	10.14	8.92	11.63	—
	(4) 16d	(2) 16d	—	175	2375	1795	2610	2550	2795	—
				0.78	10.56	7.98	11.61	11.34	12.43	—
ITS series[8] (Optional installation)	(4) 10d	(4) 10d	(4) 10d x 1½"	830	2870	1805	2545	2345	2770	—
				3.69	12.77	8.03	11.32	10.43	12.32	—
	(4) 16d	(4) 16d	(4) 10d x 1½"	830	2870	1805	2610	2550	2795	—
				3.69	12.77	8.03	11.61	11.34	12.43	—
LT series	(4) 10d x 1½"	(2) 10d x 1½"	(1) #8 x 1¼" WS	105	1910	1480	2175	1980	2215	1695
				0.47	8.50	6.58	9.68	8.81	9.85	7.54
	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	—
				0.47	11.68	7.67	11.39	11.03	11.65	—
	(4) 16d	(2) 16d	(1) #8 x 1¼" WS	105	2760	1850	2560	2480	2620	—
				0.47	12.28	8.23	11.39	11.03	11.65	—
MIT series	(4) 10d x 1½"	(4) 10d x 1½"	(2) 10d x 1½"	375	3145	1825	3330	2455	2630	1900
				1.67	13.99	8.12	14.81	10.92	11.70	8.45
	(4) 10d	(4) 10d	(2) 10d x 1½"	375	3295	2420	3550	3025	2630	—
				1.67	14.66	10.77	15.79	13.46	11.70	—
	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	—
				1.67	15.52	10.77	15.79	13.46	15.41	—
HIT series	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
				2.00	20.33	12.03	16.57	14.32	16.79	—

1. When I-joist is used as header, all nails must be 10d x 1½".
2. Resistances may not be increased for short-term loading.
3. Uplift resistances are based on D.Fir-L, and have been increased 15% for wind or earthquake loading with no further increase allowed. Divide by 1.15 for normal loading criteria like cantilever construction. For S-P-F use 0.71 x resistance.
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 S-P-F column.
5. For I-joist flanges less than 1½" thick multiply table values by a factor of 0.85.
6. Minimum solid header thickness to achieve LT table loads is 1¾".
7. Structural composite lumber is LVL, LSL and Parallam® PSL.
8. ITS optional installation requires web stiffeners installed per I-joist manufacturers recommendations.
9. For 16 and 18 gauge, 3½" wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).
10. **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. 27–28 for other nail sizes and information.

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Top-Flange Hangers ITS/LT/MIT/HIT

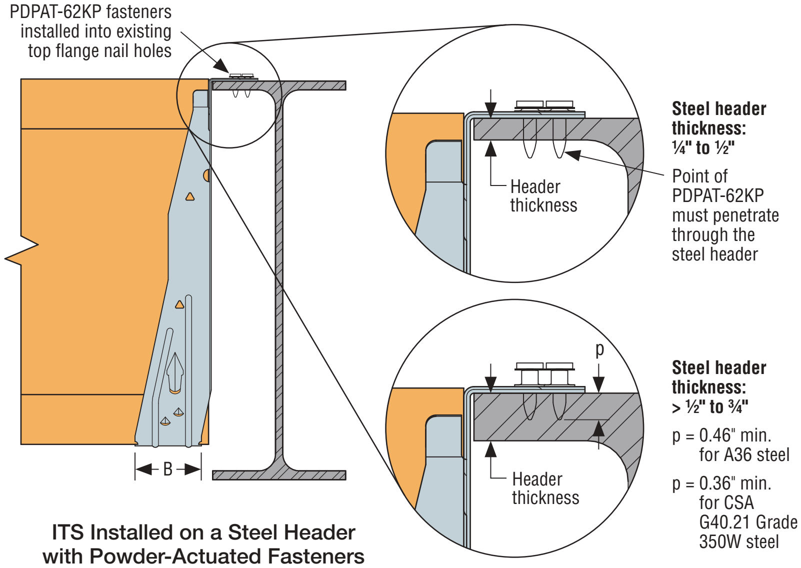
Engineered Wood Product Hangers (cont.)

Model	Nailer	Header Nailing	Factored Normal Resistance (K_D = 1.00) D.Fir-L lb. / kN	S-P-F lb. / kN	LSL lb. / kN
ITS series (Standard installation)	2x	(6) 10d x 1½"	1855	1855	—
			8.25	8.25	—
	2-2x	(6) 10d	1855	1855	—
			8.25	8.25	—
ITS series (Optional installation)	2-2x	(8) 10d	2560	2240	—
			11.39	9.96	—
	4x	(8) 16d	2770	—	—
			12.32	—	—
	Steel	(4) 0.157" x ⅝" PAT	2035	2035	—
			9.05	9.05	—
LT series	2x	(6) 10d x 1½"	1770	1620	1995
			7.87	7.21	8.87
	2-2x	(6) 10d	2310	1995	—
			10.28	8.87	—
	4x	(6) 16d	2665	—	—
			11.85	—	—
MIT series	2x	(6) 10d x 1½"	2140	2055	2630
			9.52	9.14	—
	2-2x	(8) 10d	2365	2055	—
			10.52	9.14	—
	3x	(8) 16d x 2½"	2720	2430	—
			12.10	10.81	—
	4x	(8) 16d	3090	—	—
			13.75	—	—
	Steel	(4) 0.157" x ⅝" PAT	2960	2960	—
			13.17	13.17	—
HIT series	2-2x	(10) 10d	3815	—	—
			16.97	—	—
	3x	(10) 16d x 2½"	4645	—	—
			20.66	—	—
	4x	(10) 16d	4670	—	—
			20.77	—	—

Nailer Table

This table indicates the maximum factored normal resistances for ITS/LT/MIT/HIT hangers used on wood nailers. The header nail type must be substituted for those listed in other tables.

1. Maximum factored uplift resistance (K_D = 1.15) for nailer applications is the lesser of the value shown in "Various Header Applications" table or 310 lb. (1.38kN).
2. For 16 and 18 gauge, 3½"-wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).
3. Steel nailer factored resistances apply to steel header material with thickness between ¼" and ¾" with minimum F_y = 250 MPa. Design of steel header by Designer.
4. 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.
5. **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. 27–28 for other nail sizes and information.



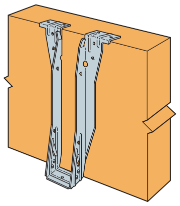
ITS Installed on a Steel Header with Powder-Actuated Fasteners
(MIT, LBV, BA similar)

PDPAT

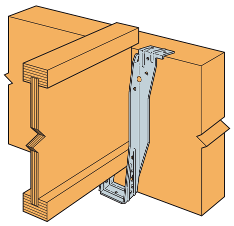
Top-Flange Hangers ITS/LT/MIT/HIT

Engineered Wood Product Hangers (cont.)

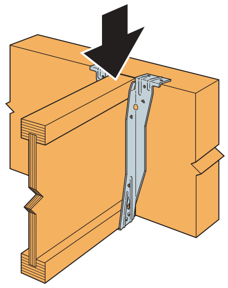
ITS Installation Sequence



Step 1
Attach the ITS to the header.



Step 2
Slide the I-joist downward into the ITS until it rests above the Strong-Grip™ seat.



Step 3
Firmly push or snap I-joist fully into the seat of the ITS.

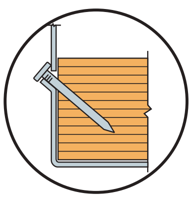
Optional Nailing for Increased Uplift

Model	Fasteners			Factored Uplift Resistance (K_D = 1.15)	
	Top	Face	Joist	D.Fir-L	S-P-F
				lb.	lb.
				kN	kN
LT series	(4) 10d x 1½"	(4) 10d x 1½"	(2) 10d x 1½"	380	380
				1.69	1.69
	(4) 10d	(4) 10d	(2) 10d x 1½"	380	380
				1.69	1.69
	(4) 16d	(4) 16d	(2) 10d x 1½"	380	380
				1.69	1.69
MIT series	(4) 10d x 1½"	(4) 10d x 1½"	(4) 10d x 1½"	895	705
				3.98	3.14
	(4) 10d	(4) 10d	(4) 10d x 1½"	895	705
				3.98	3.14
	(4) 16d	(4) 16d	(4) 10d x 1½"	895	705
				3.98	3.14
HIT series	(4) 16d	(6) 16d	(4) 10d x 1½"	895	705
				3.98	3.14
	(4) 16d	(6) 16d	(6) 10d x 1½"	1345	1175
				5.98	5.23

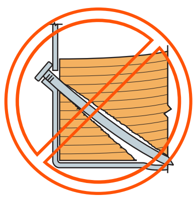
1. Factored resistances have been increased 15% for wind or earthquake loading with no further increase allowed. Reduce according to the code for normal loading criteria such as in cantilever construction.
2. Web stiffeners are required on I-joist for additional nailing.

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. 27–28 for other nail sizes and information.

Positive Angle Nailing



Correct Nailing
Approx. 45° Angle



Nail Too Long

Nail at Wrong Angle

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. 218–238.

Material: See tables on pp. 207–209.

- 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.

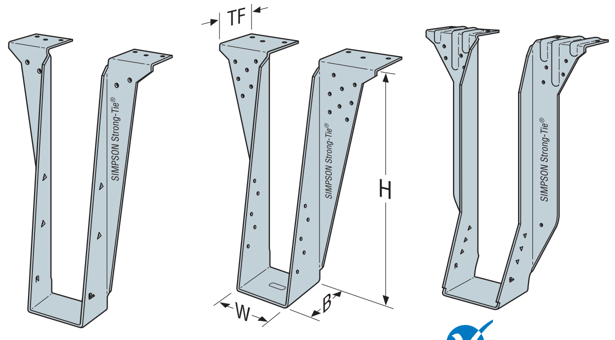
Finish: LBV, B, BA and HB — Galvanized; all saddle hangers and all welded sloped and special hangers — Simpson Strong-Tie® gray paint. LBV, B, BA and HB may be ordered hot-dip galvanized; specify HDG.

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 ⅛" x 2" fillet weld to each side of each top flange tab for 14 and 12 gauge and 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. 18, note m for weld information. Weld on applications produce the maximum factored normal resistance listed. For uplift values 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.
- 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:

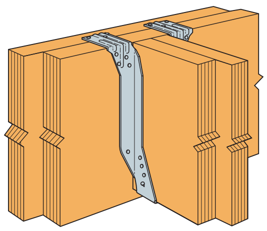
- BA is not modifiable. See modifications on pp. 126–127.
- Other widths are available; specify W dimension (the minimum W dimension is 19⁄16").
- The coating on special B hangers will depend on the manufacturing process used. Check with your Simpson Strong-Tie representative for details. Hot-dip galvanized available: specify HDG.



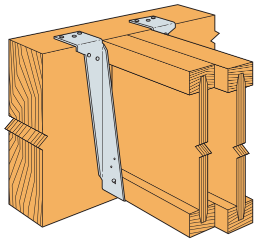
LBV

HB
(B similar)

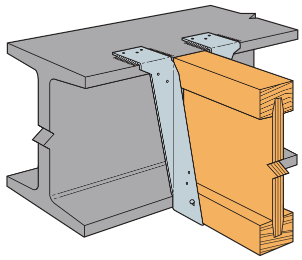
BA
U.S. Patent 7,334,372



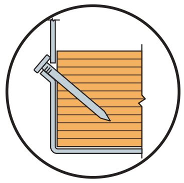
BA Installed LVL to LVL Max. Nailing



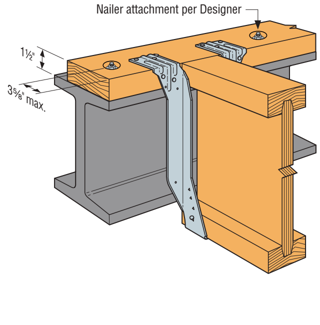
Typical Double LBV Hanger Installation



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)

I-Joist and Structural Composite Lumber Hangers (cont.)

B Series with Various Header Applications

Model Series	Fasteners			Factored Resistance						
	Top	Face	Joist	Uplift[1] (K_D = 1.15)	Normal (K_D = 1.00)					
					D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
				lb.	lb.	lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN	kN	kN
LBV	(6) 10d x 1½"	(4) 10d x 1½"	(2) 10d x 1½"	435	3165	2340	3760	3885	3295	2200
				1.94	14.08	10.41	16.73	17.28	14.66	9.79
	(6) 10d	(4) 10d	(2) 10d x 1½"	435	3890	2805	3760	3885	4330	—
				1.94	17.33	12.48	16.73	17.28	19.26	—
	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	—
				1.94	17.37	13.90	17.37	19.62	20.60	—
BA (Min.)	(6) 10d x 1½"	(10) 10d x 1½"	(2) 10d x 1½"	—	—	—	—	—	—	2420
				—	—	—	—	—	—	10.77
	(6) 10d	(10) 10d	(2) 10d x 1½"	435	4470	3975	4695	5385	5665	—
				1.94	19.88	17.68	20.89	23.95	25.20	—
	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	—
				1.94	22.20	19.44	25.96	23.95	25.89	—
BA (Max.)	(6) 10d	(10) 10d	(8) 10d x 1½"	1960	5265	4035	5825	5945	5980	—
				8.72	23.42	17.95	25.91	26.45	26.60	—
	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
				8.72	26.42	19.44	28.87	31.47	27.51	—
B	(6) 10d	(8) 10d	(6) 10d x 1½"	1650	5265	3590	5825	5230	5965	—
				7.34	23.42	15.97	25.91	23.27	26.53	—
	(6) 16d	(8) 16d	(6) 16d x 2½"	1650	5940	3910	6490	5230	6185	—
				7.34	26.42	17.39	28.87	23.27	27.51	—
HB[8]	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
				15.81	41.53	26.45	42.37	41.10	46.60	—

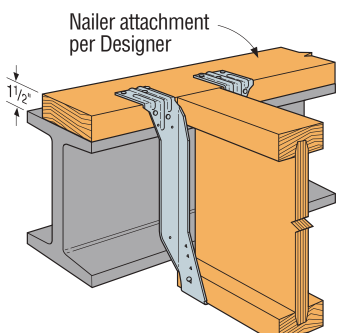
1. Factored uplift resistances shown are for D.Fir-L. Multiply tabulated loads x 0.71 for either SPF joist or header.
2. Factored resistances shown are for header connection only. The Designer must ensure the joist is capable of generating the factored resistances shown.
3. Applies to LVL headers made 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 S-P-F column.
4. I-joist values shown refer to I-joists made with SPF or LVL flanges.
5. I-joists with flanges less than 1⁵⁄₁₆" thick used in combination with hangers thinner than 14 gauge may deflect an additional ¹⁄₃₂" beyond the standard ⅛" limit.
6. For flanges with thicknesses from 1⁵⁄₁₆" to 1⅜", use 0.85 of the I-joist header value. For flanges with thicknesses from 1⅛" to 1¼", use 0.75 of the I-joist header value.
7. For LBV optional uplift, fill all triangle holes with 10d x 1½" nails. Uplift resistances are 1465 lb. (6.52 kN) D.Fir-L and 1040 lb. (4.63 kN) S-P-F.
8. Values shown are for a minimum joist width of 2½".
9. **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. 27–28 for other nail sizes and information.

I-Joist and Structural Composite Lumber Hangers (cont.)

Nailer Table

This shows the maximum factored resistances for BA, LBV, 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. This table also applies to sloped-seat hangers.

Model No.	Nailer	Header Fasteners	Factored Normal Resistance (K_D = 1.00)	
			D.Fir-L	S-P-F
			lb.	lb.
			kN	kN
LBV	2x	(10) 10d x 1½"	2835	2340
			12.61	10.41
	(2) 2x	(10) 10d	2835	2340
			12.61	10.41
	3x	(10) 16d x 2½"	3135	—
			13.95	—
	4x	(10) 16d	3135	—
			17.44	—
	Steel	(6) 0.157 x ⅝" PAT	4405	4405
			19.60	19.60
BA	2x	(10) 10d x 1½"	3220	2870
			14.32	12.77
	(2) 2x	(14) 10d	3915	3660
			17.41	16.28
	3x	(14) 16d x 2½"	4055	—
			18.04	—
	4x	(14) 16d	4055	—
			18.04	—
	Steel	(6) 0.157 x ⅝" PAT	4700	4700
			20.91	20.91
B	2x	(10) 10d x 1½"	2835	2340
			12.63	10.42
	(2) 2x	(14) 10d	3915	3660
			17.41	16.28
	3x	(14) 16d x 2½"	4055	—
			18.04	—
	4x	(14) 16d	4055	—
			18.04	—
HB	4x	(22) 16d	9015	—
			40.15	—

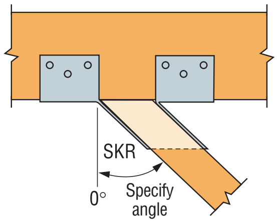


BA installed
2X nailer on steel beam
minimum nailing.

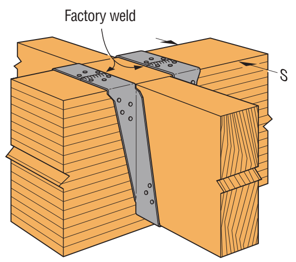
1. Maximum factored uplift resistance (K_D = 1.15) is the lesser of the value shown in the table on p. 207 or 385 lb. (1.71kN).
2. Steel nailer factored resistances apply to steel header material with thickness between ¼" and ¾" with minimum F_y = 250 MPa. Design of steel header by Designer.
3. 0.157" 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. 204.
4. **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. 27–28 for other nail sizes and information.

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 3⁹⁄₁₆". Minimum supporting member width is 3½". Minimum nailer thickness apply. Saddle hangers achieve factored resistances listed. Saddle hangers on stud walls do not achieve factored resistances listed.



Top View B Hanger
Skewed Right



Typical BD
Saddle Installation

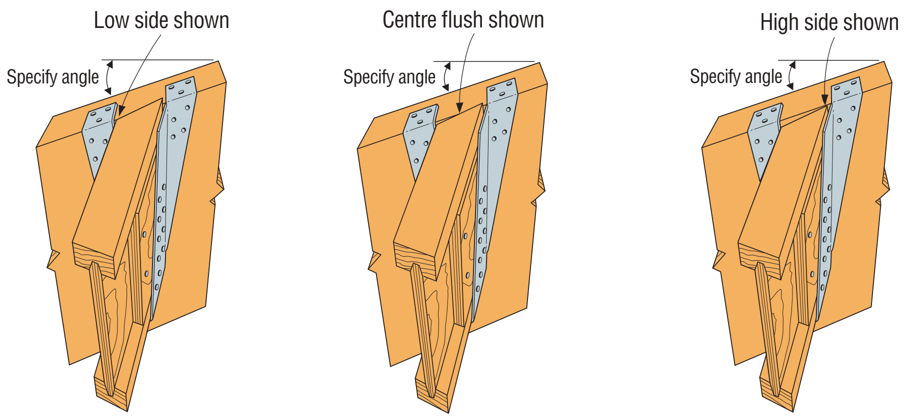
LBV/BA/B/HB

I-Joist and Structural Composite Lumber Hangers (cont.)

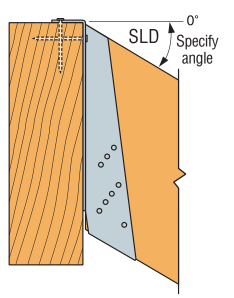
Reduction Factors for Modified Hangers[1]

Hanger Series	Condition		Sloped Down	Sloped Up	Skewed Only	Sloped Down and Skewed		Sloped Up and Skewed		TF Down	TF Open/ Closed
	Angle Limit		45	45	45	45		45		35	30
LBV	Minimum height		6	6	6	9¼	14	9¼	14	11¼	9¼
	All widths	Download	0.98	0.68	1.00	0.97	1.00	1.00	0.68	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	1.00	1.00	1.00	0.86	0.86	1.00	1.00
B	Minimum height		6	6	6	9¼	14	9¼	14	14	9¼
	Less than 2½" wide	Download	0.64	0.49	0.70	0.64	0.86	0.49	0.49	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	0.95	1.00	1.00	0.76	0.76	1.00	1.00
	2½" and wider	Download	0.80	0.97	0.81	0.75	1.00	0.97	0.49	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	0.95	1.00	1.00	0.76	0.76	1.00	1.00
HB	Minimum height		8	8	8	11¼	14	11¼	14	14	11¼
	Less than 2½" wide	Download	0.69	0.51	0.95	0.55	0.52	0.51	0.51	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	0.53	0.82	1.00	0.53	0.53	1.00	1.00
	2½" and wider	Download	0.87	0.79	0.95	0.60	1.00	0.79	0.79	(90–x)/90	(90–x)/90
		Uplift	1.00	1.00	0.53	1.00	1.00	0.53	0.53	1.00	1.00
HHB GB HGB	Minimum height		9¼	—	—	—	—	—	—	—	—
	All widths	Download	0.60	—	—	—	—	—	—	—	—
		Uplift	1.00	—	—	—	—	—	—	—	—

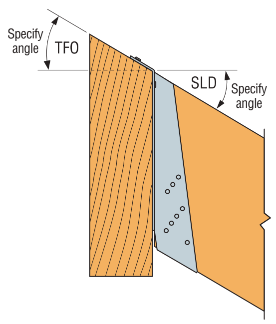
1. B and HB hangers less than 2½" wide are assumed to use 10d x 1½" joist nails.
2. B and HB hangers 2½" or wider are assumed to use 16d x 2½" or 16d common nails in the joist.
3. For B and HB hangers with TF Down that are less than 5⅜" in width, minimum hanger height is 11¼".
4. In the table the term “x” refers to the angle of the modification.
5. For top-flange closed option, install upper nails slightly angled downward to avoid interference with top flange.



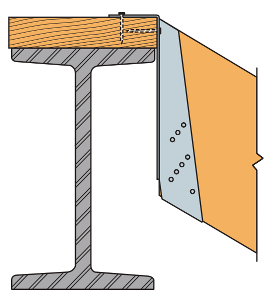
B hanger sloped down and skewed left with sloped top flange Installation. When ordering, specify low side flush, centre flush or high side flush.



Typical LBV Sloped Down Installation with Full Backing



Typical LBV Sloped Down with Top Flange Open



Typical LBV Sloped Down on Nailer Non-Backed

W/WP/WPU/WMU/HW/HWU/HWP/HWPH

I-Joist and Structural Composite Lumber Hangers

The W, WP, WPU, HWU and HW series purlin hangers offer the greatest design flexibility and versatility. WMs are designed for use on standard 8"-grouted masonry block wall construction.

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

Material: See tables on p. 211. W, WI—12 ga. top flange and stirrup; WMU — 12 ga. top flange and stirrup; WPU, WP — 7 ga. top flange, 12 ga. stirrup; HW, HWI — 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:

- Use all specified fasteners. WMU — two 16d duplex nails must be installed into the top flange and embedded into the grouted wall for mid-wall applications. Verify that the header can take the required fasteners specified in the table.
- Hangers may be welded to steel headers with ⅛" for W, WI, ³⁄₁₆" for WP, WPI, and ¼" for HW, HWI, by 1½" fillet welds located at each end of the top flange. Weld-on applications produce maximum factored resistance listed. Uplift resistances 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.
- Hangers can support joists sloped up to ¼:12 using table values. For joists sloping between ¼:12 – ⅜:12 use 85% of table value.
- Embed WMU into block with a minimum of one course above and one course below the top flange with one 15M vertical rebar minimum 24" long in each cell. Minimum grout strength is 15 MPa.
- Web stiffeners are required for standard joist nailing configuration with this hanger.

Options:

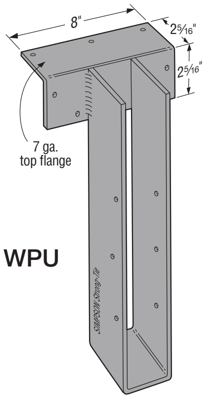
- See Hanger Options information on pp. 125–127.
- Specify alternate nailing pattern when web stiffeners are not being used (up to 16" in depth). Add X ANP after model number for nailing into the flange, available for 90° applications only. Uplift resistances do not apply to this application.
- Some 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 3½".
- 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 centre of joist will be flush with the top of the header (see illustration).
- Uplift resistances are not available for open/closed TF, TF sloped and offset options.

Saddle Hanger

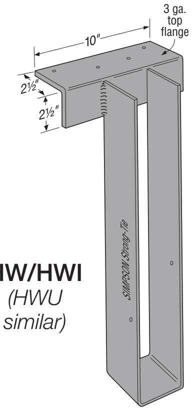
- To order, add D to model and specify S dimension (see illustration).
- Saddle hangers achieve catalogue load listed. Saddle hangers on stud walls do not achieve catalogue loads.
- Recommended S dimension is ¹⁄₁₆" oversized for carrying members 2½" wide and less or ⅛" oversized for greater than 2½" wide.
- Saddle versions are available on the W and HW models.

Ridge Hanger (not available for uplift models)

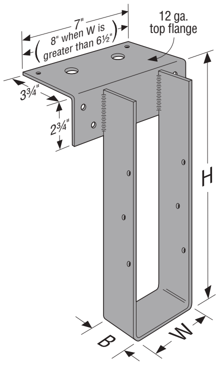
- Top flange may be sloped to a maximum of 35° to accommodate a ridge (see illustration). Specify angle of the slope. Reduce factored resistance using straight-line interpolation. See Open/Closed example.



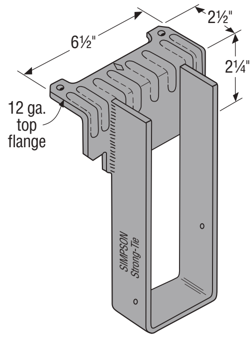
WPU



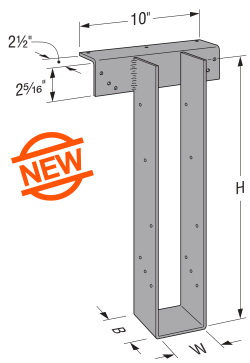
HW/HWI
(HWU similar)



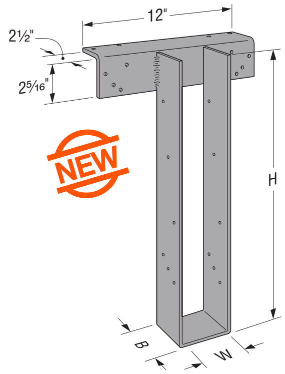
WMU



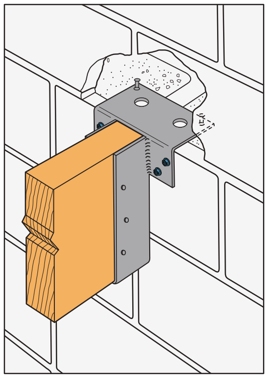
W/WI



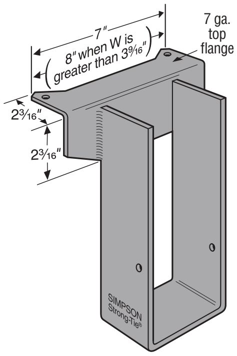
HWP



HWPH



WMU Mid-Wall Installation
See pp. 338–339 for models and more information



WP/WPI

Engineered Wood and Structural Composite Lumber Connectors

W/WP/WPU/WMU/HW/HWU/HWP/HWPH

I-Joist and Structural Composite Lumber Hangers (cont.)

W Series with Various Header Applications

Model	Joist (in.) Width	Joist (in.) Depth	Fasteners Top	Fasteners Face	Fasteners Joist	Factored Resistance Uplift[1] (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	Masonry
						lb.	lb.	lb.	lb.	lb.	lb.	lb.
						kN	kN	kN	kN	kN	kN	kN
W/WI	1½ to 4	3½ to 30	(2) 10d x 1½"	—	(2) 10d x 1½"	—	2455	2375	2675	2850	—	—
						—	10.92	10.56	11.90	12.68	—	—
	1½ to 4	3½ to 30	(2) 10d	—	(2) 10d x 1½"	—	2920	2375	3425	3305	—	—
						—	12.99	10.56	15.24	14.70	—	—
	1½ to 4	3½ to 30	(2) 16d	—	(2) 10d x 1½"	—	2955	2375	3820	3190	—	—
						—	13.15	10.56	16.99	14.19	—	—
WMU	1½ to 1¾	9 to 28	(2) 16d DPLX	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	860	Mid-Wall Installation					5300
						3.83						23.58
	2½ to 7½	9 to 28	(2) 16d DPLX	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	860						6060
						3.83						26.96
	1½ to 7½	9 to 28	(2) ¼" x 1¾" Titens	(4) ¼" x 1¾" Titens	(6) 10d x 1½"	745	Top-of-Wall Installation					5300
						3.31						23.58
WP/ WPI	1½ to 7½	3½ to 30	(3) 10d x 1½"	—	(2) 10d x 1½"	—	4095	3345	4695	4720	—	—
						—	18.22	14.88	20.89	21.00	—	—
	1½ to 7½	3½ to 30	(3) 10d	—	(2) 10d x 1½"	—	4095	3550	3885	4720	5980	—
						—	18.22	15.79	17.28	21.00	26.60	—
	1½ to 7½	3½ to 30	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
						—	19.71	17.15	26.47	24.15	26.60	—
WPU	1¾ to 5½	7¼ to 18	(3) 16d	(4) 16d	(6) 10d x 1½"	1665	6390	6390	6825	7085	5980	—
						7.41	28.43	28.43	30.36	31.52	26.60	—
	1¾ to 5½	18½ to 28	(3) 16d	(4) 16d	(6) 10d x 1½"	595	6390	6390	6825	7085	5980	—
						2.65	28.43	28.43	30.36	31.52	26.60	—
HWP	1½ to 7	6 to 15⅝	(3) 16d	(6) 16d	(10) 10d x 1½"	2125	5210	5210	5210	5870	5675	—
						9.45	23.18	23.18	23.10	26.11	**25.24**	—
	1½ to 7	15¾ to 28	(3) 16d	(6) 16d	(12) 10d x 1½"	2145	5210	5210	5210	5870	5675	—
						9.54	23.18	23.18	23.18	26.11	**25.04**	—
HW/ HWI	1½ to 7½	3½ to 32	(4) 10d	—	(2) 10d x 1½"	—	6900	5285	4695	5810	—	—
						—	30.69	23.51	20.89	25.85	—	—
	1½ to 7½	3½ to 32	(4) 16d	—	(2) 10d x 1½"	—	6900	5285	7695	5810	6870	—
						—	30.69	23.51	34.23	25.85	30.56	—
HWU	1¾ to 3½	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"	1775	10170	8875	10170	8325	8925	—
						7.90	45.24	39.48	45.24	37.03	39.70	—
	1¾ to 3½	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	1490	10170	8875	10170	8325	8925	—
						6.63	45.24	39.48	45.24	37.03	39.70	—
	1¾ to 3½	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	1520	10170	8875	10170	8325	8925	—
						6.76	45.24	39.48	45.24	37.03	39.70	—
	4½ to 7⅛	9 to 18	(4) 16d	(4) 16d	(6) 10d x 1½"[2]	1775	8250	8250	8250	8250	8250	—
						7.90	36.70	36.70	36.70	36.70	36.70	—
	4½ to 7⅛	18½ to 28	(4) 16d	(4) 16d	(6) 10d x 1½"	1490	8250	8250	8250	8250	8250	—
						6.63	36.70	36.70	36.70	36.70	36.70	—
	4½ to 7⅛	28½ to 32	(4) 16d	(4) 16d	(8) 10d x 1½"	1520	8250	8250	8250	8250	8250	—
						6.76	36.70	36.70	36.70	36.70	36.70	—
HWPH	2½ to 7	6 to 15⅝	(4) 16d	(8) 16d	(10) 10d x 1½"	2740	7905	5970	8310	8850	7910	—
						12.19	35.16	26.56	36.97	39.37	**33.19**	—
	2½ to 7	15¾ to 32	(4) 16d	(8) 16d	(12) 10d x 1½"	2815	7905	5970	8310	8850	7910	—
						12.52	35.16	26.56	36.97	39.37	**33.19**	—

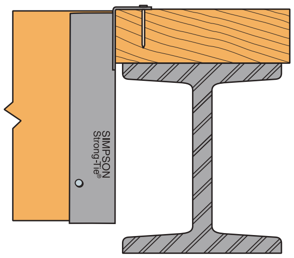
1. Factored uplift resistances shown are for D.Fir-L. Multiply tablulated resistances x 0.71 for either SPF joist or header.
2. Factored resistances shown are for header connection only. The Designer must ensure the joist is capable of generating the factored resistances shown.
3. Factored uplift resistances have been increased 15% for short-term lead duration. Reduce where other load durations govern.
4. Structural composite lumber is LVL, LSL and Parallam® PSL.
5. WP/WPI quantity of nail holes in top flange varies.
6. 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 S-P-F column.
7. Titen® ¼" x 1¾" installed on top of wall after grout has cured.
8. **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. 27–28 for other nail sizes and information.

I-Joist and Structural Composite Lumber Hangers (cont.)

Nailer Table

The table indicates the maximum factored normal resistances 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. This table also applies to sloped-seat hangers.

Model	Nailer	Top Flange Nailing	Factored Resistance (K_D = 1.00) D.Fir-L	S-P-F	LSL
			lb.	lb.	lb.
			kN	kN	kN
W	2x	(2) 10d x 1½"	2470	2470	—
			11.00	11.00	—
	(2) 2x	(2) 10d	2730	2730	—
			12.14	10.61	—
	3x	(2) 16d x 2½"	2895	2855	—
			12.88	12.70	—
	4x	(2) 10d	3025	2855	—
			13.46	12.70	—
WP	2x	(2) 10d x 1½"	3665	3630	4900
			16.30	16.15	21.82
	(2) 2x	(2) 10d	4475	3760	—
			19.91	16.75	—
	3x	(2) 16d x 2½"	4110	3760	—
			18.28	16.75	—
	4x	(2) 10d	4475	3760	—
			19.91	16.75	—
WPU	(2) 2x	(7) 10d	4475	3760	—
			19.91	16.75	—
	3x	(7) 16d x 2½"	4110	3760	—
			18.28	16.75	—
	4x	(7) 10d	4475	3760	—
			19.91	16.75	—
NEW HWP	(2) 2x	(9) 10d	6020	—	—
			26.78	—	—
	3x	(9) 16d x 2½"	6020	—	—
			26.78	—	—
	4x	(9) 16d x 2½"	6580	—	—
			29.27	—	—
HW	(2) 2x	(4) 10d	7600	—	—
			33.81	—	—
	3x	(4) 16d x 2½"	7600	—	—
			33.81	—	—
	4x	(4) 16d	7670	—	—
			34.16	—	—
HWU	(2) 2x	(8) 16d x 2½"	7880	—	—
			35.05	—	—
	3x	(8) 16d x 2½"	7880	—	—
			35.05	—	—
	4x	(8) 16d	7880	—	—
			35.05	—	—
NEW HWPH	(2) 2x	(12) 16d x 2½"	8270	—	—
			36.79	—	—
	3x	(12) 16d x 2½"	8360	—	—
			37.19	—	—
	4x	(12) 16d	8360	—	—
			37.19	—	—



Installation on Wood Nailer

I-Joist and Structural Composite Lumber Hangers (cont.)

Modifications and Associated Reduction Factors for W/WP/WPU/WMU/HW/HWU

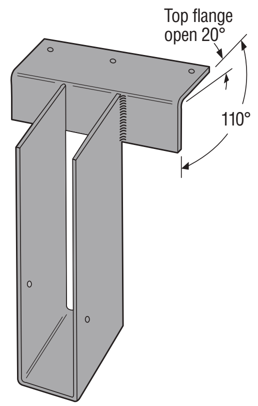
Model	Seat			Top Flange				Joist Height
	Seat Sloped Up or Down 45° Max.	Seat Skewed Left or Right 84° Max.[1]	Seat Sloped and Skewed	Top Flange[2] Sloped 30° Max.	Top Flange Bent[2] Open or Closed 30° Max.	Top Flange Offset	Top Flange Offset and Skewed Seat	Joist Shorter Than Hanger
W/WP/HW	1.00	1.00	1.00	(90–x) / 90	(90–a) / 90 HW cannot be bent closed	0.50	Use the lower of the factor or max. load 0.42 or 2905 lb. (12.92 kN) max.	By more than ½" 0.50 By ½" or less 1.00
WPU/HWU	0.50	0.50	0.50					

1. WPU, WNPW, HWU have a maximum skew of 45° and/or maximum slope of 45° and can only be skewed and/or sloped when W ≤ $3\frac{9}{16}$".
2. For straight-line interpolation, "a" is the specified angle.
3. Reduction factors are not cumulative. Use the lowest factor that applies.

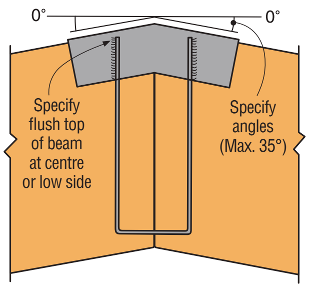
Reduction Factor Instructions

Factored Down Resistance = (lowest of Seat, Top Flange, or Joist Height) × (Table Value)

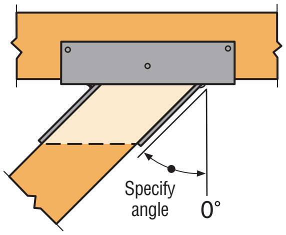
Factored Uplift Resistance = (lowest of Top Flange or Joist Height) × (Table Value), but not available when the Top Flange is open/closed, sloped or offset



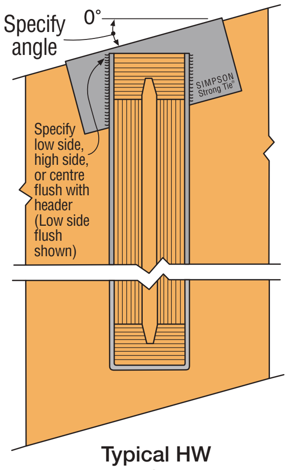
WNP with Open Top Flange



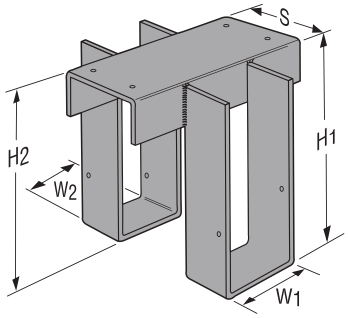
Typical W Ridge Installation
(Reduce factored resistance using straight-line interpolation. Not available for uplift models.)



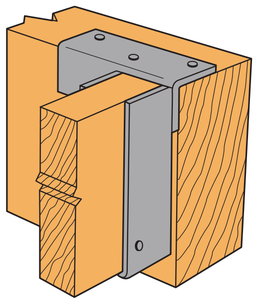
Typical W Top View Skewed Left Type A Hanger
(bevel-cut joist shown)



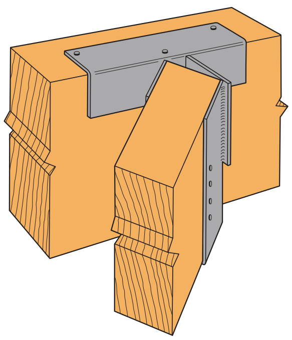
Typical HW Top Flange Sloped Down Left with Low Side Flush



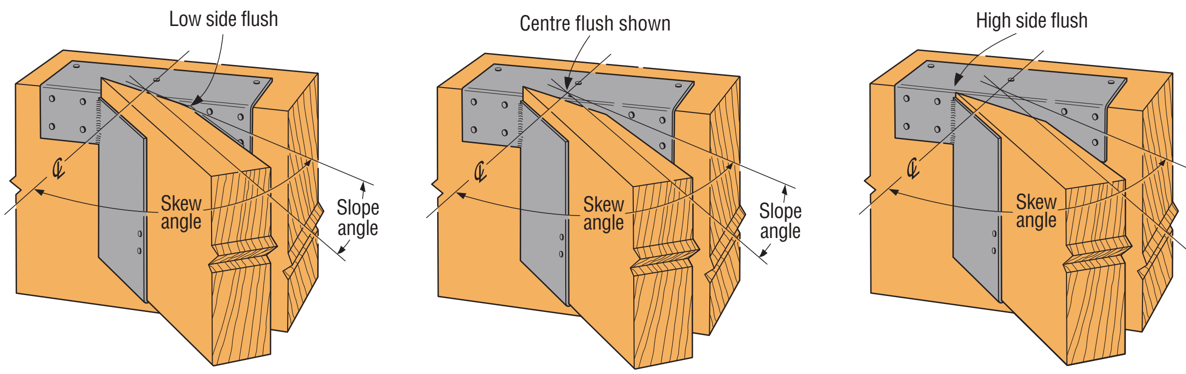
WD Saddle Hanger



Typical W Top Flange Offset Left



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



Typical HW sloped down, skewed right with type A hanger (Joist end must be bevel cut). When ordering, specify low side flush, centre flush or high side flush.

Heavy-Duty Hangers

GLTV and HGLTV hangers are designed for use with Structural Composite Lumber headers, and may take heavy 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 series.

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

Finish: Simpson Strong-Tie® gray paint

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 3⁄16" x 2½" fillet weld at each end of the top flange for GLTV, and a ¼" x 2½" fillet weld at each end of the top flange for HGLTV. Weld-on applications produce maximum factored resistances listed. Uplift resistances do not apply to this application.
- Web stiffeners are required with I-joists using this hanger style.
- Nailers and ledgers must be a minimum of 4x lumber to guarantee the resistances given in the tables. Thinner lumber or laminated veneer lumber used as a nailer must be evaluated by the Building Designer. The HGLTV series cannot be used with a nailer.

Options:

- See Hanger Options information on pp. 125–127.
- Hot-dip galvanized: specify HDG.
- Bevel-cut the carried beam for skewed hangers.

Hanger Height

- For hangers exceeding the joist height by ½", the factored resistance is 50% of the table value.

Sloped and/or Skewed Seat

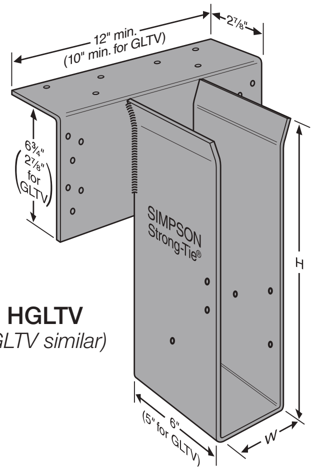
- GLTV and HGLTV series may be skewed to a maximum of 50° or sloped to a maximum of 45°.
- For skews greater than 15°, multiply the tabulated factored uplift resistance by 0.50.
- For sloped only, multiply the table value by 0.78 for GLTV to a maximum of 8135 lb. For HGLTV multiply the table value by 0.85 to a maximum of 12605 lb.
- For skewed only, multiply the table value by 0.87 for GLTV to a maximum of 9510 lb. For HGLTV multiply the table value by 0.73 to a maximum of 10890 lb.
- For sloped and skewed GLTV configurations, multiply the table values by 0.78 to a maximum of 8130 lb. Sloped and skewed combinations are not allowed for the HGLTV.

Sloped Top Flange

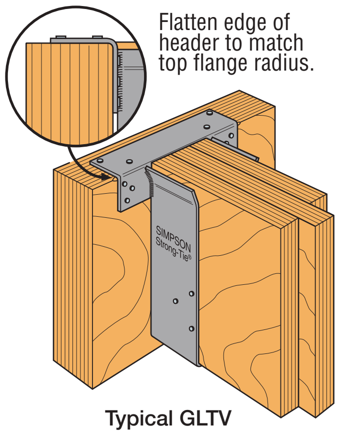
- A top flange may be sloped down left or down right to 30° with or without a sloped and/or skewed seat (see illustration). Reduce tabulated factored resistances using straight-line interpolation.
- Example: For a top flange sloped 30°, reduce resistance to [(90-30)/90] x table value.

Offset Top Flange

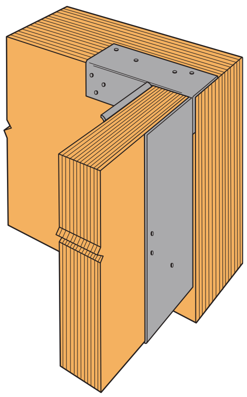
- The top flange may be offset left or right for placement at the end of a header. Minimum seat width 3¼". The maximum factored resistance is 0.50 of the table value for the GLTV and 0.45 for the HGLTV.
- For skewed and offset top flange hangers, the maximum factored resistance is 5085 lb.
- No uplift resistance.



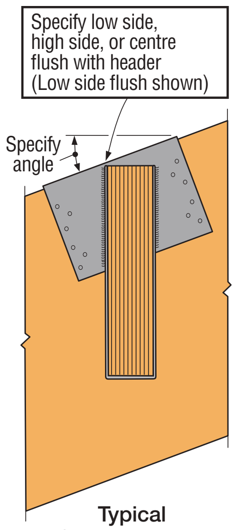
HGLTV
(GLTV similar)



Typical GLTV Installation



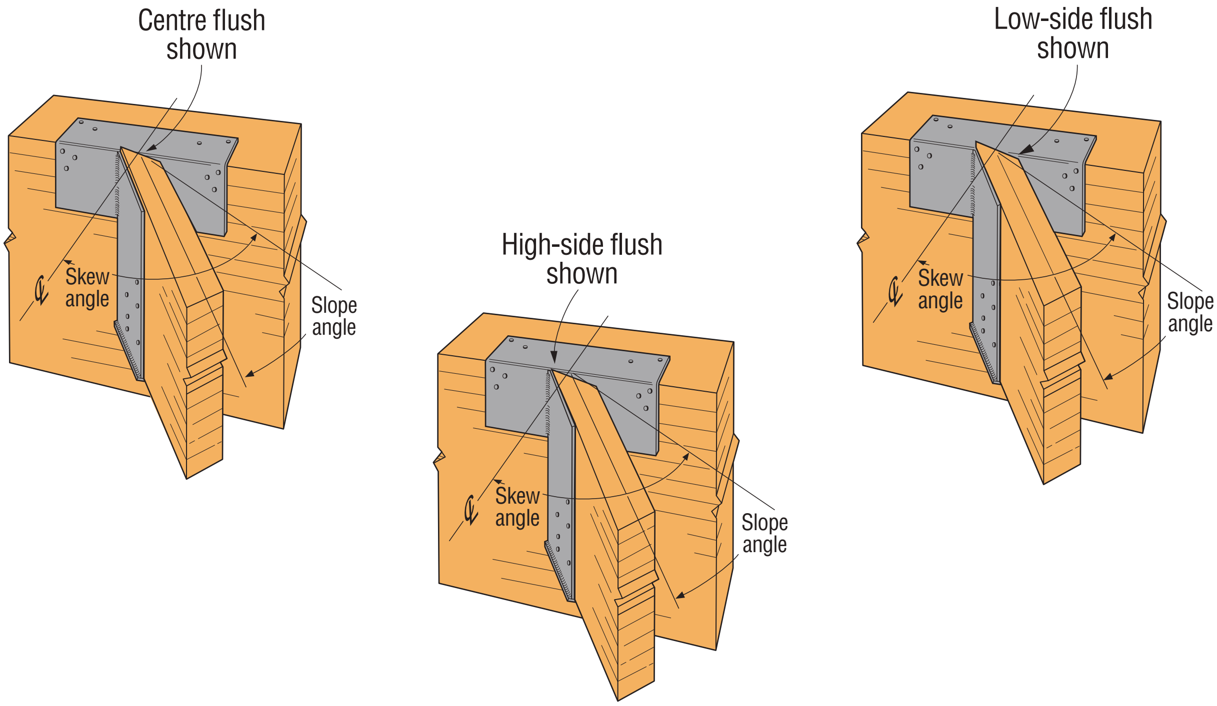
Typical GLTV Top Flange Offset Left
(HGLT similar)



Typical HGLTV Top Flange Sloped Down Left with Low Side Flush

GLTV/HGLTV

Heavy-Duty Hangers (cont.)



Typical GLTV Sloped Down, Skewed Right
When ordering, specify low-side flush, centre flush or high-side flush

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Fasteners			Factored Resistance					
				Uplift (K_D = 1.15)	Normal (K_D = 1.00)				
	Top	Face	Joist		D.Fir-L	S-P-F	LVL[4]	PSL	LSL
				lb.	lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN	kN
GLTV series	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590
				9.54	46.51	33.23	48.44	47.8	38.21
HGLTV series	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795
				9.54	58.14	43.73	68.35	50.38	61.36

1. Uplift resistances have been increased 15% for short-term loading with no further increase allowed. Reduce resistance when other load durations govern.
2. Uplift loads only apply when "H" is 28" or less.
3. S-P-F factored uplift resistance is 1520 lb. (6.76 kN).
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 S-P-F column.
5. For joist widths less than 3½" use 16d x 2½" nails into the joist.
6. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

High-Capacity Top-Flange Hangers

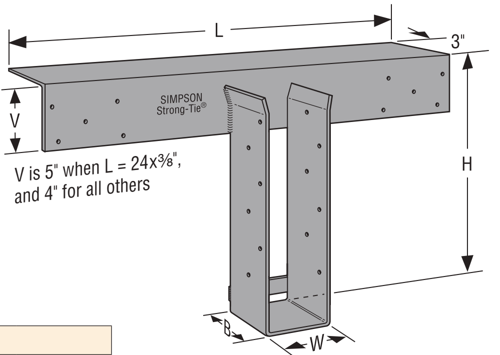
The SCL series of top flange hangers are high load capacity connectors designed for use with Structural Composite Lumber. The large top flange distributes the load to the carrying member and the fasteners are located specifically for structural composite lumber applications.

Material: Stirrups — 3 gauge; Top flange — ¼" or ⅜" hot rolled angle, see table

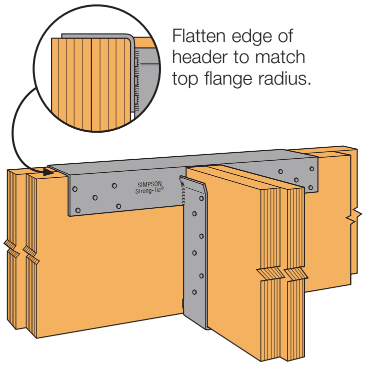
Finish: Simpson Strong-Tie® gray paint

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

- All multiple members must be fastened together to act as one single unit.
- This series may be used for weld on application. Weld top flange using ¼" x 4" long fillet welds spaced at 7" on centre with 2" return around corners.
- These hangers cannot be used with a nailer.



SCL



Typical SCL Installation

Model No.	Dimensions (in.)				Fasteners		Factored Resistance				
							Uplift (K_D = 1.15)	Normal (K_D = 1.00)			
	W	H	B	L	Header	Joist		D.Fir-L	S-P-F	LVL[2]	PSL
							lb.	lb.	lb.	lb.	lb.
							kN	kN	kN	kN	kN
SCL3.62/9.5	3⅝	9½	4	18	(6) 16d	(6) 16d	2155	13245	6775	15850	15855
							9.59	58.92	30.14	70.51	70.53
SCL3.62/11.5	3⅝	11½	4	18	(6) 16d	(6) 16d	2155	13245	6775	15850	15855
							9.59	58.92	30.14	70.51	70.53
SCL3.62/11.88	3⅝	11⅞	4	18	(6) 16d	(6) 16d	2155	13245	6775	15850	15855
							9.59	58.92	30.14	70.51	70.53
SCL3.62/14	3⅝	14	4	18	(6) 16d	(6) 16d	2155	13245	6775	15850	15855
							9.59	58.92	30.14	70.51	70.53
SCL3.62/16	3⅝	16	4	18	(6) 16d	(6) 16d	2155	13245	6775	15850	15855
							9.59	58.92	30.14	70.51	70.53
SCL3.62/18	3⅝	18	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL3.62/18.75	3⅝	18¾	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL3.62/19	3⅝	19	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL5.37/9.5	5⅜	9½	4	18	(6) 16d	(6) 16d	2155	13245	6775	15850	15855
							9.59	58.92	30.14	70.51	70.53
SCL5.37/11.5	5⅜	11½	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL5.37/11.88	5⅜	11⅞	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL5.37/14	5⅜	14	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL5.37/16	5⅜	16	6	24 x ⅜	(10) 16d	(12) 16d	4305	23730	13025	29000	27350
							19.15	105.56	57.94	129.00	121.66
SCL5.37/18	5⅜	18	6	24 x ⅜	(10) 16d	(12) 16d	4305	23730	13025	29000	27350
							19.15	105.56	57.94	129.00	121.66
SCL5.37/18.75	5⅜	18¾	6	24 x ⅜	(10) 16d	(12) 16d	4305	23730	13025	29000	27350
							19.15	105.56	57.94	129.00	121.66
SCL5.37/19	5⅜	19	6	24 x ⅜	(10) 16d	(12) 16d	4305	23730	13025	29000	27350
							19.15	105.56	57.94	129.00	121.66
SCL7.25/9.5	7¼	9½	4	18	(6) 16d	(6) 16d	2155	13245	6775	15845	15855
							9.59	58.92	30.14	70.48	70.53
SCL7.25/11.5	7¼	11½	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL7.25/11.88	7¼	11⅞	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL7.25/14	7¼	14	5	22	(12) 16d	(12) 16d	3255	17635	11490	21600	20915
							14.48	78.45	51.11	96.09	93.04
SCL7.25/16	7¼	16	6	24x⅜	(10) 16d	(12) 16d	4305	23730	13025	29000	27350
							19.15	105.56	57.94	129.00	121.66
SCL7.25/18	7¼	18	6	24x⅜	(10) 16d	(12) 16d	4305	23730	13025	29000	27350
							19.15	105.56	57.94	129.00	121.66
SCL7.25/18.75	7¼	18¾	6	24x⅜	(10) 16d	(12) 16d	4305	23730	13025	29000	27350
							19.15	105.56	57.94	129.00	121.66
SCL7.25/19	7¼	19	6	24x⅜	(10) 16d	(12) 16d	4305	23730	13025	29000	27350
							19.15	105.56	57.94	129.00	121.66

1. Factored uplift resistances have been increased 15% for short term loading with no further increase allowed. Reduce when other load durations govern.
2. Factored uplift resistances shown are for D.Fir-L. Multiply tabulated loads x 0.71 for either S-P-F joist or header.
3. Applies to LVL headers made primarily from D.Fir-L, assuming ϕF_{CP} = 1092 psi and a specific gravity of 0.50. See LVL manufacturer specifications.
4. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

EGQ

High-Capacity Hanger

VALUE ENGINEERED

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

The EGQ is a high-capacity connector for use with Structural Composite Lumber beams. Utilizing the Simpson Strong-Tie® Strong Drive® SDS Heavy-Duty Connector screws makes installation fast and easy.

EGQ hangers are precisely fabricated to individual order requirements. The H dimension required must be specified.

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.
- Minimum header depth shall be 11⅞".

Options:

- See Hanger Options information on pp. 125–127

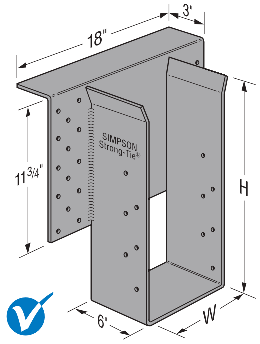
Skewed Seat

- The EGQ can be skewed a maximum of 45°
- The factored down resistance is 0.69 of the table value to a maximum of 22435 lb. (99.76 kN)
- The factored uplift resistance is 100% of the table value

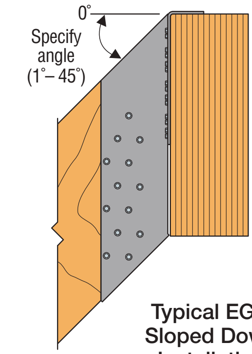
Sloped Seat

- The EGQ can be sloped up or down a maximum of 45°
- The factored down resistance is 0.78 of the table value to a maximum of 25160 lb. (111.92 kN)
- The factored uplift resistance is 100% of the table value
- Sloped seat installation requires an additional 14 joist screws (supplied with the connector)

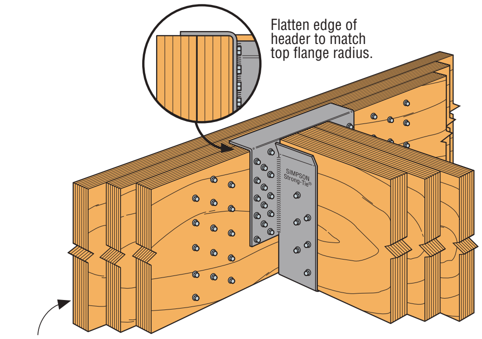
No Sloped and Skewed Combo Available.



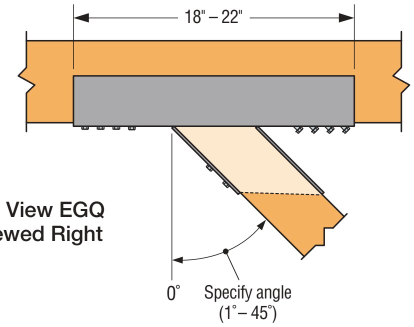
EGQ



Typical EGQ Sloped Down Installation



Typical EGQ Installation



Top View EGQ Skewed Right

These products are available with additional corrosion protection. For more information, see p. 24.

Joist or Purlin Size (in.)	Model No.	Dimensions (in.) W	Dimensions (in.) Min. H	Dimensions (in.) Max. H	Fasteners Header	Fasteners Joist	Factored Resistance Uplift (KD = 1.15)	D.Fir-L Normal (KD = 1.00)	PSL Normal (KD = 1.00)	LVL[1] Normal (KD = 1.00)	S-P-F LVL Normal (KD = 1.00)
							lb.	lb.	lb.	lb.	lb.
							kN	kN	kN	kN	kN
3½	EGQ3.62-SDS3	3⅝	11⅞	32	(28) ¼" x 3" SDS	(12) ¼" x 3" SDS	9040	24915	25450	28410	19995
							40.21	110.83	113.21	126.38	88.95
5¼	EGQ5.50-SDS3	5½	11⅞	32	(28) ¼" x 3" SDS	(12) ¼" x 3" SDS	9040	27305	28030	30425	23930
							40.21	121.46	124.69	135.34	106.45
7	EGQ7.25-SDS3	7¼	11⅞	32	(28) ¼" x 3" SDS	(12) ¼" x 3" SDS	9040	27305	30605	32435	23930
							40.21	121.46	136.14	144.28	106.45

1. Applies to LVL made primarily from Douglas Fir or Southern Pine. For LVL made primarily from other species, contact the LVL manufacturer for suitability.
2. "Min H" is the minimum joist height dimension that may be specified.
3. Use S-P-F LVL values for S-P-F glulam.
4. Multiply tabulated uplift values x 0.72 for S-P-F LVL.

Top-Flange Hangers – I-Joists and SCL

SIMPSON Strong-Tie®

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header Top	Header Face	Joist	Factored Resistance Uplift (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
1½ x 9¼	LBV1.56/9.25	—	14	1 9/16	9¼	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP29.25	✓	12	1 9/16	9¼	4	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
1½ x 9½	LT159	—	18	1 9/16	9½	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT29.5	—	16	1 9/16	9½	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV1.56/9.5	—	14	1 9/16	9½	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP29.5	✓	12	1 9/16	9½	4	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
1½ x 11⅞	LT151188	—	18	1 9/16	11⅞	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT211.88	—	16	1 9/16	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV1.56/11.88	—	14	1 9/16	11⅞	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP211.88	✓	12	1 9/16	11⅞	4	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
1½ x 14	LBV1.56/14	—	14	1 9/16	14	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
1½ x 16	LBV1.56/16	—	14	1 9/16	16	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
1¾ x 7¼	BA1.81/7.25 (Min.)	—	14	1 13/16	7¼	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA1.81/7.25 (Max.)	✓	14	1 13/16	7¼	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV1.81/7.25	—	14	1 13/16	7¼	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP1.81/7.25	✓	12	1 13/16	7¼	3½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
				W	H	B	TF	Header		Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
								Top	Face			D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
1¾ x 9½	ITS1.81/9.5	—	18	1⅞	9 7/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT179	—	18	1 13/16	9½	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT9.5	—	16	1 13/16	9½	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA1.81/9.5 (Min.)	—	14	1 13/16	9½	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA1.81/9.5 (Max.)	✓	14	1 13/16	9½	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV1.81/9.5	—	14	1 13/16	9½	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP9	✓	12	1 13/16	9½	3½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
1¾ x 11⅞	ITS1.81/11.88	—	18	1⅞	11 13/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT171188	—	18	1 13/16	11⅞	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT11.88	—	16	1 13/16	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA1.81/11.88 (Min.)	—	14	1 13/16	11⅞	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA1.81/11.88 (Max.)	✓	14	1 13/16	11⅞	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV1.81/11.88	—	14	1 13/16	11⅞	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP11	✓	12	1 13/16	11⅞	3½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
1¾ x 14	ITS1.81/14	—	18	1⅞	13 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT1714	—	18	1 13/16	14	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT1.81/14	—	16	1 13/16	14	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA1.81/14 (Min.)	—	14	1 13/16	14	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA1.81/14 (Max.)	✓	14	1 13/16	14	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV1.81/14	—	14	1 13/16	14	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP14	✓	12	1 13/16	14	3½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header Top	Header Face	Joist	Factored Resistance Uplift (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
1¾ x 16	ITS1.81/16	—	18	1⅞	15 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT1716	—	18	1 13/16	16	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT1.81/16	—	16	1 13/16	16	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV1.81/16	—	14	1 13/16	16	3	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	B1.81/16	✓	12	1 13/16	16	3	2½	(6) 10d	(8) 10d	(6) 10d x 1½"	1650	5265	3590	5825	5230	5965	—
											7.34	23.42	15.97	25.91	23.27	26.53	—
	WP16	✓	12	1 13/16	16	3½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2 x 9½	ITS2.06/9.5	—	18	2⅛	9 7/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LBV2.06/9.5	—	14	2 1/16	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
2 x 11⅞	ITS2.06/11.88	—	18	2⅛	11⅞	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	MIT2.1/11.88	—	16	1 13/16	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV2.06/11.88	—	14	2 1/16	11⅞	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
2 x 14	ITS2.06/14	—	18	2⅛	13 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LBV2.06/14	—	14	2 1/16	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
2 x16	ITS2.06/16	—	18	2⅛	15 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LBV2.06/16	—	14	2 1/16	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
2 1/16 x 9½	ITS2.06/9.5	—	18	2⅛	9 7/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LBV2.1/9.5	—	14	2⅛	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
2 1/16 x 11⅞	ITS2.06/11.88	—	18	2⅛	11 13/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	MIT2.1/11.88	—	16	1 13/16	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV2.1/11.88	—	14	2⅛	11⅞	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79

1. When I-joist is used as a header, all header fasteners must be 10d x 1½". See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header Top	Header Face	Joist	Factored Resistance Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) D.Fir-L lb. / kN	S-P-F lb. / kN	LVL lb. / kN	PSL lb. / kN	LSL lb. / kN	I-Joist lb. / kN
2 1/16 x 14	ITS2.06/14	—	18	2⅛	13 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LBV2.1/14	—	14	2⅛	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
2 1/16 x 16	LBV2.1/16	—	14	2⅛	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
2 5/16 x 9½	ITS2.37/9.5	—	18	2 7/16	9 7/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT239	—	18	2⅜	9½	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	LBV2.37/9.5	—	14	2 5/16	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
2 5/16 x 11⅞	ITS2.37.11.88	—	18	2 7/16	11 13/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT231188	—	18	2 5/16	11⅞	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT3511.88	—	16	2 5/16	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV2.37/11.88	—	14	2 5/16	11⅞	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	W3511.88	✓	12	2 5/16	11⅞	2½	2½	(2) 16d	—	(2) 10d x 1½"	—	2955	2375	3820	3190	—	—
											—	13.15	10.56	16.99	14.19	—	—
2 5/16 x 14	ITS2.37/14	—	18	2 7/16	13 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT2314	—	18	2⅜	14	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT3514	—	16	2 5/16	14	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV2.37/14	—	14	2 5/16	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3514	✓	12	2 5/16	14	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2 5/16 x 16	ITS2.37/16	—	18	2 7/16	15 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT2316	—	18	2⅜	16	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT3516	—	16	2 5/16	16	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV2.37/16	—	14	2 5/16	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3516	✓	12	2 5/16	16	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WM3516	✓	12	2 5/16	16	3	3¾	(2) 16d DPLX	—	(2) 10d x 1½"	—	—	—	—	—	—	—
											—	—	—	—	—	—	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½". See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.

Engineered Wood and Structural Composite Lumber Connectors

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.) W	H	B	TF	Fasteners: Header Top	Header Face	Joist	Factored Resistance: Uplift (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
2 5/16 x 18	MIT3518	—	16	2 5/16	18	2 1/2	2 5/16	(4) 10d	(4) 16d	(2) 10d x 1 1/2"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV2.37/18	—	14	2 5/16	18	2 1/2	2 1/2	(6) 16d	(4) 16d	(2) 10d x 1 1/2"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3518	✓	12	2 5/16	18	2 1/2	2 3/16	(2) 16d	—	(2) 10d x 1 1/2"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2 5/16 x 20	MIT3520	—	16	2 5/16	20	2 1/2	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1 1/2"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV2.37/20	✓	14	2 5/16	20	2 1/2	2 1/2	(6) 16d	(4) 16d	(2) 10d x 1 1/2"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3520	✓	12	2 5/16	20	2 1/2	2 3/16	(2) 16d	—	(2) 10d x 1 1/2"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2 1/2 – 2 9/16 x 9 1/2	ITS2.56/9.5	—	18	2 5/8	9 7/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT259	—	18	2 9/16	9 1/2	2	1 5/8	(4) 10d	(2) 10d	(1) #8 x 1 1/4" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	BA2.56/9.5 (Min.)	—	14	2 9/16	9 1/2	3	2 1/2	(6) 16d	(10) 16d	(2) 10d x 1 1/2"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA2.56/9.5 (Max.)	✓	14	2 9/16	9 1/2	3	2 1/2	(6) 16d	(10) 16d	(8) 10d x 1 1/2"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV2.56/9.5	—	14	2 9/16	9 1/2	2 1/2	2 1/2	(6) 16d	(4) 16d	(2) 10d x 1 1/2"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WI39.5	✓	12	2 9/16	9 1/2	2	2 1/2	(2) 16d	—	(2) 10d x 1 1/2"	—	2955	2375	3820	3190	—	—
											—	13.15	10.56	16.99	14.19	—	—
2 1/2 x 11 1/4	ITS2.56/11.25	—	18	2 5/8	11 3/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LBV2.56/11.25	—	14	2 9/16	11 1/4	2 1/2	2 1/2	(6) 16d	(4) 16d	(2) 10d x 1 1/2"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WI311.25	✓	12	2 9/16	11 1/4	2	2 1/2	(2) 16d	—	(2) 10d x 1 1/2"	—	2955	2375	3820	3190	—	—
											—	13.15	10.56	16.99	14.19	—	—
2 1/2 – 2 9/16 x 11 7/8	ITS2.56/11.88	—	18	2 5/8	11 13/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT251188	—	18	2 9/16	11 7/8	2	1 5/8	(4) 10d	(2) 10d	(1) #8 x 1 1/4" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT311.88	—	16	2 9/16	11 7/8	2 1/2	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1 1/2"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA2.56/11.88 (Min.)	—	14	2 9/16	11 7/8	3	2 1/2	(6) 16d	(10) 16d	(2) 10d x 1 1/2"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA2.56/11.88 (Max.)	✓	14	2 9/16	11 7/8	3	2 1/2	(6) 16d	(10) 16d	(8) 10d x 1 1/2"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV2.56/11.88	—	14	2 9/16	11 7/8	2 1/2	2 1/2	(6) 16d	(4) 16d	(2) 10d x 1 1/2"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI311.88	✓	12	2 9/16	11 7/8	2 1/2	2 3/16	(2) 16d	—	(2) 10d x 1 1/2"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1 1/2".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1 1/2" thick.
2. See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
				W	H	B	TF	Header Top	Header Face	Joist	Uplift (KD = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
2½ – 2 9/16 x 14	ITS2.56/14	—	18	2⅝	13 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT2514	—	18	2 9/16	14	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT314	—	16	2 9/16	14	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA2.56/14 (Min.)	—	14	2 9/16	14	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA2.56/14 (Max.)	✓	14	2 9/16	14	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV2.56/14	—	14	2 9/16	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI314	✓	12	2 9/16	14	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2½ – 2 9/16 x 16	ITS2.56/16	—	18	2⅝	15 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT2516	—	18	2 9/16	16	2	1⅝	(4) 10d	(2) 10d	(1) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT316	—	16	2 9/16	16	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA2.56/16 (Min.)	—	14	2 9/16	16	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA2.56/16 (Max.)	✓	14	2 9/16	16	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV2.56/16	—	14	2 9/16	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI316	✓	12	2 9/16	16	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2½ x 18	MIT318	—	16	2 9/16	18	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	HIT318	—	16	2 9/16	18	3	2⅞	(4) 16d	(6) 16d	(2) 10d x 1½"	375	4570	2705	3725	3220	3775	—
											1.67	20.33	12.03	16.57	14.32	16.79	—
	LBV2.56/18	—	14	2 9/16	18	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI318	✓	12	2 9/16	18	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2½ x 20	MIT320	✓	16	2 9/16	20	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	HIT320	—	16	2 9/16	20	3	2⅞	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV2.56/20	—	14	2 9/16	20	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI320	✓	12	2 9/16	20	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.

SIMPSON Strong-Tie®

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header Top	Header Face	Joist	Factored Resistance Uplift (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
2½ x 22	HIT322	—	16	2 9/16	22	3	2⅞	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV2.56/22	—	14	2 9/16	22	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI322	✓	12	2 9/16	22	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWI322	✓	11	2 9/16	22	4	2½	(4) 16d	—	(4) 10d x 1½"	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
2½ x 24	HIT324	—	16	2 9/16	24	3	2⅞	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV2.56/24	—	14	2 9/16	24	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI324	✓	12	2 9/16	24	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2½ x 26	HIT326	—	16	2 9/16	26	3	2⅞	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV2.56/26	—	14	2 9/16	26	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI326	✓	12	2 9/16	26	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2½ x 28	LBV2.56/28	—	14	2 9/16	28	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI328	✓	12	2 9/16	28	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
2½ x 30	LBV2.56/30	—	14	2 9/16	30	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI330	✓	12	2 9/16	30	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
3 x 9¼	LBV3.12/9.25	—	14	3⅛	9¼	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI29.25-2	✓	12	3⅛	9¼	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
3 x 9½	LT2-159	—	18	3⅛	9½	2	1⅝	(4) 10d	(2) 10d	(2) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT29.5-2	—	16	3⅛	9½	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV3.12/9.5	—	14	3⅛	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP29.5-2	✓	12	3⅛	9½	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
3 x 11¼	LBV3.12-11.25	—	14	3⅛	11¼	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP211.25-2	✓	12	3⅛	11¼	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
				W	H	B	TF	Header		Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
								Top	Face			D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
3 x 11⅞	LT2-151188	—	18	3⅛	11⅞	2	1⅝	(4) 10d	(2) 10d	(2) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT211.88-2	—	16	3⅛	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV3.12/11.88	—	14	3⅛	11⅞	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP211.88-2	✓	12	3⅛	11⅞	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
3 x 14	LBV3.12/14	—	14	3⅛	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
3 x 16	LBV3.12/16	—	14	3⅛	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
3½ x 7¼	LBV3.56/7.25	—	14	3 9/16	7¼	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPU3.56/7.25	✓	12	3 9/16	7¼	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	1665	6390	6390	6825	7085	5980	—
											7.41	28.43	28.43	30.36	31.52	26.60	—
3½ x 9½	ITS3.56/9.5	✓[3]	18	3⅝	9 7/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT359	✓[3]	18	3 9/16	9½	2	1⅝	(4) 10d	(2) 10d	(2) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT49.5	✓[3]	16	3 9/16	9½	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA3.56/9.5 (Min.)	—	14	3 9/16	9½	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.2	19.44	25.96	23.95	25.89	10.77
	BA3.56/9.5 (Max.)	✓	14	3 9/16	9½	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV3.56/9.5	—	14	3 9/16	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	HB3.56/9.5	✓	10	3 9/16	9½	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI49.5	✓	12	3 9/16	9½	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWI49.5	✓	11	3 9/16	9½	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	HWU3.56/9.5	✓	10	3 9/16	9½	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	10170	8875	10170	8325	8925	—
											7.90	45.24	39.48	45.24	37.03	39.70	—
	GLTV3.59	✓	7	3 9/16	9½	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV3.59	✓	7	3 9/16	9½	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL3.62/9.5	✓	3	3 9/16	9½	4	3	—	(6) 16d	(6) 16d	2155	13245	6775	15850	15855	—	—
											9.59	58.92	30.14	70.51	70.53	—	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.
3. For 16 and 18 gauge, 3½"-wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header Top	Header Face	Joist	Factored Resistance Uplift (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
3½ x 11⅞	ITS3.56/11.88	✓[3]	18	3⅝	11 13/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT351188	✓[3]	18	3 9/16	11⅞	2	1⅝	(4) 10d	(2) 10d	(2) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT411.88	✓[3]	16	3 9/16	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA3.56/11.88 (Min.)	—	14	3 9/16	11⅞	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA3.56/11.88 (Max.)	✓	14	3 9/16	11⅞	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV3.56/11.88	—	14	3 9/16	11⅞	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	B3.56/11.88	✓	12	3 9/16	11⅞	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB3.56/11.88	✓	10	3 9/16	11⅞	3½	2½	(6) 16d	(16) 16d	(10) 16dx2½	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI411.88	✓	12	3 9/16	11⅞	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/11.88	✓	12	3 9/16	11⅞	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	1665	6390	6390	6825	7085	5980	—
											7.41	28.43	28.43	30.36	31.52	26.60	—
	HWI411.88	✓	11	3 9/16	11⅞	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	HWU3.56/11.88	✓	10	3 9/16	11⅞	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	10170	8875	10170	8325	8925	—
											7.90	45.24	39.48	45.24	37.03	39.70	—
	GLTV3.511	✓	7	3 9/16	11⅞	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV3.511	✓	7	3 9/16	11⅞	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL3.62/11.88	✓	3	3⅝	11⅞	4	3	—	(6) 16d	(6) 16d	2155	13245	6775	15850	15855	—	—
											9.59	58.92	30.14	70.51	70.53	—	—
3½ x 14	ITS3.56/14	✓[3]	18	3⅝	13 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT3514	✓[3]	18	3 9/16	14	2	1⅝	(4) 10d	(2) 10d	(2) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT414	✓[3]	16	3 9/16	14	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA3.56/14 (Min.)	—	14	3 9/16	14	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA3.56/14 (Max.)	✓	14	3 9/16	14	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	LBV3.56/14	—	14	3 9/16	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.
3. For 16 and 18 gauge, 3½"-wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
				W	H	B	TF	Header		Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
								Top	Face			D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
3½ x 14 (cont.)	B3.56/14	✓	12	3 9/16	14	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB3.56/14	✓	10	3 9/16	14	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI414	✓	12	3 9/16	14	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/14	✓	12	3 9/16	14	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	1665	6390	6390	6825	7085	5980	—
											7.41	28.43	28.43	30.36	31.52	26.60	—
	HWI414	✓	11	3 9/16	14	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	HWU3.56/14	✓	10	3 9/16	14	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	10170	8875	10170	8325	8925	—
											7.90	45.24	39.48	45.24	37.03	39.70	—
	GLTV3.514	✓	7	3 9/16	14	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV3.514	✓	7	3 9/16	14	6	2 7/8	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	10585	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL3.62/14	✓	3	3 5/8	14	4	3	—	(6) 16d	(6) 16d	2155	13245	6775	15850	15855	—	—
											9.59	58.92	30.14	70.51	70.53	—	—
3½ x 16	ITS3.56/16	✓[3]	18	3 5/8	15 15/16	2	1 7/16	(4) 10d	(2) 10d	—	175	2235	1690	2280	2005	2615	1375
											0.78	9.94	7.52	10.14	8.92	11.63	6.12
	LT3516	✓[3]	18	3 9/16	16	2	1 5/8	(4) 10d	(2) 10d	(2) #8 x 1¼" WS	105	2625	1725	2560	2480	2620	1695
											0.47	11.68	7.67	11.39	11.03	11.65	7.54
	MIT416	✓[3]	16	3 9/16	16	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	BA3.56/16 (Min.)	—	14	3 9/16	16	3	2½	(6) 16d	(10) 16d	(2) 10d x 1½"	435	4990	4370	5835	5385	5820	2420
											1.94	22.20	19.44	25.96	23.95	25.89	10.77
	BA3.56/16 (Max.)	✓	14	3 9/16	16	3	2½	(6) 16d	(10) 16d	(8) 10d x 1½"	1960	5940	4370	6490	7075	6185	—
											8.72	26.42	19.44	28.87	31.47	27.51	—
	B3.56/16	✓	12	3 9/16	16	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB3.56/16	✓	10	3 9/16	16	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI416	✓	12	3 9/16	16	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/16	✓	12	3 9/16	16	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	1665	6390	6390	6825	7085	5980	—
											7.41	28.43	28.43	30.36	31.52	26.60	—
	HWI416	✓	11	3 9/16	16	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	HWU3.56/16	✓	10	3 9/16	16	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	10170	8875	10170	8325	8925	—
											7.90	45.24	39.48	45.24	37.03	39.70	—
	GLTV3.516	✓	7	3 9/16	16	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV3.516	✓	7	3 9/16	16	6	2 7/8	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL3.62/16	✓	3	3 5/8	16	4	3	—	(6) 16d	(6) 16d	2155	13245	6775	15850	15855	—	—
											9.59	58.92	30.14	70.51	70.53	—	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.
3. For 16 and 18 gauge, 3½"-wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).

Top-Flange Hangers – I-Joists and SCL

SIMPSON Strong-Tie®

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
								Header		Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
				W	H	B	TF	Top	Face			D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
3½ x 18	MIT418	✓[3]	16	3 9/16	18	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	HIT418	✓[3]	16	3 9/16	18	3	2 3/8	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV3.56/18	—	14	3 9/16	18	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	HB3.56/18	✓	10	3 9/16	18	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI418	✓	12	3 9/16	18	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/18	✓	12	3 9/16	18	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	1665	6390	6390	6825	7085	5980	—
											7.41	28.43	28.43	30.36	31.52	26.60	—
	HWI418	✓	11	3 9/16	18	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	HWU3.56/18	✓	10	3 9/16	18	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	10170	8875	10170	8325	8925	—
											7.90	45.24	39.48	45.24	37.03	39.70	—
	GLTV3.518	✓	7	3 9/16	18	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV3.518	✓	7	3 9/16	18	6	2 7/8	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	10565	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL3.62/18	✓	3	3 9/16	18	5	3	—	(12) 16d	(12) 16d	3255	17635	11490	21600	20915	—	—
											14.48	78.45	51.11	96.09	93.04	—	—
3½ x 18¾	GLTV3.56/18.75	✓	7	3 9/16	18¾	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV3.56/18.75	✓	7	3 9/16	18¾	6	2 7/8	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	10565	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL3.62/18.75	✓	3	3 9/16	18¾	5	3	—	(12) 16d	(12) 16d	3255	17635	11490	21600	20915	—	—
											14.48	78.45	51.11	96.09	93.04	—	—
3½ x 20	MIT420	✓[3]	16	3 9/16	20	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	HIT420	✓[3]	16	3 9/16	20	3	2 3/8	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV3.56/20	—	14	3 9/16	20	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	HB3.56/20	✓	10	3 9/16	20	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI420	✓	12	3 9/16	20	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/20	✓	12	3 9/16	20	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	595	6390	6390	6825	7085	5980	—
											2.65	28.43	28.43	30.36	31.52	26.60	—
	HWI420	✓	11	3 9/16	20	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	GLTV3.520	✓	7	3 9/16	20	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV3.520	✓	7	3 9/16	20	6	2 7/8	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.
3. For 16 and 18 gauge, 3½"-wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).

Engineered Wood and Structural Composite Lumber Connectors

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.) W	H	B	TF	Fasteners: Header Top	Header Face	Joist	Factored Resistance: Uplift (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
3½ x 22	HIT422	✓[3]	16	3 9/16	22	3	2 3/8	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV3.56/22	—	14	3 9/16	22	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	HB3.56/22	✓	10	3 9/16	22	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI422	✓	12	3 9/16	22	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/22	✓	12	3 9/16	22	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	595	6390	6390	6825	7085	5980	—
											2.65	28.43	28.43	30.36	31.52	26.60	—
	HWI422	✓	11	3 9/16	22	2½	2½	(4) 16d	—	(4) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
3½ x 24	HIT424	✓[3]	16	3 9/16	24	3	2 3/8	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV3.56/24	—	14	3 9/16	24	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	—
											1.94	17.37	13.90	17.37	19.62	20.60	2200
	HB3.56/24	✓	10	3 9/16	24	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	9.79
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI424	✓	12	3 9/16	24	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/24	✓	12	3 9/16	24	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	595	6390	6390	6825	7085	5980	—
											2.65	28.43	28.43	30.36	31.52	26.60	—
	HWI424	✓	11	3 9/16	24	2½	2½	(4) 16d	—	(4) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
3½ x 26	HIT426	✓[3]	16	3 9/16	26	3	2 3/8	(4) 16d	(6) 16d	(2) 10d x 1½"	450	4570	2705	3725	3220	3775	—
											2.00	20.33	12.03	16.57	14.32	16.79	—
	LBV3.56/26	—	14	3 9/16	26	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	HB3.56/26	✓	10	3 9/16	26	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI426	✓	12	3 9/16	26	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/26	✓	12	3 9/16	26	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	595	6390	6390	6825	7085	5980	—
											2.65	28.43	28.43	30.36	31.52	26.60	—
	HWI426	✓	11	3 9/16	26	2½	2½	(4) 16d	—	(4) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
3½ x 28	LBV3.56/28	—	14	3 9/16	28	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	HB3.56/28	✓	10	3 9/16	28	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI428	✓	12	3 9/16	28	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	WPU3.56/28	✓	12	3 9/16	28	3	2 5/16	(3) 16d	(4) 16d	(6) 10d x 1½"	595	6390	6390	6825	7085	5980	—
											2.65	28.43	28.43	30.36	31.52	26.60	—
	HWI428	✓	11	3 9/16	28	2½	2½	(4) 16d	—	(4) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.
3. For 16 and 18 gauge, 3½"-wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).

SIMPSON Strong-Tie®

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
				W	H	B	TF	Header		Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
								Top	Face			D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
3½ x 30	LBV3.56/30	—	14	3 9/16	30	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	HB3.56/30	✓	10	3 9/16	30	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI430	✓	12	3 9/16	30	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWI430	✓	11	3 9/16	30	2½	2½	(4) 16d	—	(4) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
3½ x 32	WPI432	✓	12	3 9/16	32	2½	2 3/16	(2) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWI432	✓	11	3 9/16	32	2½	2½	(4) 16d	—	(4) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
4 x 9½	LBV4.12/9.5	—	14	4⅛	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4 x 11⅞	LBV4.12/11.88	—	14	4⅛	11⅞	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4 x 14	LBV4.12/14	—	14	4⅛	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4 x 16	LBV4.12/16	—	14	4⅛	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4⅛ x 9½	MIT4.28/9.5	—	16	4 3/32	9½	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV4.28/9.5	—	14	4 3/32	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4⅛ x 11⅞	MIT4.28/11.88	—	16	4 3/32	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV4.28/11.88	—	14	4 3/32	11⅞	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4⅛ x 14	MIT4.28/14	—	16	4 3/32	14	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV4.28/14	—	14	4 3/32	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4⅛ x 16	LBV4.28/16	—	14	4 3/32	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4⅝ x 9½	MIT359.5-2	—	16	4¾	9½	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV4.75/9.5	—	14	4¾	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
4⅝ x 11⅞	MIT3511.88-2	—	16	4¾	11⅞	2½	2½	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV4.75/11.88	—	14	4¾	11⅞	2½	2 5/16	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3511.88-2	✓	12	4¾	11⅞	2½	2½	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.
3. For 16 and 18 gauge, 3½"-wide I-joist hangers, web stiffeners are required when the factored reaction is greater than 2330 lb. (10.36 kN).

Engineered Wood and Structural Composite Lumber Connectors

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
								Header			Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
				W	H	B	TF	Top	Face	Joist		D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
4⅝ x 14	MIT3514-2	—	16	4¾	14	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV4.75/14	—	14	4¾	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3514-2	✓	12	4¾	14	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
4⅝ x 16	MIT4.75/16	—	16	4¾	16	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV4.75/16	—	14	4¾	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3516-2	✓	12	4¾	16	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
4⅝ x 18	LBV4.75/18	—	14	4¾	18	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3518-2	✓	12	4¾	18	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
4⅝ x 20	LBV4.75/20	—	14	4¾	20	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WP3520-2	✓	12	4¾	20	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
5 x 9½	MIT39.5-2	—	16	5⅛	9½	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV5.12/9.5	—	14	5⅛	9½	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI39.5-2	✓	12	5⅛	9½	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
5 x 11⅞	MIT311.88-2	—	16	5⅛	11⅞	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV5.12/11.88	✓	14	5⅛	11⅞	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI311.88-2	—	12	5⅛	11⅞	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
5 x 14	MIT314-2	—	16	5⅛	14	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV5.12/14	—	14	5⅛	14	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	WPI314.2	✓	12	5⅛	14	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
5 x 16	MIT5.12/16	—	16	5⅛	16	2½	2 5/16	(4) 16d	(4) 16d	(2) 10d x 1½"	375	3490	2420	3550	3025	3465	1900
											1.67	15.52	10.77	15.79	13.46	15.41	8.45
	LBV5.12/16	—	14	5⅛	16	2½	2½	(6) 16d	(4) 16d	(2) 10d x 1½"	435	3905	3125	3905	4410	4630	2200
											1.94	17.37	13.90	17.37	19.62	20.60	9.79
	HB5.12/16	✓	10	5⅛	16	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI316-2	✓	12	5⅛	16	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.

SIMPSON Strong-Tie®

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
								Header			Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
				W	H	B	TF	Top	Face	Joist		D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
5 x 18	B5.12/18	✓	12	5⅛	18	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB5.12/18	✓	10	5⅛	18	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI318-2	✓	12	5⅛	18	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
5 x 20	B5.12/20	✓	12	5⅛	20	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB5.12/20	✓	10	5⅛	20	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI320-2	✓	12	5⅛	20	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
5 x 22	B5.12/22	✓	12	5⅛	22	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB5.12/22	✓	10	5⅛	22	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI322-2	✓	12	5⅛	22	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
5 x 24	B5.12/24	✓	12	5⅛	24	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB5.12/24	✓	10	5⅛	24	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
5 x 26	HB5.12/26	✓	10	5⅛	26	3½	3	(6) 16d	(8) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI326-2	✓	12	5⅛	26	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
5 x 28	B5.12/28	✓	12	5⅛	28	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB5.12/28	✓	10	5⅛	28	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
5 x 30	B5.12/30	✓	12	5⅛	30	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB5.12/30	✓	10	5⅛	30	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
5¼ x 7¼	WPU5.50/7.25	✓	12	5½	7¼	3	2 5/16	(3) 16d	(4) 16d	(6) 10d	1665	6390	6390	6825	7085	5980	—
											7.41	28.43	28.43	30.36	31.52	26.60	—
5¼ x 9¼	HB5.50/9.25	✓	10	5½	9¼	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWU5.50/9.25	✓	10	5½	9¼	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV5.50/9.25	✓	7	5 9/16	9¼	5	2 7/8	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—

1. When I-joist is used as a header, all header fasteners must be 10d x 1½".
   See foonotes on pp. 203–207 for reduction values when flange material is less than 1½" thick.
2. See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
								Header			Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
				W	H	B	TF	Top	Face	Joist		D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
5¼ x 9½	HB5.50/9.5	✓	10	5½	9½	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WP5.50/9.5	✓	12	5½	9½	2½	2 5/16	(3) 16d	—	(2) 10d	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWU5.50/9.5	✓	10	5½	9½	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV5.59	✓	7	5 5/16	9½	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV5.59	✓	7	5 5/16	9½	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL5.37/9.5	✓	3	5⅜	9½	4	2¾	—	(6) 16d	(6) 16d	2155	13245	6775	15850	15855	—	—
											9.59	58.92	30.14	70.51	70.53	—	—
5¼ x 11¼	HB5.50/11.25	✓	10	5½	11¼	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWU5.50/11.25	✓	10	5½	11¼	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV5.50/11.25	✓	7	5 5/16	11¼	5	2⅞	(4) 16d	(6) 16d	(6) 10d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
5¼ x 11⅞	HB5.50/11.88	✓	10	5½	11⅞	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WP5.50/11.88	✓	12	5½	11⅞	2½	2 5/16	(3) 16d	—	(2) 10d	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWU5.50/11.88	✓	10	5½	11⅞	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV5.511	✓	7	5 5/16	11⅞	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV5.511	✓	7	5 5/16	11⅞	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL5.37/11.88	✓	3	5⅜	11⅞	5	2¾	—	(12) 16d	(12) 16d	3255	17635	11490	21600	20915	—	—
											14.48	78.45	51.11	96.09	93.04	—	—
5¼ x 14	HB5.50/14	✓	10	5½	14	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWU5.50/14	✓	10	5½	14	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV5.514	✓	7	5 5/16	14	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV5.514	✓	7	5 5/16	14	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL5.37/14	✓	3	5⅜	14	5	2¾	—	(12) 16d	(12) 16d	3255	17635	11490	21600	20915	—	—
											14.48	78.45	51.11	96.09	93.04	—	—

See pp. 203–216 for specific notes on individual model types.

SIMPSON Strong-Tie®

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
								Header			Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
				W	H	B	TF	Top	Face	Joist		D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
5¼ x 16	GLTV5.516	✓	7	5 9/16	16	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV5.516	✓	7	5 9/16	16	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL5.37/16	✓	⅜	5⅜	16	6	2⅝	—	(10) 16d	(12) 16d	4305	23730	13025	29000	27350	—	—
											19.15	105.56	57.94	129.00	121.66	—	—
5¼ x 18	HB5.50/18	✓	10	5½	18	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWU5.50/18	✓	10	5½	18	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV5.518	✓	7	5 9/16	18	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV5.518	✓	7	5 9/16	18	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL5.37/18	✓	⅜	5⅜	18	6	2⅝	—	(10) 16d	(12) 16d	4305	23730	13025	29000	27350	—	—
											19.15	105.56	57.94	129.00	121.66	—	—
5¼ x 18¾	GLTV5.50/18.75	✓	7	5½	18¾	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV5.50/18.75	✓	7	5½	18¾	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL5.37/18.75	✓	⅜	5⅜	18¾	6	2⅝	—	(10) 16d	(12) 16d	4305	23730	13025	29000	27350	—	—
											19.15	105.56	57.94	129.00	121.66	—	—
5¼ x 20	HB5.50/20	✓	10	5½	20	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HW5.50/20	✓	11	5½	20	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	HWU5.50/20	✓	10	5½	20	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1490	8250	8250	8250	8250	8250	—
											6.63	36.70	36.70	36.70	36.70	36.70	—
	GLTV5.520	✓	7	5 9/16	20	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV5.520	✓	7	5 9/16	20	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
7 x 7¼	HWU7.12/7.25	✓	10	7⅛	7¼	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
7 x 9¼	HB7.12/9.25	✓	10	7⅛	9¼	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI49.25-2	✓	12	7⅛	9¼	2½	2 5/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWU7.12/9.25	✓	10	7⅛	9¼	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV49.25-2	✓	7	7⅛	9¼	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—

See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.) W	H	B	TF	Fasteners Header Top	Header Face	Joist	Factored Resistance Uplift (K_D = 1.15)	Normal (K_D = 1.00) D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
7 x 9½	B7.12/9.5	✓	12	7⅛	9½	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/9.5	✓	10	7⅛	9½	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI49.5-2	✓	12	7⅛	9½	2½	2 9/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWU7.12/9.5	✓	10	7⅛	9½	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV49.5-2	✓	7	7⅛	9½	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	SCL7.25/9.5	✓	3	7¼	9½	4	2¾	—	(6) 16d	(6) 16d	2155	13245	6775	15845	15855	—	—
											9.59	58.92	30.14	70.48	70.53	—	—
7 x 11¼	HB7.12/11.25	✓	10	7⅛	11¼	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI411.25-2	✓	12	7⅛	11¼	2½	2 9/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWU7.12/11.25	✓	10	7⅛	11¼	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV411.25-2	✓	7	7⅛	11¼	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV411.25-2	✓	7	7⅛	11¼	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
7 x 11⅞	B7.12/11.88	✓	12	7⅛	11⅞	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/11.88	✓	10	7⅛	11⅞	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI411.88-2	✓	12	7⅛	11⅞	2½	2 9/16	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWU7.12/11.88	✓	10	7⅛	11⅞	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV411.88-2	✓	7	7⅛	11⅞	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV411.88-2	✓	7	7⅛	11⅞	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL7.25/11.88	✓	3	7¼	11⅞	5	2¾	—	(12) 16d	(12) 16d	3255	17635	11490	21600	20915	—	—
											14.48	78.45	51.11	96.09	93.04	—	—

See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
								Header			Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
				W	H	B	TF	Top	Face	Joist		D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
7 x 14	B7.12/14	✓	12	7⅛	14	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/14	✓	10	7⅛	14	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI414-2	✓	12	7⅛	14	2½	2⁵⁄₁₆	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWU7.12/14	✓	10	7⅛	14	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV414-2	✓	7	7⅛	14	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV414-2	✓	7	7⅛	14	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL7.25/14	✓	⅜	7¼	14	5	2¾	—	(12) 16d	(12) 16d	3255	17635	11490	21600	20915	—	—
											14.48	78.45	51.11	96.09	93.04	—	—
7 x 16	B7.12/16	✓	12	7⅛	16	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/16	✓	10	7⅛	16	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	WPI416-2	✓	12	7⅛	16	2½	2⁵⁄₁₆	(3) 16d	—	(2) 10d x 1½"	—	4430	3855	5950	5430	5980	—
											—	19.71	17.15	26.47	24.15	26.60	—
	HWU7.12/16	✓	10	7⅛	16	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV416-2	✓	7	7⅛	16	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV416-2	✓	7	7⅛	16	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL7.25/16	✓	⅜	7¼	16	5	2¾	—	(10) 16d	(12) 16d	4305	23730	13025	29000	27350	—	—
											19.15	105.56	57.94	129.00	121.66	—	—
7 x 18	B7.12/18	✓	12	7⅛	18	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/18	✓	10	7⅛	18	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWI418-2	✓	11	7⅛	18	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	HWU7.12/18	✓	10	7⅛	18	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV418-2	✓	7	7⅛	18	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV418-2	✓	7	7⅛	18	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
	SCL7.25/18	✓	⅜	7¼	18	6	2⅝	—	(10) 16d	(12) 16d	4305	23730	13025	29000	27350	—	—
											19.15	105.56	57.94	129.00	121.66	—	—

See pp. 203–216 for specific notes on individual model types.

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
								Header			Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
				W	H	B	TF	Top	Face	Joist		D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
7 x 18¾	GLTV418.75-2	✓	7	7⅛	18¾	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	SCL7.25/18.75	✓	⅜	7⅛	18¾	6	2⅝	—	(10) 16d	(12) 16d	4305	23730	13025	29000	27350	—	—
											19.15	105.56	57.94	129.00	121.66	—	—
7 x 20	B7.12/20	✓	12	7⅛	20	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/20	✓	10	7⅛	20	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWI420-2	✓	11	7⅛	20	2½	2½	(4) 16d	—	(2) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	HWU7.12/20	✓	10	7⅛	20	3¼	2½	(4) 16d	(4) 16d	(6) 10d	1775	8250	8250	8250	8250	8250	—
											7.90	36.70	36.70	36.70	36.70	36.70	—
	GLTV420-2	✓	7	7⅛	20	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV420-2	✓	7	7⅛	20	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
7 x 22	B7.12/22	✓	12	7⅛	22	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/22	✓	10	7⅛	22	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWI422-2	✓	11	7⅛	22	2½	2½	(4) 16d	—	(4) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	GLTV422-2	✓	7	7⅛	22	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV7.12/22	✓	7	7⅛	22	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
7 x 24	B7.12/24	✓	12	7⅛	24	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/24	✓	10	7⅛	24	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWI424-2	✓	11	7⅛	24	2½	2½	(4) 16d	—	(4) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	GLTV424-2	✓	7	7⅛	24	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV7.12/24	✓	7	7⅛	24	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—

See pp. 203–216 for specific notes on individual model types.

SIMPSON Strong-Tie®

Top-Flange Hangers – I-Joists and SCL

Joist Size (in.)	Model No.	Web Stiff Reqd	Ga.	Dimensions (in.)				Fasteners			Factored Resistance						
				W	H	B	TF	Header		Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)					
								Top	Face			D.Fir-L	S-P-F	LVL	PSL	LSL	I-Joist
											lb.	lb.	lb.	lb.	lb.	lb.	lb.
											kN	kN	kN	kN	kN	kN	kN
7 x 26	B7.12/26	✓	12	7⅛	26	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/26	✓	10	7⅛	26	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWI426-2	✓	11	7⅛	26	2½	2½	(4) 16d	—	(6) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	GLTV426-2	✓	7	7⅛	26	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV426-2	✓	7	7⅛	26	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
7 x 28	B7.12/28	✓	12	7⅛	28	2½	2½	(6) 16d	(8) 16d	(6) 16d	1650	5940	3910	6490	5230	6185	—
											7.34	26.42	17.39	28.87	23.27	27.51	—
	HB7.12/28	✓	10	7⅛	28	3½	3	(6) 16d	(16) 16d	(10) 16d	3555	9335	5945	9525	9240	10475	—
											15.81	41.53	26.45	42.37	41.10	46.60	—
	HWI428-2	✓	11	7⅛	28	2½	2½	(4) 16d	—	(6) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	GLTV428-2	✓	7	7⅛	28	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV428-2	✓	7	7⅛	28	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
7 x 30	HWI430-2	✓	11	7⅛	30	2½	2½	(4) 16d	—	(6) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	GLTV430-2	✓	7	7⅛	30	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV430-2	✓	7	7⅛	30	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—
7 x 32	HWI432-2	✓	11	7⅛	32	2½	2½	(4) 16d	—	(6) 10d	—	6900	5285	7695	5810	6870	—
											—	30.69	23.51	34.23	25.85	30.56	—
	GLTV432-2	✓	7	7⅛	32	5	2⅞	(4) 16d	(6) 16d	(6) 16d	2145	10455	7470	10890	10745	8590	—
											9.54	46.51	33.23	48.44	47.80	38.21	—
	HGLTV432-2	✓	7	7⅛	32	6	2⅞	(6) 16d	(12) 16d	(6) 16d	2145	13070	9830	15365	11325	13795	—
											9.54	58.14	43.73	68.35	50.38	61.37	—

See pp. 203–216 for specific notes on individual model types.

THAI

I-Joist and Structural Composite Lumber Hangers

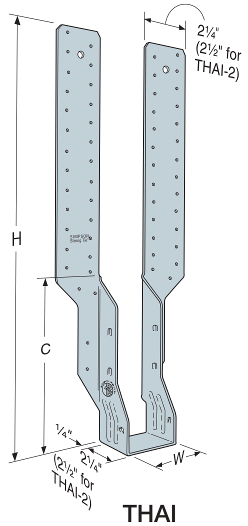
Designed for I-joists, the THAI has extra long straps and can be field-formed to give height adjustability and top flange hanger convenience. Positive angle nailing helps eliminate splitting of the I-joist's bottom flange.

Material: THAI-2 — 14 gauge; all others — 18 gauge

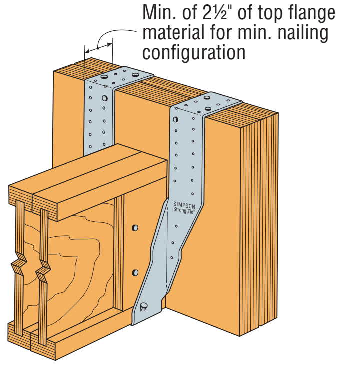
Finish: Galvanized

Installation:

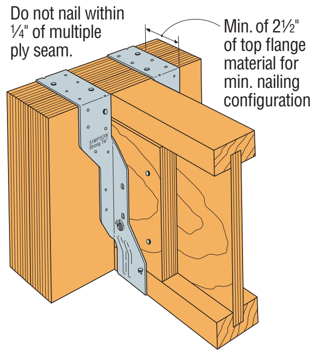
- THAI-2 must be factory-ordered for hanger width needed. See table for allowable widths.
- Use all specified fasteners. Verify that the header can take the required fasteners specified in the table.
- Web stiffeners are required for all I-joists used with these hangers.
- When a total of 20 face nails are used in THAI straps, or 30 face nails are used in THAI-2 straps, the maximum factored resistance is achieved.
- 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".



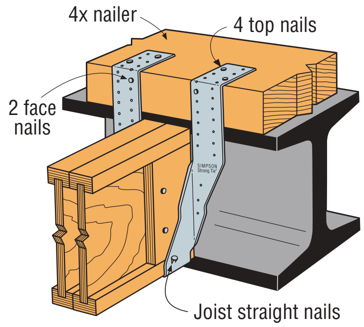
THAI
(THAI-2 similar)



Typical THAI-2 Installation



Typical THAI Installation with Minimum Nailing Configuration



Typical THAI Minimum Nailing Configuration on a 4x Nailer

Joist Dimensions (in.)		Model No.	Hanger Dimensions (in.)		
Width	Depth		W_1	H	C
1½	9¼ – 14	THAI222	1 9/16	22⅞	9⅜
1¾	9¼ – 14	THAI1.81/22	1 13/16	22¾	9¼
2	9¼ – 14	THAI2.06/22	2 1/16	22⅝	9⅛
2¼ to 2 5/16	9¼ – 14	THAI3522	2 5/16	22½	9
2½	9¼ – 14	THAI322	2 9/16	22⅜	8⅞
3½	9¼ – 14	THAI422	3 9/16	21⅞	8⅜
3 to 5¼	9¼ – 14	THAI-2	3⅛ to 5 5/16	21 11/16	8 13/16

1. The W dimension should be ordered at 1/16" to ⅛" greater than the joist width.

Nailing Option	Fasteners			Factored Resistance			
	Header		Joist	Uplift (K_D = 1.15)	D.Fir-L	S-P-F	LVL
	Top	Face			Normal (K_D = 1.00)	Normal (K_D = 1.00)	Normal (K_D = 1.00)
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
THAI minimum	(4) 10d x 1½"	(2) 10d x 1½"	(2) 10d x 1½"	—	2035	1735	2595
				—	9.05	7.72	11.54
	(4) 10d	(2) 10d	(2) 10d x 1½"	—	3000	2385	2810
				—	13.35	10.61	12.50
THAI maximum	—	(20) 10d	(2) 10d x 1½"	410	3025	2150	3025
				1.82	13.46	9.56	13.46
THAI-2 minimum	(4) 10d	(2) 10d	(2) 10d x 1½"	—	2800	2800	2800
				—	12.46	12.46	12.46
THAI-2 maximum	—	(30) 10d	(2) 10d x 1½"	410	6090	4325	6090
				1.82	27.09	19.24	27.09

1. Uplift loads have been increased 15% for wind or earthquake loading with no further increase allowed; reduce where other loads govern.
2. The minimum header depth to achieve the maximum nail configuration is 16".
3. 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 S-P-F column.
4. Factored uplift resistances shown are for D.Fir-L. Multiply tablulated resistances x 0.71 for either S-P-F joist or header.
5. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

LSU/LSSU/LSSUI

Light Slopeable/Skewable U Hangers for I-Joists and SCL

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

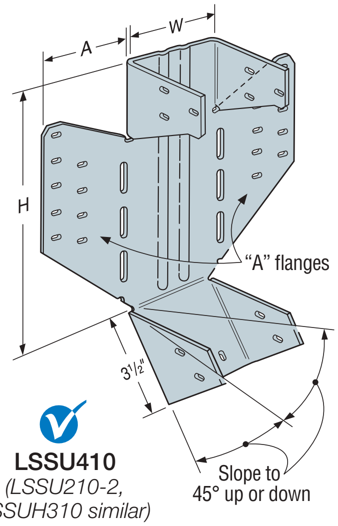
This series attaches joists or rafters to headers, sloped up or down, and skewed left or right, up to 45°.

Material: See table

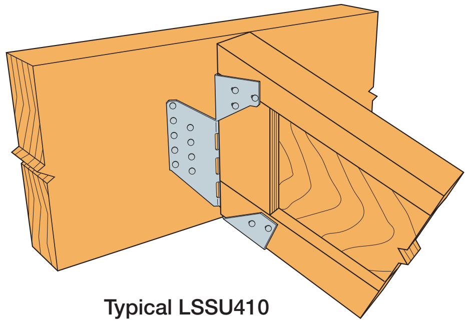
Finish: Galvanized

Installation:

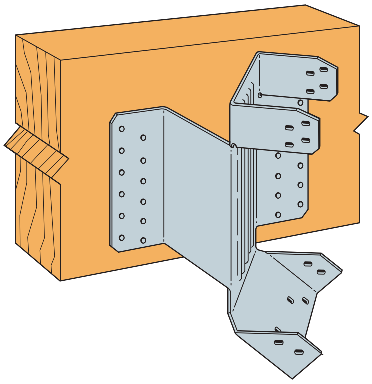
- Use all specified fasteners; see General Notes
- Attach the sloped joist at both ends so that the horizontal force developed by the slope is fully supported by the supporting members
- Web stiffeners required for I-joist applications
- To see an installation video on this product, visit **strongtie.com**
- 10d x 1½" nails cannot be substituted for specified face nails for skewed or sloped and skewed combinations



LSSU410
(LSSU210-2, LSSUH310 similar)



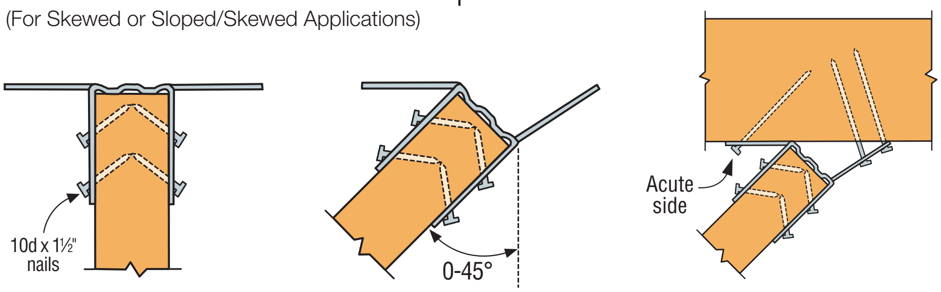
Typical LSSU410 Installation



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. Install nails at an angle.

LSU/LSSU/LSSUI

Light Slopeable/Skewable U Hangers for I-Joist and SCL (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Actual Joist Width (in.)	Model No.	Ga.	Dimensions (in.)			Fasteners		Factored Resistance			
								D.Fir-L		S-P-F	
			W	H	A	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
Sloped Only Hangers											
1½	LSSU210	18	1 9/16	8½	1⅝	(10) 10d	(7) 10d x 1½"	1240	3090	1130	2325
								5.52	13.75	5.03	10.34
1¾	LSSUI25	18	1 13/16	8½	1½	(10) 10d	(7) 10d x 1½"	1240	3090	1130	2325
								5.52	13.75	5.03	10.34
2	LSSUI2.06	18	2 1/16	8½	1¾	(10) 10d	(7) 10d x 1½"	1240	3090	1130	2325
								5.52	13.75	5.03	10.34
2 1/16	LSSU2.1	18	2⅛	8½	1¾	(10) 10d	(7) 10d x 1½"	1240	3090	1130	2325
								5.52	13.75	5.03	10.34
2¼ – 2 5/16	LSSUI35	18	2 5/16	8½	1⅝	(10) 10d	(7) 10d x 1½"	1240	3090	1130	2325
								5.52	13.75	5.03	10.34
2½	LSSUH310	16	2 9/16	8½	3⅛	(18) 16d	(12) 10d x 1½"	1625	3675	1155	2780
								7.23	16.35	5.14	12.37
3	LSSU210-2	16	3⅛	8½	2⅞	(18) 16d	(12) 10d x 1½"	1625	3675	1155	2780
								7.23	16.35	5.14	12.37
3½	LSSU410	16	3 9/16	8½	2⅝	(18) 16d	(12) 10d x 1½"	1625	4520	1155	3210
								7.23	20.11	5.14	14.28
4	LSU4.12	14	4⅛	9	2¼	(24) 16d	(16) 10d x 1½"	1960	3810	1395	2705
								8.72	16.95	6.21	12.03
4⅛	LSU4.28	14	4¼	9	2⅜	(24) 16d	(16) 10d x 1½"	1960	3810	1395	2705
								8.72	16.95	6.21	12.03
4½ – 4¾	LSU3510-2	14	4¾	8⅞	3⅝	(24) 16d	(16) 10d x 1½"	1960	3810	1395	2705
								8.72	16.95	6.21	12.03
5	LSU5.12	14	5⅛	9	2¼	(24) 16d	(16) 10d x 1½"	1285	4755	910	2770
								5.72	21.15	4.05	12.32
Skewed Hangers or Sloped and Skewed Hangers											
1½	LSSU210	18	1 9/16	8½	1⅝	(9) 10d	(7) 10d x 1½"	1240	2090	910	1485
								5.52	9.30	4.05	6.61
1¾	LSSUI25	18	1 13/16	8½	1½	(9) 10d	(7) 10d x 1½"	1240	2090	910	1485
								5.52	9.30	4.05	6.61
2	LSSUI2.06	18	2 1/16	8½	1¾	(9) 10d	(7) 10d x 1½"	1240	2090	910	1485
								5.52	9.30	4.05	6.61
2 1/16	LSSU2.1	18	2⅛	8½	1¾	(9) 10d	(7) 10d x 1½"	1240	2090	910	1485
								5.52	9.30	4.05	6.61
2¼ – 2 5/16	LSSUI35	18	2 5/16	8½	1⅝	(9) 10d	(7) 10d x 1½"	1240	2090	910	1485
								5.52	9.30	4.05	6.61
2½	LSSUH310	16	2 9/16	8½	3⅛	(14) 16d	(12) 10d x 1½"	1625	2345	1155	1665
								7.23	10.43	5.14	7.41
3	LSSU210-2	16	3⅛	8½	2⅞	(14) 16d	(12) 10d x 1½"	1625	2345	1155	1665
								7.23	10.43	5.14	7.41
3½	LSSU410	16	3 9/16	8½	2⅝	(14) 16d	(12) 10d x 1½"	1625	2345	1155	1665
								7.23	10.43	5.14	7.41
4	LSU4.12	14	4⅛	9	2¼	(24) 16d	(16) 10d x 1½"	1960	2450	1395	2030
								8.72	10.90	6.21	9.03
4⅛	LSU4.28	14	4¼	9	2⅜	(24) 16d	(16) 10d x 1½"	1960	2450	1395	2030
								8.72	10.90	6.21	9.03
4½ – 4¾	LSU3510-2	14	4¾	8⅞	3⅝	(24) 16d	(16) 10d x 1½"	1960	2450	1395	2030
								8.72	10.90	6.21	9.03
5	LSU5.12	14	5⅛	9	2¼	(24) 16d	(16) 10d x 1½"	1285	2600	910	1845
								5.72	11.57	4.05	8.21

1. Factored uplift resistances include a 15% increase for earthquake or wind loading; no further increase is allowed; reduce where other loads govern.
2. LSU3510-2, LSU4.12, LSU4.28 and LSU5.12 skew option must be factory-ordered.
3. Minimum 11" joist height for LSU3510-2, LSU4.12, LSU4.28 and LSU5.12; 9½" for all others.

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. 27–28 for other nail sizes and information.

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 header and joist. Installation is further simplified with no required bevel cuts.

Material: See table

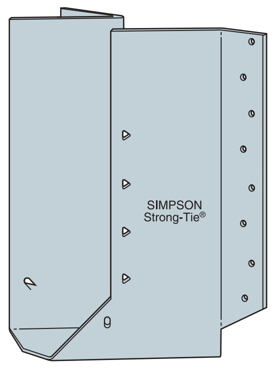
Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

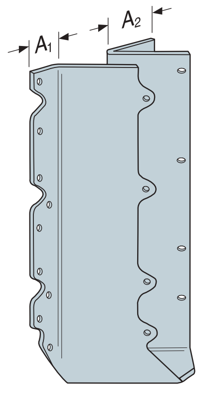
- Use all specified fasteners; see General Notes.
- Illustrations show left and right skews SUR/L (SUR = skewed right; SUL = skewed left).
- The joist end may be square cut or bevel cut.
- Web stiffeners are required for I-joist applications for all hangers requiring more than two joist fasteners or where the hanger does not overlap the top flange of the joist.
- Fill all round and obround nail holes with specified fasteners to achieve table values. Where noted, triangle holes in the joist flange may be filled for additional uplift capacity (see footnote 2).

Options:

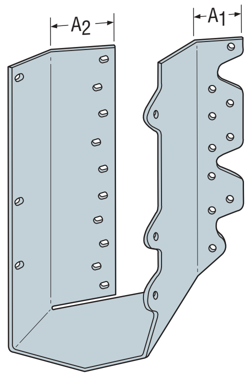
- These hangers will accommodate a 40° to 50° skew.
- Available with the A2 flange turned in on (2) 2x and 4x models only (see illustration). For example, specify HSURC410, HSULC410, SURC210-2, or SULC210-2.



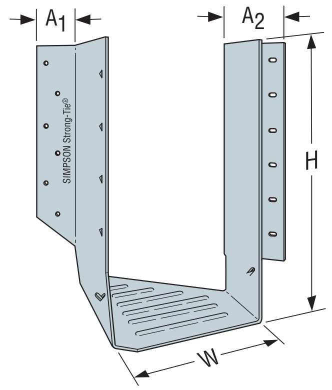
SUL2.56/11



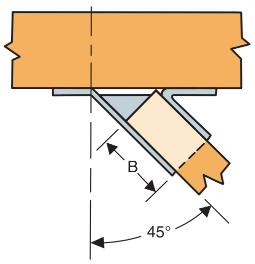
HSUR



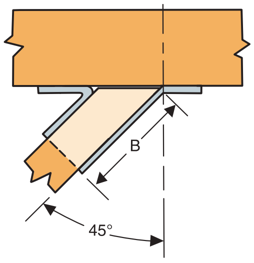
HSULC
Available for (2) 2x and 4x models only



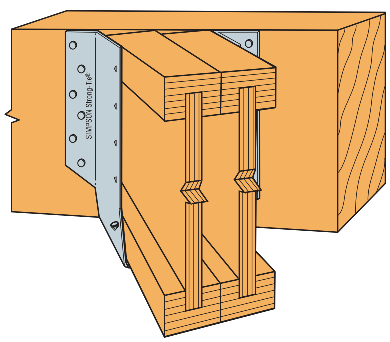
HSUR4.12/9



Typical SUR Installation with Square Cut Joist
(HSUR similar)



Typical SUL Installation with Bevel Cut Joist
(HSUL similar)



Typical HSUR4.12/9 Installation

Skewed 45° Hangers for I-Joist and SCL (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Actual Joist Size (in.)	Model No.	Ga.	Dimensions (in.)					Fasteners		Factored Resistance			
										D.Fir-L		S-P-F	
			W	H	B	A1	A2	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
SS 1½ x 9¼–9½	SUR/L210	16	1⁹⁄₁₆	8⅛	2	1⅛	1⁵⁄₁₆	(10) 16d	(10) 10d x 1½"	2085	3820	1480	2710
										9.27	16.99	6.58	12.05
1½ x 11¼–16	SUR/L214	16	1⁹⁄₁₆	10	2	1⅛	1⁵⁄₁₆	(12) 16d	(12) 10d x 1½"	2690	4585	2175	3255
										11.97	20.40	9.67	14.48
1¾ x 9¼–9½	SUR/L1.81/9	16	1¹³⁄₁₆	9	3	1⅚	2⁵⁄₁₆	(12) 16d	(2) 10d x 1½"	275	3140	195	2220
										1.22	13.97	0.87	9.88
1¾ x 11¼–11⅞	SUR/L1.81/11	16	1¹³⁄₁₆	11	3	1⅚	2⁵⁄₁₆	(16) 16d	(2) 10d x 1½"	275	3140	195	2220
										1.22	13.97	0.87	9.88
1¾ x 14–16	SUR/L1.81/14	16	1¹³⁄₁₆	13¾	3	1⅚	2⁵⁄₁₆	(20) 16d	(2) 10d x 1½"	275	3140	195	2220
										1.22	13.97	0.87	9.88
2 x 9½	SUR/L2.06/9	16	2¹⁄₁₆	9¹⁄₁₆	3³⁄₁₆	1⅚	2⅛	(14) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2 x 11⅞	SUR/L2.06/11	16	2¹⁄₁₆	11¼	3³⁄₁₆	1⅚	2⅛	(16) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2 x 14–16	SUR/L2.06/14	16	2¹⁄₁₆	13⅝	3³⁄₁₆	1⅚	2⅛	(18) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2¹⁄₁₆ x 9½	SUR/L2.1/9	16	2⅛	9¹⁄₁₆	3³⁄₁₆	1⁹⁄₁₆	2⅛	(14) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2¹⁄₁₆ x 11⅞	SUR/L2.1/11	16	2⅛	11³⁄₁₆	3³⁄₁₆	1⁹⁄₁₆	2⅛	(16) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2¹⁄₁₆ x 14–16	SUR/L2.1/14	16	2⅛	13⁹⁄₁₆	3³⁄₁₆	1⁹⁄₁₆	2⅛	(18) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2¼–2⁵⁄₁₆ x 9½	SUR/L2.37/9	16	2⅜	8¹⁵⁄₁₆	3³⁄₁₆	1⁵⁄₁₆	2⅛	(14) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2¼–2⁵⁄₁₆ x 11⅞	SUR/L2.37/11	16	2⅜	11³⁄₁₆	3³⁄₁₆	1⁵⁄₁₆	2⅛	(16) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2¼–2⁵⁄₁₆ x 14–16	SUR/L2.37/14	16	2⅜	13⁷⁄₁₆	3³⁄₁₆	1⁵⁄₁₆	2⅛	(18) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2½ x 9¼–9½	SUR/L2.56/9	16	2⁹⁄₁₆	8¹³⁄₁₆	3³⁄₁₆	1⅛	2⅛	(14) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2½–2⁹⁄₁₆ x 11¼–11⅞	SUR/L2.56/11	16	2⁹⁄₁₆	11³⁄₁₆	3³⁄₁₆	1⅛	2⅛	(16) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48
2½ x 14–16	SUR/L2.56/14	16	2⁹⁄₁₆	13⁵⁄₁₆	3³⁄₁₆	1⅛	2⅛	(18) 16d	(2) 10d x 1½"	385	3950	385	2805
										1.71	17.57	1.71	12.48

1. Factored uplift resistances have been increased by 15% for earthquake or wind loading with no further increase allowed; reduce for other load durations as required by code.
2. Triangle holes may be filled (requires web stiffeners) with 10d x 1½" nails for additional uplift.
   – SUR/SUL 9" and 11" and all HSUR/HSUL models have four additional holes.
   The factored uplift resistance is 1345 lb. (5.98 kN) D.Fir-L and 965 lb. (4.29 kN) S-P-F.
   – SUR/SUL 14" models have an additional six holes.
   The factored uplift resistance 1795 lb. (7.98 kN) D.Fir-L and 1385 lb. (6.16 kN) S-P-F.
3. **Nails:** 16d = 0.162" dia. x 3½" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

Skewed 45° Hangers for I-Joist and SCL (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Actual Joist Size (in.)	Model No.	Ga.	Dimensions (in.)					Fasteners		Factored Resistance			
										D.Fir-L		S-P-F	
			W	H	B	A_1	A_2	Header	Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
										lb.	lb.	lb.	lb.
										kN	kN	kN	kN
3 x 9¼–14	SUR/L210-2	16	3⅛	8 11/16	2⅝	1 7/16	2⅜	(14) 16d	(6) 16d x 2½"	1695	4065	1540	2875
										7.54	18.08	6.85	12.81
	HSUR/L210-2	14	3⅛	8 11/16	2 7/16	1¼	2 7/16	(20) 16d	(6) 16d x 2½"	1840	5270	1540	3745
										8.18	23.44	6.85	16.66
3 x 14–20	SUR/L214-2	16	3⅛	12 11/16	2½	1 7/16	2⅛	(18) 16d	(8) 16d x 2½"	2265	4095	2090	2895
										10.08	18.22	9.30	12.90
	HSUR/L214-2	14	3⅛	12 11/16	2 7/16	1¼	2 9/16	(26) 16d	(8) 16d x 2½"	2455	6875	2095	4880
										10.92	30.58	9.32	21.71
3½ x 9¼–14	SUR/L410	16	3 9/16	8½	2⅝	1	2⅜	(14) 16d	(6) 16d	1695	4065	1540	2875
										7.54	18.08	6.85	12.81
	HSUR/L410	14	3 9/16	8½	2 7/16	1	2 9/16	(20) 16d	(6) 16d	1840	5270	1540	3745
										8.18	23.44	6.85	16.66
3½ x 14–20	SUR/L414	16	3 9/16	12½	2⅝	1	2⅜	(18) 16d	(8) 16d	2265	4095	2090	2895
										10.08	18.22	9.30	12.90
	HSUR/L414	14	3 9/16	12½	2 7/16	1	2 9/16	(26) 16d	(8) 16d	2455	6875	2095	4880
										10.92	30.58	9.32	21.71
4 x 9½	HSUR/L4.12/9	14	4⅛	9	3	1 7/16	2⅜	(12) 16d	(2) 10d x 1½"	275	2995	195	2350
										1.22	13.34	0.87	10.47
4 x 11⅞	HSUR/L4.12/11	14	4⅛	11⅛	3	1 7/16	2⅜	(16) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
4 x 14	HSUR/L4.12/14	14	4⅛	13¾	3	1 7/16	2⅜	(20) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
4 x 16	HSUR/L4.12/16	14	4⅛	15¾	3	1 7/16	2⅜	(24) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
4⅛ x 9½	HSUR/L4.28/9	14	4 5/16	9	2¾	1 7/16	2⅜	(12) 16d	(2) 10d x 1½"	275	2995	195	2350
										1.22	13.34	0.87	10.47
4⅛ x 11⅞–16	HSUR/L4.28/11	14	4 5/16	11⅛	2¾	1 7/16	2⅜	(16) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
4⅝ x 9½	HSUR/L4.75/9	14	4¾	8 15/16	2¾	1 7/16	2⅜	(12) 16d	(2) 10d x 1½"	275	2995	195	2350
										1.22	13.34	0.87	10.47
4⅝ x 11⅞	HSUR/L4.75/11	14	4¾	10 15/16	2¾	1 7/16	2⅜	(16) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
4⅝ x 14	HSUR/L4.75/14	14	4¾	13¾	2¾	1 7/16	2⅜	(20) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
4⅝ x 16	HSUR/L4.75/16	14	4¾	15¾	2¾	1 7/16	2⅜	(24) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
5 x 9½	HSUR/L5.12/9	14	5⅛	9	2 13/16	1 7/16	2⅜	(12) 16d	(2) 10d x 1½"	275	2995	195	2350
										1.22	13.34	0.87	10.47
5 x 11⅞	HSUR/L5.12/11	14	5⅛	11	2 13/16	1 7/16	2⅜	(16) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
5 x 14	HSUR/L5.12/14	14	5⅛	13¾	2 13/16	1 7/16	2⅜	(20) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21
5 x 16	HSUR/L5.12/16	14	5⅛	15¾	2 13/16	1 7/16	2⅜	(24) 16d	(2) 10d x 1½"	275	4190	195	2965
										1.22	18.64	0.87	13.21

See footnotes on p. 243.

HHSUQ

Heavy Severe Skew Hanger

The HHSUQ is a high-load, face-mount hanger designed to accommodate severe skews (45°-84°), 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

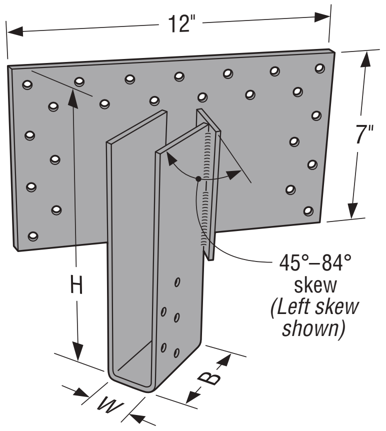
Finish: Simpson Strong-Tie® gray paint

Installation:

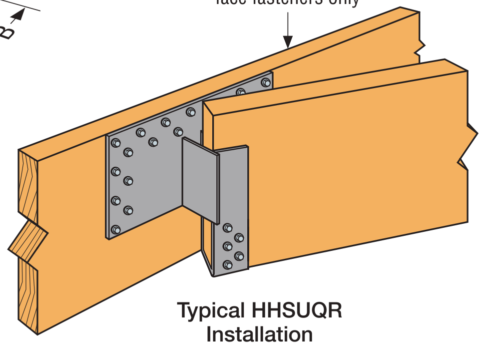
- Use all specified fasteners; see General Notes.
- Illustrations below show left and right skews HHSUQR/L (HHSUQR = skewed right; HHSUQL = skewed left).
- The joist end may be square cut or bevel cut.
- Strong-Drive SDS Heavy-Duty Connector screws supplied for all round holes.
- All multiple members must be fastened together to act as a single unit.
- When Strong-Drive SDS Heavy-Duty Connector screws are installed through metal truss plates the application must be approved by the Truss Designer. Predrilling is required using a 5⁄32" bit.

To Order:

- Specify left or right skew and the skew angle (degrees)



HHSUQ



Typical HHSUQR Installation

Model No.	Dimensions (in.) W	Dimensions (in.) H	Dimensions (in.) B	Fasteners Header	Fasteners Joist	Factored Resistance D.Fir-L Uplift (KD = 1.15) lb. / kN	D.Fir-L Normal (KD = 1.15) lb. / kN	S-P-F Uplift (KD = 1.15) lb. / kN	S-P-F Normal (KD = 1.15) lb. / kN
HHSUQ1.81/7-SDS	1 13⁄16	7¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 1½" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ1.81/9-SDS	1 13⁄16	9½	3½	(23) ¼" x 3" SDS	(5) ¼" x 1½" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ1.81/11-SDS	1 13⁄16	11⅞	3½	(23) ¼" x 3" SDS	(5) ¼" x 1½" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ1.81/14-SDS	1 13⁄16	14	3½	(23) ¼" x 3" SDS	(5) ¼" x 1½" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ48-SDS	3⅝	7¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ410-SDS	3⅝	9¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ412-SDS	3⅝	11¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ414-SDS	3⅝	13¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60

1. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase is allowed. Reduce where other load durations 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 ply of the truss) may also be used to transfer the load through all of the plies of the supporting girder. When Strong-Drive SDS Heavy-Duty Connector screws do not penetrate all plies of the supporting girder, 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 header fasteners may be replaced with 4½"- or 6"-long Strong-Drive SDS Heavy-Duty Connector screws with no reduction in capacity.
3. Resistances shown are based on a minimum 2-ply 2x8 carrying member. For single 2x carrying members, replace the 3"-long Strong-Drive SDS Heavy-Duty Connector screws with 1½"-long Strong-Drive SDS Heavy-Duty Connector screws and reduce the factored normal resistances to 3820 lb. (16.99 kN) D.Fir-L and 2750 lb. (12.23 kN) S-P-F. The tabulated uplift resistances do not change.
4. Girders must be adequately laterally braced to prevent excessive displacement due to secondary torsional stresses.
5. As per 12.2.2.5 CSA O86-14, the carrying member must be evaluated using a reduced cross-sectional area at the hanger location. The reduction in area is equal to seven (7) ¼" diameter x 3" long holes (1½" long for ¼" x 1½" Strong-Drive SDS Heavy-Duty Connector screw).

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, MSC1.81, MSC2, MSC4. Stirrups — 11 gauge; MSC5 stirrups — 7 gauge.

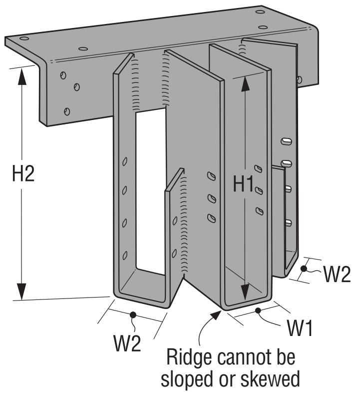
Finish: Simpson Strong-Tie® gray paint

Installation:

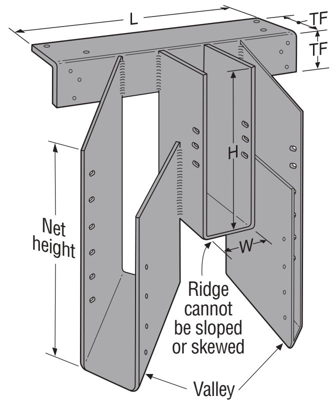
- Distribute the total load evenly about the centerline to avoid eccentric loading
- Fasten all built-up members together as one unit
- Net height will be calculated based on specified valley member depth and slope by the factory unless noted otherwise

Sloped and/or Skewed Valleys

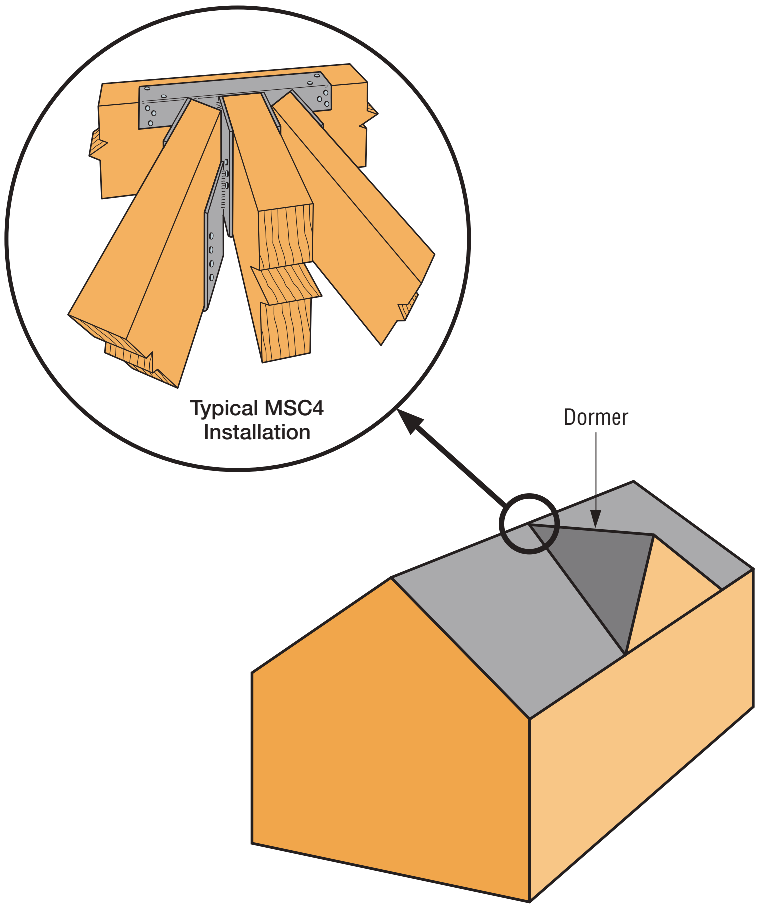
- The valley stirrups can be sloped down to 45° and skewed from 25° to 45°. (MSC5 skewed 20°-45°.)
- The total design capacity of the hanger is split between the ridge (20%) and each valley (40%).
- MSC connectors can be used for two valley connections with no ridge member. Divide the total load by two for each valley load.



MSC1.81 with Valley Skewed 45° and Sloped 0°



MSC4 with Valley Sloped and Skewed 45°



MSC

Multiple Seat Connector (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Dimensions (in)				Fasteners		Valleys		Factored Resistance (K_D = 1.00)								
									D.Fir-L			S-P-F			LVL[7] (G = 0.50)		
	W	H (Min.)	TF	L	Header	Joist	Max. Skew	Max. Slope	Valley	Ridge	Total	Valley	Ridge	Total	Valley	Ridge	Total
									lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
									kN	kN	kN	kN	kN	kN	kN	kN	kN
MSC2	1⁹⁄₁₆	5½	2⅞	12	(10) 16d	(18) 10d x 1½"	45°	0°	3085	1545	7715	2335	1170	5840	4150	2075	10375
									13.72	6.87	34.32	10.39	5.20	25.98	18.46	9.23	46.15
						(26) 10d x 1½"		45°	2450	1225	6120	1855	925	4635	3290	1645	8225
									10.90	5.45	27.22	8.25	4.11	20.62	14.64	7.32	36.59
MSC1.81	1¹³⁄₁₆	5½	2⅞	12	(10) 16d	(18) 10d x 1½"	45°	0°	3085	1545	7715	2335	1170	5840	4150	2075	10375
									13.72	6.87	34.32	10.39	5.20	25.98	18.46	9.23	46.15
						(26) 10d x 1½"		45°	2450	1225	6120	1855	925	4635	3290	1645	8225
									10.90	5.45	27.22	8.25	4.11	20.62	14.64	7.32	36.59
MSC4	3⁹⁄₁₆	7½	2⅞	18	(10) 16d	(18) 10d	45°	0°	5460	2730	13650	4135	2070	10340	5460	2730	13650
									24.29	12.14	60.72	18.39	9.21	46.00	24.29	12.14	60.72
						(26) 10d		45°	5460	2730	13650	4135	2070	10340	5460	2730	13650
									24.29	12.14	60.72	18.39	9.21	46.00	24.29	12.14	60.72
MSC5	5¼	9½	2⅞	26	(13) 16d	(18) 16d	45°	0°	10565	5280	26410	7990	3995	19975	10565	5280	26410
									47.00	23.49	117.48	35.54	17.77	88.86	47.00	23.49	117.48
						(26) 10d		45°	9130	4565	22825	6905	3450	17260	9130	4565	22825
									40.61	20.31	101.53	30.72	15.35	76.78	40.61	20.31	101.53

1. Factored resistances shown for each valley.
2. Other valley-ridge load distributions are allowed provided the sum of all three members is distributed symmetrically about the centre of the hanger and combined do not exceed the total resistance.
3. MSC4 is also available in 3⅛" glulam width.
4. MSC5 is also available in widths up to 5½".
5. MSC1.81 and MSC2 are available in saddle configurations. (e.g. MSCD1.81)
6. For the MSC5 with all three members sloped to 45° (max.) multiply the tabulated resistance x 0.64. This connection requires (30) 16d joist nails.
7. Factored resistances shown for LVL assume ϕF_{CP} = 1092 psi (7.53 MPa).
8. **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. 27–28 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°.

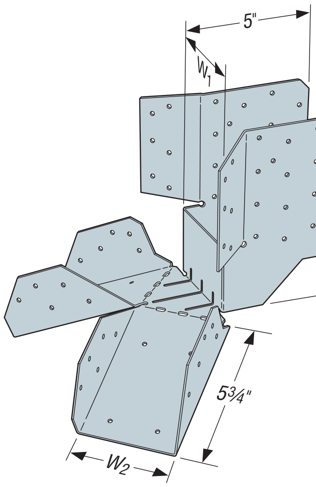
HHRC accommodates higher loads and uses Simpson Strong-Tie® Strong-Drive® SD Connector screws.

Material: HRC1.81 — 16 gauge; HHRC — 12 gauge

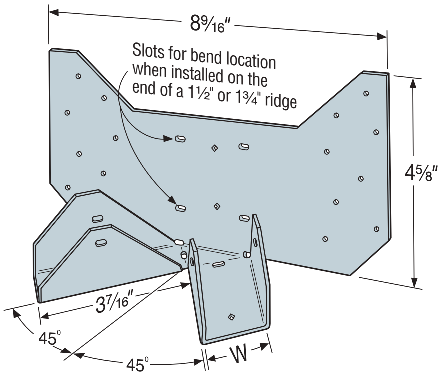
Finish: Galvanized

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.



HHRC44
(others similar)

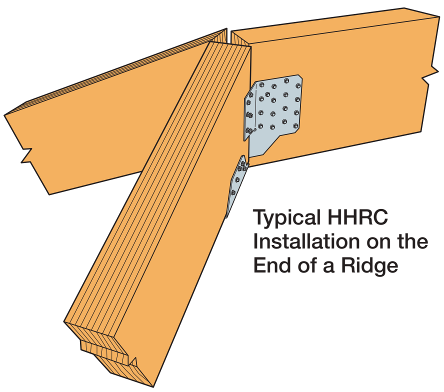


HRC1.81
U.S. Patent 5,380,116

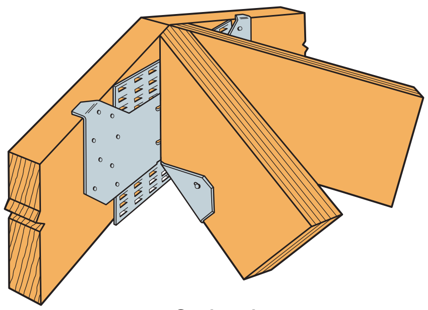
HRC Factored Resistances

Model No.	Member Size (in.)		Fasteners		Factored Resistance			
					D.Fir-L		S-P-F	
	W	Ridge	Carrying Member	Each Hip	Uplift	Down	Uplift	Down
					(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
HRC1.81	1$\frac{13}{16}$	2x or 1¾" wide	(16) 10d x 1½"	(2) 10d x 1½"	445	1340	400	950
					1.98	5.96	1.78	4.23

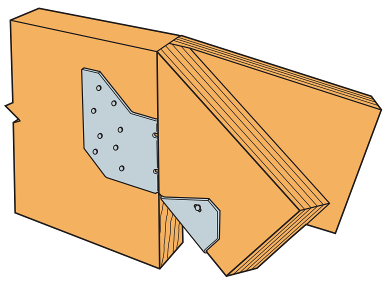
1. Factored resistances shown are for each hip. Total resistance carried by the connector is double this number.
2. Factored uplift resistances include a 15% increase for earthquake or wind loading; no further increase allowed; reduce where other loads govern.
3. Nails: 16d = 0.162" dia. x 3½" long, 10dx1½ = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



Typical HHRC Installation on the End of a Ridge



Optional HRC1.81 Installation



Typical HRC Installation on the End of a Ridge

HRC/HHRC

Hip Ridge Connectors (cont.)

HHRC Factored Resistances

Model	Member Width (in.)		Dimensions (in.)		Fasteners		Factored Resistance per Hip			
							D.Fir-L		S-P-F	
							Uplift	Normal	Uplift	Normal
	Ridge	Hip	W1	W2	Ridge	Each Hip	(KD=1.15)	(KD=1.00)	(KD=1.15)	(KD=1.00)
							lb.	lb.	lb.	lb.
							kN	kN	kN	kN
HHRC4/1.81	3½	1¾	3⅝	1 13/16	(40) SD#10 x 2½"	(22) SD#10 x 1½"	2330	3620	1805	2570
							10.36	16.10	8.03	11.43
HHRC44	3½	3½	3⅝	3⅝	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3365	4185	2530	2970
							14.97	18.62	11.25	13.21
HHRC5.25/3.25	5⅛	3⅛	5¼	3¼	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3930	4205	2790	2985
							17.48	18.71	12.41	13.28
HHRC5.25/3.62	5⅛	3½	5¼	3⅝	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3930	4205	2790	2985
							17.48	18.71	12.41	13.28
HHRC5.37/3.12	5¼	3⅛	5⅜	3¼	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3930	4205	2790	2985
							17.48	18.71	12.41	13.28
HHRC5.37/3.56	5¼	3½	5⅜	3 9/16	(40) SD#10 x 2½"	(22) SD#10 x 2½"	3930	4205	2790	2985
							17.48	18.71	12.41	13.28

1. Factored resistances shown are per hip; the total load carried by the connector is double this number. Load must be equally distributed to both hips.
2. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase is allowed. Reduce where other load durations govern.
3. Factored resistances shown are applicable for roof slopes up to and including 45° (12:12).
4. Do not attach HHRC to columns or studs.
5. **Screws**: SD#10 x 2½" (SD10212) = 0.161" dia. x 2½" long.

VPA

SIMPSON Strong-Tie®

Variable Pitch Connector

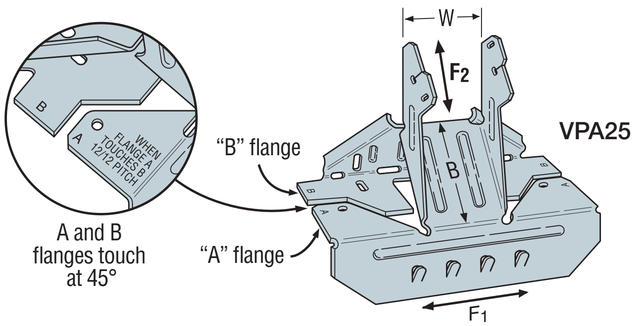
The VPA may be sloped in the field, offering a versatile solution for attaching rafters to the top plate. It will adjust to accommodate slopes between 3:12 and 12:12, making it a complement to the versatile LSSU. This connector eliminates the need for notched rafters, beveled top plates and toe nailing.

Material: 18 gauge

Finish: Galvanized

Installation:

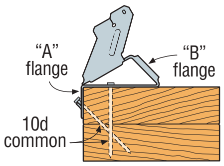
- Use all specified fasteners; see General Notes



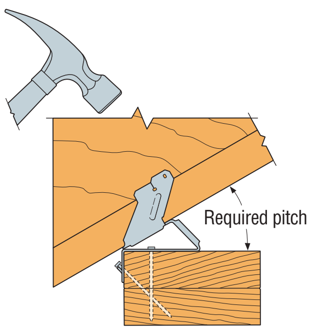
Model No.	Actual Joist Width (in.)	W (in.)	Fasteners: Carrying Member	Fasteners: Carried Member	Factored Resistance D.Fir-L Wind/Earthquake (K_D = 1.15) Uplift	D.Fir-L Wind/Earthquake F_1	D.Fir-L Wind/Earthquake F_2	D.Fir-L Normal (K_D = 1.00)	S-P-F Wind/Earthquake (K_D = 1.15) Uplift	S-P-F Wind/Earthquake F_1	S-P-F Wind/Earthquake F_2	S-P-F Normal (K_D = 1.00)
					lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN	kN	kN
VPA2	1½	1 9/16	(8) 10d	(2) 10d x 1½"	405	695	405	1695	370	615	370	1555
					1.80	3.09	1.80	7.54	1.65	2.74	1.65	6.92
VPA25	1¾	1 13/16	(8) 10d	(2) 10d x 1½"	405	695	405	1695	370	615	370	1555
					1.80	3.09	1.80	7.54	1.65	2.74	1.65	6.92
VPA2.06	2	2 1/16	(9) 10d	(2) 10d x 1½"	405	695	405	2050	370	615	370	1855
					1.80	3.09	1.80	9.12	1.65	2.74	1.65	8.25
VPA2.1	2 1/16	2⅛	(9) 10d	(2) 10d x 1½"	405	695	405	2050	370	615	370	1855
					1.80	3.09	1.80	9.12	1.65	2.74	1.65	8.25
VPA35	2¼ – 2 5/16	2 5/16	(9) 10d	(2) 10d x 1½"	405	695	405	2050	370	615	370	1855
					1.80	3.09	1.80	9.12	1.65	2.74	1.65	8.25
VPA3	2½	2 9/16	(9) 10d	(2) 10d x 1½"	405	695	405	2050	370	615	370	1855
					1.80	3.09	1.80	9.12	1.65	2.74	1.65	8.25
VPA4	3½	3 9/16	(11) 10d	(2) 10d x 1½"	405	695	405	2050	370	615	370	1855
					1.80	3.09	1.80	9.12	1.65	2.74	1.65	8.25

1. Factored uplift and lateral resistances have been increased 15% for earthquake or wind loading; no further increase is allowed.
2. Resistances may not be increased for short-term load duration.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

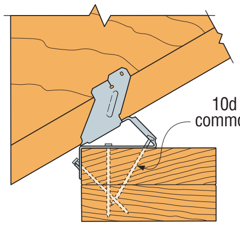
VPA Installation Sequence



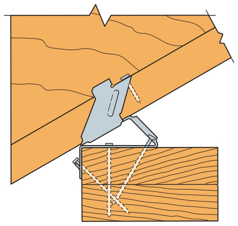
Step 1
Install top nails and face PAN nails in "A" flange to outside wall top plate.



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

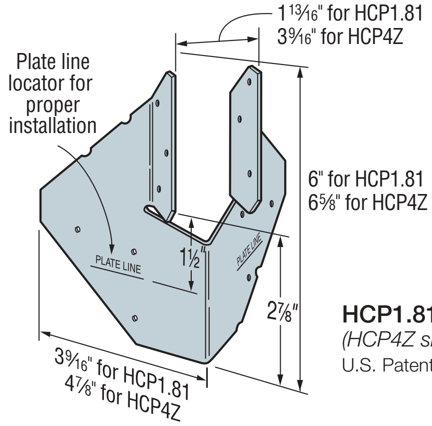
The HCP connects a rafter or joist to double top plates at a 45° angle.

Material: 18 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- Attach HCP to double top plates; birdsmouth not required for table values.
- Install rafter and complete nailing. Rafter may be sloped to 45°.

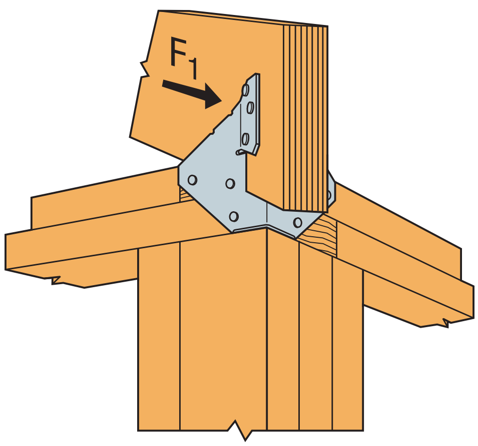


HCP1.81
(HCP4Z similar)
U.S. Patent 5,380,115

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Hip Size (in.)	Fasteners		Factored Resistance			
				D.Fir-L		S-P-F	
		To Hip	To Plates	Uplift (KD = 1.15) lb. / kN	F_1 (KD = 1.00) lb. / kN	Uplift (KD = 1.15) lb. / kN	F_1 (KD = 1.00) lb. / kN
HCP1.81	1¾	(6) 10d x 1½"	(6) 10d x 1½"	1020	355	890	325
				4.54	1.58	3.96	1.45
HCP4Z	3½	(8) 10d	(8) 10d	1485	435	1300	310
				6.61	1.94	5.78	1.38

1. The HCP can be installed on the inside and the outside of the wall with a flat bottom chord truss and achieve twice the factored resistance.
2. Factored uplift resistances include a 15% increase for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



Typical HCP Installation

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 ⅝" 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:

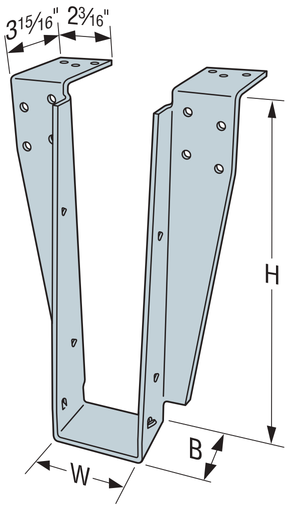
- Use all specified fasteners; see General Notes.
- Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws are provided with the hanger.
- Drywall is installed first.
- DU and DHU are mounted with top of hanger flush with top of wall and tight to the drywall.
- Wall top plates must be restrained 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:

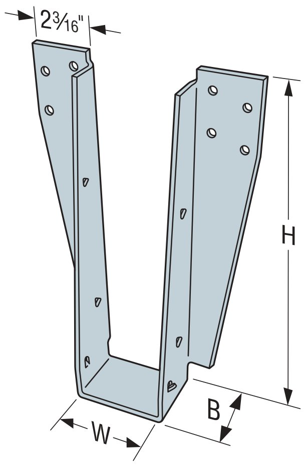
- The DHU may be ordered with one flange concealed for widths at least 2½" wide; specify which flange when ordering. Use 74% of the tabulated values.
- The DHU / DHUTF may be ordered skewed up to 45°. Use 70% of the table factored down resistances and 50% of table uplift values.

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

Model	Ga.	B (in.)	Fasteners: Joist	Fasteners: Face	Fasteners: Top
DU	14	2	(2) 10d x 1½"	(4) ¼" x 3½" SDS	—
DHU	12	2.5	(2) 10d x 1½"	(8) ¼" x 3½" SDS	—
DHUTF	12	2.5	(2) 10d x 1½"	(8) ¼" x 3½" SDS	(6) 10d x 1½"

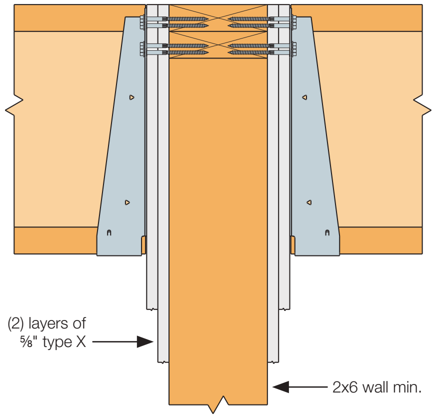
Model	Condition	Factored Resistance			
		D.Fir-L		S-P-F	
		Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
		lb. / kN	lb. / kN	lb. / kN	lb. / kN
DU	Over (1) layer ⅝" drywall	125 / 0.56	1605 / 7.14	125 / 0.56	1605 / 7.14
	Over (2) layers ⅝" drywall	125 / 0.56	2090 / 9.30	125 / 0.56	1845 / 8.21
	Two-sided over (2) layers ⅝" drywall (minimum 2x6 wall)	125 / 0.56	1780 / 7.92	125 / 0.56	1780 / 7.92
	Over (1) layer structural sheathing and (2) layers ⅝" drywall	125 / 0.56	1845 / 8.21	125 / 0.56	1845 / 8.21
DHU DHUTF	Over (1) layer ⅝" drywall	125 / 0.56	1990 / 8.85	125 / 0.56	1670 / 7.43
	Over (2) layers ⅝" drywall	125 / 0.56	2310 / 10.23	125 / 0.56	2295 / 10.21
	Two-sided over (2) layers ⅝" drywall (minimum 2x6 wall)	125 / 0.56	1780 / 7.92	125 / 0.56	1780 / 7.92
	Over (1) layer structural sheathing and (2) layers ⅝" drywall	125 / 0.56	2420 / 10.77	125 / 0.56	2030 / 9.03

1. Factored uplift resistances have been increased 15% for wind or earthquake loading with no further increase is allowed; reduce where other load durations govern.
2. Triangle nail holes may be filled with four (4) additional 10dx1½" nails to achieve a factored uplift resistance of 1290 lb. (5.74 kN). When I-joists are used, web stiffeners are required. Note that the double top plates must be anchored to the studs/framing to accomodate the uplift load.
3. Factored resistances assume ⅝" Type X gypsum board attached per NBC. Wall assembly must consist of a minimum of (2) 2x4 top plates with studs spaced no greater than 16" o/c.
4. Capacities shown for use over one (1) layer of structural sheathing are based on ⅝" thick OSB, DF plywood or CSP. For thinner panels use the lower of this value or the other applicable values in the table.

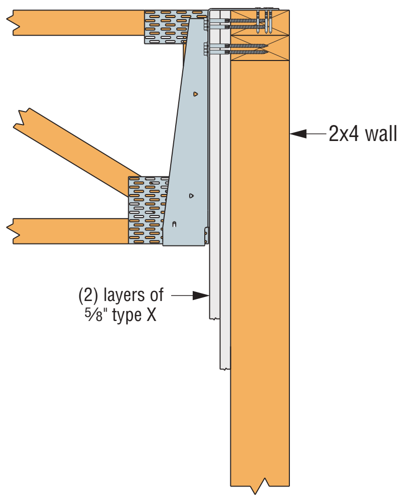
DU/DHU/DHUTF

Drywall Hangers (cont.)

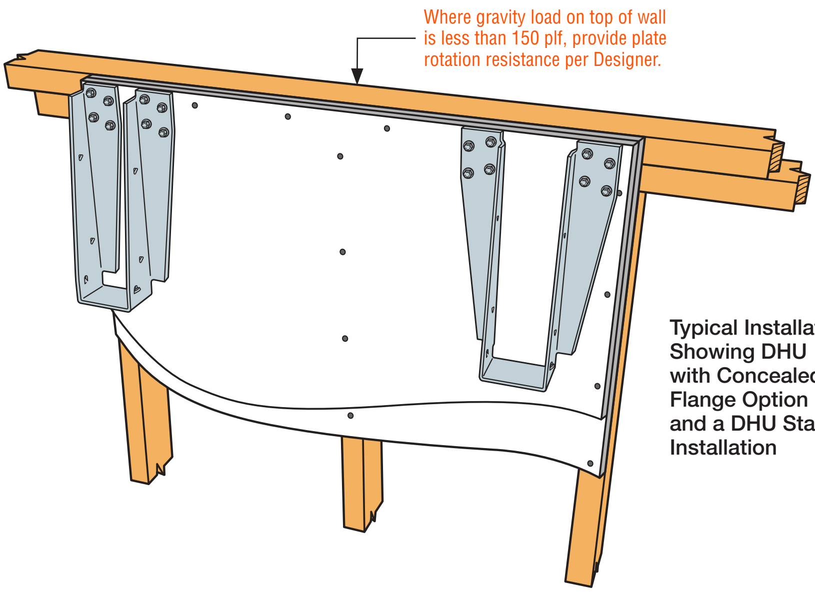
Joist Size (in.)	Face Mount		Top Flange	Dimensions (in.)	
	DU Models	DHU Models	DHUTF Models	W	H
2x10	DU210	DHU210	DHU210TF	1 9/16	9⅛
2x12	DU212	DHU212	DHU212TF	1 9/16	11⅛
1¾ x 9½	DU1.81/9.5	DHU1.81/9.5	DHU1.81/9.5TF	1 13/16	9 7/16
1¾ x 11⅞	DU1.81/11.88	DHU1.81/11.88	DHU1.81/11.88TF	1 13/16	11 13/16
1¾ x 14	DU1.81/14	DHU1.81/14	DHU1.81/14TF	1 13/16	13 15/16
1¾ x 16	DU1.81/16	DHU1.81/16	DHU1.81/16TF	1 13/16	15 15/16
2 x 9½	DU2.1/9.5	DHU2.1/9.5	DHU2.1/9.5TF	2⅛	9 7/16
2 x 11⅞	DU2.1/11.88	DHU2.1/11.88	DHU2.1/11.88TF	2⅛	11 13/16
2 x 14	DU2.1/14	DHU2.1/14	DHU2.1/14TF	2⅛	13 15/16
2 x 16	DU2.1/16	DHU2.1/16	DHU2.1/16TF	2⅛	15 15/16
2 1/16 x 9½	DU2.1/9.5	DHU2.1/9.5	DHU2.1/9.5TF	2⅛	9 7/16
2 1/16 x 11⅞	DU2.1/11.88	DHU2.1/11.88	DHU2.1/11.88TF	2⅛	11 13/16
2 1/16 x 14	DU2.1/14	DHU2.1/14	DHU2.1/14TF	2⅛	13 15/16
2 1/16 x 16	DU2.1/16	DHU2.1/16	DHU2.1/16TF	2⅛	15 15/16
2 5/16 x 9½	DU2.37/9.5	DHU2.37/9.5	DHU2.37/9.5TF	2⅜	9 7/16
2 5/16 x 11⅞	DU2.37/11.88	DHU2.37/11.88	DHU2.37/11.88TF	2⅜	11 13/16
2 5/16 x 14	DU2.37/14	DHU2.37/14	DHU2.37/14TF	2⅜	13 15/16
2 5/16 x 16	DU2.37/16	DHU2.37/16	DHU2.37/16TF	2⅜	15 15/16
2 5/16 x 18	—	DHU2.37/18	DHU2.37/18TF	2⅜	17 15/16
2 5/16 x 20	—	DHU2.37/20	DHU2.37/20TF	2⅜	19 15/16
2½ x 9½	—	DHU2.56/9.5	DHU2.56/9.5TF	2 9/16	9 7/16
2½ x 11⅞	—	DHU2.56/11.88	DHU2.56/11.88TF	2 9/16	11 13/16
2½ x 14	—	DHU2.56/14	DHU2.56/14TF	2 9/16	13 15/16
2½ x 16	—	DHU2.56/16	DHU2.56/16TF	2 9/16	15 15/16
2½ x 18	—	DHU2.56/18	DHU2.56/18TF	2 9/16	17 15/16
2½ x 20	—	DHU2.56/20	DHU2.56/20TF	2 9/16	19 15/16
3½ x 9½	—	DHU3.56/9.5	DHU3.56/9.5TF	3 9/16	9 7/16
3½ x 11⅞	—	DHU3.56/11.88	DHU3.56/11.88TF	3 9/16	11 13/16
3½ x 14	—	DHU3.56/14	DHU3.56/14TF	3 9/16	13 15/16
3½ x 16	—	DHU3.56/16	DHU3.56/16TF	3 9/16	15 15/16
3½ x 18	—	DHU3.56/18	DHU3.56/18TF	3 9/16	17 15/16
3½ x 20	—	DHU3.56/20	DHU3.56/20TF	3 9/16	19 15/16
3½ x 22	—	DHU3.56/22	DHU3.56/22TF	3 9/16	21 15/16
3½ x 24	—	DHU3.56/24	DHU3.56/24TF	3 9/16	23 15/16



Two-Sided Installation
Over (2) Layers of Drywall



Typical Installation over
(2) Layers of Drywall



Typical Installation
Showing DHU
with Concealed
Flange Option (at left)
and a DHU Standard
Installation

DG/DGH/DGB

NEW Firewall Hangers

The DG firewall hanger series is designed for installation on a two-hour firewall and does not require gypsum board (drywall) to be installed at the time of framing. These top-flange hangers provide space for two layers of ⅝" drywall to be slipped into place after framing is complete. The DG/DGH/DGB firewall hangers have been tested according to ASTM E814 and received F (flame) and T (temperature) ratings for use on one or both sides of the wall. These ratings verify that the DG hangers do not reduce the two-hour firewall assembly rating.

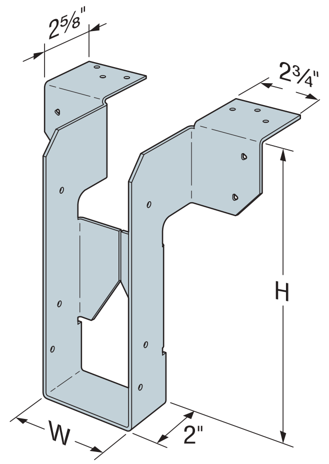
Material: DG — 12 gauge; DGH — 10 gauge; DGB — 7 gauge

Finish: DG — Galvanized
DGH, DGB – Simpson Strong-Tie® gray paint

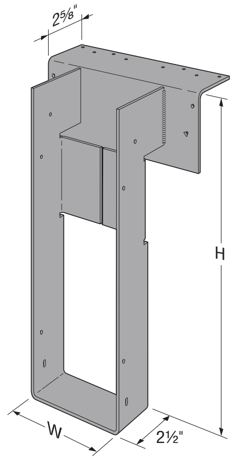
Installation:

Use all specified fasteners. I-joists require web stiffeners.

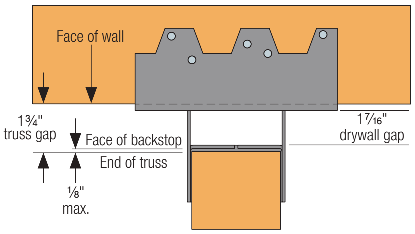
- DG/DGH/DGB hangers are mounted like a standard top-flange hanger.
- Wall-plate splices must occur at a stud location.
- DGB only — apply two ¼" beads of fire-resistant mortar caulk directly to top of wall plates for the first 6" on either side of top flange. See Intertek Design No. SST/WPCF 120-01 for detail.
- DGB only — locate minimum double stud below hanger.



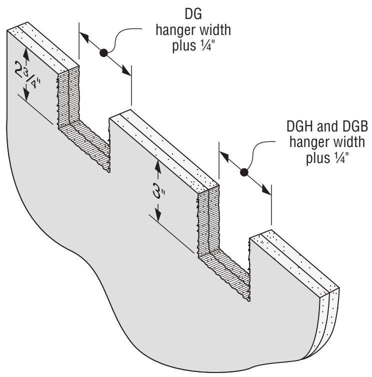
DG



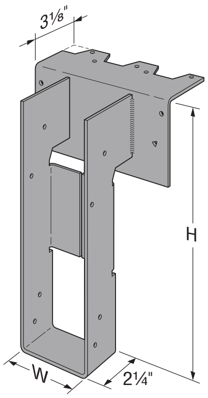
DGB



DGH Hanger (DG Similar) Top View with Gap



Drywall Notches



DGH

Model No.	Fasteners			Factored Resistance			
				D.Fir-L		S-P-F	
				Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
	Top	Face	Joist	lb. / kN	lb. / kN	lb. / kN	lb. / kN
DG	(6) 10d	—	(6) 10d x 1½"	—	2535	—	2490
				—	11.29	—	11.09
DGH	(5) 10d	(2) 10d	(8) 10d x 1½"	330	3430	235	2490
				1.47	15.28	1.05	11.09
DGB	(8) 10d	(4) 10d	(8) 10d x 1½"	1710	4445	1215	3155
				7.62	19.80	5.41	14.05

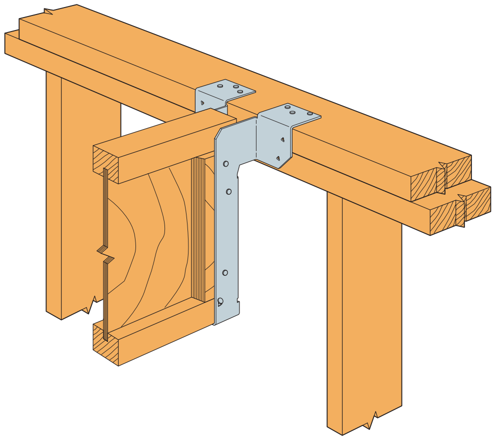
1. Factored uplift resistances have been increased 15% for wind or earthquake loading with no further increase allowed. Reduce where other load durations govern.
2. Resistances are based on joist spacing 16" o.c. or greater on a 2x4 minimum stud wall. Back-to-back installations require a 2x6 wall. Wall design by Designer.
3. DGB installation requires a minimum (2) 2x4 studs or posts in wall at the hanger location. Centre studs or posts within the middle third of hanger. Post or stud design by Designer.
4. **Nails:** 10d = 0.148" dia. x 3" long; 10d x 1½" = 0.148" dia. x 1½" long.

DG/DGH/DGB

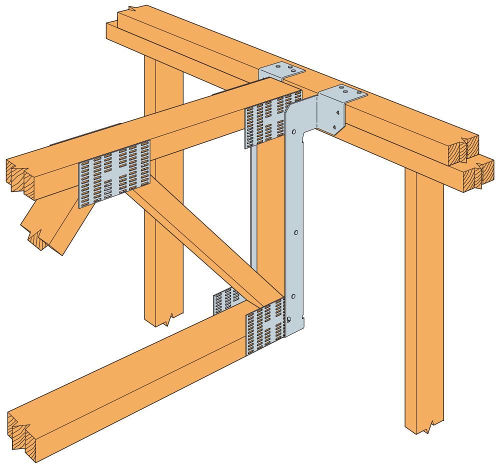
Firewall Hangers (cont.)

Joist size (in.)	Model No. DG	DGH	DGB	W (in.)	H (in.)
1¾ x 9½	DG1.81/9.5	DGH1.81/9.5	—	1 13/16	9 7/16
1¾ x 11⅞	DG1.81/11.88	DGH1.81/11.88	—		11 13/16
1¾ x 14	DG1.81/14	DGH1.81/14	—		13 15/16
1¾ x 16	DG1.81/16	DGH1.81/16	—		15 15/16
2 x 9 ½	DG2.1/9.5	DGH2.1/9.5	—	2⅛	9 7/16
2 x 11⅞	DG2.1/11.88	DGH2.1/11.88	—		11 13/16
2 x 14	DG2.1/14	DGH2.1/14	—		13 15/16
2 x 16	DG2.1/16	DGH2.1/16	—		15 15/16
2 5/16 x 9½	DG2.37/9.5	DGH2.37/9.5	—	2⅜	9 7/16
2 5/16 x 11⅞	DG2.37/11.88	DGH2.37/11.88	—		11 13/16
2 5/16 x 14	DG2.37/14	DGH2.37/14	—		13 15/16
2 5/16 x 16	DG2.37/16	DGH2.37/16	—		15 15/16
2 5/16 x 18	DG2.37/18	DGH2.37/18	—		17 15/16
2 5/16 x 20	DG2.37/20	DGH2.37/20	—		19 15/16
2½ x 9½	DG2.56/9.5	DGH2.56/9.5	—	2 9/16	9 7/16
2½ x 11⅞	DG2.56/11.88	DGH2.56/11.88	—		11 13/16
2½ x 14	DG2.56/14	DGH2.56/14	—		13 15/16
2½ x 16	DG2.56/16	DGH2.56/16	—		15 15/16
2½ x 18	DG2.56/18	DGH2.56/18	—		17 15/16
2½ x 20	DG2.56/20	DGH2.56/20	—		19 15/16
2½ x 22	DG2.56/22	DGH2.56/22	—		21 15/16
2½ x 24	DG2.56/24	DGH2.56/24	—		23 15/16
3½ x 9½	DG3.62/9.5	DGH3.62/9.5	DGB3.56/9.5	3⅝	9 7/16
3½ x 11⅞	DG3.62/11.88	DGH3.62/11.88	DGB3.56/11.88		11 13/16
3½ x 14	DG3.62/14	DGH3.62/14	DGB3.56/14		13 15/16
3½ x 16	DG3.62/16	DGH3.62/16	DGB3.56/16		15 15/16
3½ x 18	DG3.62/18	DGH3.62/18	DGB3.56/18		17 15/16
3½ x 20	DG3.62/20	DGH3.62/20	DGB3.56/20		19 15/16
3½ x 22	DG3.62/22	DGH3.62/22	DGB3.56/22		21 15/16
3½ x 24	DG3.62/24	DGH3.62/24	DGB3.56/24		23 15/16
5¼ x 11⅞	—	—	DGB5.37/11.88	5⅜	11 13/16
5¼ x 14	—	—	DGB5.37/14		13 15/16
5¼ x 16	—	—	DGB5.37/16		15 15/16
5¼ x 18	—	—	DGB5.37/18		17 15/16
5¼ x 20	—	—	DGB5.37/20		19 15/16
5¼ x 22	—	—	DGB5.37/22		21 15/16
5¼ x 24	—	—	DGB5.37/24		23 15/16
7 x 11⅞	—	—	DGB7.12/11.88	7⅛	11 13/16
7 x 14	—	—	DGB7.12/14		13 15/16
7 x 16	—	—	DGB7.12/16		15 15/16
7 x 18	—	—	DGB7.12/18		17 15/16
7 x 20	—	—	DGB7.12/20		19 15/16
7 x 22	—	—	DGB7.12/22		21 15/16
7 x 24	—	—	DGB7.12/24		23 15/16

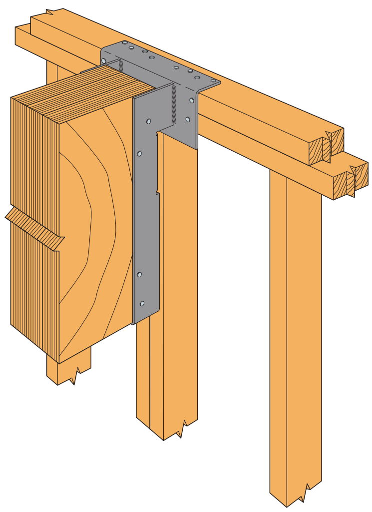
Other hanger sizes are available. Contact Simpson Strong-Tie.



DG Hanger on Stud Wall with I-Joists
(Drywall not shown for clarity)

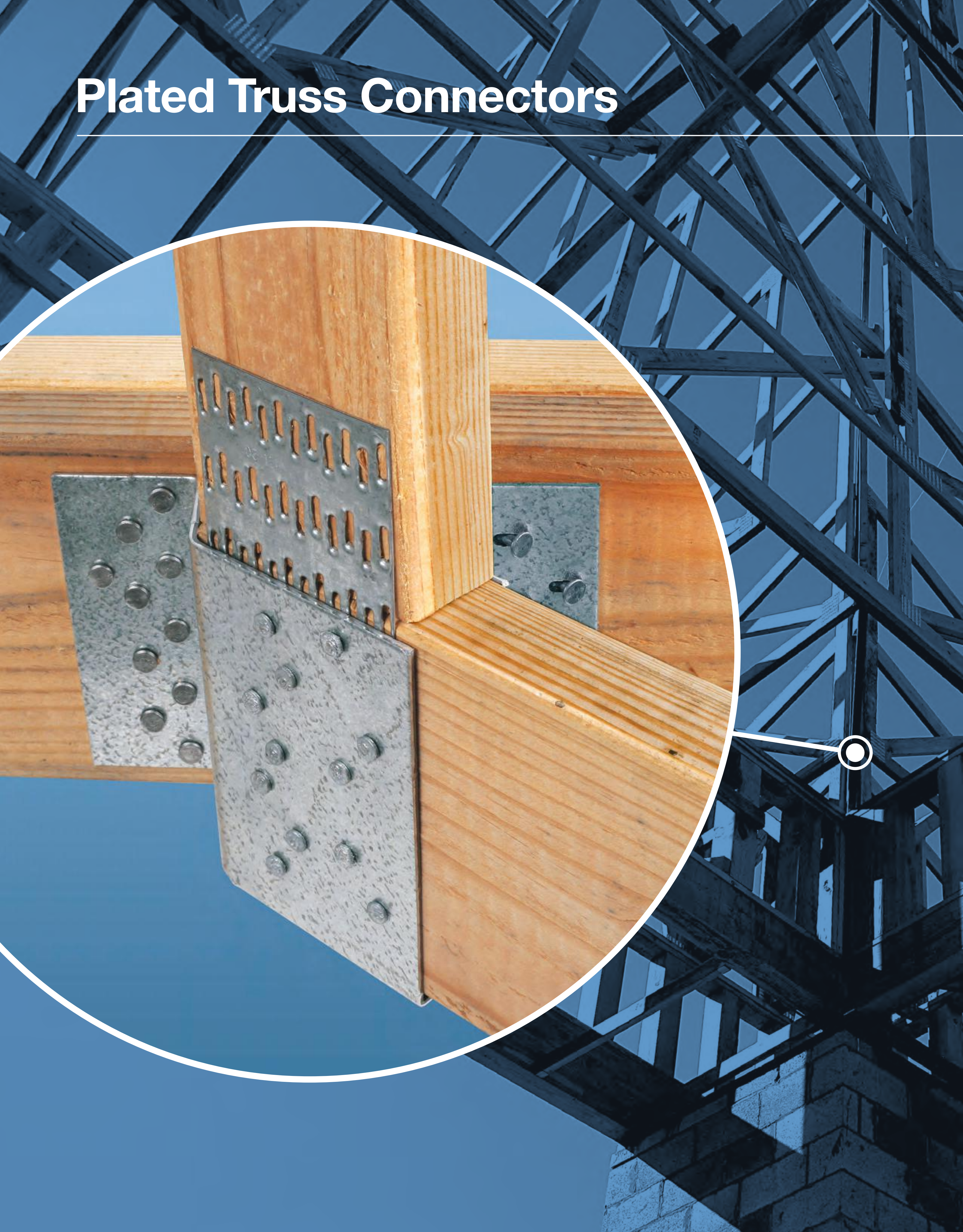


DG Hanger on Stud Wall with Truss
(Drywall not shown for clarity)



DGB Hanger Installed with Double Studs

Plated Truss Connectors



LUL/LUS/LJS/HUS/HHUS/HGUS

Standard and Double-Shear Joist Hangers

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

Most 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. (Do not bend or remove tabs)

Double-shear hangers range from the light capacity LUS hangers to the highest capacity HGUS hangers. For medium load truss applications, the HUS offers a lower cost alternative and easier installation than the HGUS hangers, while providing greater load capacity and bearing than the LUS.

Material: See table on pp. 258–259.

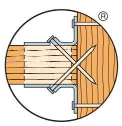
Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

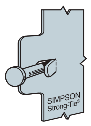
- Use all specified fasteners; see General Notes.
- Nails must be driven at an angle through the joist or truss into the header to achieve the tabulated resistances (except LUL).
- Where 16d commons are specified, 10d commons may be used at 0.83 of the tabulated factored resistance.
- Not designed for welded or nailer applications.
- With single ply 2x carrying members, use 10d x 1½" nails into the header and 10d commons into the joist, and reduce the resistance to 0.64 of the table value where 16d nails are specified and 0.77 where 10d nails are specified.

Options:

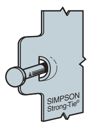
- LUS, LJS, LUL and HUS hangers cannot be modified.
- Other sizes available; consult your Simpson Strong-Tie representative.
- See Hanger Options information on p. 126.



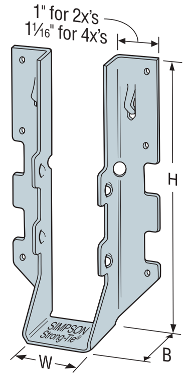
Double-Shear Nailing Top View



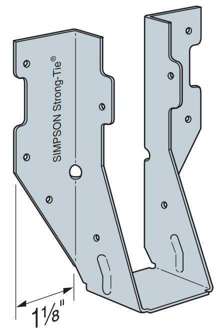
Double-Shear Nailing Side View; Do not bend tab



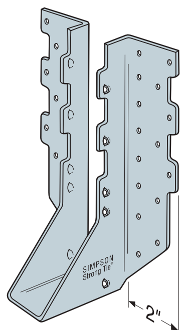
Dome Double-Shear Nailing Side View *(available on some models)* U.S. Patent 5,603,580



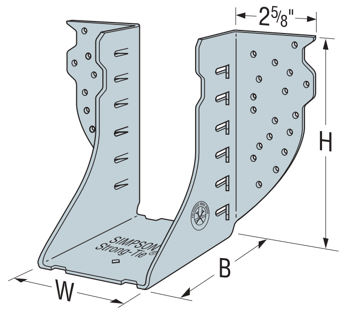
LUS28



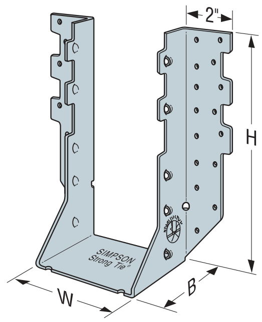
LU26L



HUS210
(HUS26, HUS28, and HHUS similar)

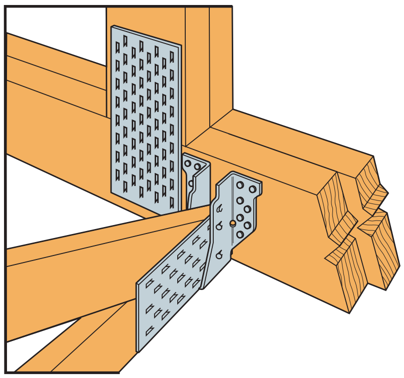


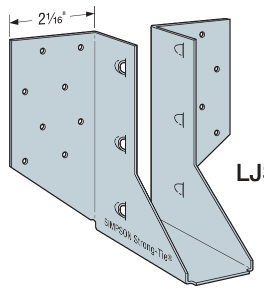
HGUS28-2



HHUS210-2

Typical HUS26 Installation with Reduced Heel Height
(Truss Designer to provide fastener quantity for connecting multiple members together)





LJS26DS

HHUS/HGUS

See Hanger Options information on pp. 125–127.

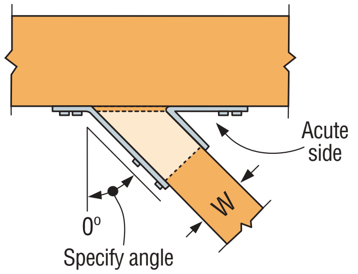
HHUS — Sloped and/or Skewed Seat

- HHUS hangers can be skewed to a maximum of 45° and/or sloped to a maximum of 45°
- For skew only, maximum factored down resistance is 0.85 of the table value
- For sloped only or sloped and skewed hangers, the maximum factored down resistance is 0.72 of the table value
- Uplift resistances for sloped/skewed conditions are 0.62 of the table value
- 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°. Factored resistances are:

HGUS Seat Width	Joist	Down Resistance	Uplift
W < 2"	Bevel or square cut	0.62 of table value	0.46 of table value
2" < W < 6"	Bevel cut	0.67 of table value	0.41 of table value
2" < W < 6"	Square cut	0.46 of table value	0.41 of table value
W > 6"	Bevel cut	0.75 of table value	0.41 of table value



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

Standard and Double-Shear Joist Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Ga.	Dimensions (in.)				Fasteners		Factored Resistance			
								D.Fir-L		S-P-F	
		W	H	B	de[3]	Header	Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
								lb. / kN	lb. / kN	lb. / kN	lb. / kN
Single 2x Sizes											
LUS24	18	1 9/16	3⅛	1¾	2¼	(4) 10d	(2) 10d	710	1625	645	1155
								3.16	7.23	2.87	5.14
LU24L	22	1 9/16	3	1⅝	2 11/16	(4) 10d	(2) 10d x 1½"	360	1020	320	725
								1.60	4.54	1.42	3.22
LU26L	22	1 9/16	5	1⅝	4⅝	(6) 10d	(4) 10d x 1½"	720	1605	645	1140
								3.20	7.14	2.87	5.07
LUS26	18	1 9/16	4¾	1¾	3¾	(4) 10d	(4) 10d	1420	2170	1290	1630
								6.32	9.65	5.74	7.25
HUS26	16	1⅝	5⅜	3	3 15/16	(14) 16d	(6) 16d	2705	4940	2065	3875
								11.30	21.97	9.20	17.24
LJS26DS	18	1 9/16	5	3½	4⅝	(16) 16d	(6) 16d	2055	4265	1460	4115
								9.14	18.97	6.49	18.31
HGUS26	12	1⅝	5⅜	5	4⅛	(20) 16d	(8) 16d	2685	6625	2685	5700
								11.96	29.51	11.96	25.35
LU28L	20	1 9/16	6¾	1⅝	5⅞	(8) 10d	(6) 10d x 1½"	1140	2185	1020	1550
								5.07	9.72	4.54	6.89
LUS28	18	1 9/16	6⅝	1¾	3¾	(6) 10d	(4) 10d	1420	2520	1290	1790
								6.32	11.21	5.74	7.96
HUS28	16	1⅝	7 1/16	3	6 1/16	(22) 16d	(8) 16d	3605	5365	2675	4345
								16.04	23.86	11.90	19.33
HGUS28	12	1⅝	7⅛	5	6⅛	(36) 16d	(12) 16d	3310	7675	3310	6900
								14.74	34.19	14.74	30.73
LU210L	20	1 9/16	8	1⅝	7⅝	(10) 10d	(6) 10d x 1½"	1140	2495	1020	1770
								5.07	11.10	4.54	7.87
LUS210	18	1 9/16	7 13/16	1¾	3⅞	(8) 10d	(4) 10d	1420	2785	1290	2210
								6.32	12.39	5.74	9.83

1. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase is allowed.
2. Designer must ensure that hanger is compatible with truss when reduced heel height is used.
3. d_e is the distance from the bearing seat to the top joist nail.
4. Resistances shown require a minimum 2-ply girder truss. For fastening to single-ply truss request technical bulletin T-C-N10TRSSCN and/or see installation notes.
5. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

Face-Mount Hangers

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

	Model No.	Ga.	Dimensions (in.)				Fasteners		Factored Resistance			
									D.Fir-L		S-P-F	
			W	H	B	d_e[3]	Header	Joist	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
	Double 2x Sizes											
	LUS24-2	18	3 1/8	3 1/8	2	1 1/2	(4) 16d	(2) 16d	835	2020	590	1435
									3.71	8.99	2.62	6.38
SS	LUS26-2	18	3 1/8	4 7/8	2	4	(4) 16d	(4) 16d	1720	2595	1545	1920
									7.65	11.54	6.87	8.54
	HHUS26-2	14	3 5/16	5 3/8	3	3 15/16	(14) 16d	(6) 16d	2850	7335	2065	5205
									12.68	32.63	9.20	23.15
	HGUS26-2	12	3 5/16	5 7/16	4	4 1/8	(20) 16d	(8) 16d	4385	8950	3110	6355
									19.51	39.81	13.83	28.27
SS	LUS28-2	18	3 1/8	7	2	4	(6) 16d	(4) 16d	1720	3325	1545	2575
									7.65	14.79	6.87	11.45
	HHUS28-2	14	3 5/16	7 5/16	3	6 1/8	(22) 16d	(8) 16d	3765	8940	2675	6345
									16.75	39.77	11.90	28.22
	HGUS28-2	12	3 5/16	7 3/16	4	6 1/8	(36) 16d	(12) 16d	6070	12980	4310	9215
									27.00	57.74	19.17	40.99
SS	LUS210-2	18	3 1/8	9	2	6	(8) 16d	(6) 16d	2580	4500	2320	3195
									11.48	20.02	10.32	14.21
	HHUS210-2	14	3 5/16	9 3/16	3	8	(30) 16d	(10) 16d	4670	9660	4235	7000
									20.77	42.97	18.84	31.14
	HGUS210-2	12	3 5/16	9 3/16	4	8 1/8	(46) 16d	(16) 16d	6840	14015	4855	10270
									30.43	62.34	21.60	45.69
	Triple 2x Sizes											
	HGUS26-3	12	4 15/16	5 1/2	4	4 1/8	(20) 16d	(8) 16d	4385	8950	3110	6355
									19.51	39.81	13.83	28.27
	HGUS28-3	12	4 15/16	7 1/4	4	6 3/8	(36) 16d	(12) 16d	6070	12980	4310	9215
									27.00	57.74	19.17	40.99
	HHUS210-3	14	4 11/16	9	3	7 15/16	(30) 16d	(10) 16d	4670	9670	4235	6865
									20.77	43.02	18.84	30.54
	HGUS210-3	12	4 15/16	9 1/4	4	8 3/8	(46) 16d	(16) 16d	6840	14645	4855	10400
									30.43	65.14	21.60	46.26
	Quadruple 2x Sizes											
	HGUS26-4	12	6 9/16	5 7/16	4	4 1/8	(20) 16d	(8) 16d	4385	8950	3110	6355
									19.51	39.81	13.83	28.27
	HGUS28-4	12	6 9/16	7 3/16	4	6 1/8	(36) 16d	(12) 16d	6070	12980	4310	9215
									27.00	57.74	19.17	40.99
	HHUS210-4	14	6 1/8	8 7/8	3	7 13/16	(30) 16d	(10) 16d	4670	10155	4235	7210
									20.77	45.17	18.84	32.07
	HGUS210-4	12	6 9/16	9 3/16	4	8 1/8	(46) 16d	(16) 16d	6840	14645	4855	10400
									30.43	65.14	21.60	46.26
	HGUS212-4	12	6 9/16	10 5/8	4	10 1/8	(56) 16d	(20) 16d	7640	14995	5425	10645
									33.98	66.70	24.13	47.35
	HGUS214-4	12	6 9/16	12 5/8	4	11 1/8	(66) 16d	(22) 16d	10130	16400	7195	11645
									45.06	72.95	32.00	51.80
	4x Sizes											
	LUS46	18	3 9/16	4 3/4	2	3 7/16	(4) 16d	(4) 16d	1720	2595	1545	1920
									7.65	11.54	6.87	8.54
	HHUS46	14	3 5/8	5 1/4	3	3 15/16	(14) 16d	(6) 16d	2540	7335	2065	5205
									11.30	32.63	9.20	23.15
	HGUS46	12	3 5/8	5 1/4	4	4 1/16	(20) 16d	(8) 16d	4385	8950	3110	6355
									19.51	39.81	13.83	28.27
	LUS48	18	3 9/16	6 3/4	2	3 7/16	(6) 16d	(4) 16d	1720	3325	1545	2575
									7.65	14.79	6.87	11.45
	HHUS48	14	3 5/8	7 1/8	3	6 1/8	(22) 16d	(8) 16d	3765	8940	2675	6345
									16.75	39.77	11.90	28.22
	HGUS48	12	3 5/8	7 1/16	4	6 1/16	(36) 16d	(12) 16d	6070	12980	4310	9215
									27.00	57.74	19.17	40.99
	LUS410	18	3 9/16	8 3/4	2	5 9/16	(8) 16d	(6) 16d	2580	4500	2320	3195
									11.48	20.02	10.32	14.21
	HGUS410	12	3 5/8	9	4	8 1/16	(46) 16d	(16) 16d	6840	14015	4855	10270
									30.43	62.34	21.60	45.69
	HGUS412	12	3 5/8	10 7/16	4	10 1/16	(56) 16d	(20) 16d	7640	14995	5425	10645
									33.98	66.70	24.13	47.35
	HGUS414	12	3 5/8	12 7/16	4	11 1/16	(66) 16d	(22) 16d	10130	16400	7195	11645
									45.06	72.95	32.00	51.80

See footnotes on p. 258.

SIMPSON Strong-Tie®

Face-Mount Truss Hanger

The HTU face-mount truss hanger has nail patterns designed specifically for shallow heel heights, so that full factored resistances (with minimum nailing) apply to heel heights as low as 3⅞". Minimum and maximum nailing options provide solutions for varying heel heights and end conditions.

Material: 16 gauge

Finish: Galvanized

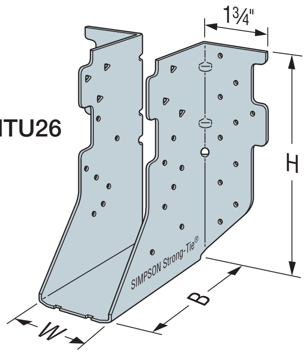
Installation:

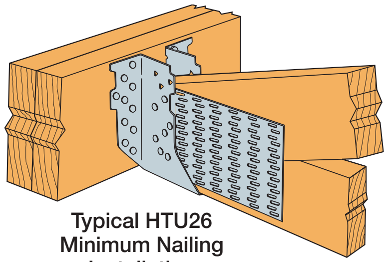
- Use all specified fasteners; see General Notes
- Can be installed filling round holes only, or filling round and triangle holes for maximum values
- See alternate installation for applications using the HTU26 on a 2x4 carrying member orHTU28 or HTU210 on a 2x6 carrying member for additional uplift capacity

Options:

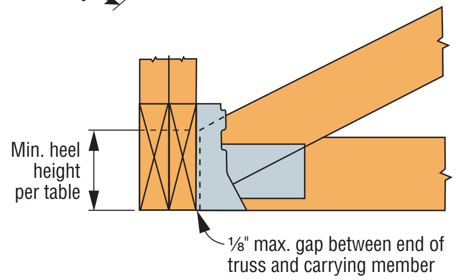
- See Hanger Options information on pp. 125–127

HTU26

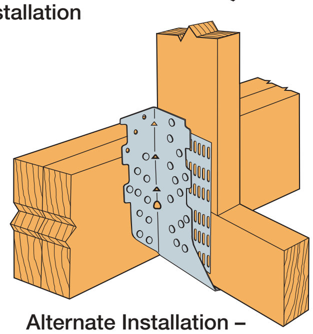




Typical HTU26 Minimum Nailing Installation



HTU Installation for Standard Factored Resistances



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. 32–34 for more information.

Standard Installation

Model No.	Min. Heel Height (in.)	Dimensions (in.) W	Dimensions (in.) H	Dimensions (in.) B	Fasteners Header	Fasteners Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	Factored Resistance D.Fir-L Normal (K_D = 1.00) lb. / kN	Factored Resistance S-P-F Uplift (K_D = 1.15) lb. / kN	Factored Resistance S-P-F Normal (K_D = 1.00) lb. / kN
Single 2x Sizes										
HTU26	3½	1⅝	5 7/16	3½	(20) 16d	(11) 10d x 1½"	1370	4990	975	3145
							6.09	22.20	4.34	13.99
HTU26 (Min.)	3⅞	1⅝	5 7/16	3½	(20) 16d	(14) 10d x 1½"	2350	5240	1670	3300
							10.45	23.31	7.43	14.68
HTU26 (Max.)	5½	1⅝	5 7/16	3½	(20) 16d	(20) 10d x 1½"	2925	6565	2075	4660
							13.01	29.20	9.23	20.73
HTU28 (Min.)	3⅞	1⅝	7 1/16	3½	(26) 16d	(14) 10d x 1½"	2325	6380	1650	4530
							10.34	28.38	7.34	20.15
HTU28 (Max.)	7¼	1⅝	7 1/16	3½	(26) 16d	(26) 10d x 1½"	4035	8900	2865	6320
							17.95	39.59	12.74	28.11
HTU210 (Min.)	3⅞	1⅝	9 1/16	3½	(32) 16d	(14) 10d x 1½"	2510	7135	1780	5065
							11.17	31.74	7.92	22.53
HTU210 (Max.)	9¼	1⅝	9 1/16	3½	(32) 16d	(32) 10d x 1½"	6245	9820	4435	6970
							27.78	43.68	19.73	31.00
Double 2x Sizes										
HTU26-2 (Min.)	3⅞	3 5/16	5 7/16	3½	(20) 16d	(14) 10d	2430	6275	1725	4035
							10.81	27.91	7.67	17.95
HTU26-2 (Max.)	5½	3 5/16	5 7/16	3½	(20) 16d	(20) 10d	3495	7195	2480	5110
							15.55	32.00	11.03	22.73
HTU28-2 (Min.)	3⅞	3 5/16	7 1/16	3½	(26) 16d	(14) 10d	2460	6920	1745	4915
							10.94	30.78	7.76	21.86
HTU28-2 (Max.)	7¼	3 5/16	7 1/16	3½	(26) 16d	(26) 10d	5590	9790	3970	6950
							24.87	43.55	17.66	30.92
HTU210-2 (Min.)	3⅞	3 5/16	9 1/16	3½	(32) 16d	(14) 10d	2470	7730	1755	5490
							10.99	34.38	7.81	24.42
HTU210-2 (Max.)	9¼	3 5/16	9 1/16	3½	(32) 16d	(32) 10d	7585	11955	5385	8490
							33.74	53.18	23.95	37.77

1. Minimum heel heights required for tabulated values are based on a minimum 2:12 roof pitch.
2. Factored uplift resistances has been increased 15% for wind or earthquake; reduce where other loads govern.

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. 27–28 for other nail sizes and information.

Plated Truss Connectors

SIMPSON Strong-Tie®

Face-Mount Truss Hanger (cont.)

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Alternate Installation for (2) 2x4 and (2) 2x6 Headers

Model No.	Min. Heel Height (in.)	Minimum Header Size	Fasteners: Header	Fasteners: Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	D.Fir-L Normal (K_D = 1.00)	S-P-F Uplift (K_D = 1.15)	S-P-F Normal (K_D = 1.00)
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
HTU26 (Min.)	3⅞	(2) 2x4	(10) 16d	(14) 10d x 1½"	1740	3340	1235	2370
					7.74	14.86	5.49	10.54
HTU26 (Max.)	5½	(2) 2x4	(10) 16d	(20) 10d x 1½"	2470	4015	1755	2850
					10.99	17.86	7.81	12.68
HTU28 (Max.)	3⅞	(2) 2x6	(20) 16d	(26) 10d x 1½"	4150	6395	2945	4540
					18.46	28.45	13.10	20.19
HTU210 (Max.)	7¼	(2) 2x6	(20) 16d	(32) 10d x 1½"	4150	6395	2945	4540
					18.46	28.45	13.10	20.19

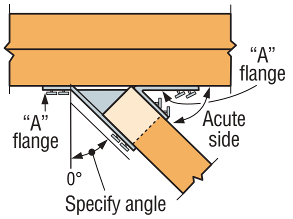
See table footnotes on p. 260.

Hanger Options

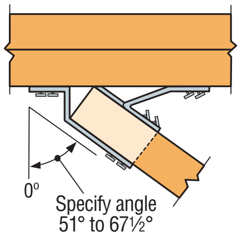
See Hanger Options information on pp. 125–127.

Skewed Seat

- Skewable up to 67½°
- Available in single and 2-ply size
- No bevel cut required



Top View HTU Hanger Skewed Right < 51°



Top View HTU Hanger Skewed Right ≥ 51°

Factored Resistances for Skewed HTU Hangers

Model No.	Skew Angle (Degrees)	Fasteners: Header	Fasteners: Joist	Factored Resistance D.Fir-L Uplift (KD=1.15)	D.Fir-L Normal (KD=1.00)	S-P-F Uplift (KD=1.15)	S-P-F Normal (KD=1.00)
				lbs	lbs	lbs	lbs
				kN	kN	kN	kN
HTU26	< 51	(20) 16d	(14) 10d x 1½"	1835	4110	1300	2905
				8.16	18.28	5.78	12.92
	51–67½	(20) 16d	(12) 10d x 1½"	1350	3620	955	2560
				6.01	16.10	4.25	11.39
HTU28	< 51	(26) 16d	(20) 10d x 1½"	2810	4270	1985	3030
				12.50	18.99	8.83	13.48
	51–67½	(26) 16d	(17) 10d x 1½"	2075	3930	1465	2780
				9.23	17.48	6.52	12.37
HTU210	< 51	(32) 16d	(26) 10d x 1½"	3785	4430	2675	3135
				16.84	19.71	11.90	13.95
	51–67½	(32) 16d	(22) 10d x 1½"	2795	4240	1980	3000
				12.43	18.86	8.81	13.35
HTU26-2	< 51	(20) 16d	(14) 10d	2140	3715	1515	2625
				9.52	16.53	6.74	11.68
	51–67½	(20) 16d	(12) 10d	1610	3920	1140	2785
				7.16	17.44	5.07	12.39
HTU28-2	< 51	(26) 16d	(20) 10d	3960	5425	2815	3855
				17.62	24.13	12.52	17.15
	51–67½	(26) 16d	(17) 10d	2385	5425	1695	3855
				10.61	24.13	7.54	17.15
HTU210-2	< 51	(32) 16d	(26) 10d	5025	6890	3570	4890
				22.35	30.65	15.88	21.75
	51–67½	(36) 16d	(22) 10d	3145	6680	2225	4745
				13.99	29.72	9.90	21.10

1. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase is allowed.
2. Reduced heel heights are not permitted for skewed HTU's.
3. **Nails:** 16d = 0.162" dia. x 3½" long, 10d x 1½" = 0.148" dia. x 1½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

THAR/L422

SIMPSON Strong-Tie®

Skewed Truss Hangers

Designed for 4x2 floor trusses and 4x beams, the THAR/L422 has a standard skew of 45 degrees. Straps must be bent for top flange installation. PAN nailing helps eliminate splitting of 4x2 truss bottom chords.

Material: 16 gauge

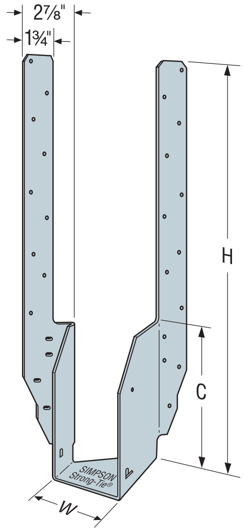
Finish: Galvanized

Installation:

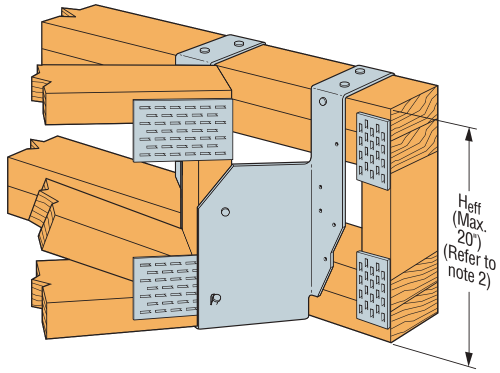
- Use all specified fasteners; see General Notes.

Two different installation methods may be used:

- Maximum Nailing — A minimum of four top and 8 face nails must be used. Straps must be field-formed over the header a minimum of 2½". Install 10d x 1½" nails into carried member PAN nail holes and 10d common nail into round nail hole. Install 10d common nails into carrying member.
- Minimum Nailing — A minimum of four top and 2 face nails must be used. Straps must be field-formed over the header a minimum of 2½". Install nails as detailed above. For single 4x carrying members, use 10d x 1½" nails and refer to the table for reduced values.



THAL422



Typical THAL422 Installation with Minimum Nailing on a Floor Truss with Double 4x2 Top Chord

Model No.	Dimensions (in.)			Minimum Carrying Member	Effective Height Heff (in.)	Fasteners				Factored Resistance			
						Header		Joist		D.Fir-L		S-P-F	
	W	H	C			Top	Face	Straight	Slant	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
THAR/L422 (Min.)	3⅝	22⅝	8	Single 4x2	9 min.	(4) 10d x 1½"	(2) 10d x 1½"	(1) 10d x 1½"	(2) 10d x 1½"	—	1445	—	1025
										—	6.44	—	4.56
				Double 4x2	9 to 12	(4) 10d	(2) 10d	(1) 10d	(2) 10d x 1½"	—	2215	—	1575
										—	9.87	—	7.01
					> 12	(4) 10d	(2) 10d	(1) 10d	(2) 10d x 1½"	—	1695	—	1205
										—	7.55	—	5.36
THAR/L422 (Max.)	3⅝	22⅝	8	Double 4x2	9 min.	(4) 10d	(8) 10d	(1) 10d	(2) 10d x 1½"	585	2585	415	1835
										2.61	11.51	1.85	8.16

1. Factored uplift resistances have been increased 15% for wind or earthquake loading with no further increase allowed.
2. 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.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

THA/THAC

Adjustable Truss Hangers

This product is preferable to similar connectors because of a) easier installation, b) higher capacities, 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.

The THA218-2, THA222-2, THA418, THA422, and THA426 models have added nail holes in the straps to ease top-flange installation and provide more nail hole options for meeting top- and face-nailing requirements.

Material: See table

Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes.

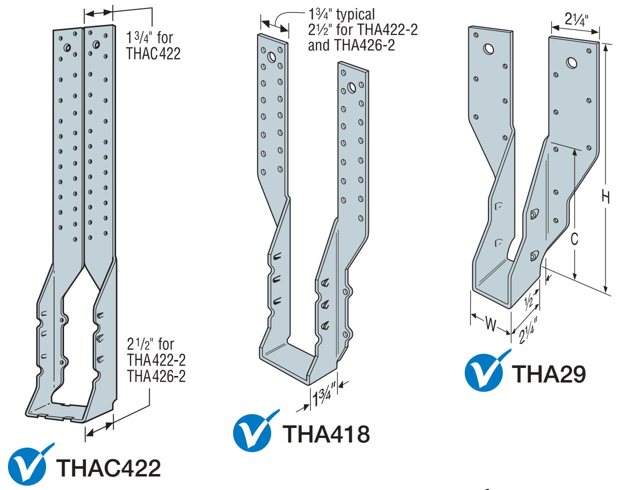
The following installation methods may be used:

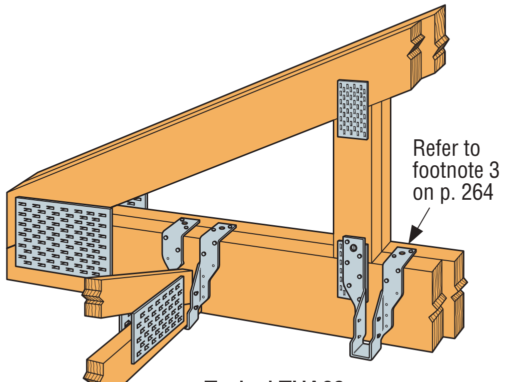
- **Top-Flange Installation** — The straps must be field formed over the header a minimum of 2½" for the THA29, 1½" for the THA213 and THA413, and 2" for all others. Install top and face nails according to the table. Top nails shall not be within ¼" from the edge of the top flange members.

  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 4 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.
- **Uplift** — Lowest face nails must be filled to achieve uplift resistances.

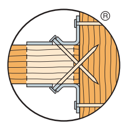
Options:

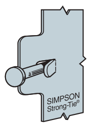
- THA hangers available with the header flanges turned in for 3⅝" (except THA413) and larger, with no load reduction — order THAC hanger.

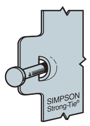


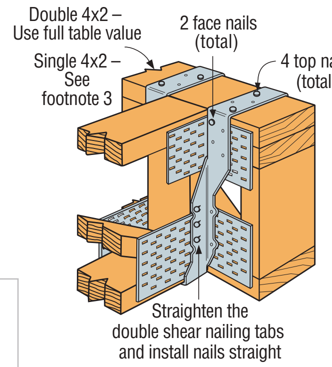


Typical THA29 Top-Flange Installation

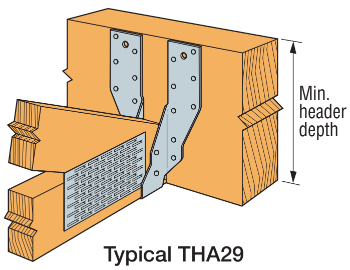

Double-Shear Nailing Top View


Double-Shear Nailing Side View; Do not bend tab

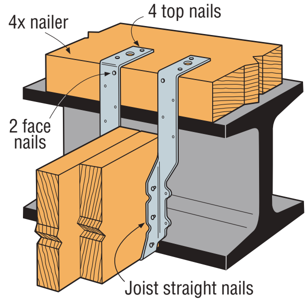

Dome Double-Shear Nailing Side View *(available on some models)*
U.S. Patent 5,603,580



Typical THA422 Top-Flange Installation on a 4x2 Floor Truss



Typical THA29 Face-Mount Installation



Typical THA Top-Flange Nailing Configuration on a 4x Nailer *(except THA29)*

Plated Truss Connectors

SIMPSON Strong-Tie®

Adjustable Truss Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Min. Joist Size	Model No.	Ga.	Dimensions (in.)			Fasteners				Factored Resistance			
						Header		Joist		D.Fir-L		S-P-F	
			W	H	C	Top	Face	Straight	Slant	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
Top-Flange Installation													
2x4	THA29	18	1⅝	9 11/16	5⅛	(4) 10d	(4) 10d	—	(4) 10d	1050	3450	750	2720
										4.67	15.35	3.34	12.10
2x6	THA213	18	1⅝	13 5/16	5½	(4) 10d	(2) 10d	(4) 10d x 1½"	—	—	2225	—	1760
										—	9.90	—	7.83
	THA218	18	1⅝	17 3/16	5½	(4) 10d	(2) 10d	(4) 10d x 1½"	—	—	2225	—	1760
										—	9.90	—	7.83
(2) 2x10	THA218-2	16	3⅛	17 11/16	8	(4) 16d	(2) 16d	(6) 16d x 2½"	—	—	2675	—	2405
										—	11.90	—	10.70
	THA222-2	16	3⅛	22 3/16	8	(4) 16d	(2) 16d	(6) 16d x 2½"	—	—	2675	—	2405
										—	11.90	—	10.70
4x6	THA413	18	3⅝	13 5/16	4½	(4) 10d	(2) 10d	(4) 10d	—	—	2225	—	1655
										—	9.90	—	7.36
4x10	THA418	16	3⅝	17½	7⅞	(4) 16d	(2) 16d	(6) 16d	—	—	2675	—	2405
										—	11.90	—	10.70
4x2 truss	THA422	16	3⅝	22	7⅞	(4) 16d	(2) 16d	(6) 16d	—	—	2675	—	2405
										—	11.90	—	10.70
	THA426	14	3⅝	26	7⅞	(4) 16d	(4) 16d	(6) 16d	—	—	3590	—	2660
										—	15.97	—	11.83
(2) 4x2 truss	THA422-2	14	7¼	22 11/16	9¾	(4) 16d	(4) 16d	(6) 16d	—	—	4605	—	3225
										—	20.48	—	14.35
	THA426-2	14	7¼	26 1/16	9¾	(4) 16d	(4) 16d	(6) 16d	—	—	4605	—	3225
										—	20.48	—	14.35
Face-Mount Installation													
2x4	THA29	18	1⅝	9 11/16	5⅛	—	(16) 10d	—	(4) 10d	1050	3440	750	2455
										4.67	15.30	3.34	10.92
2x6	THA213	18	1⅝	13 5/16	5½	—	(14) 10d	—	(4) 10d	1420	2785	1290	2210
										6.32	12.39	5.74	9.83
	THA218	18	1⅝	17 3/16	5½	—	(18) 10d	—	(4) 10d	1420	2785	1290	2210
										6.32	12.39	5.74	9.83
(2) 2x10	THA218-2	16	3⅛	17 11/16	8	—	(16) 16d	—	(6) 16d	2540	4765	1805	3385
										11.30	21.20	8.03	15.06
	THA222-2	16	3⅛	22 3/16	8	—	(22) 16d	—	(6) 16d	2540	5550	1805	4150
										11.30	24.69	8.03	18.46
4x6	THA413	18	3⅝	13 5/16	4½	—	(14) 10d	—	(4) 10d	1420	3555	1290	2525
										6.32	15.81	5.74	11.23
4x10	THA418	16	3⅝	17½	7⅞	—	(16) 16d	—	(6) 16d	2540	4765	1805	3385
										11.30	21.20	8.03	15.06
4x2 truss	THA422	16	3⅝	22	7⅞	—	(22) 16d	—	(6) 16d	2540	5850	1805	4150
										11.30	26.02	8.03	18.46
	THA426	14	3⅝	26	7⅞	—	(30) 16d	—	(6) 16d	2540	6295	1805	4545
										11.30	28.00	8.03	20.22
(2) 4x2 truss	THA422-2	14	7¼	22 11/16	9¾	—	(30) 16d	—	(6) 16d	2845	7715	2585	5475
										12.66	34.32	11.50	24.35
	THA426-2	14	7¼	26 1/16	9¾	—	(38) 16d	—	(6) 16d	2845	7715	2585	5475
										12.66	34.32	11.50	24.35

1. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce for other load durations as required by code.
2. For single 4x2 top chord carrying members, THA 4x hangers can be used with 10d x 1½" nails. The following factored resistances apply:
   THA422 2190 lb. D.Fir-L/S-P-F
   THA426 2920 lb. D.Fir-L, 2230 lb. S-P-F
   THA422-2 2255 lb. D.Fir-L, 2165 lb. S-P-F
   Values are based on hanger installations at panel points.
3. For the THA2X models, one strap may be installed vertically according to the face-mount nailing requirements and the other strap wrapped over the top chord according to the top-flange nailing requirements (see drawing on p. 263) and achieve full tabulated top-flange installation downloads.
4. **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. 27–28 for other nail sizes and information.

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 2x6 girder bottom chords and uses our Strong-Drive® SDS Heavy-Duty Connector screws for easy installation with minimal fasteners.

Features:

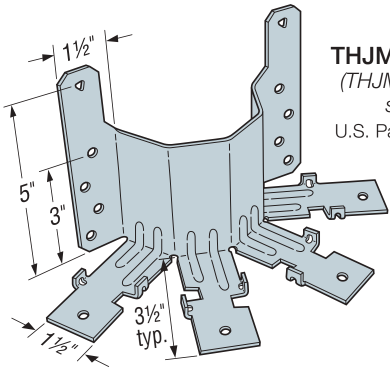
- The THJM hangers are designed for installation with ¼" x 3" Strong-Drive® SDS Heavy-Duty Connector screws that are included with the parts
- The THJM2-4-SDS3 is designed for four incoming jack trusses with the outer jacks being 22½° from the face of the girder and the inner jacks being 45° from each 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

Material: 12 gauge

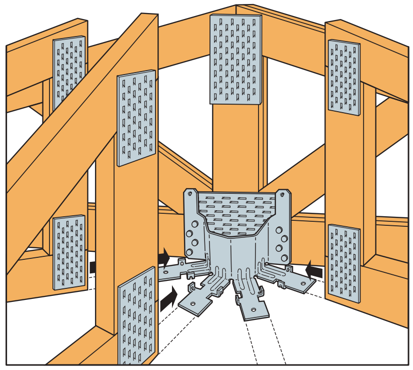
Finish: Galvanized

Installation:

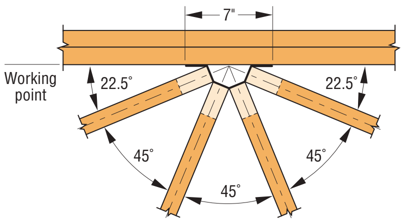
- Use all specified fasteners; see General Notes.
- Each carried jack truss requires one ¼" x 3" Strong-Drive SDS Heavy-Duty Connector screw installed into the bottom chord through the bottom of the hanger seat.
- Fill all round and triangular holes.
- Strong-Drive SDS Heavy-Duty Connector screws driven through truss plates must be approved by the Truss Designer. Predrilling using a 5⁄32" bit is required.



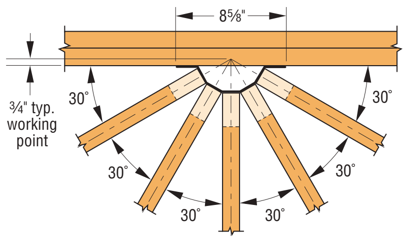
THJM2-4-SDS3
(THJM2-5-SDS3 similar)
U.S. Patent Pending



Typical THJM Installation



THJM2-4-SDS3
Top View Installation



THJM2-5-SDS3
Top View Installation

Model No.	Fasteners: Header	Fasteners: Joist (Total)	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	Factored Resistance D.Fir-L Normal (K_D = 1.00)	Factored Resistance S-P-F Uplift (K_D = 1.15)	Factored Resistance S-P-F Normal (K_D = 1.00)
			lb.	lb.	lb.	lb.
			kN	kN	kN	kN
THJM2-4-SDS3	(10) ¼" x 3" SDS	(4) ¼" x 3" SDS	890	4565	640	3290
			3.96	20.31	2.85	14.64
THJM2-5-SDS3	(10) ¼" x 3" SDS	(5) ¼" x 3" SDS	970	5250	700	3905
			4.31	23.35	3.11	17.37

1. Factored resistances shown are for all carried members combined. The load on any single member shall not exceed 25% of the tabulated factored resistace for THJM2-4 or 20% for THJM2-5.
2. Factored uplift resistances are only applicable to short term load duration. This connector cannot be used to resist uplift due to other load durations (for example: cantilever construction).
3. A minimum 2-ply header is required to achieve the factored resistances shown.
4. For single-ply headers, use ¼" x 1½" Strong-Drive® SDS Heavy-Duty Connector screw into the header and multiply the tabulated normal resistances x 0.80. Tabulated, factored uplift resistances still apply.

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°.

The THASR/L29, 29-2 and 422 are replacing the former 218, 218-2 and 418 versions.

Features:

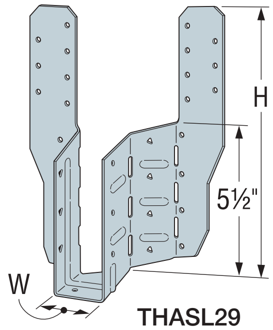
- The THASR/L single and two-ply versions have straps 9" tall. The 4x version has 22" straps to fit more parallel-chord truss applications.
- The versions have only one acute side bend line to ease design and installation.
- Joist fasteners are only required from one side for skews greater than 22½°.
- Rated for installation with either nails or Simpson Strong-Tie® Strong-Drive® SD Connector screws.

Material: 16 gauge

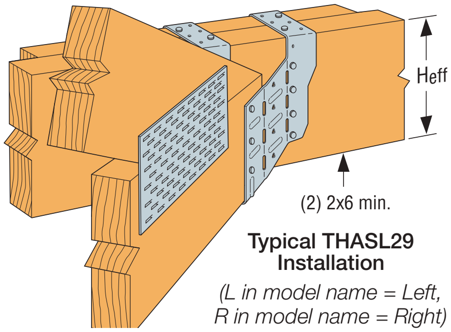
Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- Product is factory skewed to 22½° and may be field skewed from 22½° to 75°. 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. Capacities must be reduced as noted in the table footnotes.
- THASR/L422 — For face-mount installations, install the carrying member fasteners into the lowest holes.

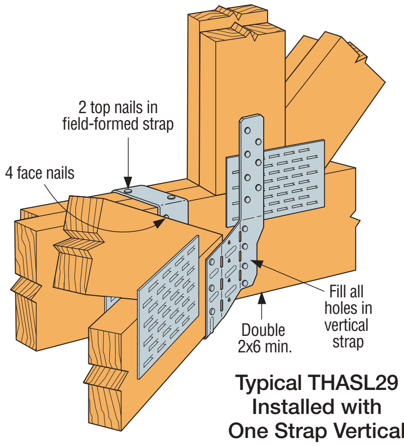


THASL29



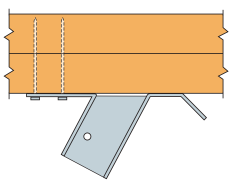
Typical THASL29 Installation

(L in model name = Left, R in model name = Right)

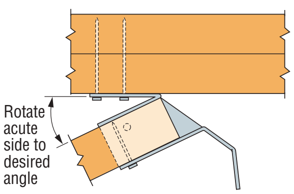


Typical THASL29 Installed with One Strap Vertical

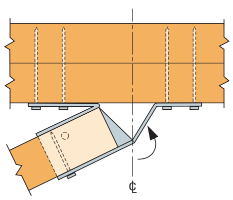
Installation Sequence for Skews > 22½°



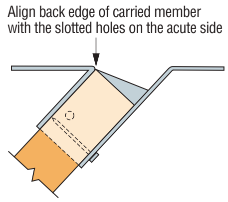
Step 1
Install acute side top and/or face header fasteners.



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.

For 22½° skew installations, fill all triangle holes.

THASR/L

Adjustable/Skewable Truss Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Min Carried Member	Model No.	Dimensions (in.) W	Dimensions (in.) H	Min. H_{eff} (in.)	Skew Angle (Degrees)	Fasteners Header Top	Fasteners Header Face	Fasteners Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	Factored Resistance D.Fir-L Normal (K_D = 1.00) lb. / kN	Factored Resistance S-P-F Uplift (K_D = 1.15) lb. / kN	Factored Resistance S-P-F Normal (K_D = 1.00) lb. / kN
Top-Flange Installation												
2x truss	THASR/L29	1⅝	9⅞	5½	22½	(4) 10d	(8) 10d	(7) 10d x 1½"	1315	2845	935	2020
									5.85	12.66	4.16	8.99
					23 to 45	(4) 10d	(8) 10d	(4) 10d x 1½"	635	2130	450	1510
									2.82	9.48	2.00	6.72
					46 to 75	(4) 10d	(8) 10d	(4) 10d x 1½"	590	2130	420	1510
									2.62	9.48	1.87	6.72
(2) 2x truss	THASR/L29-2	3⅛	9⅞	5½	22½	(4) 10d	(8) 10d	(8) 10d	1360	2380	965	1690
									6.05	10.59	4.29	7.52
					23 to 45	(4) 10d	(8) 10d	(5) 10d	425	1870	300	1325
									1.89	8.32	1.33	5.89
					46 to 75	(4) 10d	(8) 10d	(5) 10d	375	1870	270	1325
									1.67	8.32	1.20	5.89
4x truss	THASR/L422	3⅝	22	8	22½	(4) 10d	(4) 10d	(8) 10d	—	1605	—	1140
									—	7.14	—	5.07
					23 to 45	(4) 10d	(4) 10d	(5) 10d	—	1345	—	955
									—	5.98	—	4.25
					46 to 75	(4) 10d	(4) 10d	(5) 10d	—	1080	—	770
									—	4.80	—	3.43
Face-Mount Installation												
4x truss	THASR/L422	3⅝	22	5½	22½	—	(8) 10d	(8) 10d	—	1170	—	830
									—	5.20	—	3.69
					23 to 45	—	(8) 10d	(5) 10d	—	1050	—	745
									—	4.67	—	3.31
					46 to 75	—	(8) 10d	(5) 10d	—	1050	—	745
									—	4.67	—	3.31

1. Uplift resistances have been increased 15% for wind or earthquake loading with no further increase permitted; reduce where other load durations govern.
2. Minimum carried truss (joist) heel height shall be 4½".
3. H_{eff} is the distance from the top of the hanger bearing seat to the top of the carrying member (header).
4. For tabulated top-flange capacities, the straps must be wrapped over the header a minimum of 2". Factored download resistances for the THASR/L29 and THASR/L29-2 with one or both straps installed vertically (with all holes filled) are 86% of the tabulated values. Factored uplift resistances are 100% of the tabulated values.
5. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

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 two-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 two-ply hip and two-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

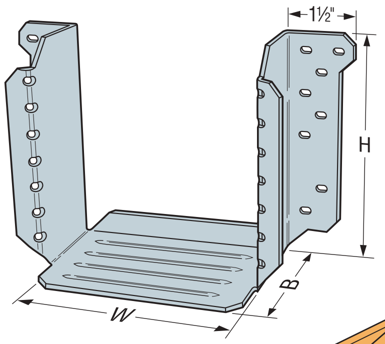
Finish: Galvanized

Installation:

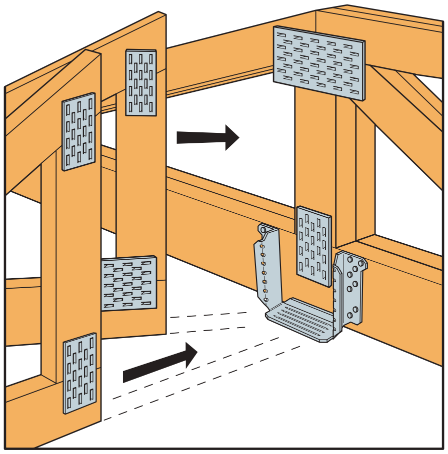
- Use all specified fasteners; see General Notes

Options:

- Other seat widths available



THJU26

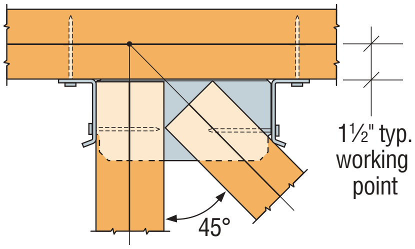


Typical THJU26 Installation

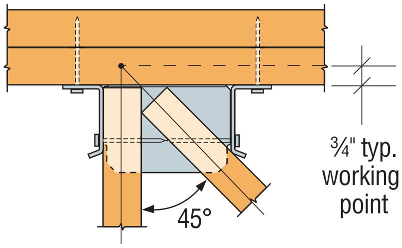
Model No.	Min. Heel Height (in.)	Dimensions (in.)			Fasteners			Factored Resistance			
								D.Fir-L		S-P-F	
								Uplift	Normal	Uplift	Normal
		W	H	B	Header	Hip	Jack	(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)
								lb.	lb.	lb.	lb.
								kN	kN	kN	kN
THJU26	3½	5⅛	5⅜	3½	(16) 10d	(4) 10d	(4) 10d	1045	2675	745	1915
								4.65	11.90	3.31	8.52
	5½				(16) 10d	(7) 10d	(7) 10d	1825	3280	1310	2350
								8.12	14.59	5.83	10.45
THJU26-W	3½	8⅛	5⅜	3½	(16) 10d	(4) 10d	(4) 10d	990	2550	705	1825
								4.40	11.34	3.14	8.12
	5½				(16) 10d	(7) 10d	(7) 10d	1730	2550	1240	1825
								7.70	11.34	5.52	8.12

1. For full capacity, the jack requires either a minimum 2x6 bottom chord or a minimum 2x4 end vertical; the hip requires either a minimum 2x6 bottom chord or a minimum 2x6 end vertical for hip skews up to 60°. For hip skews greater than 60° (THJU26-W only), a minimum 2x6 bottom chord or minimum 2x8 end vertical is required.
2. Tabulated values are the total factored 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 total factored resistances.
3. Factored uplift resistances have been increased 15% for wind or earthquake loading with no further increase permitted, reduce where other loads govern.
4. For single 2x jacks, 10d x 1½" nails may be substituted for the specified 10d commons with no reduction in capacity.
5. For single ply 2x headers use 10d x 1½" nails into the header and multiply the tabulated factored resistances by 0.77.
6. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

Truss Hip/Jack Hanger (cont.)



THJU26-W Top View
2-Ply Hip / 2-Ply Jack Installation



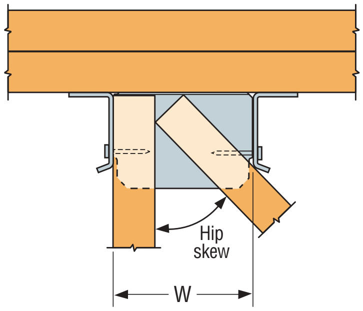
THJU26 Top View
Right-Hand Hip Installation

Hanger Options

See Hanger Options information on pp. 125–127.

Hanger Widths

- THJU is available in intermediate seat widths between 5⅛" (THJU26 width) and 8⅛" (THJU26-W width)
- Factored download and uplift resistances for all intermediate widths is 100% of the THJU26-W table values
- For double-hip installation, divide the total factored resistance by two to determine the factored resistance for each hip
- Order as THJU26X and specify width; see table for reference



THJU Top View Installation

THJU Intermediate Width Options

Carried Member Combination	Hip Skew	Width (W)
2-ply hip and single-ply jack	45°	6⅜
Single-ply hip and 2-ply jack	45°	6¾
Double (terminal) hip	45°	7⅜
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°	6⅜
	58°–59°	6⅝
	60°–61°	7
	62°–63°	7⅜
	64°–65°	Use THJU26-W

LTHJA26/THJA26

Truss Hip/Jack Hanger

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

The LTHJA26 is the lighter capacity version of the THJA26. The LTHJA26 is designed for the common 8-foot hip girder setback. Consult with truss engineer or refer to truss engineering for actual demand load information.

Material: LTHJA26 — 18 gauge; THJA26 — 14 gauge

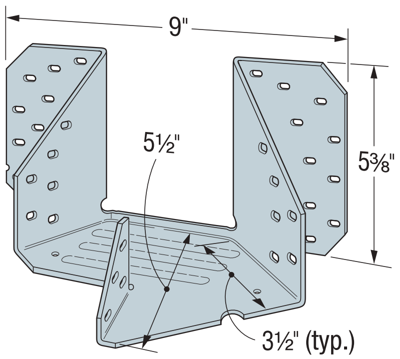
Finish: Galvanized

Installation:

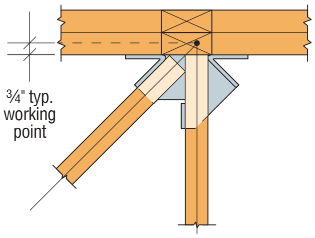
- Use all specified fasteners; see General Notes
- All multiple members must be fastened together to act as a single unit
- 10d x 1½" nails must be installed into bottom of hip members through bottom of hanger seat for factored resistances (LTHJA26)

Options:

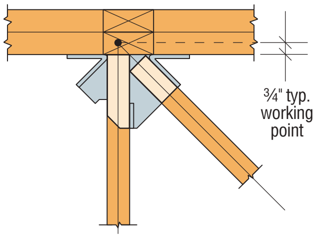
- These hangers can not be modified



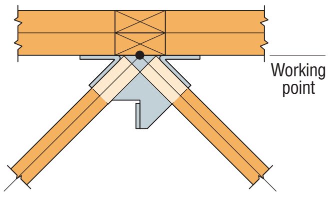
LTHJA26
(THJA26 similar)
US Patent 7,913,472



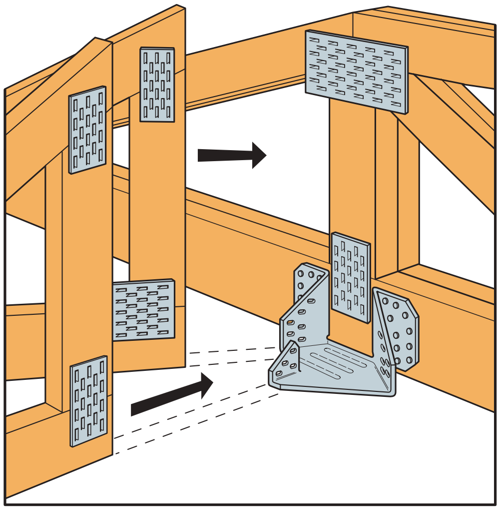
Top View
Left-Hand Hip Installation



Top View
Right-Hand Hip Installation



Top View
Terminal Hip without
Centre Common Jack



Typical LTHJA26 Installation

LTHJA26/THJA26

Truss Hip/Jack Hanger (cont.)

Model No.	Carried Member Combination	Fasteners: Carrying Member	Fasteners: Hip[2] (each)	Fasteners: Jack	Carried Member	D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
LTHJA26	Side hip and centre jack	(20) 10d	(7) 10d x 1½"	(4) 10d x 1½"	Jack	120	400	85	285
						0.53	1.78	0.38	1.27
					Hip	360	1205	260	860
						1.60	5.37	1.16	3.83
					Total	480	1605	345	1145
						2.14	7.15	1.54	5.10
	Double (Terminal hip)	(20) 10d	(7) 10d x 1½"	—	Hip (each)	550	1040	395	745
						2.45	4.63	1.76	3.32
					Total	1100	2080	790	1490
						4.90	9.27	3.52	6.64
THJA26	Side hip and centre jack	(20) 16d	(6) 10d x 1½"	(4) 10d x 1½"	Hip	1365	3810	960	2890
						6.08	16.97	4.28	12.87
					Jack	455	1270	320	965
						2.03	5.66	1.43	4.30
					Total	1820	5080	1280	3855
						8.11	22.63	5.70	17.17
	Double (Terminal hip)	(20) 16d	(6) 10d x 1½"	—	Hip (each)	910	2540	640	1925
						4.05	11.31	2.85	8.59
					Total	1820	5080	1280	3850
						8.11	22.63	5.70	17.17

1. Factored uplift resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
2. For LTHJA26, one 10d x 1½" nail must be installed into bottom of each hip member through bottom of hanger seat.
3. With single 2x carrying members, use 10d x 1½" nails and use 0.77 of the table value for LTHJA26 and 0.64 for THJA26.
4. Tabulated hip and jack factored resistances 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. **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. 27–28 for other nail sizes and information.

MTHMQ/MTHMQ-2

Multiple Truss Hangers

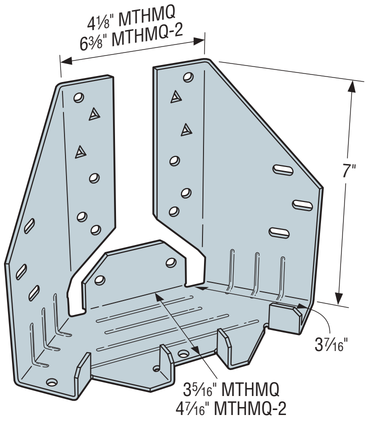
The MTHMQ and MTHMQ-2 are designed versions of our medium-to-high load capacity hangers for carrying two or three trusses. The design offers concealed flanges and installs with Strong-Drive® SDS Heavy-Duty Connector screws for easier installation.

Material: 12 gauge

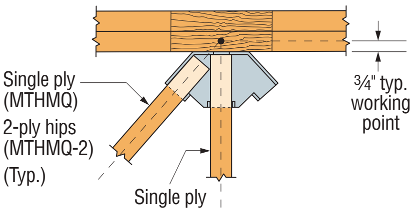
Finish: Galvanized (G90)

Installation:

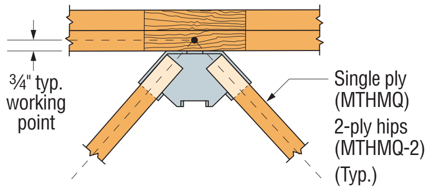
- Use all specified fasteners; see General Notes
- MTHMQ — for 2x6 header do not fill upper four holes; for 2x8 header fill all holes
- MTHMQ2 — for 2x6 header do not fill upper six holes; for 2x8 header do not fill lower triangle holes
- With single-ply 2x carrying members, use ¼" x 1½" Strong-Drive SDS Heavy-Duty Connector screws and reduce capacity x 0.68
- When Strong-Drive SDS Heavy-Duty Connector screws are installed through metal truss plates predrilling using a 5⁄32" bit is required
- All multiple members must be fastened together to as one unit



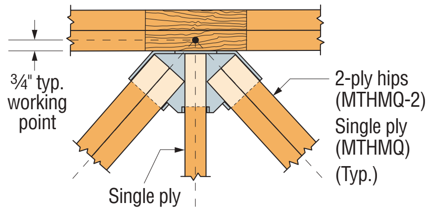
MTHMQ-SDS3
(MTHMQ-2-SDS3 similar)



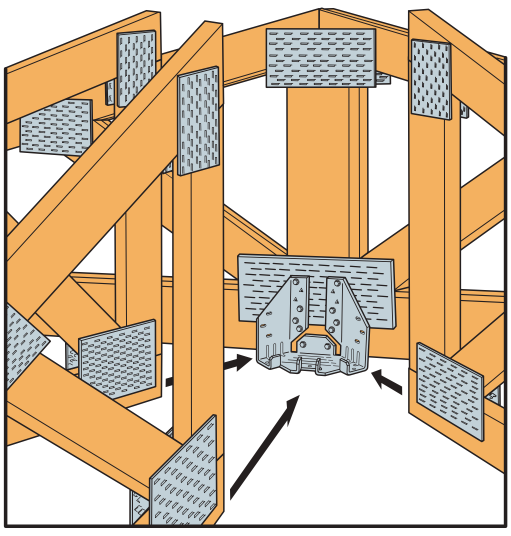
MTHMQ Top View
Left-Hand Hip Installation
(MTHMQ-2 similar)



MTHMQ Top View
Terminal Installation without
Centre Common Jack
(MTHMQ-2 similar)



MTHMQ-2 Top View
Terminal Installation with
Centre 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)

Model No.	Header	Fasteners			Factored Resistance											
					D.Fir-L						S-P-F					
		Carrying Member	Hip	Jack	Uplift (K_D = 1.15)			Down (K_D = 1.00)			Uplift (K_D = 1.15)			Down (K_D = 1.00)		
					Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total
					lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
MTHMQ	2-ply 2x6	(10) ¼" x 3" SDS	(4) ¼" x 3" SDS	(1) ¼" x 3" SDS	785	265	1050	3075	1025	4100	565	190	755	2215	735	2950
					3.49	1.18	4.67	13.68	4.56	18.24	2.51	0.85	3.36	9.85	3.27	13.12
	2-ply 2x8	(14) ¼" x 3" SDS	(4) ¼" x 3" SDS	(1) ¼" x 3" SDS	785	265	1050	4245	1415	5660	565	190	755	3055	1020	4075
					3.49	1.18	4.67	18.88	6.29	25.18	2.51	0.85	3.36	13.59	4.54	18.13
MTHMQ-2	2-ply 2x6	(10) ¼" x 3" SDS	(5) ¼" x 3" SDS	(1) ¼" x 3" SDS	1255	415	1670	3785	1265	5050	900	300	1200	2725	910	3635
					5.58	1.85	7.43	16.84	5.63	22.46	4.00	1.33	5.34	12.12	4.05	16.17
	2-ply 2x8	(14) ¼" x 3" SDS	(5) ¼" x 3" SDS	(1) ¼" x 3" SDS	1255	415	1670	4375	1460	5835	900	300	1200	3150	1050	4200
					5.58	1.85	7.43	19.46	6.49	25.96	4.00	1.33	5.34	14.01	4.67	18.68

See footnotes below.

Terminal Type Installation (Three-Member Connection)

Model No.	Header	Fasteners			Factored Resistance											
					D.Fir-L						S-P-F					
		Carrying Member	Hips (Total)	Jack	Uplift (K_D = 1.15)			Down (K_D = 1.00)			Uplift (K_D = 1.15)			Down (K_D = 1.00)		
					Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total	Hip	Jack	Total
					lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
MTHMQ	2-ply 2x6	(10) ¼" x 3" SDS	(8) ¼" x 3" SDS	(1) ¼" x 3" SDS	775	390	1940	2295	1150	5740	560	275	1395	1655	825	4130
					3.45	1.73	8.63	10.21	5.12	25.53	2.49	1.22	6.21	7.36	3.67	18.37
	2-ply 2x8	(14) ¼" x 3" SDS	(8) ¼" x 3" SDS	(1) ¼" x 3" SDS	775	390	1940	3025	1510	7560	560	275	1395	2175	1090	5440
					3.45	1.73	8.63	13.46	6.72	33.63	2.49	1.22	6.21	9.68	4.85	24.20
MTHMQ-2	2-ply 2x6	(10) ¼" x 3" SDS	(10) ¼" x 3" SDS	(1) ¼" x 3" SDS	1070	530	2670	2815	1410	7040	770	385	1925	2030	1010	5070
					4.76	2.36	11.88	12.52	6.27	31.32	3.43	1.71	8.56	9.03	4.49	22.55
	2-ply 2x8	(14) ¼" x 3" SDS	(10) ¼" x 3" SDS	(1) ¼" x 3" SDS	1070	530	2670	3635	1815	9085	770	385	1925	2615	1310	6540
					4.76	2.36	11.88	16.17	8.07	40.41	3.43	1.71	8.56	11.63	5.83	29.09

1. Factored uplift resistances have been increased 15% for short term loading; no further increase is permitted.
2. A minimum two-ply 2x carrying member is required for the tabulated resistances. With single-ply 2x carrying members use ¼" x 1½" Strong-Drive® SDS Heavy-Duty Connector screws into the carrying member and multiply the tabulated down capacities x 0.68.
3. Tablulated two-member connection capacities assume that 75% of the total load is distributed to the hip and 25% to the jack. It is permitted to distribute between 65% and 85% of the total load to the hip and the remaining load to the jack. The combined hip and jack loads may not exceed the total published factored resistances.
4. For terminal hips with no centre jack, divide the total factored resistance by two to determine the factored resistance for each hip.
5. Tablulated three-member connection capacities assume that each hip carries 40% of the total load and the jack carries 20%. Other hip/jack load distributions are permitted if the sum of all three carried members does not exceed the total load and the hips are equally loaded.
6. When Strong-Drive SDS Heavy-Duty Connector screws are installed through metal truss plates, the application must be approved by the Truss Designer. Predrilling using a 5⁄32" bit is required.
7. As per 12.2.2.5 CSA O86-14, the carrying member must be evaluated using a reduced cross sectional area at the hanger location. The reduction in area shall be based on seven (7) ¼"-diameter holes on a 2x8 bottom chord and five (5) ¼"-diameter holes on a 2x6 bottom chord.

HTHMQ

Heavy Multiple Truss Hanger

The HTHMQ is a versatile, high-capacity truss hanger designed for various lumber types and multi-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 centre common jack. The HTHMQ can accommodate various widths of lumber.

Features:

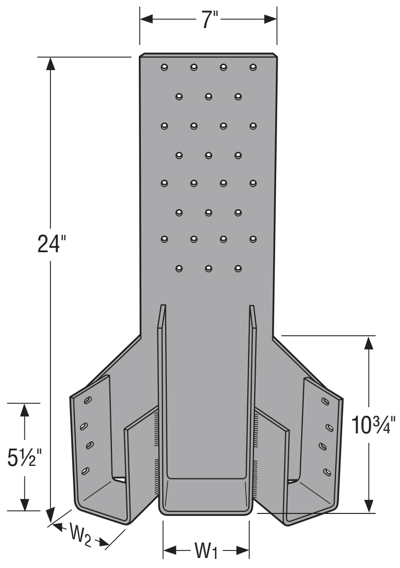
- Available in various stirrup widths to accommodate various lumber types and multi-ply trusses
- Installed with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws that eliminate the inconvenience of bolted installation
- Enables two- to three-member connection for a broader range of structural designs

Material: Back plate — 3 gauge; stirrup — 7 gauge

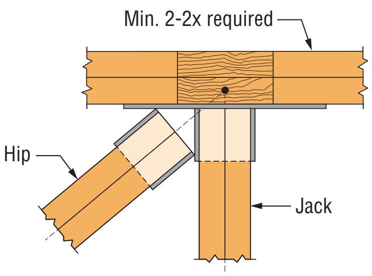
Finish: Simpson Strong-Tie® gray paint

Installation:

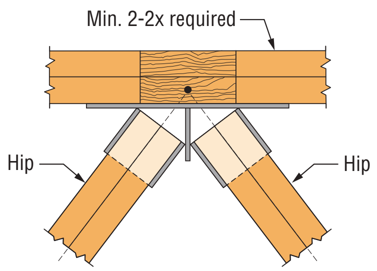
- Use all specified fasteners; see General Notes
- Strong-Drive SDS Heavy-Duty Connector screws supplied for all round and obround holes
- All multiple members must be fastened together to act as a single unit
- Shall be attached to a minimum 2-ply girder truss
- Girders must be adequately laterally braced to prevent excessive displacement due to secondary torsional stresses
- Maximum girder bottom chord depth is 2x10
- Must be installed centred on a minimum 2x8 girder vertical web
- See below for different installation options



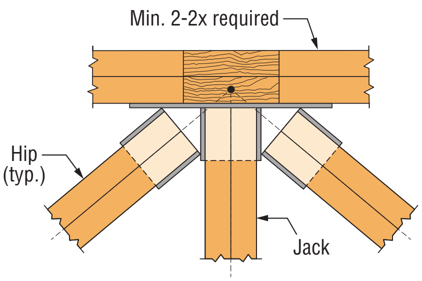
HTHMQ



HTHMQL Top View
Left-Hand Hip Installation

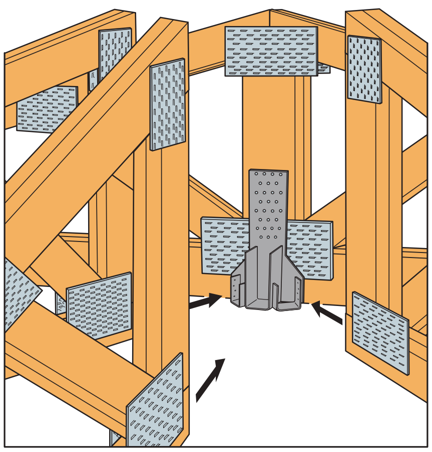


HTHMQN Top View
Terminal Hip Installation
without Common Centre Jack



HTHMQ Top View
Terminal Installation
with Centre Common Jack

Model No.	Dimensions (in.)		Hip Skew Angle	Fasteners		
	W_1	W_2		Header	Hips (Total)	Jack
HTHMQ-SDS	1 5/8 – 4 15/16	1 5/8	30°–60°	(34) ¼" x 3" SDS	(8) ¼" x 1½" SDS	(4) ¼" x 1½" SDS
HTHMQ-2-SDS	1 5/8 – 4 15/16	3 5/16	30°–60°	(34) ¼" x 3" SDS	(8) ¼" x 2½" SDS	(4) ¼" x 1½" SDS
HTHMQN-SDS	—	1 5/8	30°–60°	(34) ¼" x 3" SDS	(8) ¼" x 1½" SDS	(4) ¼" x 1½" SDS
HTHMQN-2-SDS	—	3 5/16	30°–60°	(34) ¼" x 3" SDS	(8) ¼" x 2½" SDS	(4) ¼" x 1½" SDS
HTHMQR/L-SDS	1 5/8 – 4 15/16	1 5/8	30°–60°	(34) ¼" x 3" SDS	(8) ¼" x 1½" SDS	(4) ¼" x 1½" SDS
HTHMQR/L-2-SDS	1 5/8 – 4 15/16	3 5/16	30°–60°	(34) ¼" x 3" SDS	(8) ¼" x 2½" SDS	(4) ¼" x 1½" SDS



Typical HTHMQ Installation

Heavy Multiple Truss Hanger (cont.)

Model No.	Factored Resistance – Joist Bearing											
	D.Fir-L						S-P-F					
	Uplift (K_D = 1.15)			Down (K_D = 1.00)			Uplift (K_D = 1.15)			Down (K_D = 1.00)		
	Hip (ea.)	Jack	Total	Hip (ea.)	Jack	Total	Hip (ea.)	Jack	Total	Hip (ea.)	Jack	Total
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
HTHMQ-SDS	2005	1005	5015	5820	2910	14550	1445	720	3610	4735	2365	11835
	8.92	4.47	22.31	25.89	12.94	64.72	6.43	3.20	16.06	21.06	10.52	52.65
HTHMQ-2-SDS	2005	1005	5015	6750	3375	16875	1445	720	3610	5845	2920	14610
	8.92	4.47	22.31	30.03	15.01	75.07	6.43	3.20	16.06	26.00	12.99	64.99
HTHMQN-SDS	1295	—	2590	5820	—	11640	935	—	1870	4735	—	9470
	5.76	—	11.52	25.89	—	51.78	4.16	—	8.32	21.06	—	42.13
HTHMQN-2-SDS	1295	—	2590	6820	—	13640	935	—	1870	4910	—	9820
	5.76	—	11.52	30.34	—	60.68	4.16	—	8.32	21.84	—	43.68
HTHMQR/L-SDS	2140	715	2855	5820	1940	7760	2000	665	2665	4735	1580	6315
	9.52	3.18	12.70	25.89	8.63	34.52	8.90	2.96	11.85	21.06	7.03	28.09
HTHMQR/L-2-SDS	2715	905	3620	10140	3380	13520	2015	670	2685	8190	2730	10920
	12.08	4.03	16.10	45.11	15.04	60.14	8.96	2.98	11.94	36.43	12.14	48.58

See footnotes below.

Model No.	Factored Resistance – End Grain Bearing											
	D.Fir-L						S-P-F					
	Uplift (K_D = 1.15)			Down (K_D = 1.00)			Uplift (K_D = 1.15)			Down (K_D = 1.00)		
	Hip (ea.)	Jack	Total	Hip (ea.)	Jack	Total	Hip (ea.)	Jack	Total	Hip (ea.)	Jack	Total
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN	kN
HTHMQ-SDS	1070	535	2675	6750	3375	16875	1000	500	2500	5845	2920	14610
	4.76	2.38	11.90	30.03	15.01	75.07	4.45	2.22	11.12	26.00	12.99	64.99
HTHMQ-2-SDS	1355	680	3390	6750	3375	16875	1265	630	3160	5845	2920	14610
	6.03	3.02	15.08	30.03	15.01	75.07	5.63	2.80	14.06	26.00	12.99	64.99
HTHMQN-SDS	1070	—	2140	6820	—	13640	935	—	1870	4910	—	9820
	4.76	—	9.52	30.34	—	60.68	4.16	—	8.32	21.84	—	43.68
HTHMQN-2-SDS	1295	—	2590	6820	—	13640	935	—	1870	4910	—	9820
	5.76	—	11.52	30.34	—	60.68	4.16	—	8.32	21.84	—	43.68
HTHMQR/L-SDS	1070	355	1425	10140	3380	13520	1000	335	1335	8215	2735	10950
	4.76	1.58	6.34	45.11	15.04	60.14	4.45	1.49	5.94	36.54	12.17	48.71
HTHMQR/L-2-SDS	1355	450	1805	10140	3380	13520	1265	420	1685	8215	2735	10950
	6.03	2.00	8.03	45.11	15.04	60.14	5.63	1.87	7.50	36.54	12.17	48.71

1. Uplift resistances have been increased 15% for wind or earthquake loading with no further increase allowed.
2. Specify W_2 where applicable and hip skew angle.
3. Connector must be installed centered on minimum 2x8 girder vertical web.
4. A minimum two-ply carrying member is required for the tabulated loads.
5. Carrying truss plies must be adequately fastened together as determined by Designer.
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 (predrilling required through the plate using a maximum of 5⁄32" bit).
7. Tabulated resistances for three-member configurations assume that each hip carries 40% of the total load and the jack carries 20% of the total load. Tabulated resistances for single hip-jack configurations assume that 75% of the total load is distributed to the hip and 25% to the jack.
8. Joist bearing assumes the bottom chord of the truss is sitting in the hanger seat where Q_r/A_b and Q_r'/A_b' = 812 psi D.Fir-L and 615 psi S-P-F. See 6.5.4 and 7.5.9 TPIC 2014.
9. End grain bearing assumes a vertical web is sitting in the hanger seat.

SIMPSON Strong-Tie®

CGH

Corner Girder Hangers

The CGH is a multi-purpose connector used for connecting hip and jack trusses to bottom chords of girder trusses at a 45° skew.

Material: Face plate — 3 gauge; stirrups — 11 gauge

Finish: Simpson Strong-Tie® gray paint

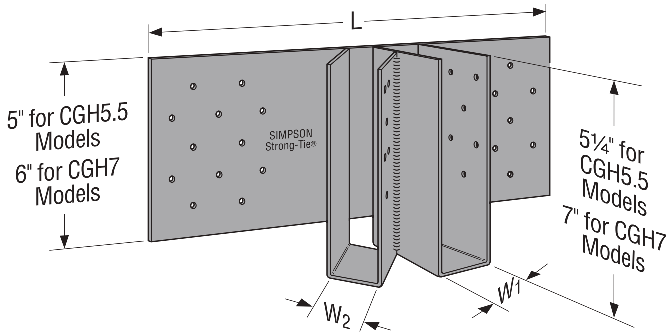
Installation:

- Use all specified fasteners
- All multiple members must be fastened together to act as a single unit
- When using single ply hip or jack trusses, fasten the member to the connector with 10d x 1½" nails
- Both hip and jack must be installed to achieve tabulated values

To Order:

- Specify left or right hip skew

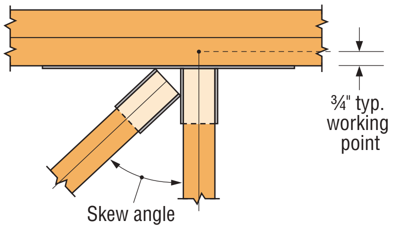
Options: None



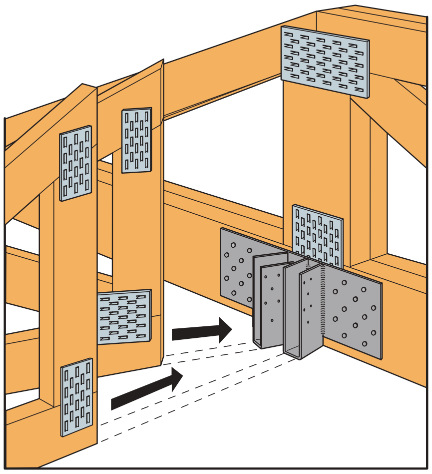
CGHS-S

Model No.	Dimensions (in.)			Fasteners			Factored Resistance			
							D.Fir-L		S-P-F	
	W_1	W_2	L	Header	Hip	Jack	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
CGH5.5SS	1⅝	1⅝	14	(24) 16d	(4) 10d x 1½"	(4) 10d x 1½"	1180	5205	1035	3695
CGH5.5SD	1⅝	3¼	15							
CGH5.5DS	3¼	1⅝	16				5.26	23.18	4.61	16.46
CGH5.5DD	3¼	3¼	17							
CGH7SS	1⅝	1⅝	14	(24) 16d	(6) 10d x 1½"	(6) 10d x 1½"	1765	7820	1555	5550
CGH7SD	1⅝	3¼	15							
CGH7DS	3¼	1⅝	16				7.86	34.83	6.93	24.72
CGH7DD	3¼	3¼	17							

1. Factored uplift resistances have been increased 15% for short term loading and are for each connecting member. Reduce where other loads govern.
2. The factored normal resistances are based on the combined load from both connecting members.
3. For single-ply hips or jacks verify that the 3" bearing length does not govern.
4. Factored uplift resistances shown are for each joist.
5. **Nails:** 16d = 0.162" dia. x 3½" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



CGHS-S Top View
Left Installation



CGHS-S Left Installation

Plated Truss Connectors

Heavy Severe Skew Truss Hanger

The HHSUQ is a high-load, face-mount, truss-to-truss hanger designed to accommodate severe skews (45°–84°) 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

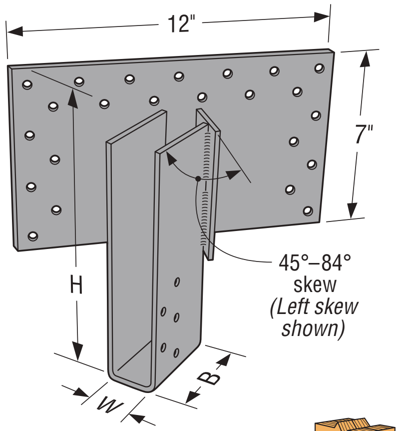
Finish: Simpson Strong-Tie® gray paint

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

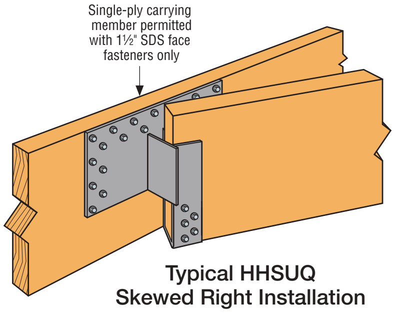
- Illustrations below show left and right skews HHSUQR/L (HHSUQR = skewed right; HHSUQL = skewed left).
- The joist/truss end may be square cut or bevel cut with a 3⅞" minimum heel height.
- Strong-Drive SDS Heavy-Duty Connector screws supplied for all round holes.
- All multiple members must be fastened together to act as a single unit.
- When Strong-Drive SDS Heavy-Duty Connector screws are installed through metal truss plates the application must be approved by the Truss Designer. Predrilling is required using a 5⁄32" bit.

To Order:

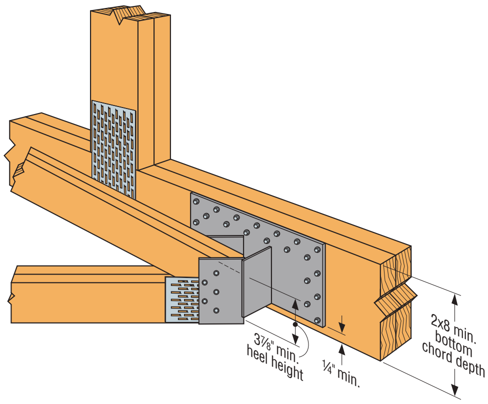
- Specify left or right skew and the skew angle (degrees).



HHSUQ



Typical HHSUQ Skewed Right Installation



Typical HHSUQL Skewed Left Installation with Min. Heel Height

Model No.	Dimensions (in.)			Fasteners		Factored Resistance			
						D.Fir-L		S-P-F	
	W	H	B	Header	Joist	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
						lb.	lb.	lb.	lb.
						kN	kN	kN	kN
HHSUQ28-SDS	1⅝	7¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 1½" SDS	1890	5530	1360	5400
						8.41	24.60	6.05	24.02
HHSUQ210-SDS	1⅝	9¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 1½" SDS	1890	5530	1360	5400
						8.41	24.60	6.05	24.02
HHSUQ212-SDS	1⅝	11¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 1½" SDS	1890	5530	1360	5400
						8.41	24.60	6.05	24.02
HHSUQ28-2-SDS	3 5⁄16	7¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ210-2-SDS	3 5⁄16	9¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ212-2-SDS	3 5⁄16	11¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ48-SDS	3⅝	7¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ410-SDS	3⅝	9¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ412-SDS	3⅝	11¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60
HHSUQ414-SDS	3⅝	13¼	3½	(23) ¼" x 3" SDS	(5) ¼" x 3" SDS	1890	5530	1360	5530
						8.41	24.60	6.05	24.60

1. Factored uplift resistances have been increased 15% for wind or earthquake loading; no further increase is allowed. Reduce where other load durations 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 ply of the truss) may also be used to transfer the load through all of the plies of the supporting girder. When Strong-Drive SDS Heavy-Duty Connector screws do not penetrate all plies of the supporting girder, 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 header fasteners may be replaced with 4½"- or 6"-long Strong-Drive SDS Heavy-Duty Connector screws with no reduction in capacity.
3. Resistances shown are based on a minimum two-ply 2x8 carrying member. For single 2x carrying members, replace the 3"-long Strong-Drive SDS Heavy-Duty Connector screws with 1½"-long Strong-Drive SDS Heavy-Duty Connector screws and reduce the factored normal resistances to 3820 lb. (16.99 kN) D.Fir-L and 2750 lb. (12.23 kN) S-P-F. The tabulated uplift resistances do not change
4. Girders must be adequately laterally braced to prevent excessive displacement due to secondary torsional stresses.
5. As per 12.2.2.5 CSA O86-14, the carrying member must be evaluated using a reduced cross-sectional area at the hanger location. The reduction in area is equal to seven (7) ¼"-diameter x 3"-long holes (1½" long for ¼" x 1½" Strong-Drive SDS Heavy-Duty Connector screw).

Jack Truss Connector

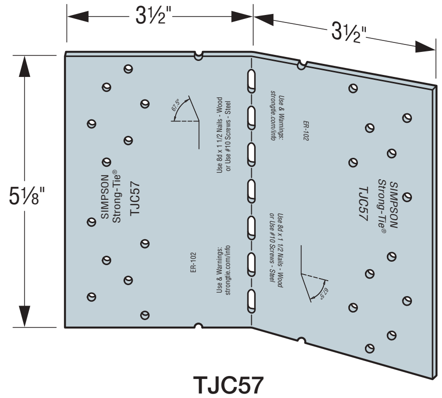
TJC is a versatile connector for jack trusses and adjustable from 0 to 85 degrees (shipped with 67.5 degree bend). The nail hole locations allow for easy installation. The minimum nailing option on the TJC37 provides faster installation and lower installed cost.

Material: 16 gauge

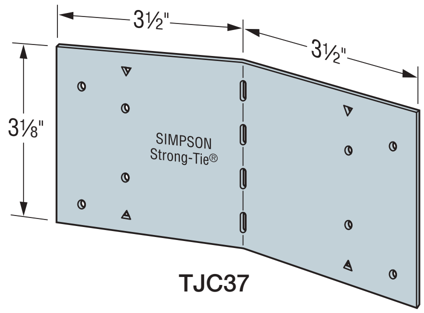
Finish: Galvanized

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.



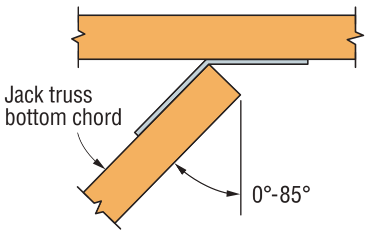
TJC57



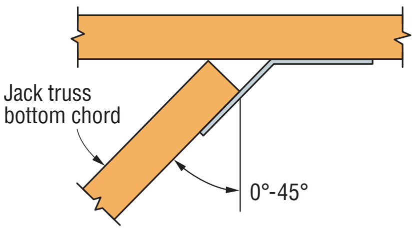
TJC37

Standard Installation

Model No.	Fasteners		Factored Resistance					
	Carrying Member	Carried Member	D. Fir-L		S-P-F			
			(K_D = 1.00 or 1.15)		(K_D = 1.00)		(K_D = 1.15)	
			0°	1° to 85°	0°	1° to 85°	0°	1° to 85°
			lb.	lb.	lb.	lb.	lb.	lb.
			kN	kN	kN	kN	kN	kN
TJC37 (Min.)	(4) 8d x 1½"	(4) 8d x 1½"	495	465	350	330	405	380
			2.20	2.07	1.56	1.47	1.80	1.69
TJC37 (Max.)	(6) 8d x 1½"	(6) 8d x 1½"	950	650	675	465	775	535
			4.23	2.89	3.00	2.07	3.45	2.38
TJC57	(12) 8d x 1½"	(12) 8d x 1½"	1170	1110	880	835	1010	960
			5.21	4.94	3.92	3.71	4.49	4.27
	(12) SD9112	(12) SD9112	1425	1425	1075	1075	1235	1235
			6.34	6.34	4.76	4.76	5.49	5.49



Standard Installation Top View



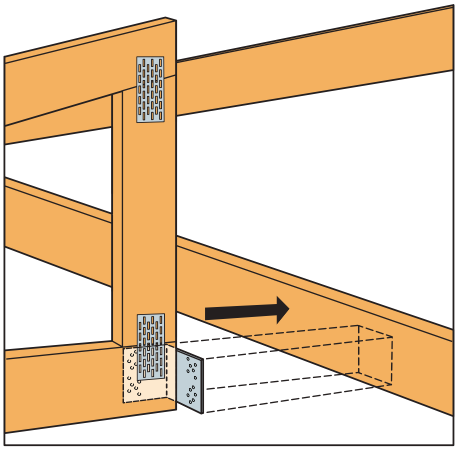
Alternate Installation Top View

Jack Truss Connector (cont.)

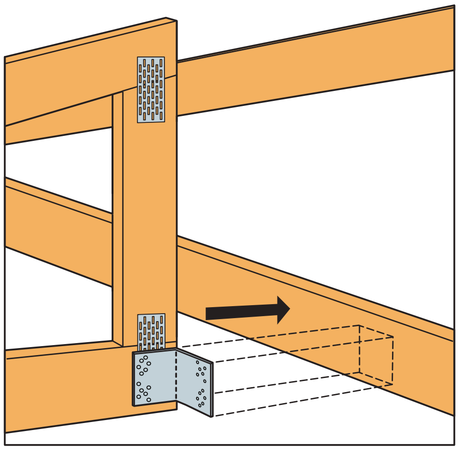
Alternate Installation

Model No.	Fasteners		Factored Resistance					
	Carrying Member	Carried Member	D.Fir-L		S-P-F			
			(K_D = 1.00 or 1.15)		(K_D = 1.00)		(K_D = 1.15)	
			0°	1°–45°	0°	1°–45°	0°	1°–45°
			lb.	lb.	lb.	lb.	lb.	lb.
			kN	kN	kN	kN	kN	kN
TJC37 (Min.)	(4) 8d x 1½"	(4) 8d x 1½"	435	435	305	305	355	355
			1.94	1.94	1.36	1.36	1.58	1.58
TJC37 (Max.)	(6) 8d x 1½"	(6) 8d x 1½"	760	620	540	440	620	505
			3.38	2.76	2.40	1.96	2.76	2.25
TJC57	(12) 8d x 1½"	(12) 8d x 1½"	1165	1100	875	825	1005	950
			5.18	4.89	3.89	3.67	4.47	4.23

1. Factored resistances are for uplift and downward directions.
2. TJC37 and TJC57 require single-ply carried members with minimum 2x4 and 2x6 chord members, respectively.
3. **Nails:** 8d x 1½" = 0.131" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.
   Screws: SD9112 = 0.131" dia. x 1½" long.



Typical TJC57 Standard Installation
(TJC37 similar)



Typical TJC57 Alternate Installation
(TJC37 similar)

Top Chord Member Sizes

Part	Pitch		
	≤ 3:12	≤ 7:12	≤ 12:12
TJC37	2x6	2x6	2x8
TJC57	2x8	2x8	2x10

THGQ/THGQH/HTHGQ

SCL and Truss Girders Hangers

This product is preferable to similar connectors because of a) easier installation, b) higher capacities, 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. Factored resistances 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 Strong-Drive SDS Heavy-Duty Connector screws.

Material: THGQ — 7 gauge; THGQH/HTHGQ — 3 gauge

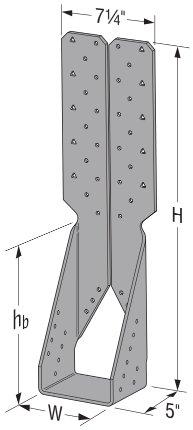
Finish: THGQ — Galvanized;
THGQH/HTHGQ — Simpson Strong-Tie® gray paint

Installation:

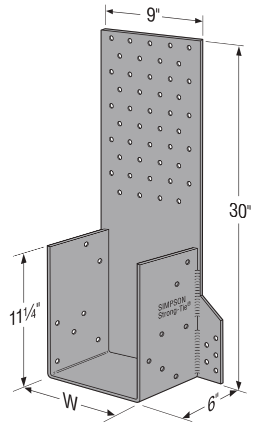
- Use all specified fasteners; see General Notes.
- Can be installed filling round holes only (minimum value), or filling round and triangle holes for maximum values.
- Strong-Drive SDS Heavy-Duty Connector screws supplied for all round and triangle holes. Installation may not require use of all Strong-Drive 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.
- Strong-Drive SDS Heavy-Duty Connector screws driven through truss plates must be approved by the Designer. Predrilling using a 5/32" bit is required.

Options:

- THGQH hangers for multi-ply truss girders may be skewed 45°. THGQH for structural composite lumber (SCL) cannot be skewed. See Hanger Options information on pp. 125–127.

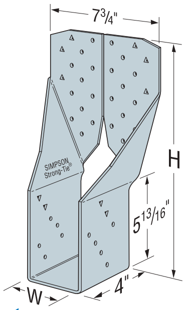


THGQH5.50
(others similar)

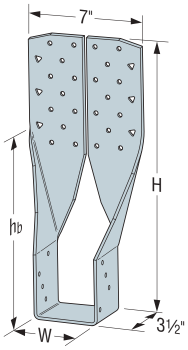


HTHGQ
(others similar)

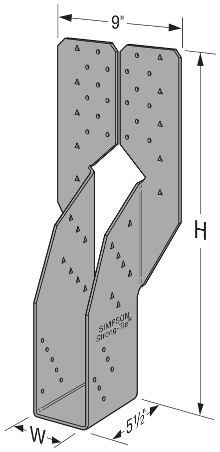
U.S. Patent Pending



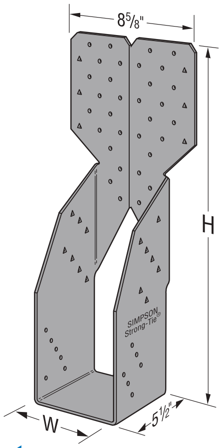
THGQ2-SDS3
(THGQ3-SDS4.5 similar)



THGQ3.62
(others similar)



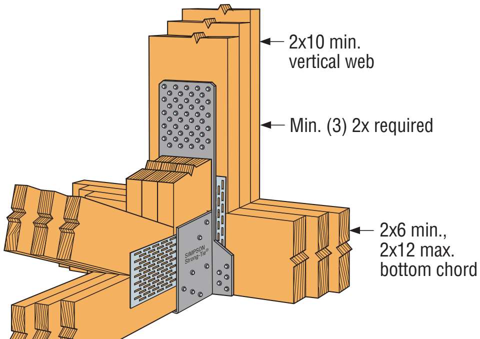
THGQH2-SDS3



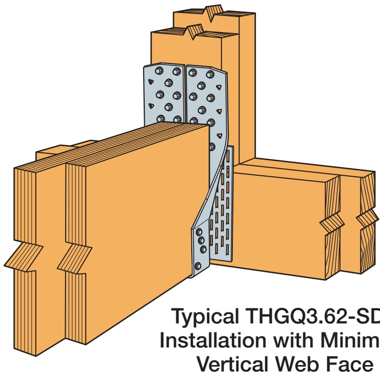
THGQH3-SDS4.5
(THGQH4-SDS6 similar)

THGQ/THGQH/HTHGQ

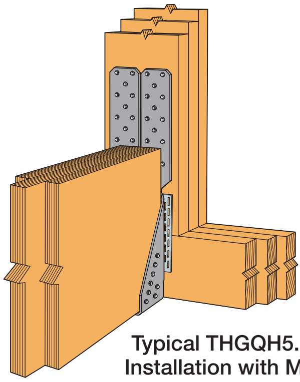
SCL and Truss Girders Hangers (cont.)



Typical HTHGQ Installation



Typical THGQ3.62-SDS Installation with Minimum Vertical Web Face Fasteners



Typical THGQH5.50-SDS Installation with Maximum Vertical Web Face Fasteners

Model No.	Dimensions (in.) W	Dimensions (in.) H	Max. Girder Truss B.C. Depth	Min. Vert. Web Size	SDS Fasteners Header	SDS Fasteners Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
Multi-Ply Truss Sizes										
THGQ2-SDS3 (Min.)	3 5/16	16	2x6	2x8	(22) ¼" x 3"	(10) ¼" x 3"	5205	11655	3750	8395
							23.15	51.85	16.68	37.34
THGQ2-SDS3 (Max.)	3 5/16	16	2x6	2x10	(28) ¼" x 3"	(14) ¼" x 3"	6555	18055	4720	13000
							29.16	80.32	21.00	57.83
THGQH2-SDS3 (Min.)	3 5/16	25	2x10	2x8	(18) ¼" x 3"	(14) ¼" x 3"	5790	12555	4170	9040
							25.76	55.85	18.55	40.21
THGQH2-SDS3 (Max.)	3 5/16	25	2x10	2x10	(28) ¼" x 3"	(26) ¼" x 3"	14190	18455	10215	13285
							63.12	82.10	45.44	59.10
HTHGQ2-SDS	3 5/16	30	2x12	2x10	(55) ¼" x 4½"	(14) ¼" x 3"	7420	26375	5345	19320
							33.01	117.33	23.78	85.94
THGQ3-SDS4.5 (Min.)	4 15/16	16	2x6	2x8	(22) ¼" x 4½"	(10) ¼" x 4½"	5205	11655	3750	8395
							23.15	51.85	16.68	37.34
THGQ3-SDS4.5 (Max.)	4 15/16	16	2x6	2x10	(28) ¼" x 4½"	(14) ¼" x 4½"	6555	17760	4720	12785
							29.16	79.00	21.00	56.87
THGQH3-SDS4.5 (Min.)	4 15/16	25	2x10	2x10	(32) ¼" x 4½"	(14) ¼" x 4½"	5790	17860	4170	12860
							25.76	79.45	18.55	57.21
THGQH3-SDS4.5 (Max.)	4 15/16	25	2x10	2x12	(38) ¼" x 4½"	(26) ¼" x 4½"	14190	21055	10215	15160
							63.12	93.66	45.44	67.44
HTHGQ3-SDS	4 15/16	30	2x12	2x10	(55) ¼" x 4½"	(14) ¼" x 3"	7420	33685	5345	24850
							33.01	149.84	23.78	110.54
THGQH4-SDS6 (Min.)	6 9/16	25	2x12	2x10	(34) ¼" x 6"	(14) ¼" x 6"	5790	17860	4170	12860
							25.76	79.45	18.55	57.21
THGQH4-SDS6 (Max.)	6 9/16	25	2x12	2x12	(40) ¼" x 6"	(26) ¼" x 6"	14190	24870	10215	17905
							63.12	110.63	45.44	79.65
HTHGQ4-SDS	6 9/16	30	2x12	2x10	(55) ¼" x 4½"	(14) ¼" x 3"	7420	33930	5345	28400
							33.01	150.93	23.78	126.33
HTHGQ5-SDS	8⅛	30	2x12	2x10	(55) ¼" x 4½"	(14) ¼" x 3"	7420	33930	5345	28400
							33.01	150.93	23.78	126.33

1. Factored uplift resistances have been increased 15% for short term load duration. No further increase is permitted.
2. A minimum three-ply girder truss (header) is required for all HTHGQ sizes.
3. Minimum bottom chord depth of the joist shall be 2x6.
4. When end grain bearing is used with HTHGQ models, the factored normal resistances are 33930 lb. (150.93 kN) D.Fir-L and 28400 lb. (126.33 kN) S-P-F. The factored uplift resistances are 5300 lb. (23.57 kN) D.Fir-L and 3815 lb. (16.97 kN) S-P-F.
5. Designer must ensure that the girder truss is capable of supporting the applied loads based on the reduced cross sectional area from the ¼"-diameter fasteners.
6. Strong-Drive® SDS Heavy-Duty Connector screws that penetrate all plies of the supporting girder a minimum of 1" into the last ply may also be used to transfer the load between plies of the supporting girder. When Strong-Drive SDS Heavy-Duty Connector screws do not penetrate all plies, supplemental Strong-Drive SDS Heavy-Duty Connector screws may be required to transfer the load to the truss plies not penetrated by the face fasteners, as determined by the Designer.
7. All truss sizes assume Q_r/A_b and Q_r'/A_b' = 812 psi D.Fir-L and 615 psi S-P-F for bearing capacities. See 6.5.4 and 7.5.9 TPIC 2014.

THGQ/THGQH/HTHGQ

SCL and Truss Girders Hangers (cont.)

Model No.	Dimensions (in.) W	Dimensions (in.) H	Dimensions (in.) h_b	Max. Girder Truss B.C. Depth	Min. Vert. Web Size	SDS Fasteners Header	SDS Fasteners Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
Structural Composite Lumber (SCL) Sizes											
THGQ3.62-SDS3 (Min.)	3⅝	16 1/16	10	2x6	2x8	(22) ¼" x 3"	(8) ¼" x 3"	4725	9510	3400	6850
								21.02	42.30	15.12	30.47
THGQ3.62-SDS3 (Max.)	3⅝	16 1/16	10	2x6	2x10	(28) ¼" x 3"	(8) ¼" x 3"	4725	12815	3400	9225
								21.02	57.01	15.12	41.04
THGQH3.62-SDS3 (Min.)	3⅝	24½	11	2x8	2x6	(26) ¼" x 3"	(18) ¼" x 3"	6640	16540	4780	11910
								29.54	73.58	21.26	52.98
THGQH3.62-SDS3 (Max.)	3⅝	24½	11	2x8	2x8	(36) ¼" x 3"	(18) ¼" x 3"	6640	17695	4780	12740
								29.54	78.71	21.26	56.67
THGQ5.50-SDS4.5 (Min.)	5½	17¼	8¼	2x8	2x8	(24) ¼" x 4½"	(8) ¼" x 4½"	4725	10945	3400	7880
								21.02	48.69	15.12	35.05
THGQ5.50-SDS4.5 (Max.)	5½	17¼	8¼	2x8	2x10	(32) ¼" x 4½"	(8) ¼" x 4½"	4725	12570	3400	9050
								21.02	55.92	15.12	40.26
THGQH5.50-SDS4.5 (Min.)	5½	25	11¼	2x10	2x6	(28) ¼" x 4½"	(16) ¼" x 4½"	5900	17415	4250	12535
								26.25	77.47	18.91	55.76
THGQH5.50-SDS4.5 (Max.)	5½	25	11¼	2x10	2x8	(38) ¼" x 4½"	(16) ¼" x 4½"	5900	25155	4250	18110
								26.25	111.90	18.91	80.56
THGQH7.25-SDS6 (Min.)	7¼	24½	11¼	2x10	2x8	(28) ¼" x 6"	(16) ¼" x 6"	5900	19750	4250	14220
								26.25	87.86	18.91	63.26
THGQH7.25-SDS6 (Max.)	7¼	24½	11¼	2x10	2x12	(46) ¼" x 6"	(16) ¼" x 6"	5900	26660	4250	19195
								26.25	118.59	18.91	85.39

See footnotes on p. 281.

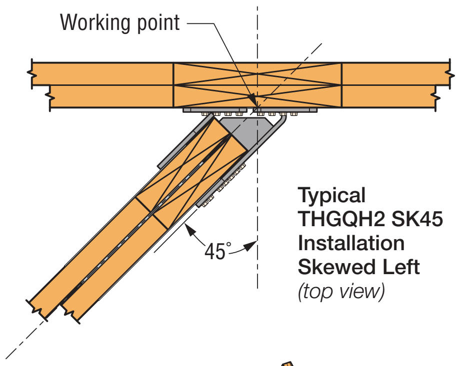
THGQH

See Hanger Options General Notes on p. 125.

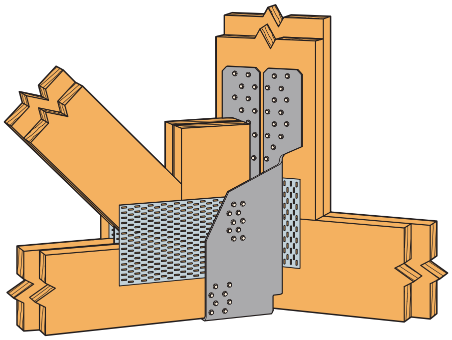
Skewed Seat

- THGQH may be skewed 45° for the models shown. Carried members may be bevel cut.
- Align centreline of joist and centreline of connecting web at the face of the girder.

Model No.	Max. Girder Truss B.C. Depth	Min. Vert. Web Size	Fasteners Header	Fasteners Joist	Factored Resistance D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
THGQH2 SK45	2x10	2x12	(28) ¼" x 3" SDS	(18) ¼" x 3" SDS	6275	15440	4520	11115
					27.91	68.68	20.11	49.44
THGQH3 SK45	2x10	2x12	(36) ¼" x 4½" SDS	(18) ¼" x 4½" SDS	5345	15440	3845	11115
					23.78	68.68	17.10	49.44
THGQH4 SK45	2x12	2x12	(40) ¼" x 6" SDS	(18) ¼" x 6" SDS	5345	20310	3845	14625
					23.78	90.35	17.10	65.06



Typical THGQH2 SK45 Installation Skewed Left *(top view)*



Typical THGQH2 SK45 Installation Skewed Left

Plated Truss Connectors

THGB/THGBH/THGW

Truss Girder Hangers

High-capacity, welded hangers for multi-ply girder trusses. Two models offer higher design load values and optional installation with Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screw.

Material: 3 gauge

Finish: Simpson Strong-Tie® gray paint

Design:

- Vertical web on supporting girder truss must be 2x8 (min.) for 4-bolt and 6-bolt applications and 2x12 for 8-bolt applications per 5.3.8.2 CSA O86-14
- Designer must ensure that vertical web member supporting hanger is capable of resisting applied loads based on net cross-sectional area
- ¼" x 3" Strong-Drive SDS Heavy-Duty Connector screw must be attached to a minimum 2-ply header (3")
- Joist bearing assumes Q_r/A_b and Q_r'/A_b' = 812 psi D.Fir-L and 615 psi S-P-F. See 6.5.4 and 7.5.9 TPIC 2014
- Maximum bottom chord depth on header shall be 11⅞"
- To achieve the tabulated uplift resistances the maximum bottom chord depth of the joist shall be 7¼"

Installation:

- Use all specified fasteners; see General Notes
- All multiple members must be fastened together to act as a single unit

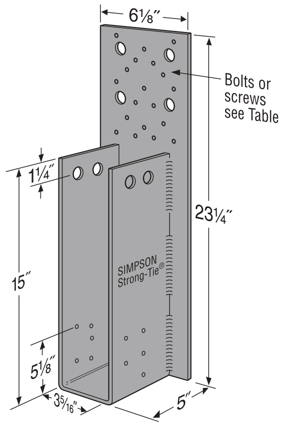
Options:

- See Hanger Options information on pp. 125–127

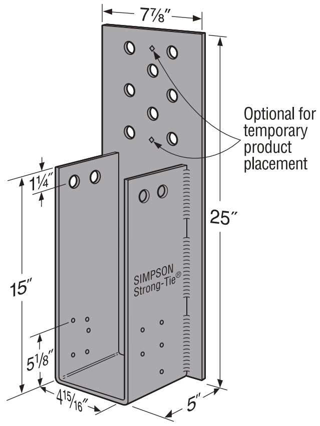
Skewed Seat, 45° Maximum:

- Multiply the tabulated factored resistances for uplift and download by the following:

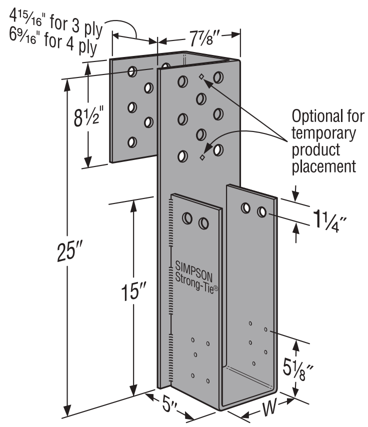
– THGB2/THGB3	0.74
– THGBH3	0.71
– THGBH4	0.56



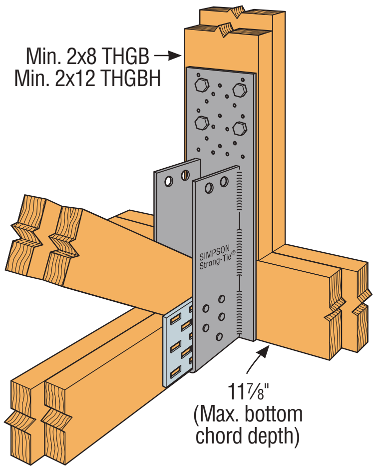
THGB2
(THGB3 similar)



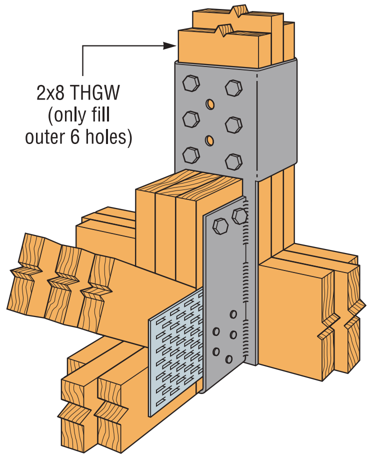
THGBH3
(THGBH2 and THGBH4 similar)



THGW3
U.S. Patent 6,230,466



Typical THGB2 Installation



Typical THGW3 Installation

THGB/THGBH/THGW

SIMPSON Strong-Tie®

Truss Girder Hangers (cont.)

Model No.	Width (in.)	Fasteners: Joist	Fasteners: Header	Minimum Header Thickness (in.)	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	Factored Resistance D.Fir-L Normal (K_D = 1.00)	Factored Resistance S-P-F Uplift (K_D = 1.15)	Factored Resistance S-P-F Normal (K_D = 1.00)
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
THGB2	3 5/16	(10) 10d and (2) ¾" MB	(4) ¾" MB	3	5175	8290	4085	6545
					23.02	36.88	18.17	29.11
				4½	5175	12435	4085	9815
					23.02	55.32	18.17	43.66
				6	5175	13615	4085	10750
					23.02	60.56	18.17	47.82
			(19) ¼" x 3" SDS	3	5175	13805	4085	9940
					23.02	61.41	18.17	44.22
THGBH2	3 5/16	(10) 10d and (2) ¾" MB	(8) ¾" MB	3	5175	12435	4085	9815
					23.02	55.32	18.17	43.66
				4½	5175	14385	4085	11355
					23.02	63.99	18.17	50.51
				6	5175	14385	4085	11355
					23.02	63.99	18.17	50.51
THGB3	4 15/16	(10) 10d and (2) ¾" MB	(4) ¾" MB	3	7760	8290	6125	6545
					34.52	36.88	27.25	29.11
				4½	7760	12435	6125	9815
					34.52	55.32	27.25	43.66
				6	7760	13615	6125	10750
					34.52	60.56	27.25	47.82
			(19) ¼" x 3" SDS	3	7760	13805	6125	9940
					34.52	61.41	27.25	44.22
THGBH3	4 15/16	(10) 10d and (2) ¾" MB	(8) ¾" MB	3	7760	12435	6125	9815
					34.52	55.32	27.25	43.66
				4½	7760	18390	6125	14520
					34.52	81.81	27.25	64.59
				6	7760	18605	6125	14690
					34.52	82.76	27.25	65.35
THGW3-3	4 15/16	(10) 10d and (2) ¾" MB	(6) ¾" MB	4½[3]	7760	18650	6125	14725
					34.52	82.96	27.25	65.50
THGW3-4				6[3]	7760	20830	6125	16065
					34.52	92.66	27.25	71.46
THGBH4	6 9/16	(10) 10d and (2) ¾" MB	(8) ¾" MB	3	8850	12435	8170	9815
					39.37	55.32	36.34	43.66
				4½	8850	18650	8170	14725
					39.37	82.96	36.34	65.50
				6	8850	21865	8170	17265
					39.37	97.26	36.34	76.80
THGW4-3	6 9/16	(10) 10d and (2) ¾" MB	(6) ¾" MB	4½[3]	8850	18650	8170	14725
					39.37	82.96	36.34	65.50
THGW4-4				6[3]	8850	24870	8170	19630
					39.37	110.63	36.34	87.32

1. Uplift resistances have been increased 15% for wind or earthquake loading with no further increase allowed.
2. When using (10) 10d nails only on carried member, uplift resistance is 2945 lb. (13.10 kN) for D.Fir-L and 2590 lb. (11.52 kN) for S-P-F.
3. THGW is sized to fit the header thickness shown.
4. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

THGBV/THGBHV/THGWV

SCL-to-Truss Girder Hangers

An extension of the THGB/THGBH/THGW series, these high-capacity, welded hangers are designed for attaching multi-ply structural composite lumber (SCL) beams to girder trusses. Two models offer higher design values and optional installation with the Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws. 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 design flexibility for a variety of SCL-to-truss connections.

Material: 3 gauge

Finish: Simpson Strong-Tie® gray paint

Design:

- Vertical web on supporting girder truss must be 2x8 (min.) for 4-bolt and 6-bolt applications and 2x12 for 8-bolt applications per 5.3.8.2 CSA O86-14
- Designer must ensure that vertical web member supporting hanger is capable of resisting applied loads based on net cross-sectional area
- ¼" x 3" Strong-Drive SDS Heavy-Duty Connector screws must be attached to a minimum 2-ply header (3")
- Maximum bottom chord depth on header shall be 11⅞"

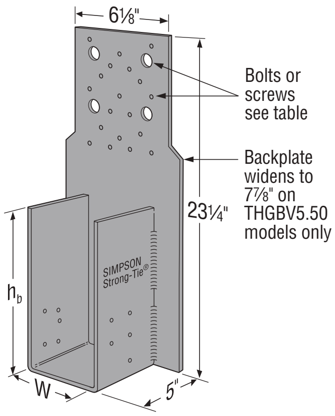
Installation:

- Use all specified fasteners; see General Notes
- All multiple members must be fastened together to act as a single unit

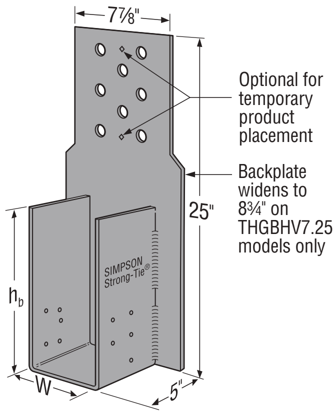
Options:

- See Hanger Options information on pp. 125–127.
- THGBV/THGBHV backplates can be extended to allow for up to a 6" dropped bucket.
- Factored resistances are 100% of the table values.
- 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 27¼".

Joist Dimensions (in.)		Model No.	Hanger Dimensions (in.)	
Width	Depth		W	h_b
3½	9¼ – 14	THGBV3.62/9	3⅝	9
		THGBHV3.62/9		
	11¼ – 20	THGBV3.62/11		11
		THGBHV3.62/11		
5¼	9¼ – 14	THGBV5.50/9	5½	9
		THGBHV5.50/9		
		THGWV5.50/9		
	11¼ – 20	THGBV5.50/11		11
		THGBHV5.50/11		
		THGWV5.50/11		
7	9¼ – 14	THGBHV7.25/9	7¼	9
		THGWV7.25/9		
	11¼ – 20	THGBHV7.25/11		11
		THGWV7.25/11		



THGBV



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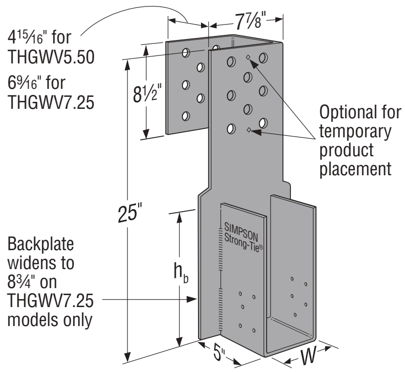
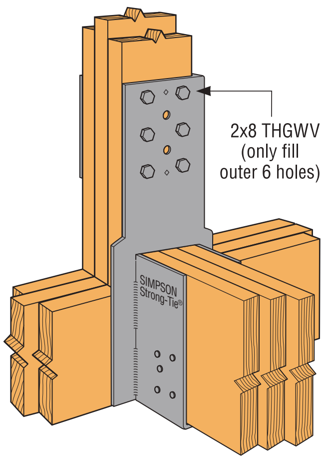
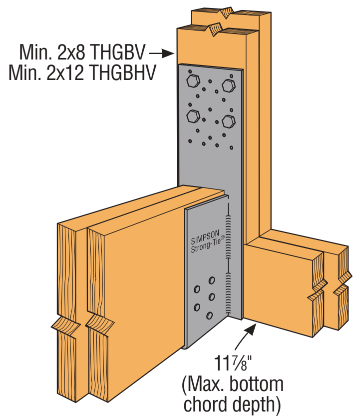


THGWV



Typical THGWV Installation



Typical THGBV3.62/9 Installation

THGBV/THGBHV/THGWV

SIMPSON Strong-Tie

SCL-to-Truss Girder Hangers (cont.)

Model No.	Width (in.)	Fasteners: Joist	Fasteners: Header	Minimum Header Thickness (in.)	D.Fir-L Uplift (K_D = 1.15) lb. / kN	D.Fir-L Normal (K_D = 1.00) lb. / kN	S-P-F Uplift (K_D = 1.15) lb. / kN	S-P-F Normal (K_D = 1.00) lb. / kN
THGBV3.62/9 THGBV3.62/11	3⅝	(10) 10d	(4) ¾" MB	3	2945	8290	2590	6545
					13.10	36.88	11.52	29.11
				4½	2945	12435	2590	9815
					13.10	55.32	11.52	43.66
				6	2945	13615	2590	10750
					13.10	60.56	11.52	47.82
			(19) ¼" x 3" SDS	3	2945	13805	2590	9940
					13.10	61.41	11.52	44.22
THGBHV3.62/9 THGBHV3.62/11	3⅝	(10) 10d	(8) ¾" MB	3	2945	12435	2590	9815
					13.10	55.32	11.52	43.66
				4½	2945	14385	2590	11355
					13.10	63.99	11.52	50.51
				6	2945	14385	2590	11355
					13.10	63.99	11.52	50.51
THGBV5.50/9 THGBV5.50/11	5½	(10) 10d	(4) ¾" MB	3	2945	8290	2590	6545
					13.10	36.88	11.52	29.11
				4½	2945	12435	2590	9815
					13.10	55.32	11.52	43.66
				6	2945	13615	2590	10750
					13.10	60.56	11.52	47.82
			(19) ¼" x 3" SDS	3	2945	13805	2590	9940
					13.10	61.41	11.52	44.22
THGBHV5.50/9 THGBHV5.50/11	5½	(10) 10d	(8) ¾" MB	3	2945	12435	2590	9815
					13.10	55.32	11.52	43.66
				4½	2945	18390	2590	14520
					13.10	81.81	11.52	64.59
				6	2945	18605	2590	14690
					13.10	82.76	11.52	65.35
THGWV5.50/9 THGWV5.50/11	5½	(10) 10d	(6) ¾" MB	4½[2]	2945	18650	2590	14725
					13.10	82.96	11.52	65.50
THGBHV7.25/9 THGBHV7.25/11	7¼	(10) 10d	(8) ¾" MB	3	2945	12435	2590	9815
					13.10	55.32	11.52	43.66
				4½	2945	18650	2590	14725
					13.10	82.96	11.52	65.50
				6	2945	21865	2590	17265
					13.10	97.26	11.52	76.80
THGWV7.25/9 THGWV7.25/11	7¼	(10) 10d	(6) ¾" MB	6[2]	2945	24870	2590	19630
					13.10	110.63	11.52	87.32

1. Uplift resistances have been increased 15% for wind or earthquake loading with no further increase allowed.
2. THGWV is sized to fit the header thickness shown.
3. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

Plated Truss Connectors

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 BCSI Canada. Easier to install than wood bracing, the TSBR firmly grips the trusses, capturing on-centre 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:

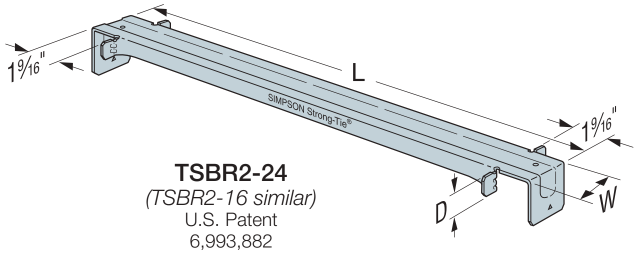
- Enables the quick and accurate spacing of trusses without measuring or adjusting
- Helps meet prescriptive temporary bracing recommendations of BCSI Canada
- Easily "grabs" onto the truss — may be put in place with one hand
- Stays in place during sheathing, saving time and making the roof more stable 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

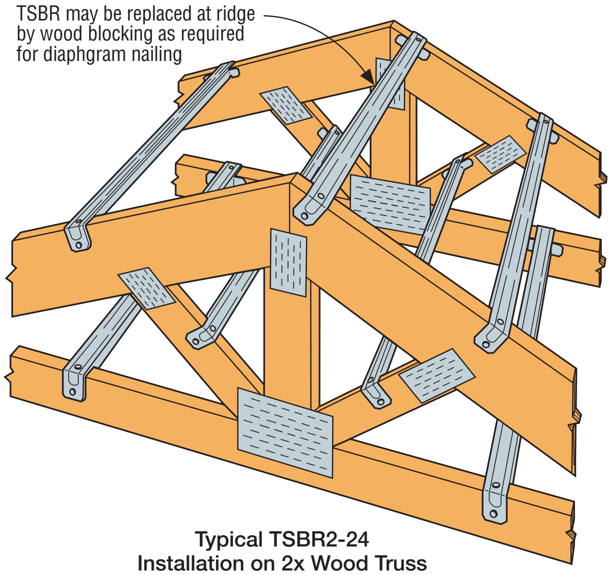
Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- TSBR lateral restraint locations are as recommended in BCSI-B2C. For more information see the Simpson Strong-Tie *Wood Truss Bracing and Restraint Guide* (F-TSBRTBD22) at **strongtie.com**
- Fill all round and triangular holes



TSBR2-24
(TSBR2-16 similar)
U.S. Patent
6,993,882



Typical TSBR2-24 Installation on 2x Wood Truss

Model No.	Dimensions (in.)			Fasteners	Factored Resistance (K_D = 1.15)			
					D.Fir-L		S-P-F	
	L	W	D		Compression	Tension	Compression	Tension
					lb.	lb.	lb.	lb.
					kN	kN	kN	kN
TSBR2-16	17½	1¼	1¼	(4) 10d x 1½"	885	740	630	525
					3.94	3.29	2.80	2.34
TSBR2-24	25½	1¾	1	(4) 10d x 1½"	685	625	485	445
					3.05	2.78	2.16	1.98

1. No load duration increase allowed.
2. Meets or exceeds the temporary lateral restraint recommendations of BCSI-08.
3. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

TBD22

Diagonal Brace

The TBD22 diagonal truss brace offers a time-saving subsitute for 2x4 diagonal bracing that helps meet the recommendations of BCSI Canada. 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/bracer and transfers it diagonally in tension to the edge of the braced-truss system. When used in conjunction with the TSBR, the TBD22 meets or exceeds the the recommendations set forth by BCSI Canada.

Features:

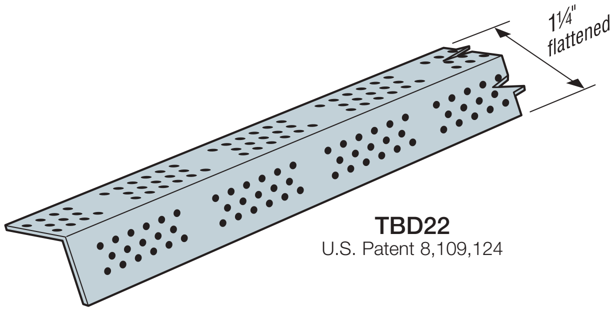
- Helps meet prescriptive temporary bracing recommendations of BCSI Canada
- Rigid A-shape design virtually eliminates sagging between trusses spaced 16"–24" on centre
- Can be sheathed over after installation, no need to remove bracing
- Dimpled nailing grid allows installation with standard pneumatic fasteners
- 160' of bracing in an easy-to-handle carton

Material: 22 gauge

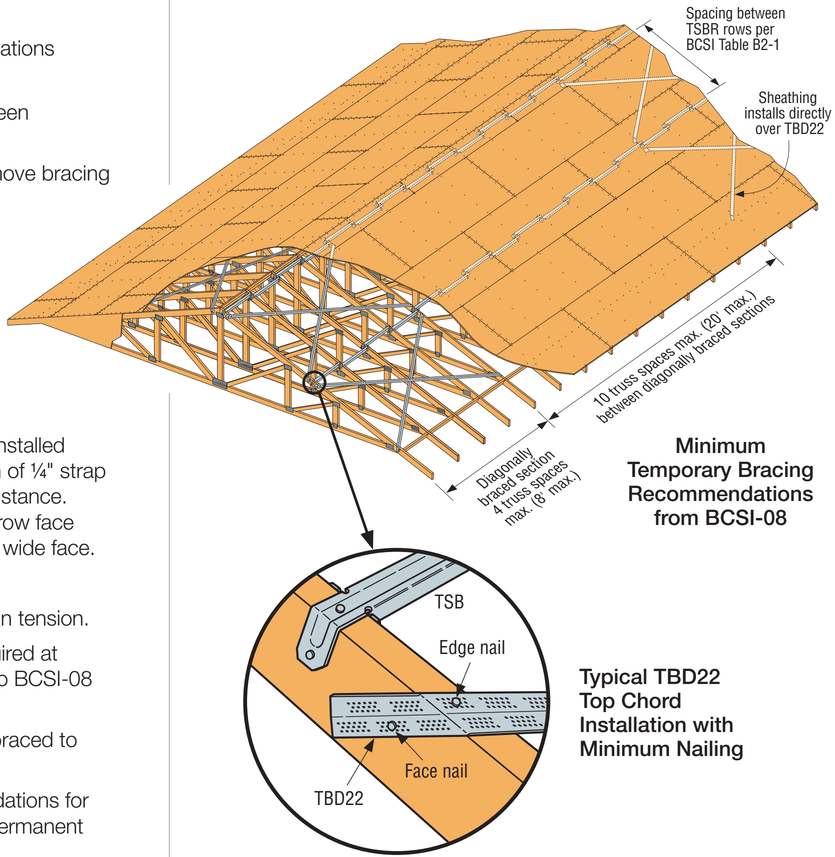
Finish: Galvanized

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 ¼" strap edge distance and a minimum of ½" centre-to-centre distance. Nails should be installed in the centre 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 BCSI-08 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.



TBD22
U.S. Patent 8,109,124



Minimum Temporary Bracing Recommendations from BCSI-08

Typical TBD22 Top Chord Installation with Minimum Nailing

Model No.	Fasteners		Factored Tensile Resistance (K_D = 1.15)	
	Strap Ends	Intermediate Trusses	D.Fir-L	S-P-F
			lb.	lb.
			kN	kN
TBD22 (Min.)	(1) 10d x 1½" in face and (1) 10d x 1½" in edge	(1) 10d x 1½"	680	615
			3.02	2.74
TBD22 (Max.)	(2) 10d x 1½" in face and (1) 10d x 1½" in edge	(1) 10d x 1½"	895	820
			3.98	3.65

1. Factored resistances have been increased for construction and wind loading with no further increase allowed.
2. Minimum nailing meets or exceeds the temporary bracing recommendations of BCSI Canada.
3. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

TBD22 Dispenser Detail

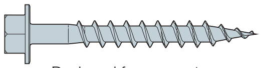
VTCR

Single-Sided Valley Truss Clip

This product is preferable to similar connectors because of a) easier installation, b) higher capacities, 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

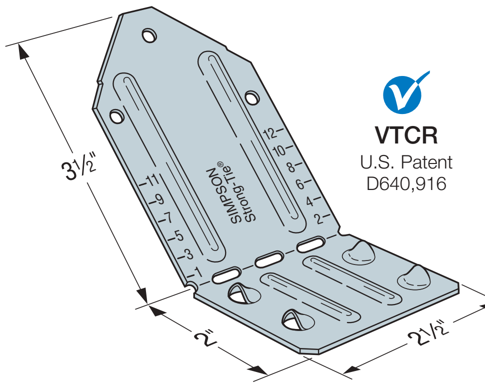


Designed for connectors

Material: 18 gauge **Finish:** Galvanized

Installation:

- The dome holes assist in installing the fasteners into the supporting framing at approximately 45°
- Install VTCR at all valley truss/common truss intersections
- VTCR must be installed directly over roof sheathing between 7/16" and 5/8" thick

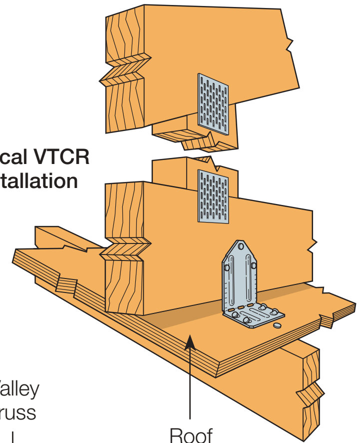


VTCR
U.S. Patent D640,916

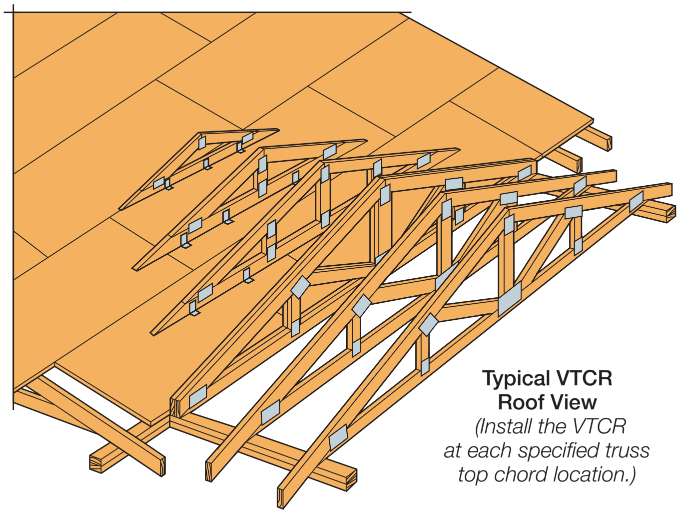
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Fasteners		Factored Resistance			
			D.Fir-L		S-P-F	
	Supporting Framing	Valley Truss	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
			lb.	lb.	lb.	lb.
			kN	kN	kN	kN
VTCR	4-10d	(3) 10d x 1½"	220	595	160	595
			0.98	2.65	0.71	2.65
	(4) SD #9 x 2½"	(3) SD #9 x 1½"	575	595	405	595
			2.56	2.65	1.80	2.65

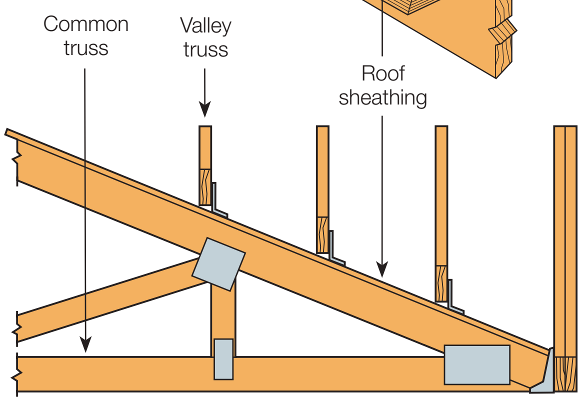
1. Factored uplift resistances have been increased 15% for wind loads. No further increase is permitted.
2. Factored normal resistance assume continuous bearing of the valley truss bottom chord along the roof sheathing. For applications where the supporting framing is less than 24" o/c, the tabulated normal resistances shall be linearly reduced.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.
4. **Screws:** SD #9 x 1½" (model SD9112) = 0.131" dia. x 1½" long, SD #9 x 2½" (model SD9212) = 0.131" dia. x 2½" long.



Typical VTCR Installation



Typical VTCR Roof View
(Install the VTCR at each specified truss top chord location.)



Typical VTCR Side View

Plated Truss Connectors

Drag Strut Connector

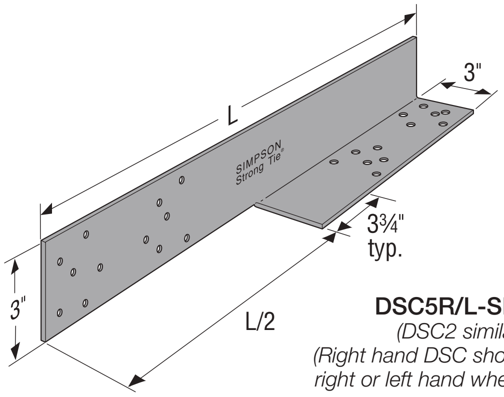
The DSC drag-strut connector transfers the diaphragm shear forces to the shearwalls. The DSC2 is a smaller, lighter version that installs with fewer screws.

Material: DSC2 — 7 gauge; DSC5 — 3 gauge

Finish: DSC2 — Galvanized;
DSC5 — Simpson Strong-Tie® gray paint

Installation:

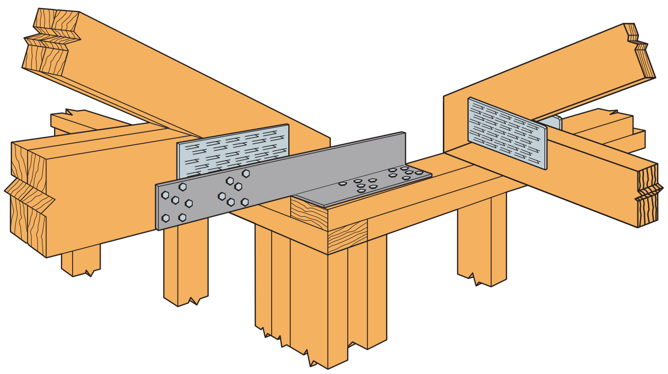
- Use all specified fasteners; see General Notes
- Simpson Strong-Tie Strong-Drive® SDS Heavy-Duty Connector screws are provided
- Left-hand and right-hand versions available



DSC5R/L-SDS3
(DSC2 similar)
(Right hand DSC shown; specify right or left hand when ordering)
U.S. Patent 6,655,096

Model No.	L (in.)	Fasteners	Factored Resistance (K_D = 1.15)			
			D.Fir-L		S-P-F	
			Compression	Tension	Compression	Tension
			lb.	lb.	lb.	lb.
			kN	kN	kN	kN
DSC2R/L-SDS3	16	(20) ¼" x 3" SDS	3740	6530	2695	4700
			16.66	29.09	12.00	20.94
DSC5R/L-SDS3	21	(24) ¼" x 3" SDS	6495	10630	4675	7655
			28.93	47.35	20.82	34.10

1. Factored resistances have been increased 15% for earthquake and wind loading with no further increase allowed.
2. Lag screws will not generate the tabulated factored resistances.
3. Strong-Drive SDS Heavy-Duty Connector screws minimum penetration is 2¾", minimum end distance is 2½" and minimum edge distance is ⅝" for full load values.
4. Installation of Strong-Drive SDS Heavy-Duty Connector through truss plates must be approved by the truss engineer. Predrilling is required.



Typical DSC5R-SDS3 Installation
(DSC2 similar)

SIMPSON Strong-Tie®

Gable Brace Connector

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

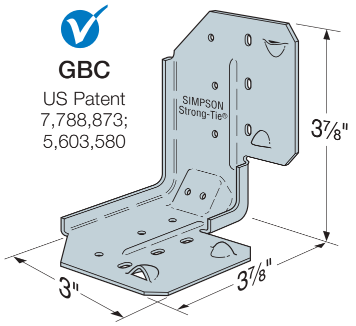
The GBC provides improved anchorage of gable bracing to the exterior wall. Installation flexibility for brace angle. GBC has tension and compression capacities.

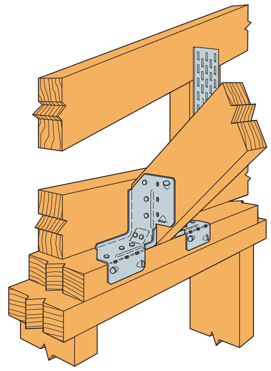
Material: 16 gauge

Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes
- The GBC must be installed in pairs to achieve full load capacity

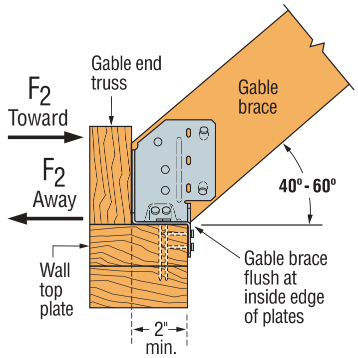




Typical GBC Installation

Model No.	Qty. Req'd	Fasteners per Connector: Gable Brace	Fasteners per Connector: Top Plates	Perpendicular to Endwall (F_2) Factored Resistance (K_D = 1.15)							
				D.Fir-L				S-P-F			
				Toward Anchors		Away from Anchors		Toward Anchors		Away from Anchors	
				Gable Brace Angle		Gable Brace Angle		Gable Brace Angle		Gable Brace Angle	
				40°–45°	46°–60°	40°–45°	46°–60°	40°–45°	46°–60°	40°–45°	46°–60°
				lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN	kN	kN	kN
GBC	2	(5) 8d x 1½"	(7) 8d	945	830	695	610	665	580	490	425
				4.21	3.70	3.10	2.72	2.96	2.58	2.18	1.89

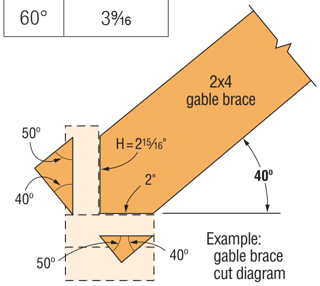
1. For 1¾" x 3½" (or larger) LVL gable brace, the factored resistance at 40° to 45° is 945 lb. (4.21 kN) towards the anchors and 970 lb. (4.32 kN) away from the anchors.
2. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
3. Use a minimum 2x4 gable brace.
4. **Nails:** 8d = 0.131" dia. x 2½" long, 8d x 1½" = 0.131" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



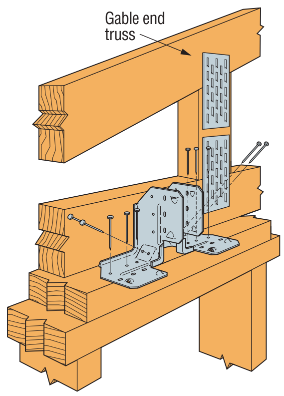
Typical Sloped Installation

GBC Installation Sequence

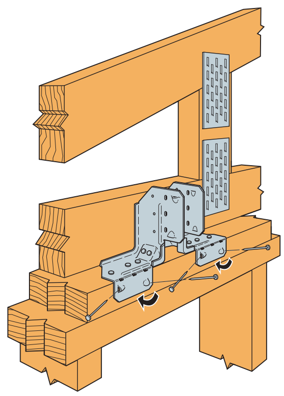
Slope	H Dimension
40°	2¹⁵⁄₁₆
50°	3¹⁄₁₆
60°	3⁹⁄₁₆



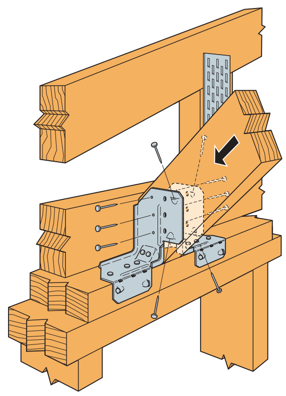
Step 1
Double angle cut the gable brace to sit flat on the wall double top plate and flush against the gable end truss for 2x4 top plate. The double angle cuts should form a 90° angle on the end of the gable brace.



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.

TSF

Truss Spacer

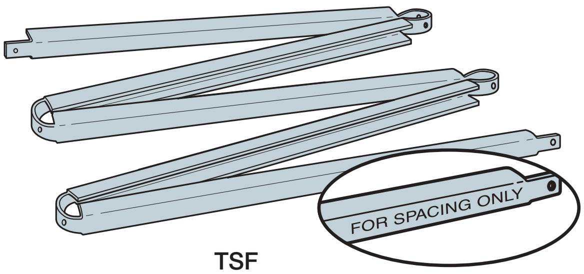
The TSF is a fast and accurate method for spacing trusses that eliminates layout marking of top plates and can be left in place under the sheathing. Accuracy is improved, spacing errors are minimized, and it is easy to use.

Material: 24 gauge

Finish: Galvanized

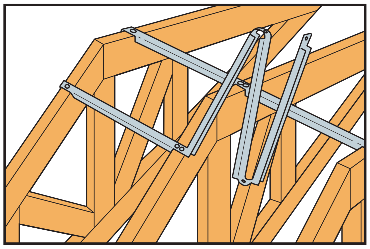
Installation:

- 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.

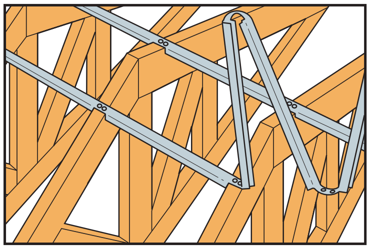


TSF

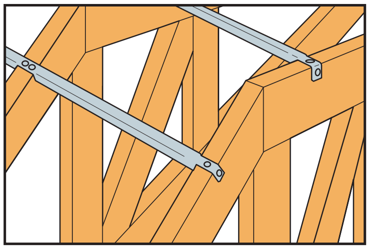
Model No.	Dimensions		
	W	O.C. Spacing	Total Length
TSF2-16	1½"	16"	8'
TSF2-24	1½"	24"	10'



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.

CP Crush Plates

SIMPSON Strong-Tie®

Bearing Enhancers

The CP transfers load from the truss or girder to plates for bearing limited conditions. Replaces nail-on scabs or in some cases, an additional ply when needed for bearing.

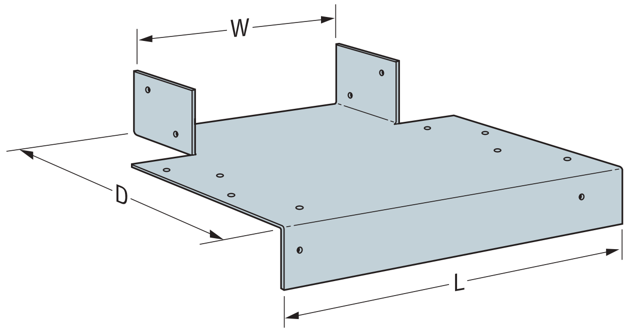
Material: See table **Finish:** Galvanized

Design:

- Factored resistances are in accordance with CSA O86-14 assuming Q_r/A_b and Q_r'/A_b' = 812 psi for D.Fir-L and 615 psi for S-P-F. See clauses 6.5.4 and 7.5.9 TPIC 2014 when compression loads are applied to both sides of truss chord members at bearing locations.

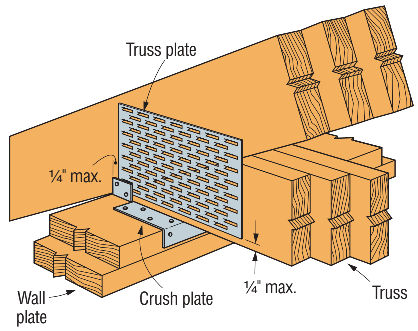
Installation:

- Use all specified fasteners
- For Case 1, truss plates must be located a maximum of ¼" from the underside of the truss chord and a maximum of ¼" from the edge of the wall plates in accordance with the reinforcing requirements of 7.5.9 TPIC 2014

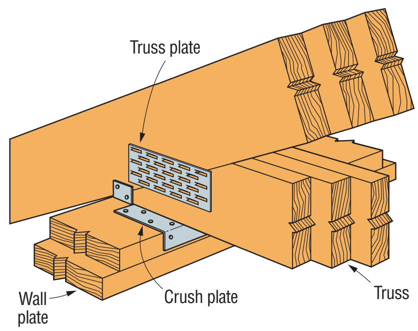


CP

Model No.	Ga.	Wall Plate	Dimensions (in.) W	D	L	Fasteners Wall Plate	Truss	Factored Resistance D.Fir-L Uplift (K_D = 1.15)	D.Fir-L Bearing (K_D = 1.00)	S-P-F Uplift (K_D = 1.15)	S-P-F Bearing (K_D = 1.00)
								lb.	lb.	lb.	lb.
								kN	kN	kN	kN
Case 1 (Truss Plate Reinforcement)											
CP1-4	20	2x4	1⅝	3½	4½	(6) 10d	(4) 10d x 1½"	225	5965	225	4515
								1.00	26.57	1.00	20.11
CP2-4	16	2x4	3¼	3½	5¾	(6) 10d	(4) 10d x 1½"	225	11390	225	9030
								1.00	53.14	1.00	40.22
CP3-4	16	2x4	4¾	3½	7½	(6) 10d	(4) 10d x 1½"	225	17895	225	13545
								1.00	79.71	1.00	60.33
CP4-4	12	2x4	6½	3½	9½	(6) 10d	(4) 10d x 1½"	225	23860	225	18065
								1.00	106.28	1.00	80.47
CP1-6	20	2x6	1⅝	5½	4½	(10) 10d	(4) 10d x 1½"	225	9370	225	7095
								1.00	41.47	1.00	31.60
CP2-6	16	2x6	3¼	5½	5¾	(10) 10d	(4) 10d x 1½"	225	18740	225	14190
								1.00	83.47	1.00	63.21
CP3-6	16	2x6	4¾	5½	7½	(10) 10d	(4) 10d x 1½"	225	28110	225	21285
								1.00	125.21	1.00	94.81
CP4-6	12	2x6	6½	5½	9½	(10) 10d	(4) 10d x 1½"	225	37495	225	28390
								1.00	167.02	1.00	126.46
Case 2 (No Reinforcement)											
CP1-4	20	2x4	1⅝	3½	4½	(6) 10d	(4) 10d x 1½"	225	4685	225	3550
								1.00	20.87	1.00	15.81
CP2-4	16	2x4	3¼	3½	5¾	(6) 10d	(4) 10d x 1½"	225	9370	225	7100
								1.00	41.74	1.00	31.63
CP3-4	16	2x4	4¾	3½	7½	(6) 10d	(4) 10d x 1½"	225	14055	225	10650
								1.00	62.61	1.00	47.44
CP4-4	12	2x4	6½	3½	9½	(6) 10d	(4) 10d x 1½"	225	18750	225	14195
								1.00	83.52	1.00	63.23
CP1-6	20	2x6	1⅝	5½	4½	(10) 10d	(4) 10d x 1½"	225	7365	225	5575
								1.00	32.81	1.00	24.83
CP2-6	16	2x6	3¼	5½	5¾	(10) 10d	(4) 10d x 1½"	225	14730	225	11150
								1.00	65.61	1.00	49.67
CP3-6	16	2x6	4¾	5½	7½	(10) 10d	(4) 10d x 1½"	225	22095	225	16725
								1.00	98.42	1.00	74.50
CP4-6	12	2x6	6½	5½	9½	(10) 10d	(4) 10d x 1½"	225	29460	225	22305
								1.00	131.22	1.00	99.35



Case 1



Case 2

1. Factored bearing resistances assume wall plate and truss are the same species. For a mixed species system use S-P-F values.

Nails: 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

Plated Truss Connectors

SIMPSON Strong-Tie®

TBE

Truss Bearing Enhancer

One size works with any number of girder plys. The TBE transfers load from the truss or girder to plates for bearing-limited conditions, and provides exceptional uplift capacity. Replaces nail-on scabs that provide lower load transfer, or in some cases, an additional ply when needed for bearing.

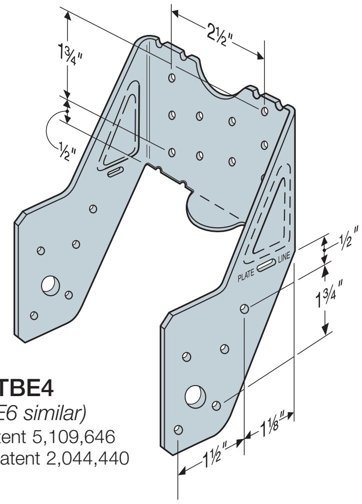
The table lists factored resistances for TBE4 used on 2x4 and TBE6 used on 2x6 top plates. The tables give the different resistances calculated for TBE with and without wood bearing. See below for Alternate Installation.

Material: 18 gauge

Finish: Galvanized. See Corrosion Information, pp. 20–24.

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.
- Do not use TBEs in end-grain-bearing applications.

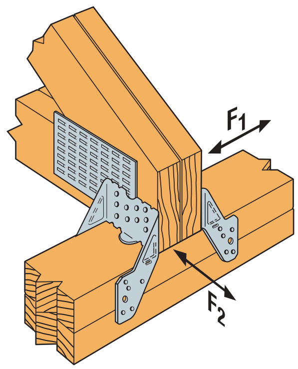


TBE4
(TBE6 similar)
U.S. Patent 5,109,646
Canada Patent 2,044,440

TBE Fastener Schedule

Model No.	Truss Plies	Fasteners per each TBE	
		Rafter	Plate
TBE4	1	(10) 10d x 1½"	(10) 10d x 1½"
	2 or more	(10) 10d	(10) 10d
TBE6	1	(10) 10d x 1½"	(10) 10d x 1½"
	2 or more	(10) 10d	(10) 10d

Nails: 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long.
See pp. 27–28 for other nail sizes and information.



Two TBE Installed with Two-Ply Girder Truss

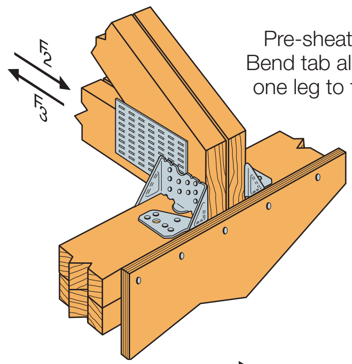
Alternate Installation

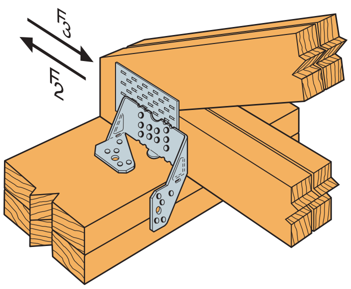
(See illustrations at right)

Model No.	Alternate Installation Factored Resistance							
	D.Fir-L (K_D = 1.15)				S-P-F (K_D = 1.15)			
	Uplift	F_1	F_2	F_3	Uplift	F_1	F_2	F_3
	lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
	kN	kN	kN	kN	kN	kN	kN	kN
TBE4	1605	490	1415	490	1280	370	1005	350
	7.14	2.18	6.29	2.18	5.69	1.65	4.47	1.56
TBE6	1760	490	1415	490	1280	370	1005	350
	7.83	2.18	6.29	2.18	5.69	1.65	4.47	1.56

1. Alternate Installation Factored Normal Resistances are 0.60 of the TBE only tabulated resistances on p. 295.
2. TBL values do not apply to Alternate Installation.
3. See table footnotes on p. 295.

Pre-sheathed shearwall. Bend tab along slot and nail one leg to top of the plate.





TBE6 Installed on Double 2x8 Top Plate

Truss Bearing Enhancer (cont.)

Model No.	No.of Truss Plies	Fasteners: Truss	Fasteners: Plate	TBE Only Factored Resistance: Uplift (K_D = 1.15)	TBE Only Factored Resistance: Normal (K_D = 1.00)	TBE Only Factored Resistance: Lateral (K_D = 1.15) F_1	TBE Only Factored Resistance: Lateral (K_D = 1.15) F_2	Combined TBE and Wood Bearing Factored Resistance: Normal (K_D = 1.00)	Combined TBE and Wood Bearing Factored Resistance: TBL[6]
				lb.	lb.	lb.	lb.	lb.	in.
				kN	kN	kN	kN	kN	
D.Fir-L									
TBE4	1	(20) 10d x 1½"	(20) 10d x 1½"	1605	3540	655	1415	7800	6.41
				7.14	15.75	2.91	6.29	34.70	
	2	(20) 10d	(20) 10d	1605	3660	655	1415	12180	5.00
				7.14	16.28	2.91	6.29	54.18	
	3	(20) 10d	(20) 10d	1605	3660	655	1415	16445	4.50
				7.14	16.28	2.91	6.29	73.15	
	4	(20) 10d	(20) 10d	1605	3660	655	1415	20705	4.25
				7.14	16.28	2.91	6.29	92.10	
TBE6	1	(20) 10d x 1½"	(20) 10d x 1½"	1760	3540	490	1745	10235	8.41
				7.83	15.75	2.18	7.76	45.53	
	2	(20) 10d	(20) 10d	1760	3860	490	1745	17250	7.09
				7.83	17.17	2.18	7.76	76.73	
	3	(20) 10d	(20) 10d	1760	3860	490	1745	23945	6.56
				7.83	17.17	2.18	7.76	106.52	
	4	(20) 10d	(20) 10d	1760	3860	490	1745	30640	6.29
				7.83	17.17	2.18	7.76	136.30	
S-P-F									
TBE4	1	(20) 10d x 1½"	(20) 10d x 1½"	1605	3220	615	1415	6445	6.99
				7.14	14.32	2.74	6.29	28.67	
	2	(20) 10d	(20) 10d	1605	3440	615	1415	9890	5.37
				7.14	15.30	2.74	6.29	43.99	
	3	(20) 10d	(20) 10d	1605	3440	615	1415	13120	4.74
				7.14	15.30	2.74	6.29	58.36	
	4	(20) 10d	(20) 10d	1605	3440	615	1415	16345	4.43
				7.14	15.30	2.74	6.29	72.71	
TBE6	1	(20) 10d x 1½"	(20) 10d x 1½"	1760	3220	490	1585	8290	8.99
				7.83	14.32	2.18	7.05	36.88	
	2	(20) 10d	(20) 10d	1760	3540	490	1585	13680	7.42
				7.83	15.75	2.18	7.05	60.85	
	3	(20) 10d	(20) 10d	1760	3540	490	1585	18750	6.78
				7.83	15.75	2.18	7.05	83.41	
	4	(20) 10d	(20) 10d	1760	3540	490	1585	23820	6.46
				7.83	15.75	2.18	7.05	105.96	

1. Factored resistances are for two TBEs only. Wood factored bearing resistance may be added as shown in the table.
2. Factored bearing resistances shown assume Q_r/A_b and Q_r'/A_b' = 812 psi (5.60 MPa) for D.Fir-L and 614 psi (4.24 MPa) for S-P-F. See clause 6.5.4 TPIC 2014 for required bearing reinforcement when compression loads are applied to both sides of truss member.
3. Factored uplift resistances have been increased 15% for short term load duration with no further increase allowed; reduce resistances by 15% for standard term load duration.
4. Factored resistances are determined by nail shear calculations or tests of the metal connectors. The attached wood members must be designed to withstand the loads imposed by the nails.
5. Use lower of top plate or wood truss species.
6. Total bearing length, TBL, equals the plate width plus simulated bearing length provided by the TBE. TBE4 = 3½" plate width; TBE6 = 5½" plate width.

Truss Connector

The TC truss connector is an ideal connector for scissor trusses and can allow horizontal movement up to 1¼". 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

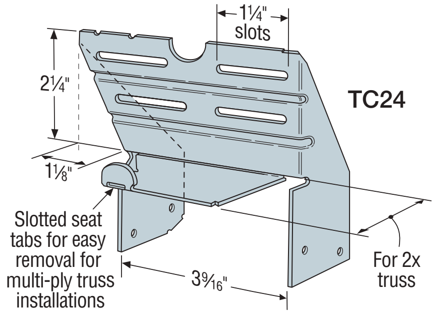
Finish: Galvanized

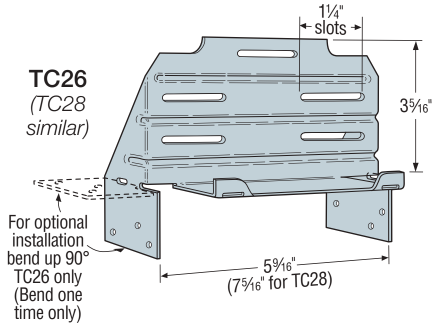
Installation:

- 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 centre 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.)

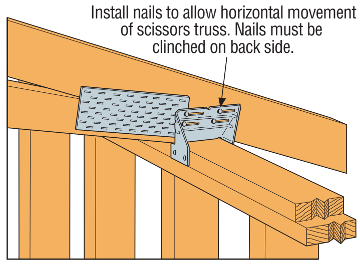
Optional TC Installation:

- 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.





Model	Fasteners		Factored Uplift Resistance (K_D = 1.15)	
	Truss	Wall Plates	D.Fir-L	S-P-F
			lb.	lb.
			kN	kN
TC24	(4) 10d	(4) 10d	605	430
			2.69	1.91
TC26	(5) 10d	(6) 10d	1015	720
			4.51	3.20
TC28	(5) 10d	(6) 10d	1015	720
			4.51	3.20

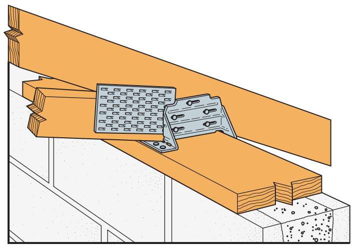


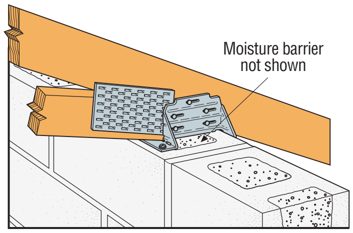
Typical TC24 Installation

Optional TC Installation

Model	Fasteners		Factored Uplift Resistance (K_D = 1.15)	
	Truss	Wall Plates	D.Fir-L	S-P-F
			lb.	lb.
			kN	kN
TC26	(5) 10d x 1½"	(6) 10d x 1½"	810	660
			3.60	2.94
	(5) 10d	(6) 10d	930	660
			4.14	2.94

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
2. Grout strength is 15 MPa 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. TC26 fastened to grouted concrete block with (6) ³⁄₁₆" x 2¼" Titen screws has a factored uplift resistance of 275 lb. (1.22 kN).
6. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.


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

HTC

Heavy Truss Clip

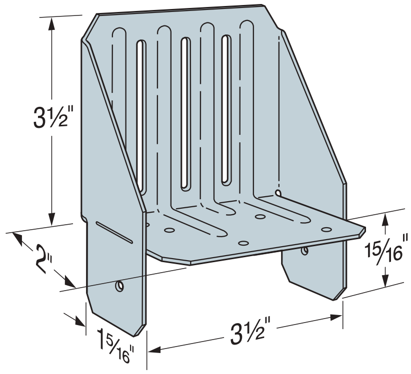
For alignment control between a roof truss and nonbearing walls; the 2½" slot permits vertical truss chord movement when loads are applied.

Material: 18 gauge

Finish: Galvanized

Installation:

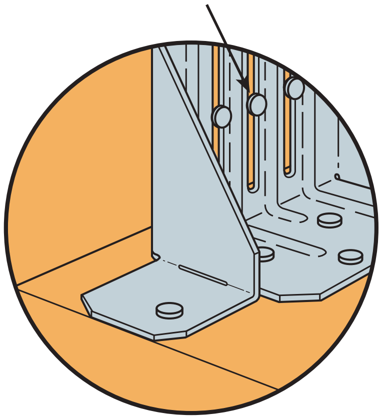
- Use all specified fasteners; see General Notes
- The HTC has a 2½" slot to accommodate truss movement
- This connector has high lateral capacity
- The S/HTC is available for steel truss applications



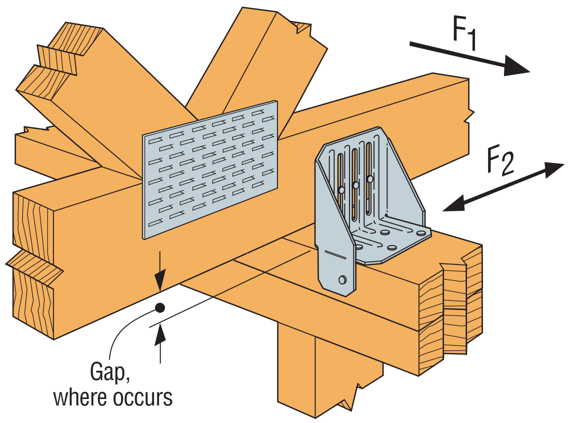
HTC4

Model No.	Dimensions	Fasteners		Factored Resistance (K_D = 1.15)			
				Without Gap[2]		With 1¼" Gap[3]	
	Top Plate	Base	Slot	F_1	F_2	F_1	F_2
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
D.Fir-L							
HTC4	2x4 plate	(6) 10d	(3) 10d	735	445	145	470
				3.27	1.98	0.65	2.09
	2x6 plate	(6) 10d	(3) 10d	910	465	265	460
				4.05	2.07	1.18	2.05
S-P-F							
HTC4	2x4 plate	(6) 10d	(3) 10d	530	315	105	340
				2.36	1.40	0.47	1.51
	2x6 plate	(6) 10d	(3) 10d	650	330	190	330
				2.90	1.47	0.85	1.47

1. Factored resistances have been increased 15% for wind or earthquake loading with no further increase allowed; reduce where other load durations govern.
2. Truss or rafter must be bearing on top plate to achieve factored resistances under "Without Gap."
3. Installed with maximum 1¼" space between rafter or truss and top plate, use values under "With 1¼" Gap." Where resistances are not required, space is not limited to 1¼".
4. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.



Typical HTC4 Installation on a 2x6 or Larger Plate



Typical HTC4 Installation on a 2x4 Plate

STC/STCT/DTC

Roof Truss Clips

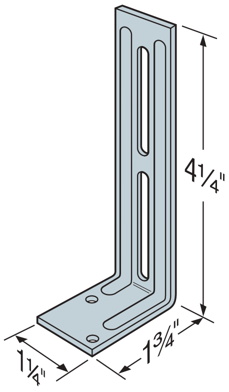
For alignment control between a roof truss and nonbearing walls; the 1½" slot permits vertical truss chord movement when loads are applied.

Material: 18 gauge

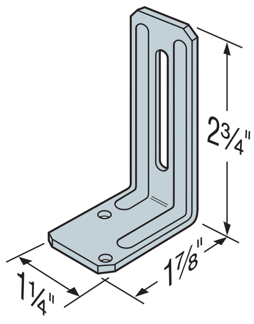
Finish: Galvanized

Installation:

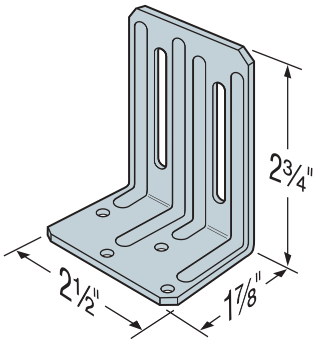
- Use all specified fasteners; see General Notes.
- Use STC or DTC depending on required resistances. STC, installed with Drywall Stop (DS), helps prevent fasteners tearing through the ceiling sheetrock (see illustration).
- Use STCT where truss or rafter is separated from the top plate of the nonbearing wall.
- Install slot nails in the middle of the slot.
- Not intended for floor applications.



STCT



STC



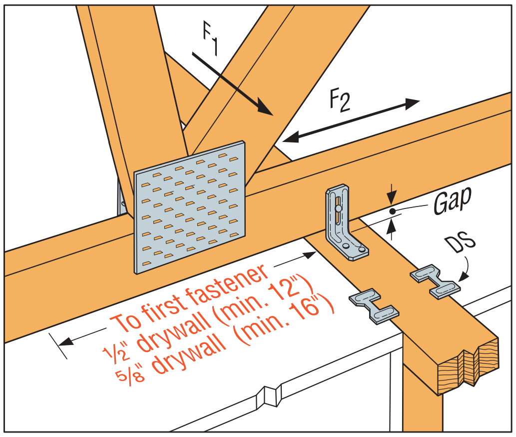
DTC

Model No.	Dimensions (in.)		Fasteners		Factored Resistance (K_D = 1.15)							
					D.Fir-L				S-P-F			
					Without Gap[2]		¼" Max. Gap		Without Gap[2]		¼" Max. Gap	
	Plate Base	Vertical Leg	Base	Slot	F_1	F_2	F_1	F_2	F_1	F_2	F_1	F_2
					lb.	lb.	lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN	kN	kN
STC	1¼ x 1⅞	1¼ x 2¾	(2) 8d	(1) 8d	155	85	70	60	110	60	50	45
					0.69	0.38	0.31	0.27	0.49	0.27	0.22	0.20
STCT	1¼ x 1¾	1¼ x 4¼	(2) 8d	(1) 8d	—	—	—	—	—	—	—	—
					—	—	—	—	—	—	—	—
DTC	2½ x 1⅞	2½ x 2¾	(4) 8d	(2) 8d	240	395	155	250	170	280	110	175
					1.07	1.76	0.69	1.11	0.76	1.25	0.49	0.78

1. Factored resistances may not be increased for short-term loading.
2. Truss or rafter must be bearing on top plate to achieve the factored resistances under "Without Gap."
3. Installed with maximum ¼" space between rafter or truss and top plate under "With ¼ Gap." Where resistances are not required, space is not limited to ¼".
4. **Nails:** 8d = 0.131" dia. x 2½" long. See pp. 27–28 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 STC Installation with DS

Plated Truss Connectors

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.

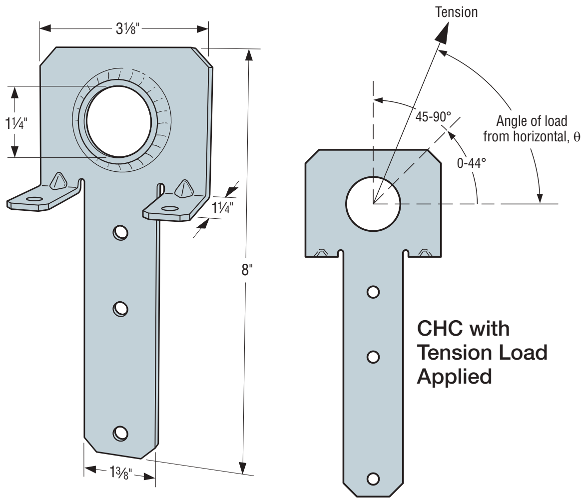
Features:

- 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 factored resistance



CHC
U.S. Patent 8,720,129

Single Part Safe Working Loads

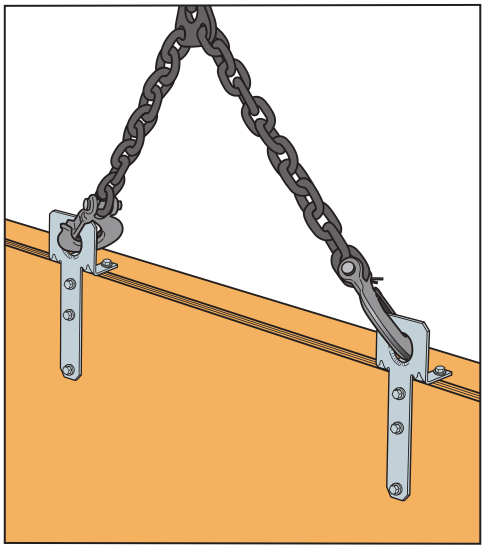
Model No.	Fasteners[4]		Angle from Horizontal, θ	D.Fir-L/ S-P-F
	Top	Face		
CHC	(2) ¼" x 3" SDS	(3) ¼" x 3" SDS	0–44	610
			45–90	975

1. Safe working 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. Safe working loads are based on installation over sheathing on stud walls with double 2x top plates and max. ⅝" sheathing.
4. Fasteners require full penetration into the framing members.
5. All lifting devices and spreader bars that are used in conjuction 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.

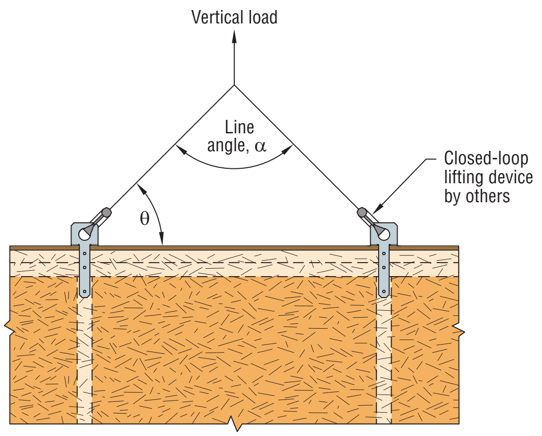
Safe Working Loads for Two Parts

Model No.	Type of Connection	Angle from Horizontal, θ	Line Angle, α	D.Fir-L/ S-P-F
CHC	1	30	120	610
		45	90	1380
		60	60	1690
	2	90	—	1950

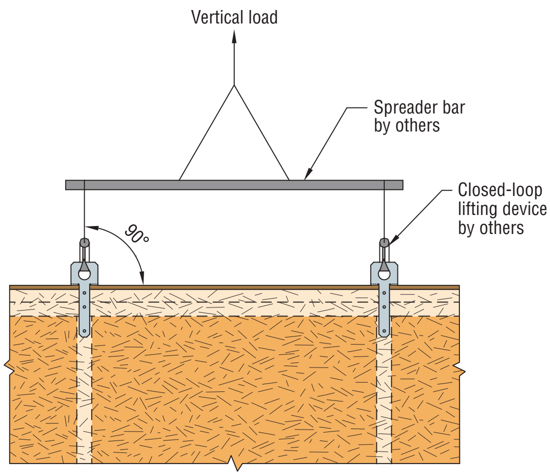
See footnotes above.



Typical CHC Installation Using Two Parts



1 Typical CHC Installation with Angular Loading



2 Typical CHC Installation with Spreader Bar

Plated Truss Connectors

Straps and Ties

SIMPSON Strong-Tie®

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. New additions to the line provide even more options.

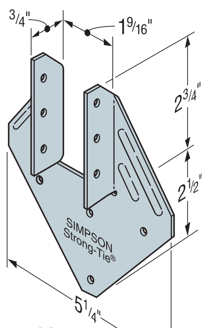
- H10AR — The heavy-duty design of the H10A available with a 2" wide throat to accommodate rough lumber
- H10A-2 — The H10A design with a 3" throat for double 2x members
- H2ASS, H2.5ASS and H10ASS — Popular ties now available in stainless steel

Material: See table

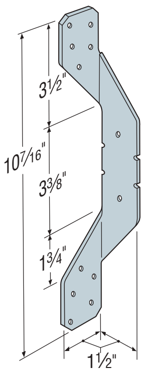
Finish: Galvanized. H7Z and H11Z — ZMAX® coating. Some models available in stainless steel or ZMAX; see Corrosion Information, pp. 20–24 or visit **strongtie.com**.

Installation:

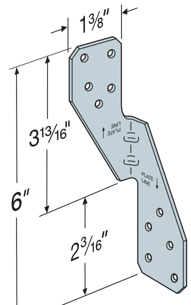
- Use all specified fasteners; see General Notes.
- H1 can be installed with flanges facing inward (reverse of H1 installation drawing; number 1).
- H2.5T, H3 and H6 ties are shipped in equal quantities of right and left versions (right versions shown).
- Hurricane ties do not replace solid blocking.
- 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.



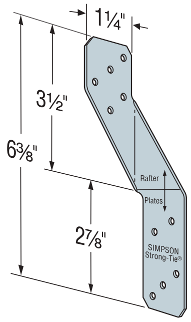
H1



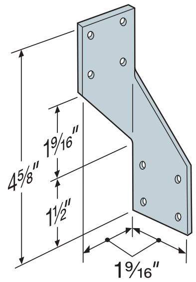
H2A
(H2ASS similar)



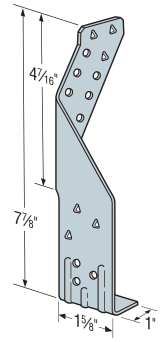
H2.5A
(H2.5ASS similar)



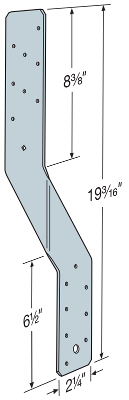
H2.5T



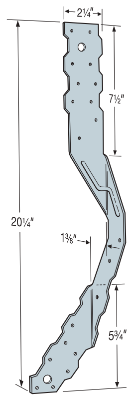
H3



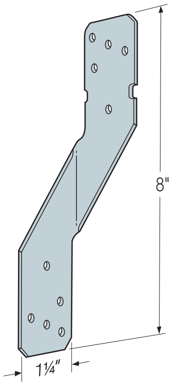
TSP



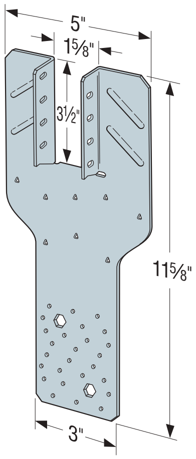
H6



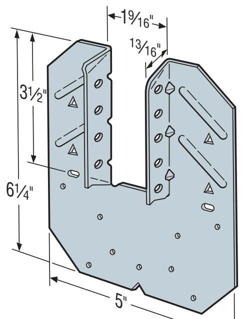
H7Z



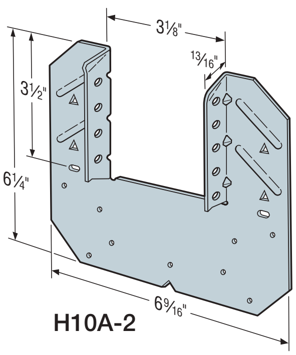
H8



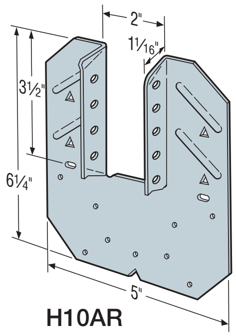
H10S



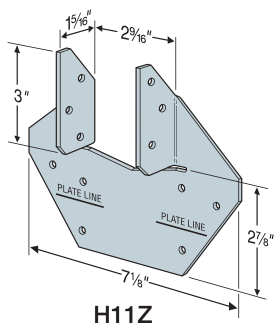
H10A
(H10ASS similar)



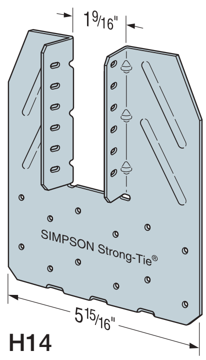
H10A-2



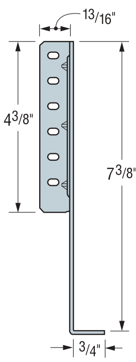
H10AR



H11Z



H14



H14
Profile

Seismic and Hurricane Ties (cont.)

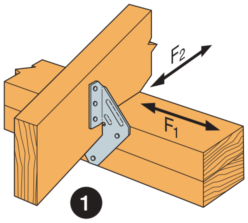
These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

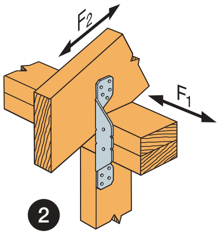
Model No.	Ga.	Fasteners			Factored Resistance (K_D = 1.15)					
					D.Fir-L			S-P-F		
		To Rafters/ Truss	To Plates	To Studs	Uplift	Lateral		Uplift	Lateral	
						F_1	F_2		F_1	F_2
					lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN
H1	18	(6) 8d x 1½"	(4) 8d	—	740	685	300	680	485	215
					3.29	3.05	1.33	3.02	2.16	0.96
SS H2A	18	(5) 8d x 1½"	(2) 8d x 1½"	(5) 8d x 1½"	830	220	75	590	155	55
					3.69	0.98	0.33	2.62	0.69	0.24
SS H2.5A	18	(5) 8d	(5) 8d	—	805	160	160	755	160	160
					3.58	0.71	0.71	3.36	0.71	0.71
H2.5T	18	(5) 8d	(5) 8d	—	835	175	210	740	160	210
					3.71	0.78	0.93	3.29	0.71	0.93
SS H3	18	(4) 8d	(4) 8d	—	740	180	265	615	125	190
					3.29	0.80	1.18	2.74	0.56	0.85
H6	16	—	(8) 8d	(8) 8d	1585	1085	—	1125	770	—
					7.05	4.83	—	5.00	3.43	—
H7Z	16	(4) 8d	(2) 8d	(8) 8d	1390	670	—	990	475	—
					6.18	2.98	—	4.40	2.11	—
SS H8[3]	18	(5) 10d x 1½"	(5) 10d x 1½"	—	1120	—	—	1025	—	—
					4.98	—	—	4.56	—	—
SS H10A[9]	18	(9) 10d x 1½"	(9) 10d x 1½"	—	1735	795	410	1505	565	290
					7.72	3.54	1.82	6.69	2.51	1.29
H10AR	18	(9) 10d x 1½"	(9) 10d x 1½"	—	1485	690	430	1220	570	305
					6.61	3.07	1.91	5.43	2.54	1.36
H10A-2	18	(9) 10d x 1½"	(9) 10d x 1½"	—	1835	1275	430	1645	880	305
					8.16	5.67	1.91	7.32	3.91	1.36
H10S[7,8]	18	(8) 8d x 1½"	(8) 8d x 1½"	(8) 8d	1465	795	315	1040	565	225
					6.52	3.54	1.40	4.63	2.51	1.00
H11Z	18	(6) 16d x 2½"	(6) 16d x 2½"	—	1095	920	545	780	655	390
					4.87	4.09	2.42	3.47	2.91	1.73
H14	18	1 (12) 8d x 1½"	(13) 8d	—	2390	855	320	1805	610	230
					10.63	3.80	1.42	8.03	2.71	1.02
		2 (12) 8d x 1½"	(15) 8d	—	2390	855	320	1805	610	230
					10.63	3.80	1.42	8.03	2.71	1.02
TSP	16	(9) 10d x 1½"	(6) 10d x 1½"	—	1295	440	—	920	310	—
					5.76	1.96	—	4.09	1.38	—
		(9) 10d x 1½"	(6) 10d	—	1560	440	—	1105	310	—
					6.94	1.96	—	4.92	1.38	—

1. Factored resistances have been increased 15% for short term loading; no further increase is allowed.
2. Factored resistances are for one anchor. A minimum rafter thickness of 2½" must be used when framing anchors are installed on the same side of the plate (exception: H2.5A).
3. H8 factored uplift resistances for stud-to-bottom plate installations are 595 lb. (2.65 kN) for D.Fir-L and 390 lb. (1.74 kN) for S-P-F.
4. When cross-grain bending or cross-grain tension cannot be avoided, mechanical reinforcement to resist such forces should be considered.
5. Hurricane ties are shown installed on the outside of the wall for clarity. Installation on the inside of the wall is acceptable. For a continuous load path, connections at the top and bottom of the wall must be on the same side of the wall (see technical bulletin T-HTIECONPATH).
6. Factored resistances in the F_1 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.
7. H10S can have the stud offset a maximum of 1" from the rafter (centre to centre) for a reduced uplift of 1435 lb. (6.38 kN) D.Fir-L and 1015 lb. (4.51 kN) S-P-F.
8. H10S nails to plates are optional for uplift but required for lateral loads.
9. H10A may be field-bent up to a slope of 6/12. Multiply the tabulated uplift value x 0.75. Full tabulated lateral resistances apply.
10. The factored resistances 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**.
11. D.Fir-L/S-P-F factored uplift resistances 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 495 lb. (2.20 kN).
12. **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. 27–28 for other nail sizes and information.

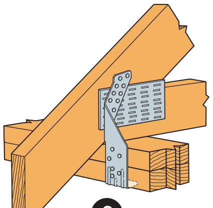
Seismic and Hurricane Ties (cont.)



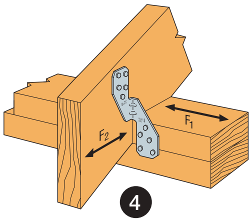
1 H1 Installation



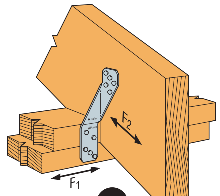
2 H2A Installation



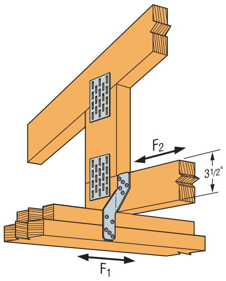
3 TSP Installation



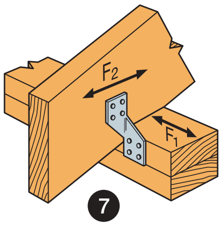
4 H2.5A Installation
(Nails into both top plates)



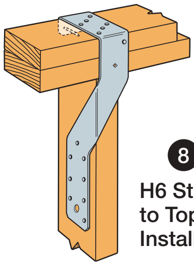
5 H2.5T Installation
(Nails into both top plates)



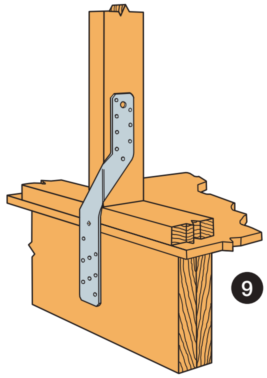
6 H2.5T Installation



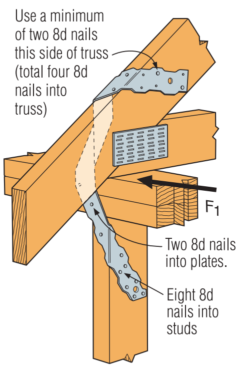
7 H3 Installation
(Nails into upper top plate)



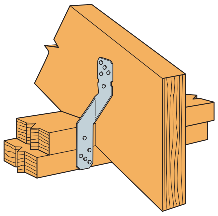
8 H6 Stud to Top Plate Installation



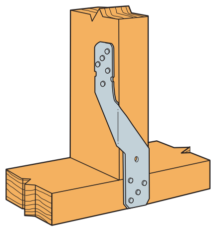
9 H6 Stud to Band Joist Installation



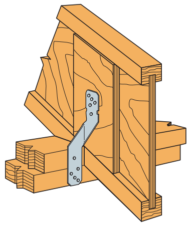
10 H7Z Installation



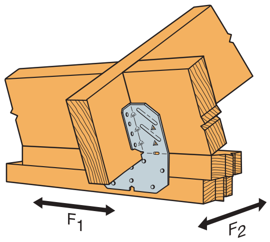
11 H8 Attaching Rafter to Double Top Plates



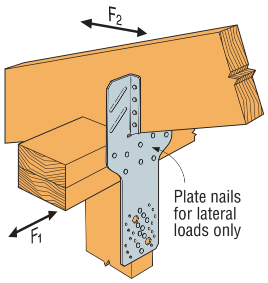
12 H8 attaching Stud to Sill
((4) 8d into plate, (5) 8d into stud)



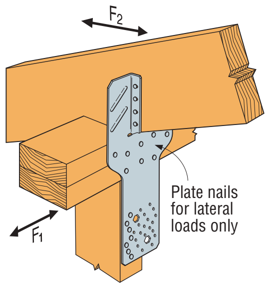
13 H8 attaching I-Joist to Double Top Plates



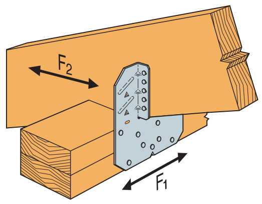
14 H10A Field-Bent Installation



15 H10S Installation



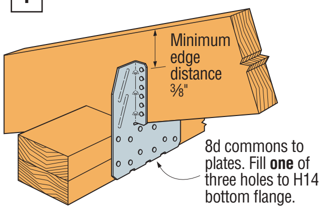
16 H10S Installation with Stud Offset



17 H10A Installation

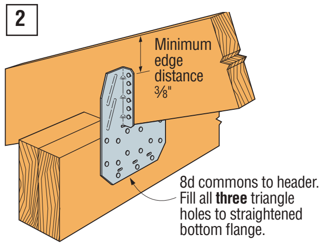
H10A optional positive angle nailing connects shear blocking to rafter. Use 8d common nails. Slot allows maximum field-bending up to a pitch of 6/12, use 75% of the table uplift value; bend one time only.

1



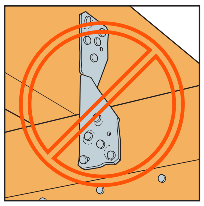
18 H14 Installation to Double Top Plates

2



19 H14 Installation to Double 2x Header

Avoid a Misinstallation



Do not make new holes or overdrive nails.

Seismic and Hurricane Ties (cont.)

Considerations for Hurricane Tie Selection

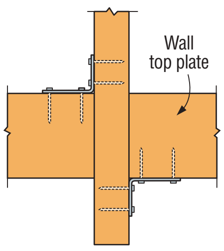
1. What is the uplift resistance?
2. What is the parallel-to-plate resistance?
3. What is the perpendicular-to-plate resistance?
4. What is the species of wood used for the rafter and the top plates? (Select the load table based on the lowest performing species of wood.)
5. Will the hurricane tie be nailed into both top plates or the upper top plate only?
6. What load or loads will the hurricane tie be taking?

> Factored resistances for more than one direction for a single connection cannot be added together. A design load which can be divided into components in the directions given must be evaluated as follows:
>
> Factored Uplift / Uplift Resistance + Factored Parallel to Plate / Parallel to Plate Resistance + Factored Perpendicular to Plate / Perpendicular to Plate Resistance < 1.0.
>
> The three terms in the unity equation are due to possible directions that exist to generate force on a hurricane tie. The actual number of terms used in the equation for each condition is dependant on designer's method of calculating wind forces and the utilization of the tie in the structural system.

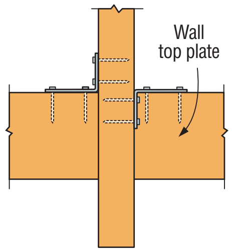
7. Select hurricane tie based on performance, application, installed cost and ease of installation.

Hurricane Tie Installations To Achieve Twice the Capacities (Top View)

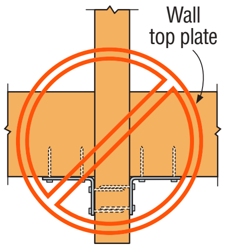
Both connectors shall be same model.



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.

Straps and Ties

Seismic and Hurricane Ties

The H connector series provides wind and seismic ties for trusses and rafters. 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 H16-2 series has a presloped seat of 5:12, for double trusses.

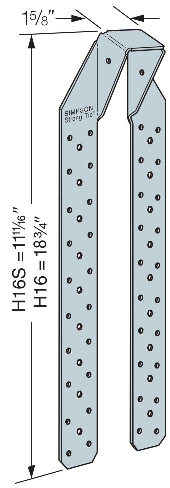
The HGA10 attaches to gable trusses and provides good lateral wind resistance. The HS24 attaches the bottom chord of a truss or rafter at pitches from 0:12 to 4:12 to double 2x4 top plates. Double-shear nailing allows for higher lateral resistance.

Material: See table

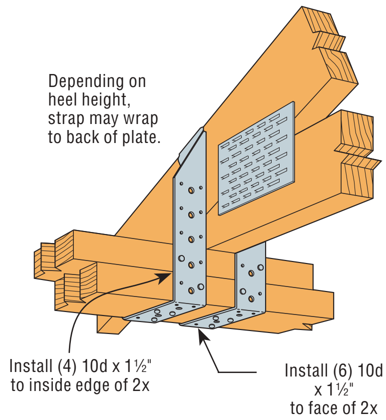
Finish: Galvanized. Some models available in stainless steel or ZMAX®; see Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes
- HS24 requires slant nailing only when bottom chord of truss or rafter has no slope
- Hurricane Ties do not replace solid blocking
- HGA10KT comes with SDS screws provided



H16 and H16S
Presloped at 5/12.
Truss/rafter pitch of 3/12 to 7/12 is acceptable.



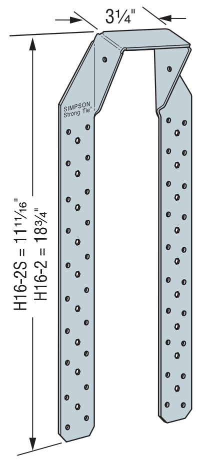
H16 Installation

SIMPSON Strong-Tie®

Seismic and Hurricane Ties (cont.)

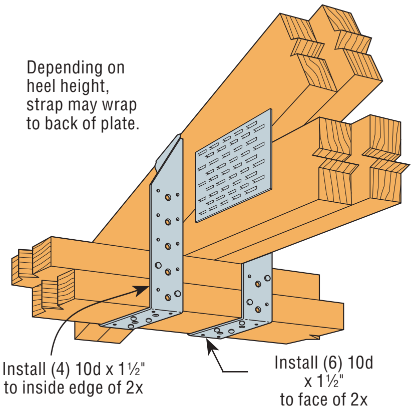
Model No.	Ga.	Fasteners: To Rafters/Truss	Fasteners: To Plates	Factored Resistance (K_D = 1.15) D.Fir-L Uplift	D.Fir-L Lateral F_1	D.Fir-L Lateral F_2	S-P-F Uplift	S-P-F Lateral F_1	S-P-F Lateral F_2
				lb.	lb.	lb.	lb.	lb.	lb.
				kN	kN	kN	kN	kN	kN
HGA10KT[2]	14	(4) ¼" x 1½" SDS	(4) ¼" x 3" SDS	750	1604	1615	660	1410	1420
				3.34	7.14	7.19	2.94	6.28	6.32
HS24[4]	18	(8) 8d x 1½" and (2) 8d slant	(8) 8d	1145	1210	1600	805	860	1135
				5.10	5.38	7.12	3.59	3.83	5.05
H16	18	(2) 10d x 1½"	(10) 10d x 1½"	1870	—	—	1330	—	—
				8.32	—	—	5.92	—	—
H16S	18	(2) 10d x 1½"	(10) 10d x 1½"	1870	—	—	1330	—	—
				8.32	—	—	5.92	—	—
H16-2	18	(2) 10d x 1½"	(10) 10d x 1½"	1870	—	—	1330	—	—
				8.32	—	—	5.92	—	—
H16-2S	18	(2) 10d x 1½"	(10) 10d x 1½"	1870	—	—	1330	—	—
				8.32	—	—	5.92	—	—

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed.
2. Factored F_2 resistances shown are for loading applied into the connector. For loading applied away from the connector the factored resistances are 1020 lb. (4.54 kN) for D.Fir-L and 425 lb. (1.89 kN) for S-P-F.
3. When cross-grain bending or cross-grain tension cannot be avoided, mechanical reinforcement to resist such forces should be considered.
4. HS24 factored resistances without slant nailing are 885 lb. (3.94 kN) D.Fir-L and 630 lb. (2.80 kN) S-P-F for uplift, 985 lb. (4.38 kN) D.Fir-L 700 lb. (3.11 kN) S-P-F for F_1, 930 lb. (4.14 kN) D.Fir-L and 655 lb. (2.91 kN) S-P-F for F_2.
5. **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. 27–28 for other nail sizes and information.

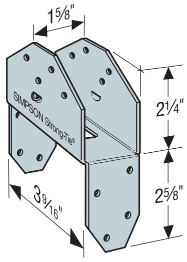


H16-2 and H16-2S

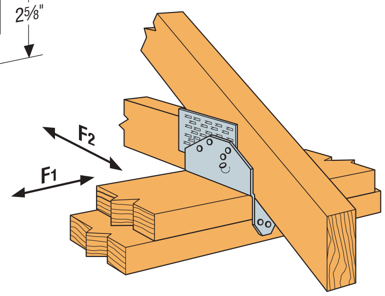
Presloped at 5/12. Pitch of 3/12 to 7/12 is acceptable.



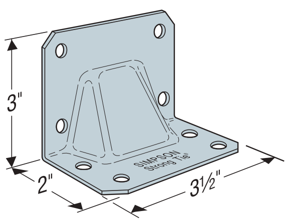
H16-2 Installation



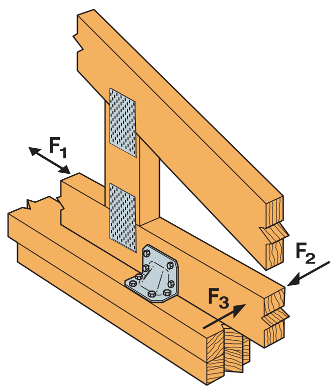
HS24
U.S. Patents 5,603,580



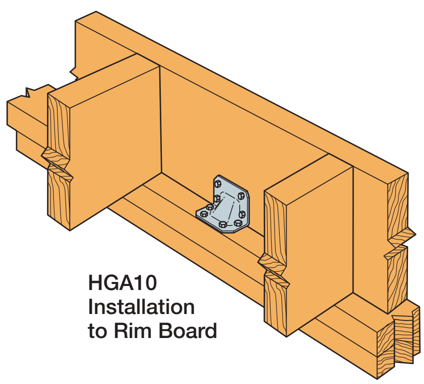
HS24 Installation



HGA10



HGA10 Installation to Double Top Plates



HGA10 Installation to Rim Board

Straps and Ties

LGT/MGT/VGT

Girder Tiedowns

The LGT, MGT and VGT are girder tiedowns for moderate- to high-load 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.

The variable girder tiedown (VGT) is a higher capacity alternative to the LGT and MGT for girder trusses. It attaches with 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 overhang.

Material: VGT — 7 gauge, LGT2 — 14 gauge, MGT, LGT3, LGT4 — 12 gauge

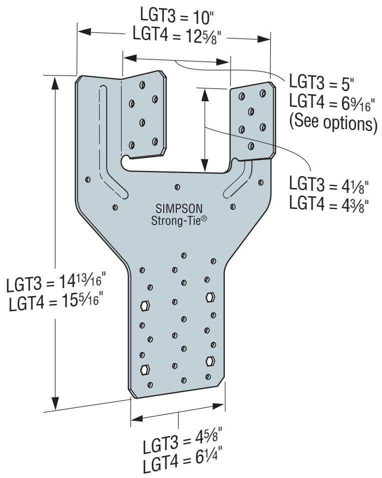
Finish: Galvanized

Installation:

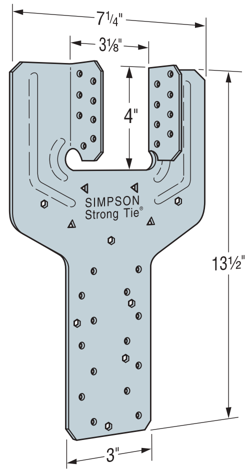
- Before installing fasteners, ensure LGT3-SDS2.5 makes complete contact with bottom of truss.
- Strong-Drive SDS Heavy-Duty Connector screws included with LGT3, LGT4 and VGT series.
- Strong-Drive SDS Heavy-Duty Connector screws driven through truss plates must be approved by the Truss Designer. Predrilling using a 5⁄32" bit is required.
- 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 — The product can be installed in a single application or in pairs to achieve a higher uplift capacity.
- 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 and LGT4-SDS3 — 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 p. 342 for masonry applications.

Options:

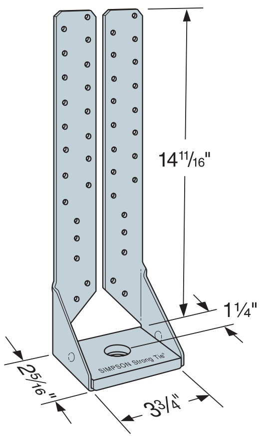
- LGT3 and LGT4 are available with reduced widths of W = 4 13⁄16" and W = 6⅜" — order as LGT3N-SDS2.5 and LGT4N-SDS3.



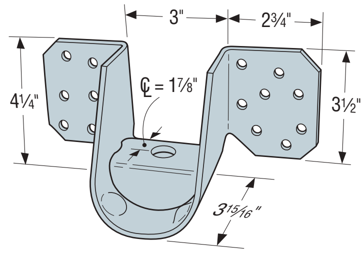
LGT3-SDS2.5
(LGT4-SDS3 similar)



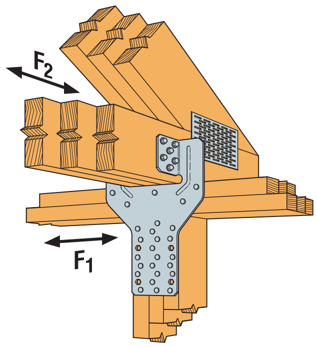
LGT2



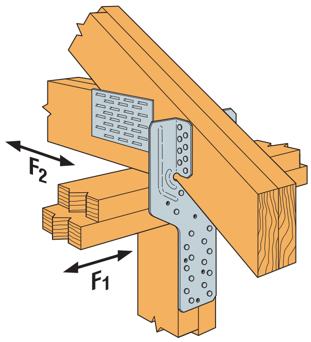
MGT



VGT
U.S. Patent
7,707,785



Typical LGT3-SDS2.5 Installation



Typical LGT2 Installation

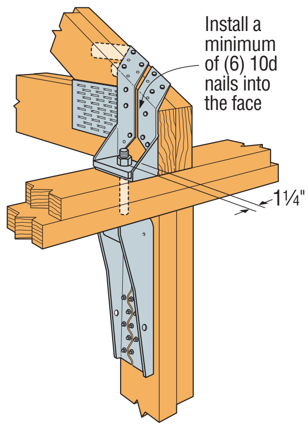
Straps and Ties

Girder Tiedowns (cont.)

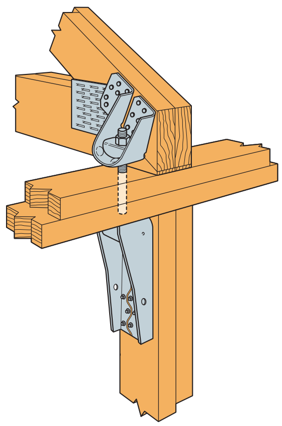
These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Qty.	No. of Plies	Fasteners		Factored Resistance (K_D = 1.15)					
					D.Fir-L			S-P-F		
			Studs or Anchor	Girder Truss	Uplift	Lateral		Uplift	Lateral	
						F_1	F_2		F_1	F_2
					lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN
LGT2	1	2 ply	(14) 10d[4]	(16) 10d	3670	1170	285	2605	830	200
					16.33	5.20	1.27	11.59	3.69	0.89
LGT3-SDS2.5	1	3 ply	(26) 10d	(12) ¼" x 2½" SDS	6415	1335	670	4930	945	475
					28.54	5.94	2.98	21.93	4.20	2.11
LGT4-SDS3	1	4 ply	(30) 10d[5]	(16) ¼" x 3" SDS	6030	2785	1125	3980	1980	800
					26.82	12.39	5.00	17.70	8.81	3.56
MGT	1	2 ply min.	(1) ⅝" diameter	(22) 10d	5610	—	—	3985	—	—
					24.96	—	—	17.73	—	—
VGT	1	2 ply min.	(1) ⅝" diameter	(16) ¼" x 3" SDS	8600	—	—	6195	—	—
					38.26	—	—	27.56	—	—
	2	2 ply min.	(2) ⅝" diameter	(32) ¼" x 3" SDS	11690	—	—	8420	—	—
					52.00	—	—	37.46	—	—
VGTR/L	1	2 ply min.	(1) ⅝" diameter	(16) ¼" x 3" SDS	3475	—	—	2505	—	—
					15.46	—	—	11.14	—	—
	2	2 ply min.	(2) ⅝" diameter	(32) ¼" x 3" SDS	6950	—	—	5010	—	—
					30.92	—	—	22.29	—	—

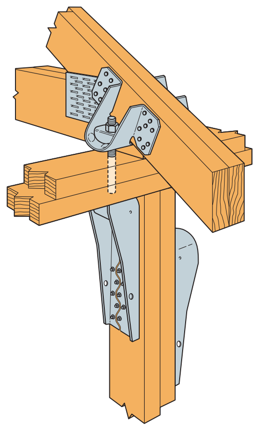
1. Attached members must be designed to resist the factored resistances.
2. Factored resistances have been increased 15% for uplift with no further increase allowed; reduce where other loads govern.
3. Additional anchorage products to be designed by others.
4. LGT2 — F_2 factored resistance requires installation of (4) 10d nails in optional nail holes.
5. LGT4 — F_2 factored resistance requires installation of (7) 10d nails in optional nail holes.
6. MGT can be installed with straps vertical for full table value provided 26-10d nails are installed to either a solid header or minimum double 2x6 web.
7. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.



Typical MGT Installation with HDU4



Typical VGTR Single Installation with HDU2



Typical VGT Double Installation with HDU4's

Straps and Ties

HGT

Heavy Girder Tiedowns

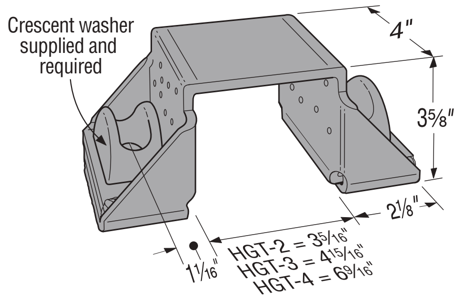
The HGT heavy girder tie-down offers the highest uplift capacity for girders and can be installed on trusses and beams with top chord slopes from 3:12 to 8:12.

Material: 7 gauge

Finish: Simpson Strong-Tie® gray paint

Installation:

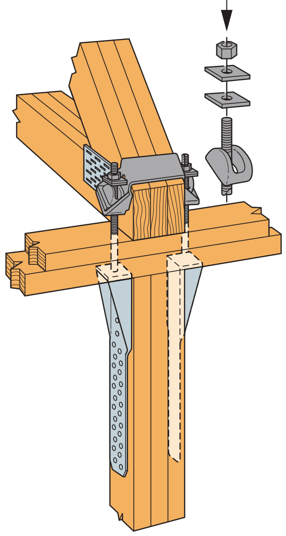
- Install two LBP⅝ washers on top of each crescent washer. LBP⅝ washers are not included with HGT and must be ordered separately. Crescent washers come with the HGT.
- Anchorage from HGT to holdown below shall be with ⅝" diameter ASTM A307 Grade A bolts or threaded rod.
- See p. 344 for masonry or concrete installations.



HGT-2
(HGT-3, HGT-4 similar)

Model No.	Qty.	No. of Plies	O.C. Dimension Between Anchors (in.)	Fasteners		Factored Uplift Resistance (K_D = 1.15)	
				Anchor Bolts	Girder Truss	D.Fir-L	S-P-F
						lb.	lb.
						kN	kN
HGT-2	1	2 ply	5¾	(2) ⅝" ϕ	(16) 10d	12140	9280
						54.00	41.28
HGT-3	1	3 ply	7⅜	(2) ⅝" ϕ	(16) 10d	12140	9280
						54.00	41.28
HGT-4	1	4 ply	9	(2) ⅝" ϕ	(16) 10d	12140	9280
						54.00	41.28

1. Factored resistances have been increased 15% for earthquake or wind load; reduce where other load durations govern.
2. Attached members must be designed to resist the applied loads.
3. Anchorage must be designed by others.
4. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.



Typical HGT-3 Installation with HTT5s

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:

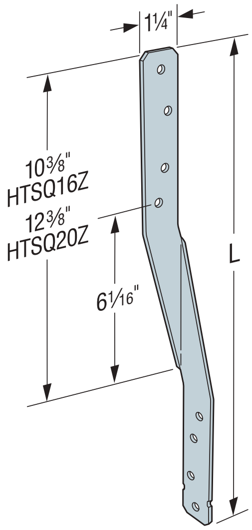
- Quicker and more consistent installation than bolts
- Better fastener withdrawal resistance than nails
- Corrosion resistance finish options
- HTSQxxZ-KT is a 30-piece kit that comes with SDS screws

Material: 14 gauge

Finish: ZMAX coating or stainless steel

Installation:

- Use all specified fasteners; see General Notes

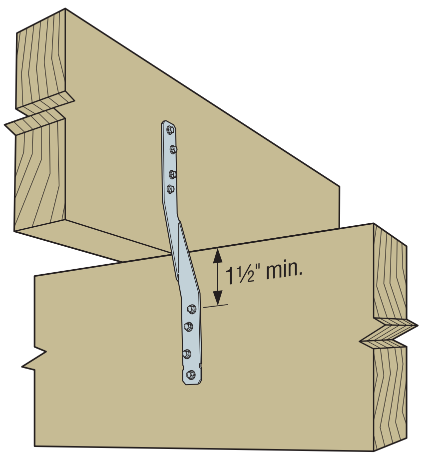


HTSQ16Z
(others similar)

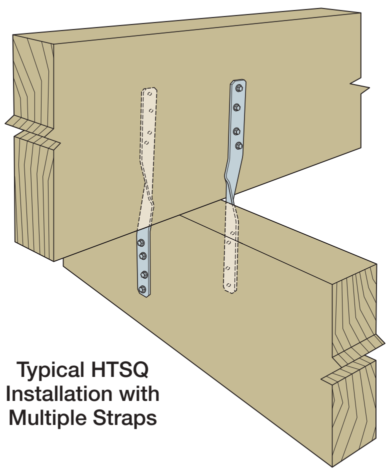
These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	L (in.)	Fasteners Total	Factored Resistance D.Fir-L (K_D = 1.00)	Factored Resistance D.Fir-L (K_D = 1.15)	Factored Resistance S-P-F (K_D = 1.00)	Factored Resistance S-P-F (K_D = 1.15)
			lb.	lb.	lb.	lb.
			kN	kN	kN	kN
SS HTSQ16Z-KT or HTSQ16SS-SDS	16	(8) ¼" x 1½" SDS	1500	1725	1215	1395
			6.67	7.67	5.40	6.21
SS HTSQ20Z-KT or HTSQ20SS-SDS	20	(8) ¼" x 1½" SDS	1500	1725	1370	1575
			6.67	7.67	6.09	7.01

1. Factored resistances have been increased 15% for short term load duration; no further increase is permitted.
2. Install four fasteners into each member to achieve full capacity. HTSQ20 has two (2) extra holes per side to allow for installation flexibility.
3. Factored resistances shown are for one part.



Typical HTSQ16Z Installation



Typical HTSQ Installation with Multiple Straps

TS/LTS/MTS/HTS

Twist Straps

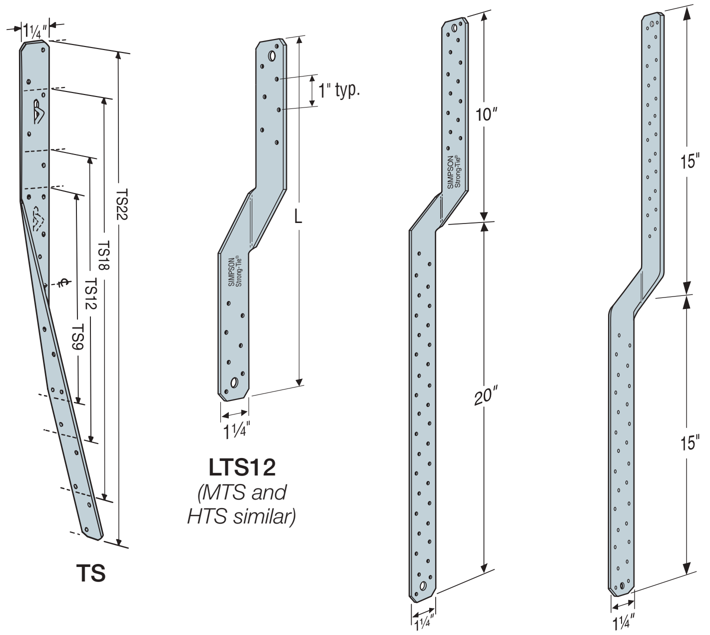
Twist straps provide a tension connection between two wood members. They resist uplift at the heel of a truss economically. The 3"-bend section eliminates interference at the transition points between wood members. TS twist straps come with an equal number of left and right hand units in each carton.

Material: LTS — 18 gauge; MTS/TS — 16 gauge; HTS — 14 gauge

Finish: Galvanized. Some products available in stainless steel and ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes
- TS should be installed in pairs to reduce eccentricity
- When LTS/MTS is installed as truss-to-top plate tie, install (3) 10d x 1½" nails to the underside of the plate and (3) 10d x 1½" nails into the edge of the double top plate
- LTS, MTS and HTS are available with the bend reversed. Specify "-REV" after model number, such as MTS16-REV

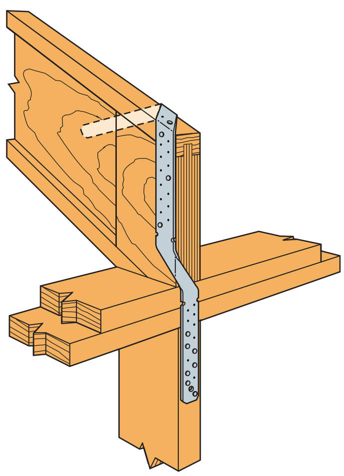


TS

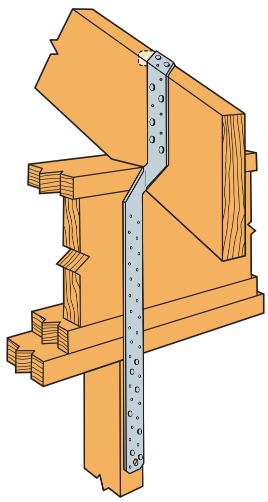
LTS12
(MTS and HTS similar)

MTS30
(HTS30 similar)

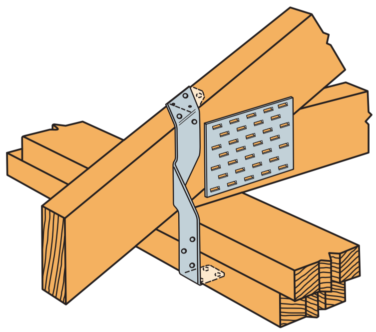
HTS30C
(MTS30C similar)



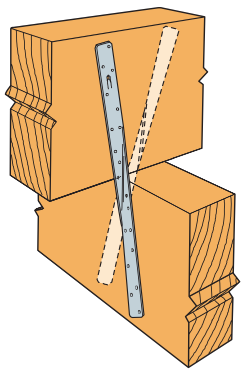
MTS30 Installation with I-Joist Rafter



Typical MTS30 Installation



MTS Installation as a Truss-to-Top Plate Tie



Typical TS Installation

Straps and Ties

Twist Straps (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	L (in.)	Fasteners (Total)	Factored Resistance (K_D = 1.15) D.Fir-L lb. / kN	Factored Resistance (K_D = 1.15) S-P-F lb. / kN
TS9	9	(8) 16d	1125 / 5.00	1040 / 4.63
TS12	11⅝	(10) 16d	1410 / 6.27	1300 / 5.78
TS18	17¾	(14) 16d	1970 / 8.76	1820 / 8.10
TS22	21⅝	(18) 16d	2125 / 9.45	2125 / 9.45
LTS12 (SS)	12	(12) 10d x 1½"	1015 / 4.52	720 / 3.20
LTS16	16	(12) 10d x 1½"	1015 / 4.52	720 / 3.20
LTS18 (SS)	18	(12) 10d x 1½"	1015 / 4.52	720 / 3.20
LTS20	20	(12) 10d x 1½"	1015 / 4.52	720 / 3.20
MTS12	12	(14) 10d x 1½"	1570 / 6.98	1180 / 5.25
MTS16	16	(14) 10d x 1½"	1570 / 6.98	1180 / 5.25
MTS18	18	(14) 10d x 1½"	1570 / 6.98	1180 / 5.25
MTS20 (SS)	20	(14) 10d x 1½"	1570 / 6.98	1180 / 5.25
MTS30	30	(14) 10d x 1½"	1570 / 6.98	1180 / 5.25
MTS24C	24	(14) 10d x 1½"	1570 / 6.98	1180 / 5.25
MTS30C	30	(14) 10d x 1½"	1570 / 6.98	1180 / 5.25
HTS16	16	(16) 10d x 1½"	2050 / 9.12	1455 / 6.47
HTS20	20	(24) 10d x 1½"	2050 / 9.12	1455 / 6.47
HTS24	24	(24) 10d x 1½"	2050 / 9.12	1455 / 6.47
HTS28	28	(24) 10d x 1½"	2050 / 9.12	1455 / 6.47
HTS30	30	(24) 10d x 1½"	2050 / 9.12	1455 / 6.47
HTS30C	30	(24) 10d x 1½"	2050 / 9.12	1455 / 6.47

1. LTS12 through LTS20, MTS16 through MTS30, HTS24 through HTS30C (except HTS30) have additional nail holes.
2. Install half of the fasteners on each end of strap to achieve maximum factored resistance.
3. Factored resistances have been increased 15% for earthquake or wind loading. No further increase allowed; reduce where other loads govern.
4. All straps except the MTS30 and HTS30 have the twist in the centre of the strap.
5. Twist straps do not have to be wrapped over the truss to achieve the load.
6. Optional nail holes are provided on some straps.
7. When used as a truss-to-top plate tie multiply the tabulated values by 0.95 for LTS and 0.74 for MTS. HTS cannot be used in this application.
8. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

DSP/SSP/SP/SPH/RSP4/TSP

Stud Plate Ties

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

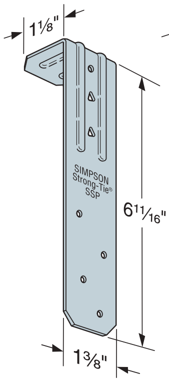
The stud plate tie series offers general solutions for connecting the stud to the top and bottom plates. All models can be used to make a connection to either the top or bottom plate, and several are suitable for double top plates and studs.

Material: DSP/SSP/SPH — 18 gauge; TSP — 16 gauge; all others — 20 gauge

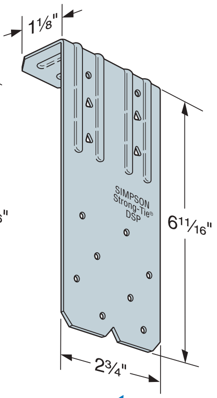
Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

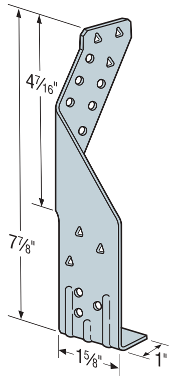
- Use all specified fasteners; see General Notes
- TSP/DSP/SSP — Sill-plate installation: fill all round holes
- TSP/DSP/SSP — Top-plate installation: fill all round and triangle holes
- SP1/SP2 — One of the 10d common stud nails is driven at a 45° angle through the stud into the plate



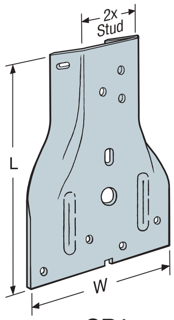
SSP
U.S. Patent
7,065,932
7,356,973



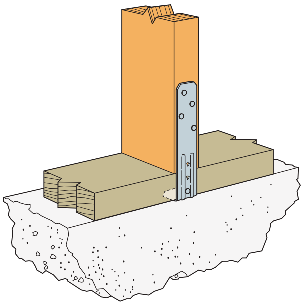
DSP
U.S. Patent
7,065,932
7,356,973



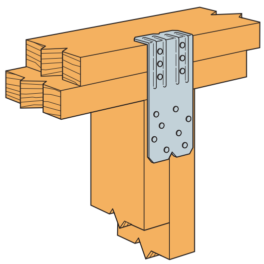
TSP
U.S. Patent
D618,085



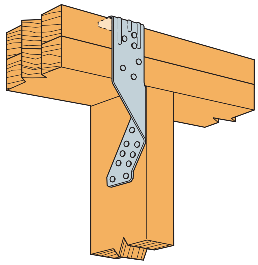
SP1
(SP2 similar)



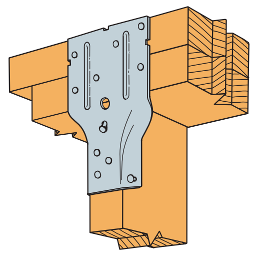
Typical SSP Installed to Sill Plate



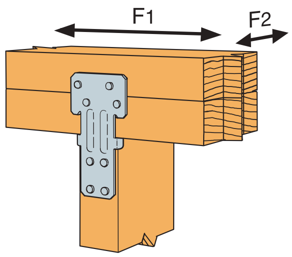
Typical DSP Installed to Top Plate



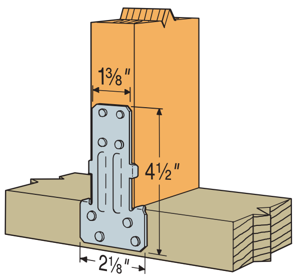
Typical TSP Installed to Top Plate



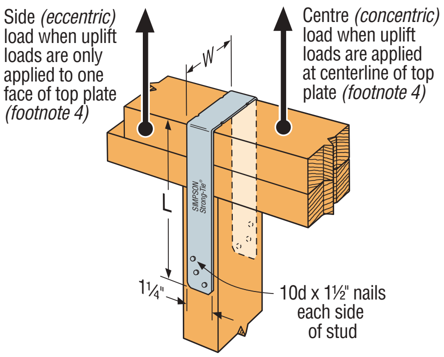
Typical SP2 Installation



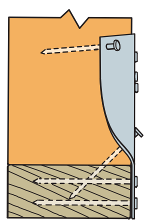
Typical RSP4 Stud to Double Top Plate
(See footnote 2)



Typical RSP4 Stud to Single Bottom Plate



Typical SP4 Installation
(SPH similar)



SP1 Nailing Profile

Straps and Ties

DSP/SSP/SP/SPH/RSP4/TSP

Stud Plate Ties (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Stud	Plate Width	Dimensions (in.) W	Dimensions (in.) L	Fasteners: Studs	Fasteners: Double Top Plate	Fasteners: Single Sill Plate	Factored Resistance (K_D = 1.15) D.Fir-L Double Top Plate	D.Fir-L Single Sill Plate	S-P-F Double Top Plate	S-P-F Single Sill Plate
								lb.	lb.	lb.	lb.
								kN	kN	kN	kN
Connector Type											
RSP4	2x	—	2⅛	4½	(4) 8d x 1½"	(4) 8d x 1½"	(4) 8d x 1½"	670	595	600	535
								2.98	2.65	2.67	2.38
SSP	2x	—	1⅜	6 11/16	(4) 10d x 1½"	(3) 10d x 1½"	(1) 10d x 1½"	570	535	570	535
								2.54	2.38	2.54	2.38
					(4) 10d	(3) 10d	(1) 10d	710	690	710	690
								3.16	3.07	3.16	3.07
SP1	2x	—	3½	5 1/16	(6) 10d	—	(4) 10d	—	810	—	740
								—	3.60	—	3.29
SP2	2x	—	3½	6⅝	(6) 10d	(6) 10d	—	1220	—	1110	—
								5.43	—	4.94	—
DSP	(2) 2x	—	2¾	6 11/16	(8) 10d x 1½"	(6) 10d x 1½"	(2) 10d x 1½"	1270	890	1270	890
								5.65	3.96	5.65	3.96
					(8) 10d	(6) 10d	(2) 10d	1550	985	1550	985
								6.90	4.38	6.90	4.38
TSP	—	—	1½	7⅞	(6) 10d x 1½"	—	(3) 10d x 1½"	—	765	—	685
								—	3.40	—	3.05
					(9) 10d x 1½"	(6) 10d x 1½"	—	1325	—	940	—
								5.89	—	4.18	—
					(9) 10d x 1½"	(6) 10d	—	1455	—	1030	—
								6.47	—	4.58	—
Strap Type											
SP4	2x	4x	3 9/16	7¼	(6) 10d x 1½"	—	—	1135	—	915	—
								5.05	—	4.07	—
SPH4	2x	4x	3 9/16	8¾	(12) 10d x 1½"	—	—	2450	2010	1815	1430
								10.90	8.94	8.07	6.36
SP6	2x	6x	5 9/16	7¾	(6) 10d x 1½"	—	—	1135	—	915	—
								5.05	—	4.07	—
SPH6	2x	6x	5 9/16	9¼	(12) 10d x 1½"	—	—	2450	2010	1815	1430
								10.90	8.94	8.07	6.36
SP8	2x	8x	7 5/16	8 5/16	(6) 10d x 1½"	-—	—	1135	—	915	—
								5.05	—	4.07	—
SPH8	2x	8x	7 5/16	8⅜	(12) 10d x 1½"	—	—	2450	2010	1815	1430
								10.90	8.94	8.07	6.36

1. Factored resistances have been increased 15% for short term loading; no further increase is allowed. Reduce values by 15% for standard term loading.
2. RSP4 factored lateral resistance is 345 lb. (1.53 kN) D-Fir-L and 245 lb. (1.09 kN) S-P-F for F_1 direction. The factored resistance in the F_2 direction is 175 lb. (0.78 kN) D.Fir-L and 125 lb. (0.51 kN) S-P-F. These values apply to both single- and double-plate applications.
3. When cross-grain bending or cross-grain tension cannot be avoided, mechanical reinforcement to resist such forces should be considered.
4. Tabulated values for SP4, SPH4, SP6, SPH6, SP8 and SPH8 assume loads are applied through the centre of the stud or plates (concentric loading). For applications where the load is applied to the connector through one side of the stud or plates (eccentric loading) multiply the tabulated values by 0.50.
5. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long, 8d x 1½" = 0.131" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

CS/CMST/CMSTC

Coiled Straps

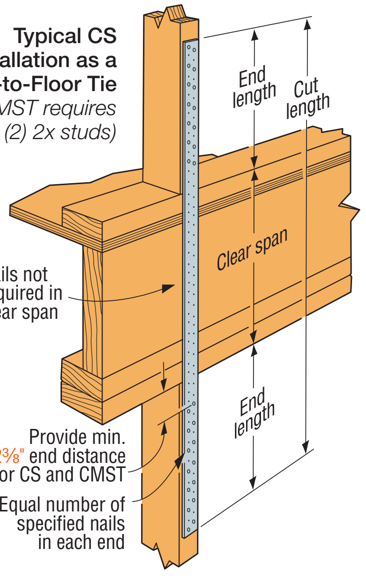
CMSTC provides nail slots for easy installation and coined edges for safe handling. CS are continuous utility straps which can be cut to length on the job site. Packaged in lightweight (about 40 pounds) cartons.

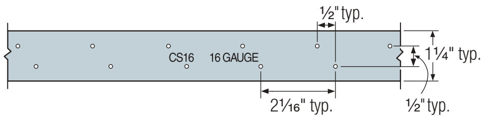
Finish: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 20–24.

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 factored resistances and the nails required to obtain them. Fewer nails may be used; reduce the factored resistance as shown in footnotes.
- CMST only–Use every other triangle 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 slice and alternate nailing information, see technical bulletin T-CMST.
- CS straps are available in 25' lengths. Order CS14-R, CS16-R, CS18-R, CS20-R or CS22-R.

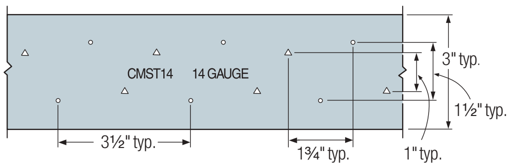
Typical CS Installation as a Floor-to-Floor Tie
(CMST requires minimum (2) 2x studs)



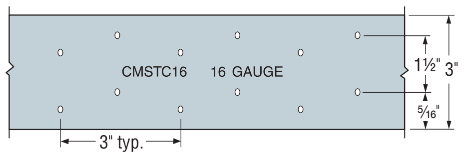


CS16 Hole Pattern
(All other CS straps similar)

Gauge stamped on part for easy identification



CMST14 Hole Pattern
(CMST12 similar)



CMSTC16 Hole Pattern

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Ga	Dimensions: Total Coil Length (ft.)	Dimensions: End Length (in.)	Dimensions: Cut Length (in.)	Fasteners (Total)	Factored Tensile Resistance D.Fir-L (K_D = 1.00) lb. / kN	D.Fir-L (K_D = 1.15) lb. / kN	S-P-F (K_D = 1.00) lb. / kN	S-P-F (K_D = 1.15) lb. / kN
CS22	22	300	10	Clear span + 20	(16) 8d	1140	1140	1075	1140
						5.07	5.07	4.78	5.07
CS20	20	250	12	Clear span + 24	(18) 8d	1390	1390	1295	1390
						6.18	6.18	5.76	6.18
CS18	18	200	12	Clear span + 24	(20) 8d	1745	1850	1620	1850
						7.76	8.23	7.21	8.23
SS CS16	16	150	14	Clear span + 28	(24) 8d	2305	2305	2155	2305
						10.25	10.25	9.59	10.25
CMSTC16	16	54	20	Clear span + 40	(46) 10d	5685	5845	5195	5845
						25.29	26.00	23.11	26.00
CS14	14	100	22	Clear span + 44	(34) 8d	3360	3360	3090	3360
						14.95	14.95	13.75	14.95
CMST14	14	52½	31	Clear span + 62	(66) 10d	8430	8430	7455	8430
						37.50	37.50	33.16	37.50
CMST12	12	40	43	Clear span + 86	(94) 10d	11995	11995	10615	11995
						53.36	53.36	47.22	53.36

1. Factored resistances shown are the lesser of the steel tensile strength (T_r) or the lateral nail value (N_r).
2. Use half of the required nails in each member being connected to achieve the listed resistances.
3. Calculate the connector value for a reduced number of nails as follows: $\text{Factored resistance} = \frac{\text{No. of Nails Used}}{\text{No. of Nails in Table}} \times \text{Table Value}$

   Example: CS14 on D.Fir-L with 30 nails total. *(Half of the nails in each member being connected)* $\text{Factored resistance} = \frac{\text{30 Nails (Used)}}{\text{34 Nails (Table)}} \times 3360 \text{ lb.} = 2965 \text{ lb.}$
4. **Nails:** 10d = 0.148" dia. x 3" long, 8d = 0.131" dia. x 2½" long. See pp. 27–28 for other nail sizes and information.

HRS/HST/ST/PS/LSTA/LSTI/MST/MSTA/MSTC/MSTI

Strap Ties

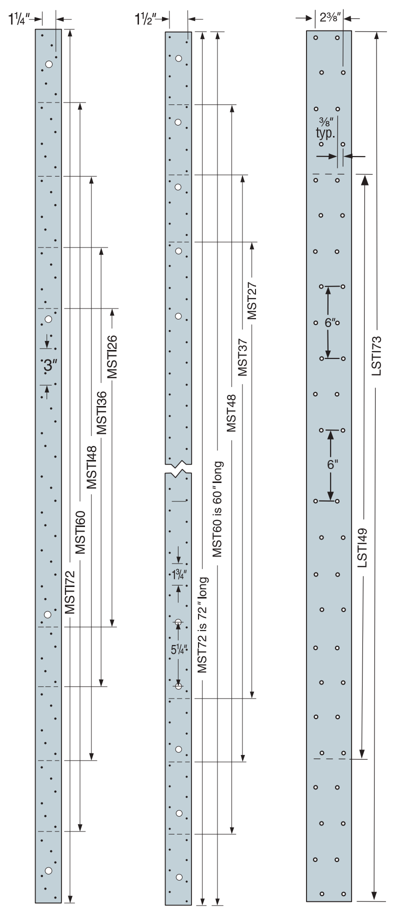
HRS, a heavy 12-gauge strap tie, provides greater support in construction and repair of home projects. Straight lines and chamfered edges for better appearance. The MSTC series has countersunk nail slots for a lower nailing profile. Coined edges ensure safer handling.

Install strap ties where wall plates are cut, at wall intersections, and as ridge ties. LSTA and MSTA straps are engineered for use on 1½" members. The 3" centre-to-centre nail spacing reduces the possibility of splitting. The LSTI light strap ties are suitable where gun-nailing is necessary through diaphragm decking and wood chord open web trusses.

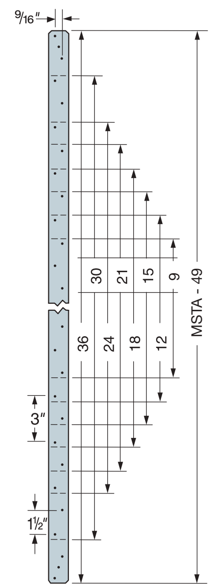
Finish: HST — Simpson Strong-Tie® gray paint; PS — HDG; all others — galvanized. Some products are available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation: Use all specified fasteners; see General Notes

Options: Special sizes can be made to order; contact Simpson Strong-Tie for longer lengths

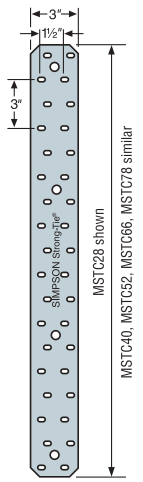


MSTI MST LSTI

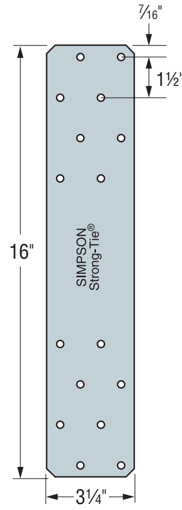


LSTA and MSTA

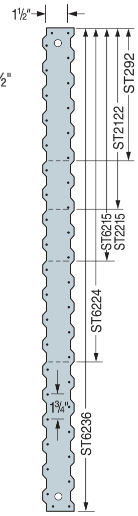
(Pilot holes not shown)



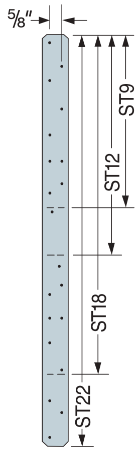
MSTC



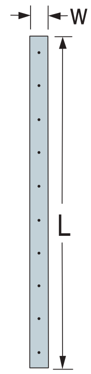
HRS416Z



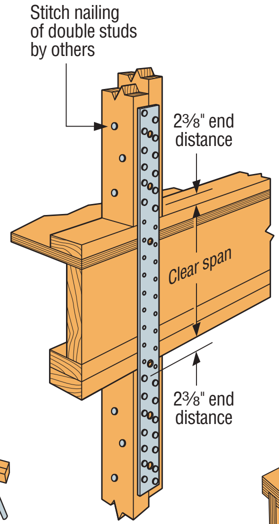
ST



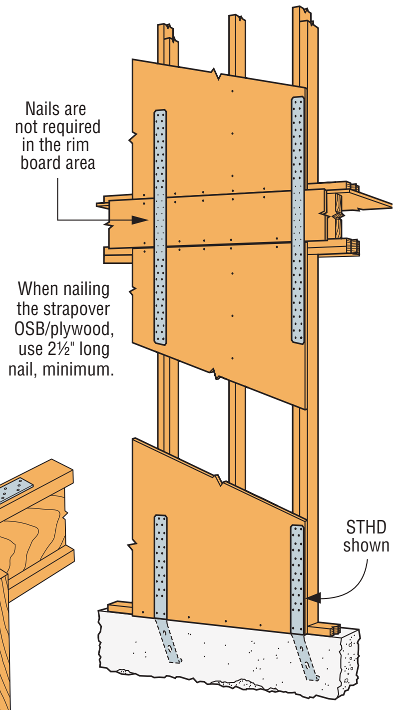
ST9, ST12, ST18, ST22



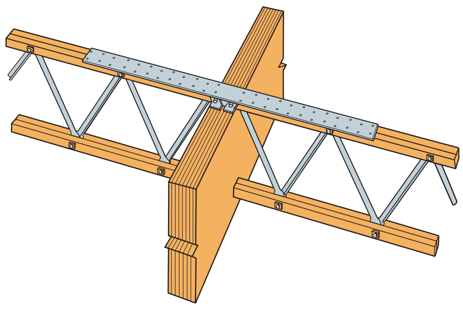
ST2115



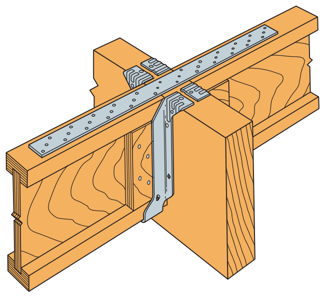
Floor-to-Floor Tie Installation Showing a Clear Span



Typical Detail with Strap Installed Over Sheathing



Typical LSTI Installation



Typical MSTI Installation

(MIT hanger shown)

LSTI similar

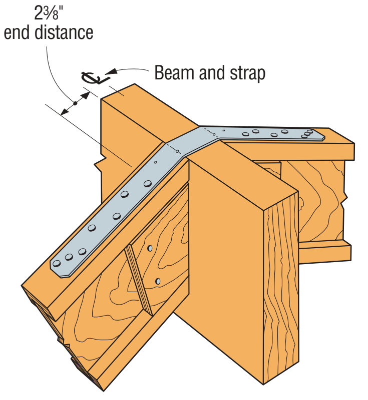
Straps and Ties

Strap Ties (cont.)

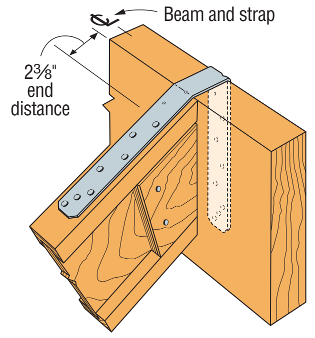
These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

	Model No.	Ga.	Dimensions (in.) W	Dimensions (in.) L	Fasteners (Total)	Factored Tensile Resistance D.Fir-L (K_D = 1.00) lb. / kN	D.Fir-L (K_D = 1.15) lb. / kN	S-P-F (K_D = 1.00) lb. / kN	S-P-F (K_D = 1.15) lb. / kN
	LSTA9	20	1¼	9	(6) 10d	600 / 2.67	690 / 3.07	555 / 2.47	635 / 2.82
	LSTA12	20	1¼	12	(8) 10d	800 / 3.56	920 / 4.09	735 / 3.27	845 / 3.76
	LSTA15	20	1¼	15	(10) 10d	1000 / 4.45	1150 / 5.12	920 / 4.09	1060 / 4.72
	LSTA18	20	1¼	18	(12) 10d	1200 / 5.34	1380 / 6.14	1105 / 4.92	1270 / 5.65
	LSTA21	20	1¼	21	(14) 10d	1400 / 6.23	1610 / 7.16	1290 / 5.74	1485 / 6.61
	LSTA24	20	1¼	24	(16) 10d	1600 / 7.12	1840 / 8.19	1475 / 6.56	1695 / 7.54
	ST292	20	2 1/16	9 5/16	(8) 8d	585 / 2.60	675 / 3.00	535 / 2.38	615 / 2.74
	ST2122	20	2 1/16	12 13/16	(12) 8d	940 / 4.18	1085 / 4.83	865 / 3.85	995 / 4.43
	ST2115	20	¾	16 5/16	(8) 8d	670 / 2.98	770 / 3.43	615 / 2.74	710 / 3.16
	ST2215	20	2 1/16	16 5/16	(16) 8d	1335 / 5.94	1540 / 6.85	1235 / 5.49	1420 / 6.32
	LSTA30	18	1¼	30	(20) 10d	2235 / 9.94	2465 / 10.97	2075 / 9.23	2385 / 10.61
	LSTA36	18	1¼	36	(24) 10d	2465 / 10.97	2465 / 10.97	2465 / 10.97	2465 / 10.97
	LSTI49	18	3¾	49	(32) 10d x 1½"	3115 / 13.86	3580 / 15.93	2852 / 12.69	3280 / 14.59
	LSTI73	18	3¾	73	(48) 10d x 1½"	4670 / 20.77	5370 / 23.89	4280 / 19.04	4920 / 21.89
	MSTA9	18	1¼	9	(6) 10d	670 / 2.98	770 / 3.43	625 / 2.78	715 / 3.18
SS	MSTA12	18	1¼	12	(8) 10d	895 / 3.98	1030 / 4.58	830 / 3.69	955 / 4.25
	MSTA15	18	1¼	15	(10) 10d	1120 / 4.98	1285 / 5.72	1040 / 4.63	1195 / 5.32
SS	MSTA18	18	1¼	18	(12) 10d	1340 / 5.96	1545 / 6.87	1245 / 5.54	1430 / 6.36
	MSTA21	18	1¼	21	(14) 10d	1565 / 6.96	1800 / 8.01	1455 / 6.47	1670 / 7.43
SS	MSTA24	18	1¼	24	(16) 10d	1790 / 7.96	2060 / 9.16	1660 / 7.38	1910 / 8.50
	MSTA30	16	1¼	30	(20) 10d	2470 / 10.99	2840 / 12.63	2260 / 10.05	2595 / 11.54
SS	MSTA36	16	1¼	36	(24) 10d	2965 / 13.19	3070 / 13.66	2710 / 12.06	3070 / 13.66
	MSTA49	16	1¼	49	(28) 8d	2725 / 12.12	2725 / 12.12	2545 / 11.32	2725 / 12.12
	ST6215	16	2 1/16	16 5/16	(16) 8d	1405 / 6.25	1615 / 7.18	1300 / 5.78	1500 / 6.67
	ST6224	16	2 1/16	23 5/16	(24) 8d	2305 / 10.25	2650 / 11.79	2155 / 9.59	2475 / 11.01
	ST9	16	1¼	9	(6) 8d	525 / 2.34	605 / 2.69	490 / 2.18	560 / 2.49
	ST12	16	1¼	11⅝	(8) 8d	700 / 3.11	805 / 3.58	650 / 2.89	750 / 3.34
	ST18	16	1¼	17¾	(12) 8d	1050 / 4.67	1210 / 5.38	975 / 4.34	1125 / 5.00
	ST22	16	1¼	21⅝	(18) 8d	1580 / 7.03	1790 / 7.96	1465 / 6.52	1685 / 7.50



Typical LSTA Installation
(hanger not shown)
Bend strap one time only



Typical LSTA Installation
(hanger not shown)
Bend strap one time only

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed.
2. Use half of the nails in each member being connected to achieve the listed resistances.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long, 8d = 0.131" dia. x 2½" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

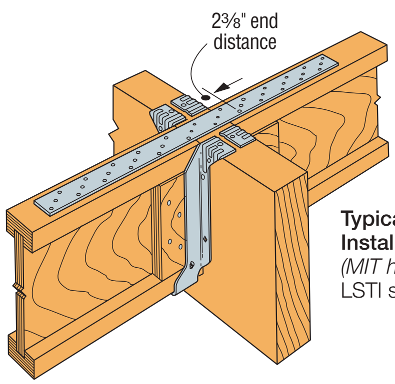
Strap Ties (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Ga.	Dimensions (in.) W	Dimensions (in.) L	Fasteners (Total)	Factored Tensile Resistance D.Fir-L (K_D = 1.00)	D.Fir-L (K_D = 1.15)	S-P-F (K_D = 1.00)	S-P-F (K_D = 1.15)
					lb. / kN	lb. / kN	lb. / kN	lb. / kN
MSTC28	16	3	28¼	(32) 10d	3955	4545	3615	4155
					17.59	20.22	16.08	18.48
MSTC40	16	3	40¼	(48) 10d	5930	6820	5420	6235
					26.38	30.34	24.11	27.74
MSTC52	16	3	52¼	(54) 10d	6670	6940	6100	6940
					29.67	30.87	27.14	30.87
MSTC66	14	3	65¾	(66) 10d	8515	8565	7455	8565
					37.88	38.10	33.16	38.10
MSTC78	14	3	77¾	(66) 10d	8515	8565	7455	8565
					37.88	38.10	33.16	38.10
ST6236	14	2$\frac{1}{16}$	33$\frac{13}{16}$	(36) 8d	3735	4295	3270	3760
					16.61	19.11	14.55	16.73
MSTI26	12	2$\frac{1}{16}$	26	(22) 10d x 1½"	2825	3250	2475	2850
					12.57	14.46	11.01	12.68
MSTI36	12	2$\frac{1}{16}$	36	(32) 10d x 1½"	4110	4725	3600	4140
					18.28	21.02	16.01	18.42
MSTI48	12	2$\frac{1}{16}$	48	(44) 10d x 1½"	5650	6500	4955	5695
					25.13	28.91	22.04	25.33
MSTI60	12	2$\frac{1}{16}$	60	(56) 10d x 1½"	7195	7360	6305	7250
					32.01	32.74	28.05	32.25
MSTI72	12	2$\frac{1}{16}$	72	(68) 10d x 1½"	7360	7360	7240	7360
					32.74	32.74	32.21	32.74
MST27	12	2$\frac{1}{16}$	27	(26) 8d	2685	3090	2355	2710
					11.94	13.75	10.48	12.06
MST37	12	2$\frac{1}{16}$	37½	(38) 8d	3930	4515	3440	3960
					17.48	20.08	15.30	17.62
MST48	12	2$\frac{1}{16}$	48	(50) 8d	5170	5945	4530	5210
					23.00	26.45	20.15	23.18
HRS416Z	12	3¼	16	(16) ¼" x 1½" SDS	2400	2760	2120	2440
					10.68	12.28	9.43	10.85
MST60	10	2$\frac{1}{16}$	60	(64) 8d	6620	7610	5800	6670
					29.45	33.85	25.80	29.67
MST72	10	2$\frac{1}{16}$	72	(78) 8d	8065	9135	7065	8125
					35.88	40.64	31.43	36.14

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed.
2. Use half of the nails in each member being connected to achieve the listed resistances.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long, 8d = 0.131" dia. x 2½" long. See pp. 27–28 for other nail sizes and information.



Typical MSTI Installation
(MIT hanger shown)
LSTI similar

Straps and Ties

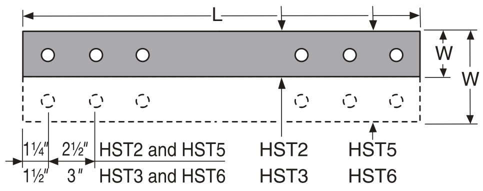
HRS/HST/ST/PS/LSTA/LSTI/MST/MSTA/MSTC/MSTI

Strap Ties (cont.)

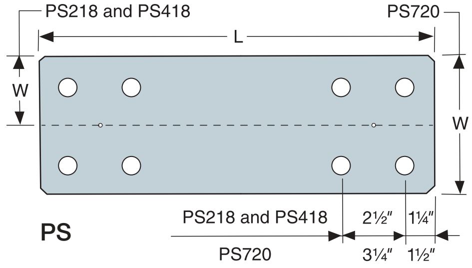
These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Ga.	Dimensions (in.)		Fasteners (Total)	T_r[1]	
		W	L		lb.	kN
PS218	7	2	18	(4) ¾" MB	8315	36.99
PS418		4	18	(4) ¾" MB	21325	94.86
PS720		6¾	20	(8) ½" MB	35985	160.08
HST2		2½	21¼	(6) ⅝" MB	12670	56.36
HST5		5	21¼	(12) ⅝" MB	25375	112.88
HST3	3	3	25¼	(6) ¾" MB	20520	91.28
HST6		6	25¼	(12) ¾" MB	41035	182.54

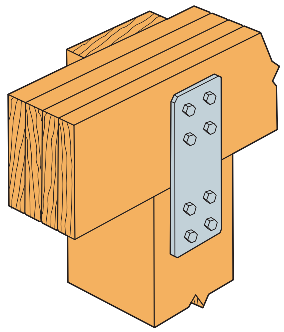
1. Tr is the factored tensile resistance of the strap in accordance with CSA S136-12. The capacity of the strap, used in a connection, must be verified by the Designer using the lower of the strap capacity or the fastener capacity per the applicable CSA standard.



HST



PS


Typical PS720 Installation

Straps and Ties

HRS/HST/ST/PS/LSTA/LSTI/MST/MSTA/MSTC/MSTI

SIMPSON Strong-Tie®

Strap Ties (cont.)

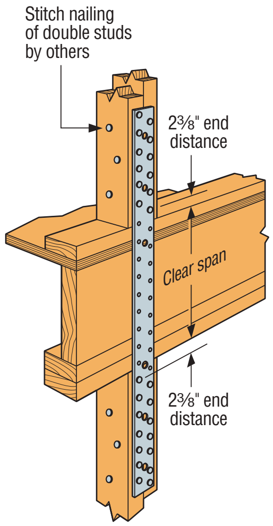
These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

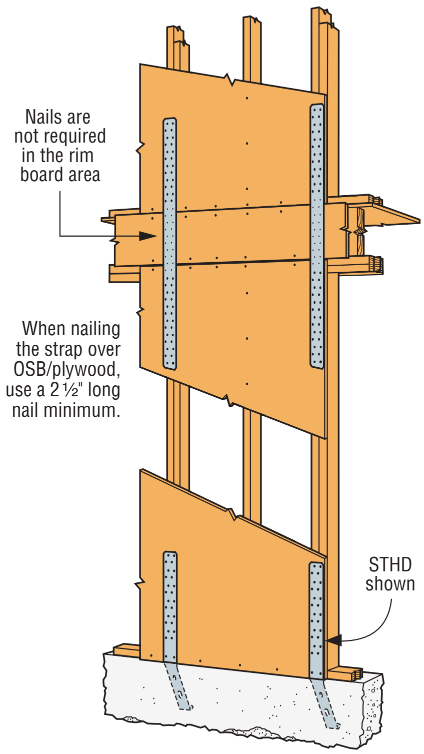
Floor-to-Floor Clear Span Table

Model No.	Clear Span (in.)	Fasteners (Total)	Factored Tensile Resistance			
			D.Fir-L		S-P-F	
			(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)
			lb. / kN	lb. / kN	lb. / kN	lb. / kN
MSTA49	16	(38) 8d	2725	2725	2725	2725
			12.12	12.12	12.12	12.12
	18	(36) 8d	2725	2725	2725	2725
			12.12	12.12	12.12	12.12
MSTC28	16	(12) 10d	1480	1705	1355	1560
			6.58	7.58	6.03	6.94
	18	(8) 10d	990	1135	905	1040
			4.40	5.05	4.03	4.63
MSTC40	16	(28) 10d	3460	3980	3160	3635
			15.39	17.70	14.06	16.17
	18	(24) 10d	2965	3410	2710	3115
			13.19	15.17	12.06	13.86
MSTC52	16	(44) 10d	5435	6250	4970	5715
			24.18	27.80	22.11	25.42
	18	(40) 10d	4940	5685	4515	5195
			21.98	25.29	20.08	23.11
MSTC66	16	(60) 10d	7740	8565	6775	7790
			34.43	38.10	30.14	34.65
	18	(60) 10d	7740	8565	6775	7790
			34.43	38.10	30.14	34.65
MSTC78	16	(66) 10d	8515	8565	7455	8565
			37.88	38.10	33.16	38.10
	18	(66) 10d	8515	8565	7455	8565
			37.88	38.10	33.16	38.10
MST37	16	(20) 8d	2065	2375	1810	2085
			9.19	10.56	8.05	9.27
	18	(18) 8d	1860	2140	1630	1875
			8.27	9.52	7.25	8.34
MST48	16	(32) 8d	3310	3805	2900	3335
			14.72	16.93	12.90	14.84
	18	(30) 8d	3100	3570	2720	3125
			13.79	15.88	12.10	13.90
MST60	16	(46) 8d	4755	5470	4170	4795
			21.15	24.33	18.55	21.33
	18	(44) 8d	4550	5235	3985	4585
			20.24	23.29	17.73	20.40
MST72	16	(60) 8d	6205	6520	5435	6250
			27.60	29.00	24.18	27.80
	18	(58) 8d	6000	6520	5255	6045
			26.69	29.00	23.38	26.89

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed.
2. Use half of the required nails in each member being connected to achieve the listed resistances.
3. When nailing the strap over OSB/plywood, use a minimum 2½" long nail.
4. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



Floor-to-Floor Tie Installation Showing a Clear Span



Typical Detail with Strap Installed Over Sheathing

Straps and Ties

MSTC48B3/MSTC66B3

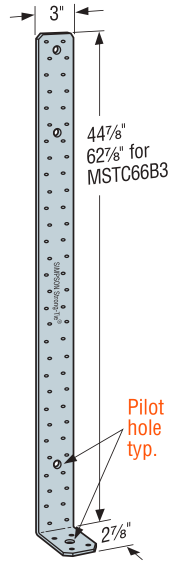
Pre-Bent Straps

The MSTC48B3 and MSTC66B3 are pre-bent straps designed to transfer tension load from an upper-storey shearwall to a beam on the storey below.

Material: 14 gauge

Finish: Galvanized

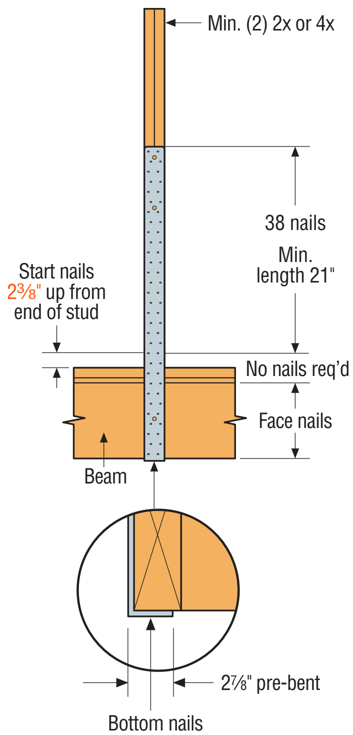
These products are available with additional corrosion protection. For more information, see p. 24.



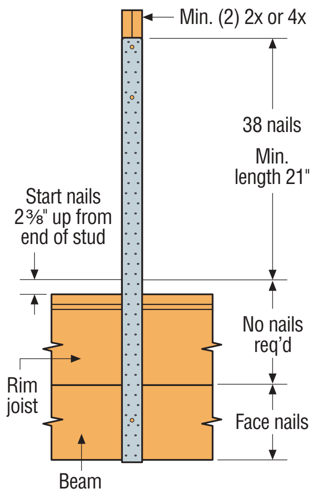
MSTC48B3

Model No.	Minimum Beam Size (in.) Width	Minimum Beam Size (in.) Depth	Fasteners Beam Face	Fasteners Beam Bottom	Fasteners Studs/Post	Factored Tensile Resistance (K_D = 1.15) D.Fir-L	Factored Tensile Resistance (K_D = 1.15) S-P-F
						lb.	lb.
						kN	kN
MSTC48B3	3	9¼	(12) 10d	(4) 10d	(38) 10d	5440	3860
						24.20	17.17
MSTC66B3	3½	11¼	(14) 10d	(4) 10d	(38) 10d	5230	3715
						23.27	16.53

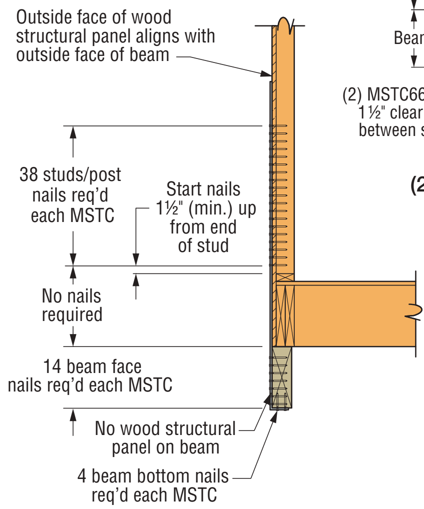
1. Factored resistances have been increased 15% for earthquake or wind loading; no further increase is permitted. Reduce where other load durations govern.
2. Nails in studs/post shall be installed symmetrically. Nails may be installed over the entire length of the strap.
3. The 3"-wide beam may be double 2x members.
4. Straps installed over sheathing up to ½" thick can achieve 85% of the tabulated values.
5. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.



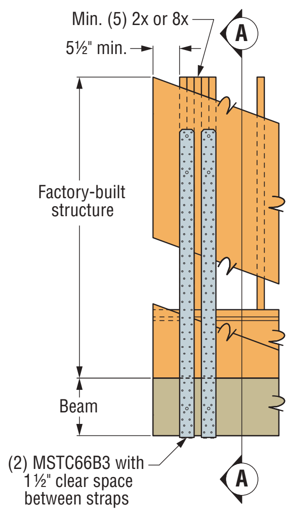
MSTC48B3 Installation with No Rim Board



MSTC66B3 Installation with Rim Board



Section A-A



(2) MSTC66B3 Installation

PWF24

Strap Tie

The PWF24 is a galvanized metal strap manufactured specifically for connecting preservative-treated wood foundation walls to the floor system. This strap exceeds the prescriptive requirements of CSA S406-14 *Construction of Preserved Wood Foundations*.

Material: 20 gauge

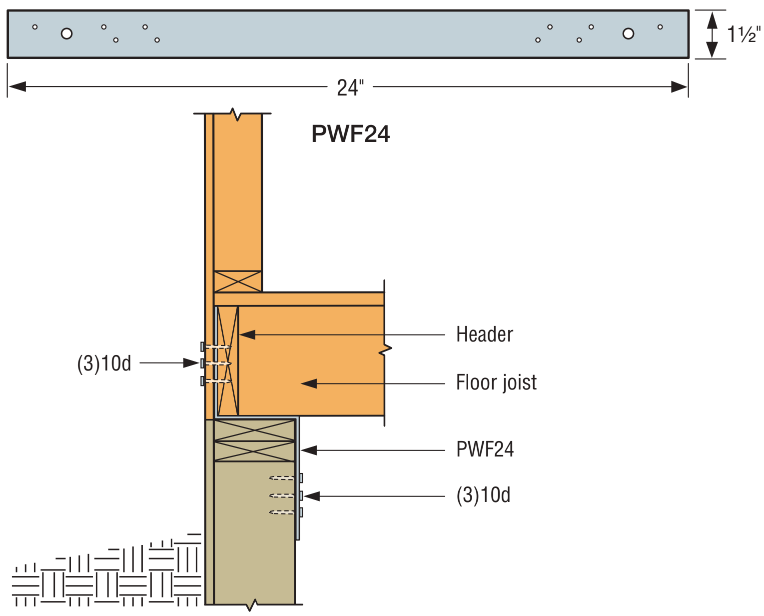
Finish: Galvanized

Installation:

- All fasteners shall be hot-dip galvanized
- See CSA S406-14
- For installations in interior-dry applications with CCA-treated lumber only

Model No.	Dimensions (in.)		Total Fasteners
	W	L	
PWF24	1½	24	(6) 10d

1. Install three nails into the stud and three nails into the rim board.
2. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.



Typical PWF24 Installation

Z

Clip

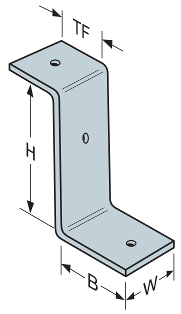
The Z clip secures 2x4 flat blocking between joists or trusses to support sheathing.

Material: See table

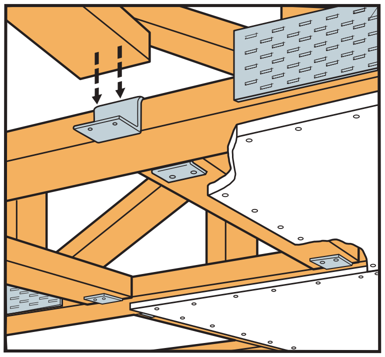
Finish: Galvanized

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.



Z4
(others similar)



Typical Z2 Installation

Model No.	Ga.	Dimensions (in.)				Fasteners[1] Total	Factored Resistance (K_D = 1.00)	
		W_1	H	B	TF		D.Fir-L lb. / kN	S-P-F lb. / kN
Z2	20	2⁵⁄₁₆	1½	1⅜	1⅜	(4) 10d x 1½"	740 / 3.29	525 / 2.34
Z4	12	1½	3½	2⅛	1¾	(2) 16d	765 / 3.40	545 / 2.42
Z6	12	1½	5⅜	2	1⅜	(2) 16d	790 / 3.51	560 / 2.49
Z28	28	2⁵⁄₁₆	1½	1⅜	1⅜	10d x 1½"	— / —	— / —
Z38	28	2⁵⁄₁₆	2½	1⅜	1⅜	10d x 1½"	— / —	— / —
Z44	12	2½	3½	2	1⅜	(4) 16d	1420 / 6.32	1010 / 4.49

1. Z28 and Z38 do not have nail holes. Fastener quantity and type shall be per Designer.
2. Z4 and Z6 resistances apply with a nail into the top and a nail into the seat.
3. Factored resistances for Z clips cannot be increased for short term loading.
4. **Nails:** 16d = 0.162" dia. x 3½" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

LTP4/LTP5/A34/A35

Framing Angles and Plates

The larger LTP5 spans subfloor at the top of the blocking or rim joist. The embossments enhance performance and the min./max. nailing option allows for design flexibility.

The LTP4 lateral tie plate transfers shear forces for top plate-to-rim joist or blocking connections. Nail holes are spaced to prevent wood splitting for single and double top-plate applications. May be installed over plywood sheathing.

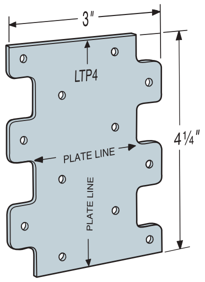
The A35 angle's exclusive bending slot allows instant, accurate field bends for all two- and three-way ties. Balanced, completely reversible design permits the A35 to secure a great variety of connections.

Material: LTP4/LTP5 — 20 gauge; all others — 18 gauge

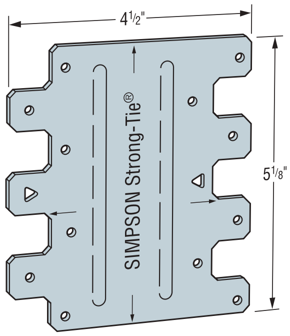
Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

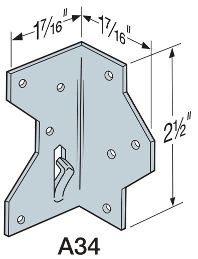
- Use all specified fasteners; see General Notes
- A35 — Bend one time only



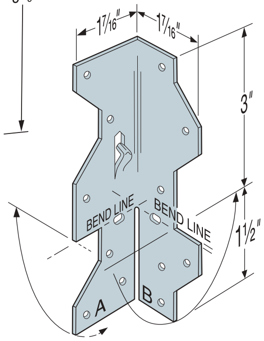
LTP4



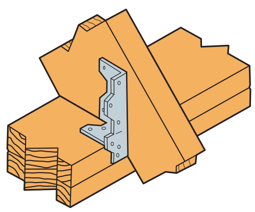
LTP5



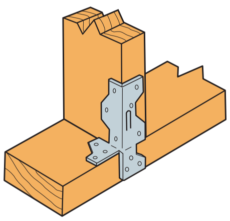
A34



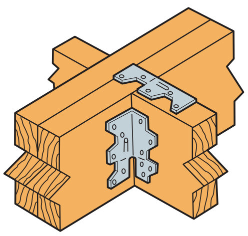
A35



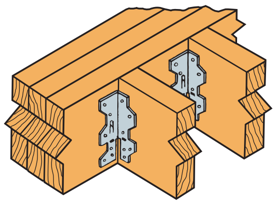
Joists to Plate with A Leg Inside



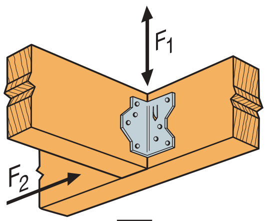
Studs to Plate with B Leg Outside



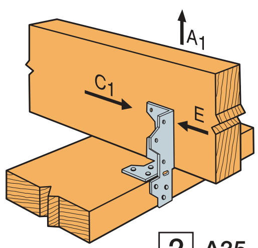
Joists to Beams



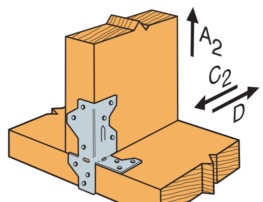
Ceiling Joists to Beam



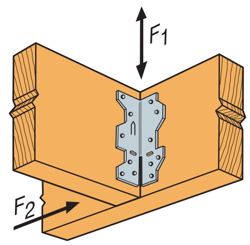
1 A34



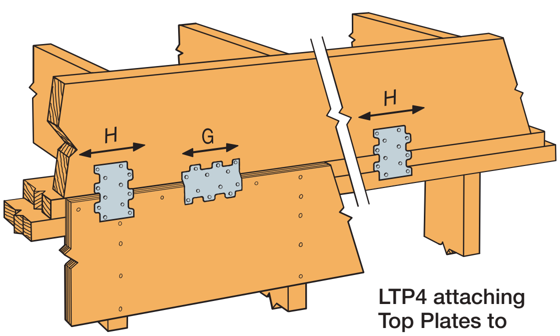
2 A35



3 A35

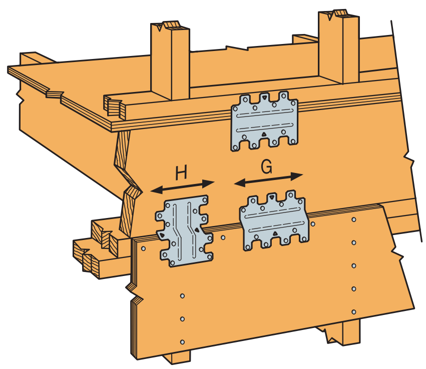


4 A35



LTP4 attaching Top Plates to Rim Joist

5 LTP4 Installed over Plywood Sheathing



6 LTP5 Installed over Plywood Sheathing

Straps and Ties

SIMPSON Strong-Tie®

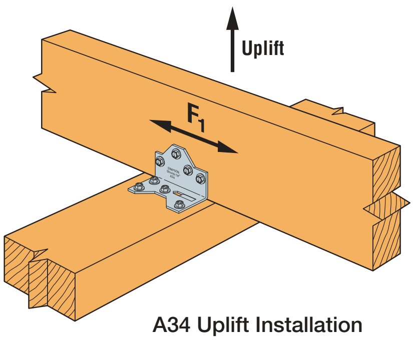
Framing Angles and Plates (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

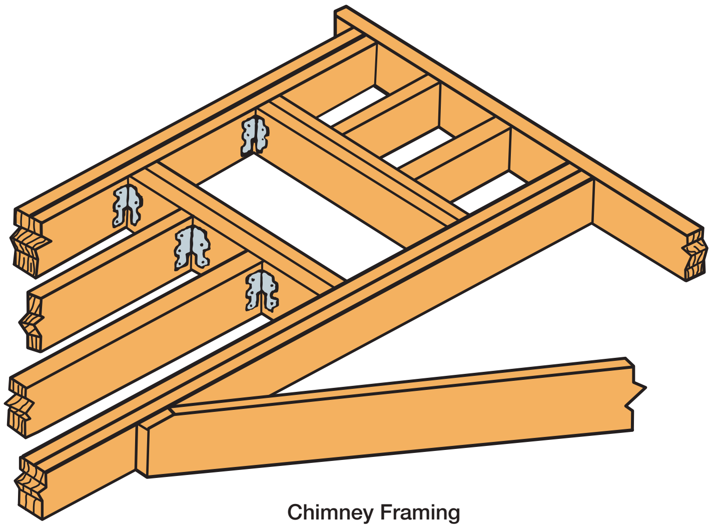
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Type of Connection	Fasteners Total	Direction of Load	Factored Resistance			
				D.Fir-L		S-P-F	
				(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
A34	1	(8) 8d x 1½"	F_1	630	665	475	475
				2.80	2.96	2.11	2.11
			F_2	630	640	455	455
				2.80	2.85	2.02	2.02
		(8) SD #9 x 1½"	F_1	785	785	560	560
				3.49	3.49	2.49	2.49
			F_2	765	880	545	625
				3.40	3.91	2.42	2.78
			Uplift	370	425	265	305
				1.65	1.89	1.18	1.36
A35	2	(9) 8d x 1½"	A_1, E	475	545	430	440
				2.11	2.42	1.91	1.96
			C_1	290	290	205	205
				1.29	1.29	0.91	0.91
	3	(12) 8d x 1½"	A_2	475	545	375	430
				2.11	2.42	1.67	1.91
			C_2	475	505	355	355
				2.11	2.25	1.58	1.58
			D	315	365	225	260
				1.40	1.62	1.00	1.16
	4	(12) 8d x 1½"	F_1	950	955	675	675
				4.23	4.25	3.00	3.00
			F_2	920	920	650	650
				4.09	4.09	2.89	2.89
LTP4	5	(12) 8d x 1½"	G	815	815	580	580
				3.63	3.63	2.58	2.58
			H	835	835	595	595
				3.71	3.71	2.65	2.65
LTP5	6	(12) 8d x 1½"	G	875	875	620	620
				3.89	3.89	2.76	2.76
			H	865	865	615	615
				3.85	3.85	2.74	2.74

1. Factored resistances are for one anchor. When anchors 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 ½" plywood sheathing with no reduction in capacity.
4. LTP5 can be installed over ½" plywood sheathing and achieve 0.89 of the tabulated values for loads in the H direction. For load in the G direction, full tabulated values can be achieved.
5. **Nails:** 8d x 1½" = 0.131" dia. x 1½" long. **Screws:** SD #9 x 1½" = 0.131" dia. x 1½" long (SD9112). See pp. 27–28 for other nail sizes and information.



A34 Uplift Installation


Chimney Framing

L/LS/GA

Reinforcing and Skewable Angles

L — Staggered nail pattern reduces the possibility for splitting.

LS — Field-adjustable 0° to 135° angles.

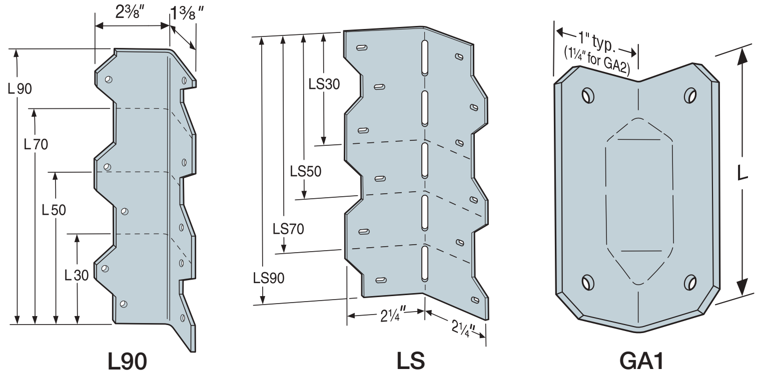
The GA gusset angles' embossed bend section provides added strength.

Material: L — 16 gauge; GA and LS — 18 gauge

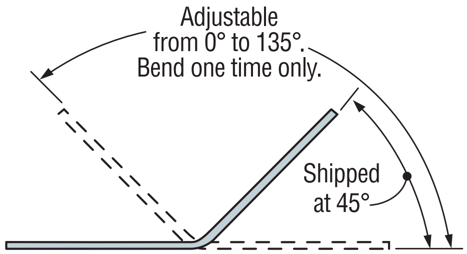
Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 15–18.

Installation:

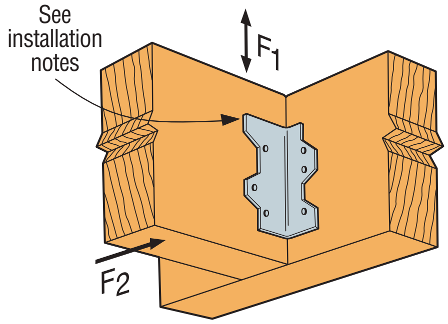
- Use all specified fasteners; see General Notes
- LS — field skewable; bend one time only
- Joist must be constrained against rotation (for example, with solid blocking) when using a single LS per connection
- Nail the L angle's wider leg into the joist to ensure table values and allow correct nailing



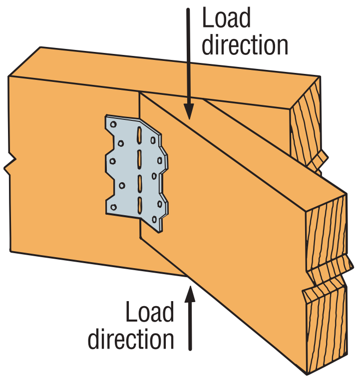
L90 **LS** **GA1** *(GA2 similar)*



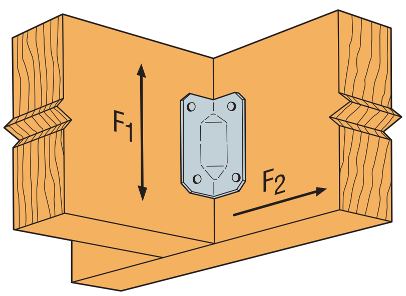
LS Top View



Typical L50 Installation



Typical LS70 Installation



Typical GA Installation

L/LS/GA

Reinforcing and Skewable Angles (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	L (in.)	Fasteners Total	Factored Resistance			
			D.Fir-L		S-P-F	
			(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)
			lb.	lb.	lb.	lb.
			kN	kN	kN	kN
GA1	2¾	(4) 10d x 1½"	305	350	215	245
			1.36	1.56	0.96	1.09
		(4) SD #9 x 1½"	420	485	380	400
			1.87	2.16	1.69	1.96
GA2	3¼	(6) 10d x 1½"	530	610	485	555
			2.36	2.71	2.16	2.47
		(6) SD #9 x 1½"	630	725	575	660
			2.80	3.23	2.56	2.94
L30	3	(4) 10d x 1½"	360	360	275	315
			1.60	1.60	1.22	1.40
		(4) 10d	420	480	390	445
			1.87	2.14	1.73	1.98
L50	5	(6) 10d	625	720	580	670
			2.78	3.20	2.58	2.98
		(6) SD #9 x 1½"	685	785	585	675
			3.05	3.49	2.60	3.00
		(6) SD #9 x 2½"	830	830	585	675
			3.69	3.69	2.60	3.00
L70	7	(8) 10d	835	960	775	890
			3.71	4.27	3.45	3.96
		(8) SD #9 x 1½"	910	1050	835	960
			4.05	4.67	3.71	4.27
		(8) SD #9 x 2½"	1290	1480	1115	1280
			5.74	6.58	4.96	5.69
L90	9	(10) 10d	1045	1200	970	1115
			4.65	5.34	4.31	4.96
		(10) SD #9 x 1½"	1140	1310	1045	1200
			5.07	5.83	4.65	5.34
		(10) SD #9 x 2½"	1610	1850	1450	1670
			7.16	8.23	6.45	7.43
LS30	3⅜	(6) 10d x 1½"	475	475	365	415
			2.11	2.11	1.62	1.85
		(6) 10d	540	555	385	415
			2.40	2.47	1.71	1.85
LS50	4⅞	(8) 10d x 1½"	720	800	625	720
			3.20	3.56	2.78	3.20
		(8) 10d	770	890	670	720
			3.43	3.96	2.98	3.20
LS70	6⅜	(10) 10d x 1½"	900	1035	700	805
			4.00	4.60	3.11	3.58
		(10) 10d	965	1090	775	805
			4.29	4.85	3.45	3.58
LS90	7⅞	(12) 10d x 1½"	1080	1240	980	1125
			4.80	5.52	4.36	5.00
		(12) 10d	1160	1330	1010	1125
			5.16	5.92	4.49	5.00

1. GA resistances are for both F_1 or F_2 direction. L and LS resistances are for F_1 direction only.
2. Factored resistances shown are for one part.
3. L50, L70 and L90 may be installed using 10d x 1½" nails. Multiply the tablulated 10d resistances x 0.92.
4. GA1 uplift resistance with SD9 screws is 455 lb. (2.02 kN) D.Fir-L and 345 lb. (1.53 kN) S-P-F (K_D = 1.15).
5. GA2 uplift resistance with SD9 screws is 550 lb. (2.45 kN), D.Fir-L and 415 lb. (1.85 kN) S-P-F (K_D = 1.15).
6. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" x 1½" long. See pp. 27–28 for other nail sizes and information.
7. **Screws:** SD #9 x 1½" = 0.131" dia. x 1½" long (SD9112), SD #9 x 2½" = 0.131" dia. x 2½" long (SD9212).

SIMPSON Strong-Tie®

Angles

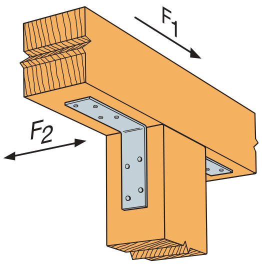
Our line of angles provides a way to make a wide range of 90° connections.

Material: A21 and A23 — 18 gauge; all other A angles — 12 gauge

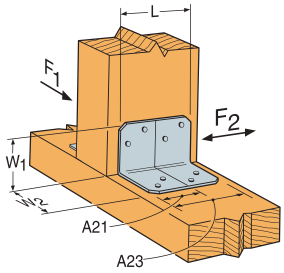
Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes
- F_1 direction is loading into the part



A44 Installation
(A33 similar)



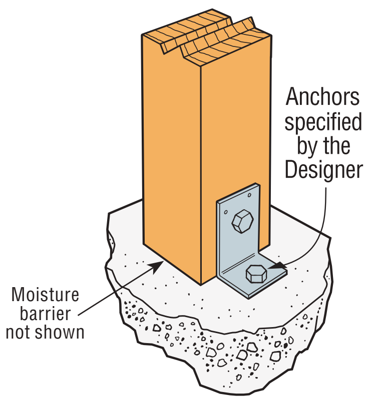
A21/A23 Installation

These products are available with additional corrosion protection. For more information, see p. 24.

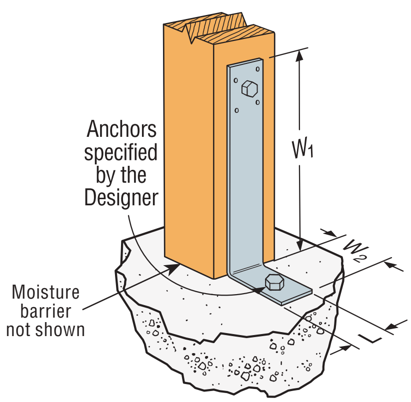
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Dimensions (in.) W1	W2	L	Fasteners Base Bolts	Base Nails	Post Bolts	Post Nails	Factored Resistance (K_D = 1.15) D.Fir-L F_1 lb. / kN	D.Fir-L F_2 lb. / kN	S-P-F F_1 lb. / kN	S-P-F F_2 lb. / kN
A21	2	1½	1⅜	—	(2) 10d x 1½"	—	(2) 10d x 1½"	405	260	335	185
								1.80	1.16	1.49	0.82
A23	2	1½	2¾	—	(4) 10d x 1½"	—	(4) 10d x 1½"	815	715	725	510
								3.63	3.18	3.23	2.27
A33	3	3	1½	—	(4) 10d	—	(4) 10d	1175	570	930	405
								5.23	2.54	4.14	1.80
A44	4 9/16	4⅜	1½	—	(4) 10d	—	(4) 10d	1175	485	930	345
								5.23	2.16	4.14	1.53
A66	5⅞	5⅞	1½	(2) ⅜" MB	(3) 10d	(2) ⅜" MB	(3) 10d	—	—	—	—
								—	—	—	—
A88	8	8	2	(3) ⅜" MB	(4) 10d	(3) ⅜" MB	(4) 10d	—	—	—	—
								—	—	—	—
A24	3⅞	2	2½	(1) ½" MB	—	(1) ½" MB	(2) 10d	—	—	—	—
								—	—	—	—
A311	11	3⅝	2	(1) ½" MB	—	(1) ½" MB	(4) 10d	—	—	—	—
								—	—	—	—

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
2. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.



A24 Installation



A311 Installation

Straps and Ties

RBC

Roof Boundary Clip

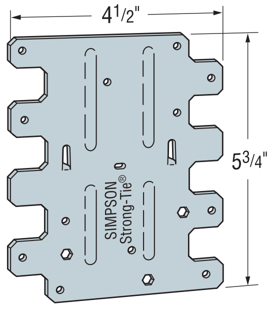
The RBC roof boundary clip is designed to aid installation and transfer shear loads between the roof diaphragm and wall. The locator tabs make proper location of the clip easy. The RBC can be used on wood or masonry walls and will handle roof pitches from 0/12 to 12/12.

Material: 20 gauge

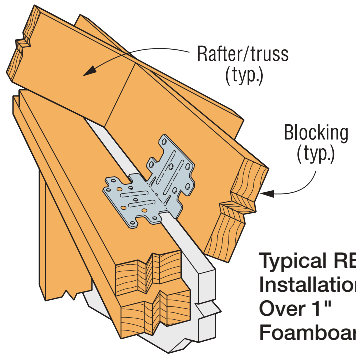
Finish: Galvanized

Installation:

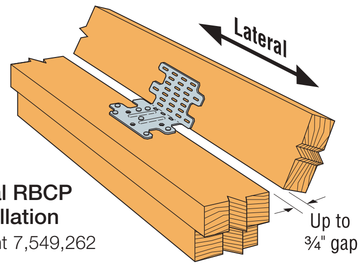
- Use all specified fasteners; see General Notes
- Field bend to desired angle — one time only
- See flier F-C-RBC for more information on installation
- Titen® screws are not recommended for exposed exterior applications or wet service conditions
- See pp. 43–46 for more information on Titen screws



RBC
U.S. Patent 7,293,390



Typical RBC Installation Over 1" Foamboard[5]

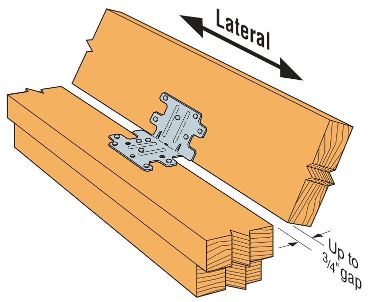


Typical RBCP Installation
U.S. Patent 7,549,262

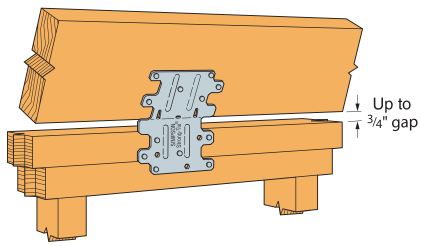
The RBC is available with prongs into one side (RBCP) for pre-attachment of the part to a block at the truss plant. Refer to technical bulletin T-C-RBCP for more information.

Model No.	Type of Connection	Bending Angle	Fasteners		Factored Resistance (K_D = 1.15)	
			To Wall	To Blocking	D.Fir-L	S-P-F
					lb.	lb.
					kN	kN
RBC	1	45° to 90°	(6) 10d x 1½"	(6) 10d x 1½"	660	465
					2.94	2.07
	2	< 30°	(6) 10d x 1½"	(6) 10d x 1½"	645	460
					2.87	2.05
		30° to 45°	(6) 10d x 1½"	(6) 10d x 1½"	685	485
					3.05	2.16
	3	0° to 45°	(3) ¼" x 2¼" Titen	(6) 10d x 1½"	575	410
					2.56	1.82

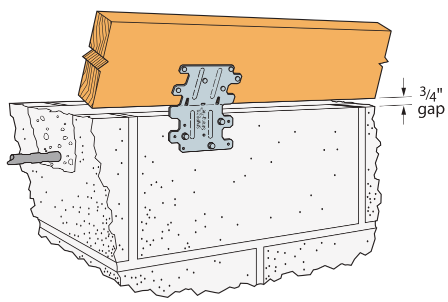
1. Factored resistances are for one anchor attached to blocking minimum 1½" thick.
2. RBC can be installed with up to ¾" gap and achieve 100% of the listed value.
3. Factored resistances have been increased 15% for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
4. When attaching to concrete use (3) ¼" x 1¾" Titen screws TTN2-25134H.
5. RBC installed over 1" foamboard has a factored resistance of 650 lb. (2.89 kN) in a parallel to wall load direction for D.Fir-L. For S-P-F, the value is 460 lb. (2.05 kN).
6. RBC may be installed over ½" structural sheathing using 10d x 1½" nails with no reduction in capacity.
7. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



1 Typical RBC Installation



2 Typical RBC Installation



3 Typical RBC Installation to CMU Block

HSLQ

Heavy Shear Transfer Angle

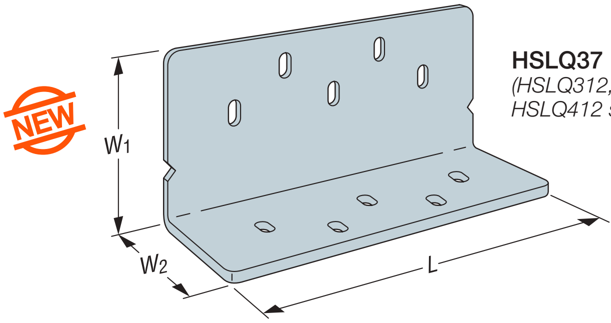
The HSLQ heavy shear transfer angle is designed to transfer lateral loads from wood solid sawn joists or blocking into a wood solid sawn element such as a moment frame nailer. The angle offers versatility by allowing up to a 2" gap between the structural members and easy installation with Simpson Strong-Tie® 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

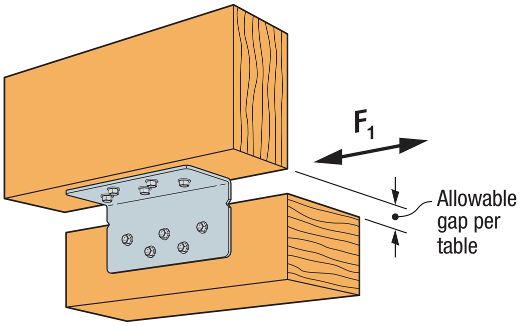
Finish: Galvanized, available in HDG

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.



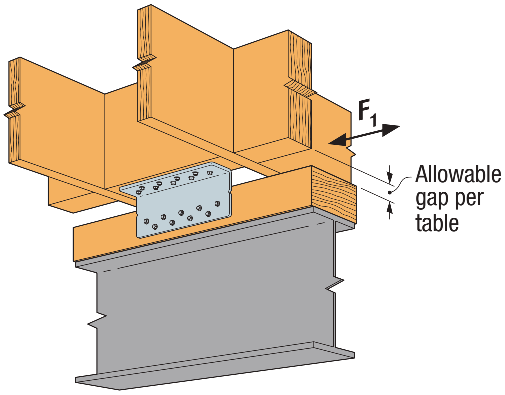
HSLQ37
(HSLQ312, HSLQ47, HSLQ412 similar)



Typical HSLQ37 Installation

Model No.	Allowable Gap	Dimensions (in.)			Fasteners	Factored Resistance (K_D=1.15)	
		W_1	W_2	L	SDS ¼" x 2½" Screws	D.Fir-L	S-P-F
						lb.	lb.
						kN	kN
HSLQ37-SDS2.5	0" – 1"	3¼	2¾	7¼	10	2250	1620
						10.01	7.21
HSLQ312-SDS2.5	0" – 1"	3¼	2¾	11¾	18	4465	3215
						19.86	14.30
HSLQ47-SDS2.5	1" – 2"	4¼	2¾	7¼	10	1695	1220
						7.54	5.43
HSLQ412-SDS2.5	1" – 2"	4¼	2¾	11¾	18	3695	2660
						16.44	11.83

1. Factored resistances have been increased 15% for wind or earthquake loading. Reduce where other load durations govern.
2. Values shown are for one angle.
3. Minimum 4x8 wood members are required.
4. HSLQ is used for in-plane lateral load transfer only. Designer shall provide for frame out-of-plane stability as required.



Typical HSLQ412 Installation

Cross Laminated Timber Connectors

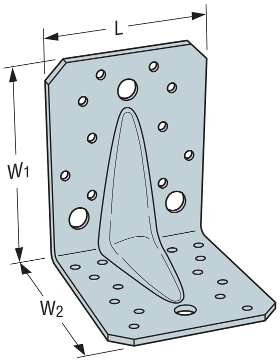
The AE and ABR heavy angles are used to transfer shear forces between CLT wall and floor panels. Both series of angles have been tested using S-P-F cross laminated timber manufactured to ANSI/APA PRG 320 standard and can be installed using proprietary CNA ring-shank nails or Simpson Strong-Tie® Strong-Drive® SD Connector screws.

Material: See table

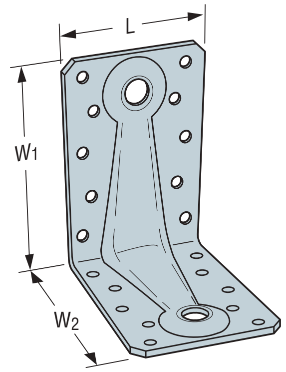
Finish: Galvanized

Installation:

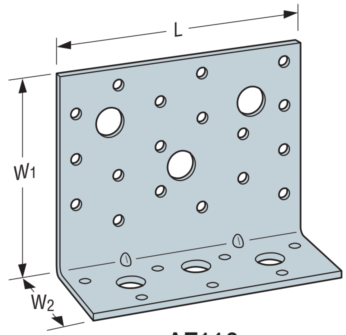
- Use all specified fasteners.
- Installation and fasteners schedule assumes platform framing. Install vertical leg at bottom edge of CLT wall panel and horizontal leg on CLT floor panel with 3⅞" minimum edge distance.



ABR105



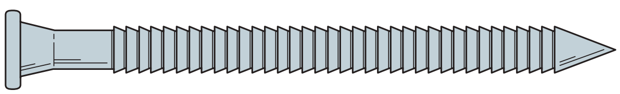
ABR9020

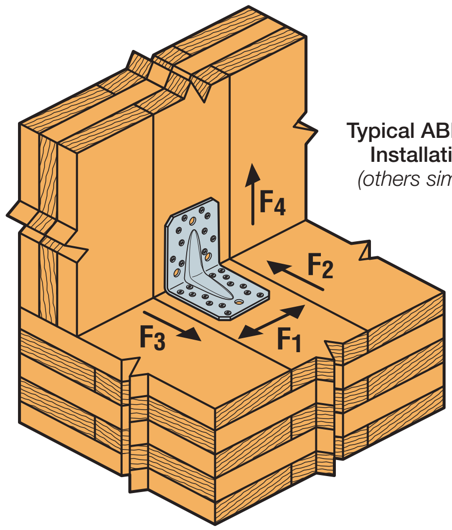


AE116

Model No.	Dimensions (mm)				Fasteners		Factored Resistance (K_D = 1.15)			
	t	W_1	W_2	L	Horizontal Leg	Vertical Leg	F_1 lb. / kN	F_2 lb. / kN	F_3 lb. / kN	F_4 lb. / kN
ABR9020	2	88	88	65	(10) CNA4 x 60	(10) CNA4 x 60	1525 / 6.78	510 / 2.27	1925 / 8.56	510 / 2.27
					(10) SD #10 x 2½"	(10) SD #10 x 2½"	2320 / 10.31	1440 / 6.41	1925 / 8.56	1440 / 6.41
ABR105	3	105	105	90	(14) CNA4 x 60	(10) CNA4 x 60	1885 / 8.38	500 / 2.23	3330 / 14.81	700 / 3.12
					(14) SD #10 x 2½"	(10) SD #10 x 2½"	2735 / 12.16	1440 / 6.41	3330 / 14.81	2015 / 8.97
AE116	3	90	48	116	(7) CNA4 x 60	(18) CNA4 x 60	2125 / 9.45	900 / 4.01	2125 / 9.45	350 / 1.56
					(7) SD #10 x 2½"	(18) SD #10 x 2½"	2980 / 13.25	2140 / 9.53	2980 / 13.25	1010 / 4.49

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed; reduce where other load durations govern.
2. Factored resistances are based on cross-laminated timber manufactured to ANSI/APA PRG 320 using SPF material.
3. **Nails:** CNA4 x 60 = 4.1 mm diameter x 60 mm-long proprietary ring-shank nail.
4. **Screws:** SD #10 x 2½" (model SD10212) = 0.131" dia. x 2½" long.


CNA4 x 60



Typical ABR105 Installation
(others similar)

HL

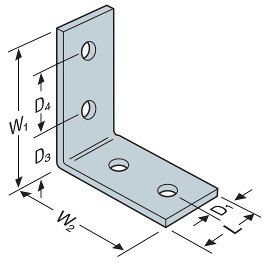
Heavy Angles and Gussets

Versatile angle gussets and heavy angles promote standardization and construction economy, and are compatible with Simpson Strong-Tie® structural hardware.

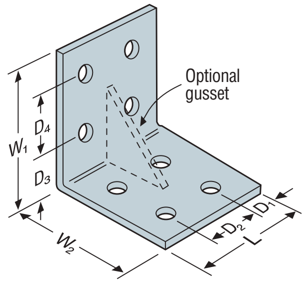
Finish: HL33, 35, 53, 55 — Galvanized; others Simpson Strong-Tie® gray paint (including all parts with gussets). May be ordered in HDG.

Options:

- Gussets may be added to HL models when L ≥ 5" (specify G after model number, as in HL46G)



HL53

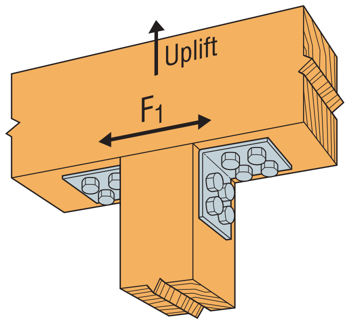


HL55

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Ga.	Dimensions (in.)						Bolts (Total)	
		W_1 and W_2	L	D_1	D_2	D_3	D_4	Qty.	Dia.
HL33	7	3¼	2½	1¼	—	2	—	2	½
HL35	7	3¼	5	1¼	2½	2	—	4	½
HL53	7	5¾	2½	1¼	—	2	2½	4	½
HL55	7	5¾	5	1¼	2½	2	2½	8	½
HL43	3	4¼	3	1½	—	2¾	—	2	¾
HL46	3	4¼	6	1½	3	2¾	—	4	¾
HL73	3	7¼	3	1½	—	2¾	3	4	¾
HL76	3	7¼	6	1½	3	2¾	3	8	¾

1. Connectors are not load rated.



Typical HL55 Installation

Straps and Ties

T and L

Strap Ties

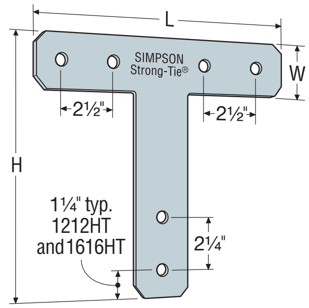
T and L strap ties are versatile utility straps. See Indoor Architectural Products for aesthetically pleasing options with black powder-coated paint.

Finish: Galvanized; see Corrosion Information, pp. 20–24

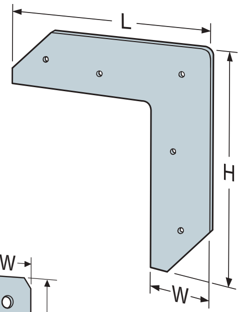
These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Ga.	Dimensions (in.)			Fasteners		
		L	H	W	Nails	Bolts Qty.	Bolts Dia.
55L	16	4¾	4¾	1¼	(5) 10d	—	—
66L	14	6	6	1½	(10) 16d	3	⅜
88L	14	8	8	2	(12) 16d	3	½
1212L	14	12	12	2	(14) 16d	3	½
1212HL	7	12	12	2½	—	4	⅝
1616HL	7	16	16	2½	—	4	⅝
66T	14	6	5	1½	(8) 16d	3	⅜
128T	14	12	8	2	(12) 16d	3	½
1212T	14	12	12	2	(12) 16d	3	½
1212HT	7	12	12	2½	—	6	⅝
1616HT	7	16	16	2½	—	6	⅝

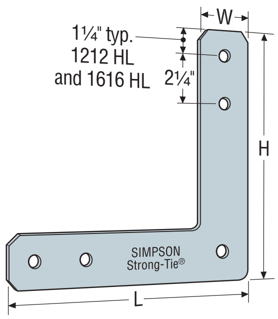
1. These connectors are not load-rated and may be installed with nails or bolts.
2. **Nails:** 16d = 0.162" dia. x 3½" long, 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.



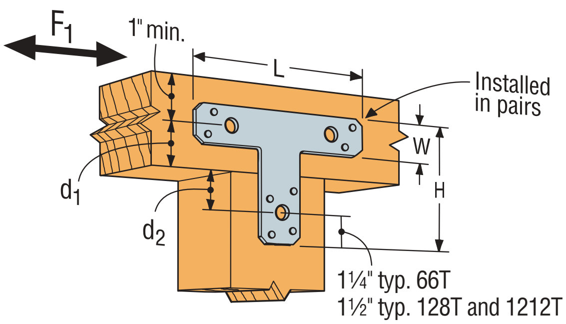
1212HT



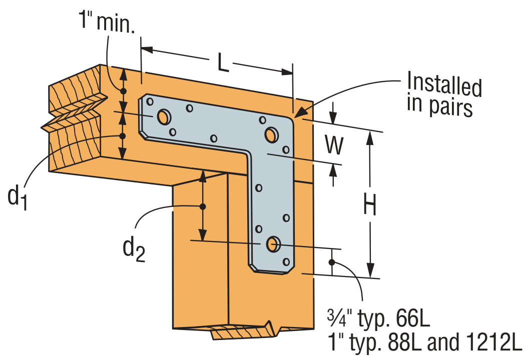
55L



1212HL



Typical T Installation



Typical L Installation

Masonry and Concrete Connectors

HU/HUC

Hangers

HU and HUC products are heavy duty face mount joist hangers.

Material: 14 gauge

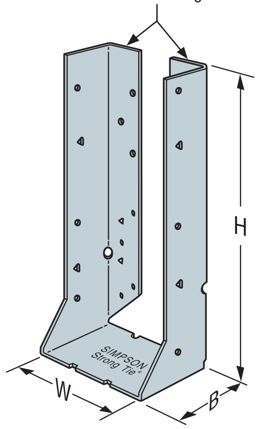
Finish: Galvanized; ZMAX® and stainless steel available

Installation:

- These hangers are attached to the concrete or grout-filled CMU walls using ¼" hex head Titen® 2 screws. Titen 2 screws (Model No. TTN25234H) are not provided with the hangers.
- Drill the 3⁄16"-diameter hole to the specified embedment depth plus ½".
- Alternatively, drill the 3⁄16"-diameter hole to the specified embedment depth and blow it clean using compressed air.
- 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.
- The hangers should be installed such that a minimum end and edge distance of 1½" is maintained.
- Stainless-steel HU/HUC hangers and Titen screws are available for some medium corrosion exterior applications.
- GFCMU shall be 15 MPa (min.) concrete block masonry with Type S mortar grout filled in accordance with CSA A179.
- See pp. 43–46 for more information on Titen 2 screws.

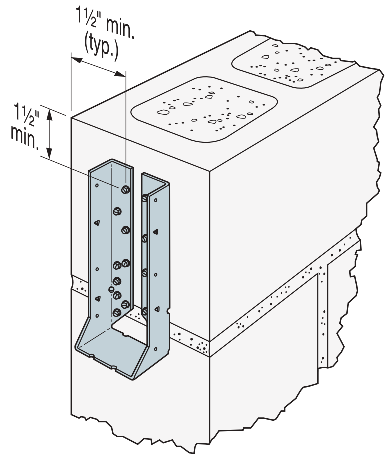
Options:

- The HUC is a concealed flange version of the HU. Concealed flange hangers have the face flanges turned in.
- HU is available with A flanges concealed, provided the W dimension is 2 5⁄16" or greater, at 100% of the table value.
- HU is available with one flange concealed when the W dimension is less than 2 5⁄16" at 100% of the table value.
- Skewed HU/HUC hangers attached to masonry have not been evaluated.

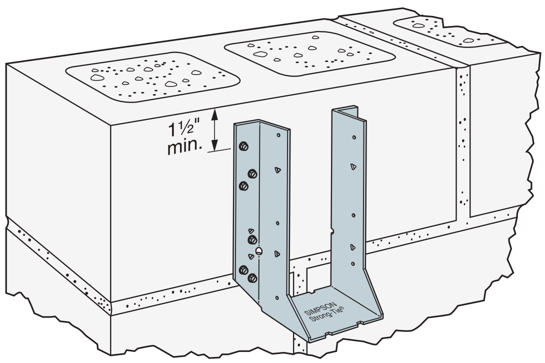


HUC410

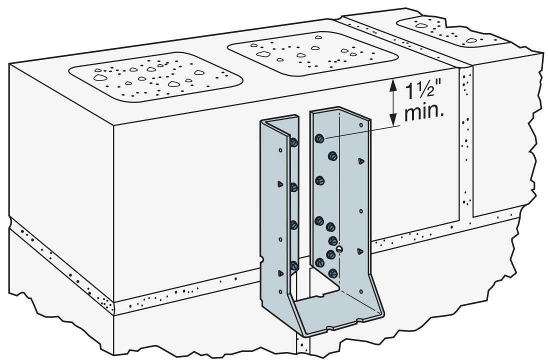
Titen® 2
Hex Head



HUC410 Installed on
Masonry Block End Wall



HU410 Installed on
Masonry Block Side Wall



HUC410 Installed on
Masonry Block Side Wall

HU/HUC

SIMPSON Strong-Tie®

Hangers (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.		Dimensions (in.)				Fasteners			Factored Resistance Uplift (KD = 1.15)		Factored Resistance Normal (KD = 1.00)	
Standard	Concealed	W	H	B	d_e	GFCMU Titen® 2	Concrete Titen® 2	Joist	lb.	kN	lb.	kN
HU26	HU26X	1⁹⁄₁₆	3¹⁄₁₆	2¼	2¹¹⁄₁₆	(4) ¼" x 2¾"	(4) ¼" x 1¾"	(2) 10d x 1½"	490	2.18	1625	7.23
HU28	HU28X	1⁹⁄₁₆	5¼	2¼	4⅞	(6) ¼" x 2¾"	(6) ¼" x 1¾"	(4) 10d x 1½"	975	4.34	2435	10.83
HU210	HU210X	1⁹⁄₁₆	7⅛	2¼	6¾	(8) ¼" x 2¾"	(8) ¼" x 1¾"	(4) 10d x 1½"	975	4.34	3250	14.46
HU212	HU212X	1⁹⁄₁₆	9	2¼	8⅝	(10) ¼" x 2¾"	(10) ¼" x 1¾"	(6) 10d x 1½"	1465	6.52	4015	17.86
HU26-2	HUC26-2	3⅛	5⅜	2½	5	(12) ¼" x 2¾"	(12) ¼" x 1¾"	(6) 10d	1575	7.01	5430	24.15
HU28-2	HUC28-2	3⅛	7	2½	6⅝	(14) ¼" x 2¾"	(14) ¼" x 1¾"	(6) 10d	1575	7.01	5780	25.71
HU210-2	HUC210-2	3⅛	8¹³⁄₁₆	2½	8⁷⁄₁₆	(18) ¼" x 2¾"	(18) ¼" x 1¾"	(10) 10d	2620	11.65	5780	25.71
HU212-2	HUC212-2	3⅛	10⁹⁄₁₆	2½	10³⁄₁₆	(22) ¼" x 2¾"	(22) ¼" x 1¾"	(10) 10d	2620	11.65	5780	25.71
HU46	HUC46	3⁹⁄₁₆	5³⁄₁₆	2½	4¹³⁄₁₆	(12) ¼" x 2¾"	(12) ¼" x 1¾"	(6) 10d	1575	7.01	4870	21.66
HU48	HUC48	3⁹⁄₁₆	6¹³⁄₁₆	2½	6⁷⁄₁₆	(14) ¼" x 2¾"	(14) ¼" x 1¾"	(6) 10d	1575	7.01	5685	25.29
HU410	HUC410	3⁹⁄₁₆	8⅝	2½	8¼	(18) ¼" x 2¾"	(18) ¼" x 1¾"	(10) 10d	2620	11.65	5780	25.71
HU412	HUC412	3⁹⁄₁₆	10⁵⁄₁₆	2½	9¹⁵⁄₁₆	(22) ¼" x 2¾"	(22) ¼" x 1¾"	(10) 10d	2620	11.65	5780	25.71
HU26-3	HUC26-3	4¹¹⁄₁₆	5⅜	2½	5	(12) ¼" x 2¾"	(12) ¼" x 1¾"	(6) 10d	1575	7.01	4870	21.66
HU28-3	HUC28-3	4¹¹⁄₁₆	7	2½	6⅝	(14) ¼" x 2¾"	(14) ¼" x 1¾"	(6) 10d	1575	7.01	5685	25.29
HU210-3	HUC210-3	4¹¹⁄₁₆	8¹³⁄₁₆	2½	8⁷⁄₁₆	(18) ¼" x 2¾"	(18) ¼" x 1¾"	(10) 10d	2620	11.65	5780	25.71
HU212-3	HUC212-3	4¹¹⁄₁₆	10⁹⁄₁₆	2½	10³⁄₁₆	(22) ¼" x 2¾"	(22) ¼" x 1¾"	(10) 10d	2620	11.65	5780	25.71

1. Factored uplift resistances have been increased 15% for wind or earthquake loading with no further increase allowed. The values shown assume a D.Fir-L joist in the hanger and are based on nail values only. The Designer must ensure the joist can generate the resistances shown based on the effective shear depth d_e. For S-P-F joist multiply uplift value by 0.71.
2. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
3. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
4. The Designer must ensure the joist can generate the factored normal resistances shown.
5. d_e is the dimension from the bearing seat to the top joist nail.
6. Products shall be installed such that screws are not exposed to weather.
7. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

LGUM/HGUM

High-Capacity Beam/Girder Hangers for Concrete and GFCMU

High-capacity girder hangers for masonry applications. Installation is made easier using Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws into the wood member and Titen HD® heavy-duty screw anchors into the masonry.

Material: See table

Finish: Galvanized

Installation:

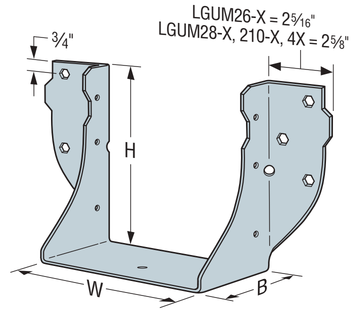
- Use all specified fasteners (included).

Titen HD:

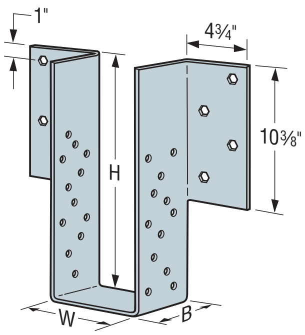
- Drill holes using drill bits equal in diameter to the specified Titen HD screw anchor.
- Holes shall be drilled ½" deeper than the specified Titen HD screw anchor length (i.e. 4½" for a 4" long Titen HD screw anchor).
- Caution: Oversized holes in the base material will reduce or eliminate the mechanical interlock of the threads with the base material and will reduce the anchor's load capacity.
- Titen HD screw anchor is not recommended for exposed exterior applications or wet service conditions.
- GFCMU shall be Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14.
- See pp. 43–46 for more information on Titen HD screw anchors.

Options:

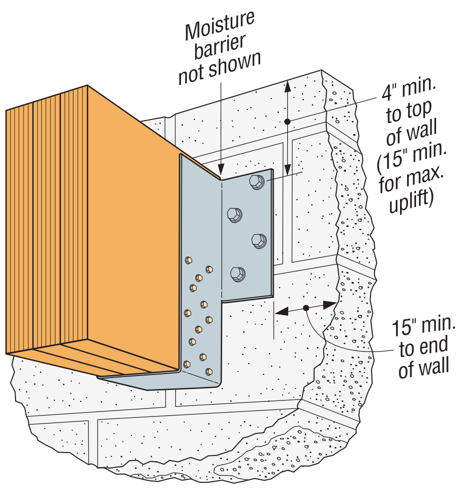
- For HGUM only – Other seat widths available. Order as "X" version.
- HGUM available with one flange concealed.
- LGUM/HGUM available with skews up to 45°. See hanger options, p. 126.



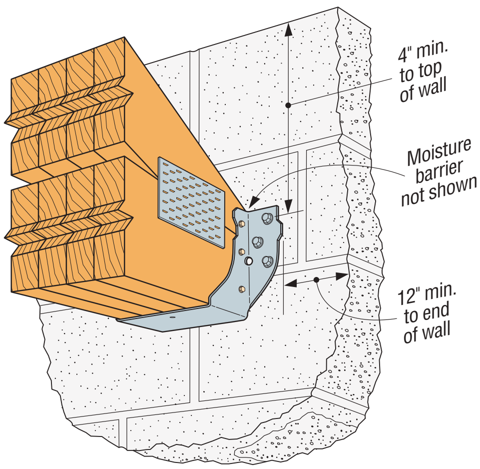
LGUM



HGUM



Typical HGUM Installation



Typical LGUM Installation

LGUM/HGUM

High-Capacity Beam/Girder Hangers for Concrete and GFCMU (cont.)

Model No.	Ga.	Dimensions (in.)			Fasteners		Factored Resistance		
							Uplift	Normal	
		W	H	B	GFCMU / Concrete	Joist		GFCMU	Concrete
							(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.00)
					Titen HD	SDS Screws	lb.	lb.	lb.
							kN	kN	kN
Double 2x Sizes									
LGUM26-2-SDS	12	3 5/16	5 7/16	4	(4) ⅜" x 4"	(4) ¼" x 2½"	2640	8125	8125
							11.76	36.19	36.19
LGUM28-2-SDS	12	3 5/16	7 3/16	4	(6) ⅜" x 4"	(6) ¼" x 2½"	4070	10110	10110
							18.13	45.03	45.03
LGUM210-2-SDS	12	3 5/16	9 3/16	4	(8) ⅜" x 4"	(8) ¼" x 2½"	5430	11585	11585
							24.19	51.60	51.60
Triple 2x Sizes									
LGUM26-3-SDS	12	4 15/16	5½	4	(4) ⅜" x 4"	(4) ¼" x 2½"	2640	8125	8125
							11.76	36.19	36.19
LGUM28-3-SDS	12	4 15/16	7¼	4	(6) ⅜" x 4"	(6) ¼" x 2½"	4070	10110	10110
							18.13	45.03	45.03
LGUM210-3-SDS	12	4 15/16	9¼	4	(8) ⅜" x 4"	(8) ¼" x 2½"	5430	11585	11585
							24.19	51.60	51.60
Quadruple 2x Sizes									
LGUM26-4-SDS	12	6 9/16	5 7/16	4	(4) ⅜" x 4"	(4) ¼" x 2½"	2640	8125	8125
							11.76	36.19	36.19
LGUM28-4-SDS	12	6 9/16	7 3/16	4	(6) ⅜" x 4"	(6) ¼" x 2½"	4070	10110	10110
							18.13	45.03	45.03
LGUM210-4-SDS	12	6 9/16	9 3/16	4	(8) ⅜" x 4"	(8) ¼" x 2½"	5430	11585	11585
							24.19	51.60	51.60
4x Sizes									
LGUM46-SDS	12	3⅝	5 5/16	4	(4) ⅜" x 4"	(4) ¼" x 2½"	2640	8125	8125
							11.76	36.19	36.19
LGUM48-SDS	12	3⅝	7 5/16	4	(6) ⅜" x 4"	(6) ¼" x 2½"	4070	10110	10110
							18.13	45.03	45.03
LGUM410-SDS	12	3⅝	9 5/16	4	(8) ⅜" x 4"	(8) ¼" x 2½"	5430	11585	11585
							24.19	51.60	51.60
Engineered Wood and Structural Composite Lumber Sizes (Heavy Duty)									
HGUM5.25-SDS	7	5¼	11 to 30	5¼	(8) ⅝" x 5"	(24) ¼" x 2½"	8045	15310	22615
							35.84	68.20	100.73
HGUM5.50-SDS	7	5½		5¼	(8) ⅝" x 5"	(24) ¼" x 2½"	8045	15310	22615
							35.84	68.20	100.73
HGUM7.00-SDS	7	7		5¼	(8) ⅝" x 5"	(24) ¼" x 2½"	8045	15310	22615
							35.84	68.20	100.73
HGUM7.25-SDS	7	7¼		5¼	(8) ⅝" x 5"	(24) ¼" x 2½"	8045	15310	22615
							35.84	68.20	100.73
HGUM9.00-SDS	7	9		5¼	(8) ⅝" x 5"	(24) ¼" x 2½"	8045	15310	22615
							35.84	68.20	100.73

1. Factored uplift values have been increased 15% for wind or earthquake loading with no further increase allowed; reduce where other load durations govern.
2. Factored uplift values assume D.Fir-L joist (SG = 0.49). For S-P-F joist, multiply the tabulated uplift values by 0.72.
3. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
4. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
5. Factored resistances for concrete-block masonry assumes minimum 8" (190 mm) block-grouted solid as per CSA A179-14. Designer to design block-wall reinforcing as per CSA S304-14 to carry the applied load.
6. Factored resistances for concrete assumes minimum 8" (203 mm) concrete wall. Designer to design concrete wall reinforcing as per CSA A23.3-14 to carry the applied load.
7. Factored normal resistances assume D.Fir-L joist. For other joist materials, the Designer must ensure that the bearing capacity of the joist does not govern.
8. HGUM tabulated factored uplift resistance require a minimum loaded edge distance of 15". For loaded edge distances less than 15" to a minimum of 4", the factored uplift resistance is 5030 lb. (22.38 kN).

SIMPSON Strong-Tie®

High-Capacity Beam/Girder Hangers for Concrete and GFCMU (cont.)

Hanger Options

See Hanger Options General Notes on p. 125.

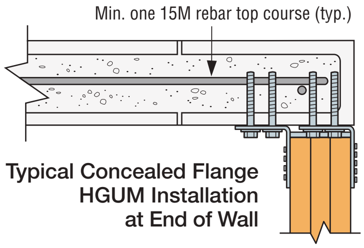
Concealed Flange

- HGUM hangers are available with one flange concealed. Specify flange to conceal.

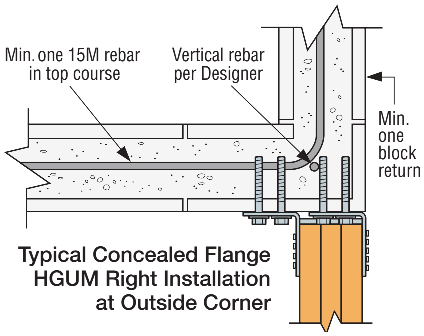
Table 1 – HGUM Factored Resistances for One Flange Concealed Applications

Model No.	Dimensions (in.)		Fasteners		Factored Resistance					
					End of Wall				Outside Corner	
			GFCMU / Concrete	Joist	GFCMU Wall		Concrete Wall		GFCMU or Concrete Wall	
	W	H	Titen HD	SDS Screws	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
					lb.	lb.	lb.	lb.	lb.	lb.
					kN	kN	kN	kN	kN	kN
HGUM	5¼ to 9	11 to 30	(8) ⅝" x 5"	(24) ¼" x 2½"	1690	7355	4495	9660	3880	9890
					7.52	32.72	20.00	42.97	17.26	43.99

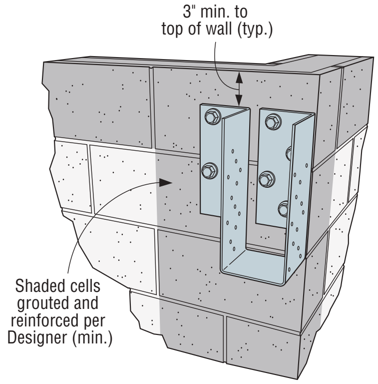
1. Factored uplift resistances shown are for D.Fir-L joist. For S-P-F joist, multiply the value x 0.72.
2. See Table 2 for additional notes.



Typical Concealed Flange HGUM Installation at End of Wall



Typical Concealed Flange HGUM Right Installation at Outside Corner

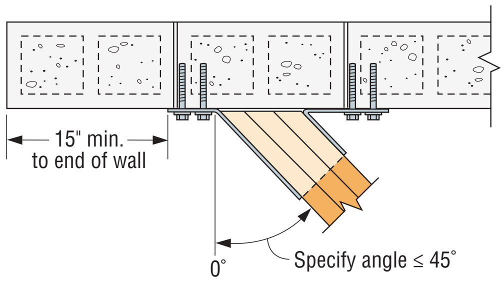


Typical Concealed Flange HGUM Installation at Outside Corner
(concealed right shown)

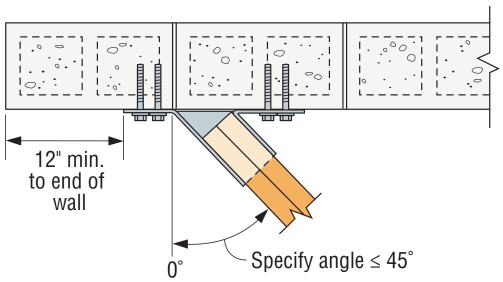
Table 2 – LGUM/HGUM Factored Resistances for Skewed Applications

Model No.	Fasteners		Factored Resistance		
			Uplift		Normal
	GFCMU / Concrete	Joist	D.Fir-L (K_D = 1.15)	S-P-F (K_D = 1.15)	Concrete / GFCMU (K_D = 1.00)
	Titen HD	SDS Screws	lb.	lb.	lb.
			kN	kN	kN
LGUM26-2X LGUM26-3X LGUM26-4X LGUM46X	(4) ⅜" x 4"	(4) ¼" x 2½"	875	630	2855
			3.89	2.80	12.70
LGUM28-2X LGUM28-3X LGUM28-4X LGUM48X	(6) ⅜" x 4"	(6) ¼" x 2½"	1410	1015	4470
			6.27	4.52	19.88
LGUM210-2X LGUM210-3X LGUM210-4X LGUM410X	(8) ⅜" x 4"	(8) ¼" x 2½"	1950	1405	6085
			8.67	6.25	27.07
HGUM5.25X HGUM5.50X	(8) ⅝" x 5"	(8) ¼" x 2½"	2390	1720	9370
			10.63	7.65	41.68
HGUM7.00X HGUM7.25X	(8) ⅝" x 5"	(8) ¼" x 2½"	2350	1690	8450
			10.45	7.52	37.59
HGUM9.00X	(8) ⅝" x 5"	(8) ¼" x 2½"	2310	1660	7530
			10.28	7.38	33.50

1. Factored uplift values have been increased 15% for wind or earthquake loading with no further increase allowed; reduce where other load durations govern.
2. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete-block masonry as per Table 4 CSA S304.1-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
3. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
4. Factored resistances for concrete-block masonry assumes minimum 8" (190 mm) block-grouted solid as per CSA A179-14. Specifier to design block-wall reinforcing per CSA S304.1-14 to carry the applied load.
5. Factored resistances for concrete assumes minimum 8" (203 mm) concrete wall. Specifier to design concrete wall reinforcing as per CSA A23.3-14 to carry the applied load.



Top View HGUM Skewed Right Bevel Cut



Top View LGUM Skewed Right Square Cut

Masonry and Concrete Connectors

WMU

GFCMU Hanger

WMs are designed for use on standard 8" grouted masonry block wall construction.

Material: See tables on p. 339;
12 gauge top flange and stirrup

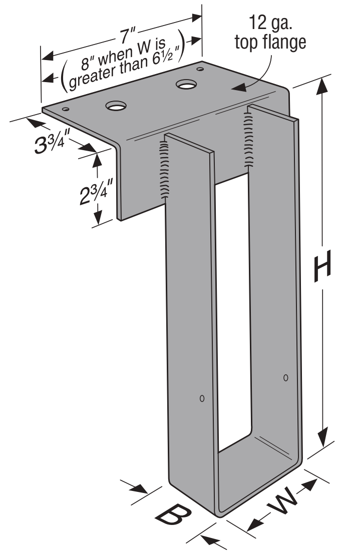
Finish: Simpson Strong-Tie® gray paint; hot-dip galvanized available: specify HDG

Factored Resistances: For hanger heights exceeding the joist height, the factored resistance is 0.50 of the table load.

Installation:

- Use all specified fasteners.
- GFCMU shall be Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14.
- Mid-wall — Two 16d duplex nails must be installed into the top flange and embedded into the grouted wall. Embed into block with a minimum of one course above and one course below the top flange with one 15M vertical rebar minimum 24" long in each cell. Minimum grout strength is 2000 psi (13.8 MPa).
- When installed on top of masonry wall, use two Titen® 2 ¼ x 1¾" masonry screws after pre-drilling into grout.
- See pp. 43–46 for more information on Titen screws.

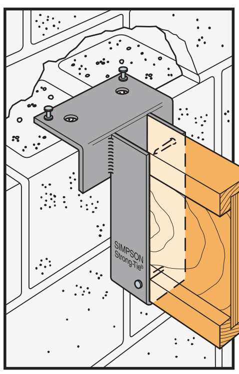
Options: See Hanger Options information on pp. 125–127.

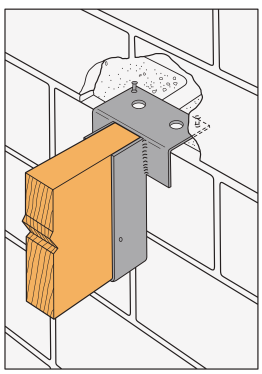


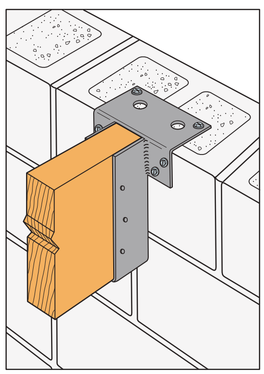
WM

Model No.	Joist Size (in.) Width	Joist Size (in.) Height	Fasteners Top	Fasteners Face	Fasteners Joist	Factored Resistance Uplift (K_D = 1.15) lb. / kN	Factored Resistance Normal (K_D = 1.00) lb. / kN
Mid-Wall Installation							
WMU	1½ to 1¾	9 to 28	(2) 16d duplex	(4) ¼" x 1¾" Titen 2	(2) 10d x 1½"	860	5300
						3.83	23.58
	2½ to 7½	9 to 28	(2) 16d duplex	(4) ¼" x 1¾" Titen 2	(6) 10d x 1½"	860	6060
						3.83	26.96
Top-of-Wall Installation							
WMU	1½ to 7½	9 to 28	(2) ¼" x 1¾" Titen 2	(4) ¼" x 1¾" Titen 2	(6) 10d x 1½"	745	5300
						3.31	23.58

1. Factored uplift resistances shown are for D.Fir-L joist. Multiply table value x 0.71 for S-P-F values.
2. WMU hangers are limited based on joist bearing capacity for the specific wood species, up to the maximum test value of 6060 lb. (26.99 kN). All headers are grouted masonry block.
3. Titen 2 ¼" x 1¾" installed on top of wall after grout has cured.
4. Products shall be installed such that Titen screws are not exposed to weather.
5. **Nails:** 16d duplex = 0.162" dia. x 3½" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.


Typical WM Installation with Alternate Nailing Pattern (ANP)


Typical WM Installation at Mid Wall


Typical WMU Installation at Top of Wall

Masonry and Concrete Connectors

SIMPSON Strong-Tie®

GFCMU Hanger (cont.)

Joist Size	Model No.	Dimensions (in)			Fasteners		Factored Resistance on GFCMU					
							Mid-Wall Installation			Top-of-Wall Installation		
		B	W	H (9 to 28)	Masonry (Titen® 2)	Joist	Top Fasteners	Uplift (K_D = 1.15) lb. / kN	Download (K_D = 1.00) lb. / kN	Top Fasteners (Titen 2)	Uplift (K_D = 1.15) lb. / kN	Download (K_D = 1.00) lb. / kN
2x	WMU1.56X	5	1 9/16	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	5300	(2) ¼" x 1 ¾"	745	5300
								3.83	23.58		3.31	23.58
1-ply truss	WMU1.62X	5	1⅝	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	5300	(2) ¼" x 1 ¾"	745	5300
								3.83	23.58		3.31	23.58
1-ply SCL	WMU1.81X	5	1 13/16	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	5300	(2) ¼" x 1 ¾"	745	5300
								3.83	23.58		3.31	23.58
2" I-joist	WMU2.06X	5	2 1/16	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
2 1/16" I-joist	WMU2.12X	5	2⅛	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
2 5/16" I-joist	WMU2.37X	5	2⅜	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
3x	WMU2.56X	5	2 9/16	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
Double 2x	WMU3.12X	5	3⅛	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
3⅛" glulam	WMU3.25X	5	3¼	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
4x	WMU3.56X	5	3 9/16	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
Double 3x	WMU5.12X	5	5⅛	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
5⅛" glulam	WMU5.25X	5	5¼	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
6x	WMU5.50X	5	5½	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58
Double 4x	WMU7.12X	5	7⅛	Specify	(4) ¼" x 1 ¾"	(4) 10d x 1 ½"	(2) 16d duplex	860	6060	(2) ¼" x 1 ¾"	745	5300
								3.83	26.96		3.31	23.58

1. Factored uplift resistances have been increased 15% for wind or earthquake loading with no further increase allowed. Reduce where other load durations govern.
2. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
3. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
4. Products shall be installed such that Titen screws are not exposed to the weather.
5. For hanger heights that exceed the joist height by ½", the factored resistance is 50% of the tabulated value.
6. **Fasteners:** 16d duplex = 0.162" x 3½" long, 10d x 1½" = 0.148" dia. X 1½" long, TTN2-25134H = ¼" x 1¾" Titen 2; TTN25134H = ¼" x 1¾" Titen may be used for full catalogue values. See pp. 27–28 for other nail sizes and information.

Seismic and Hurricane Ties

The Hurricane Tie series features various configurations of wind and seismic ties for trusses and rafers. The H10S provides a high-capacity connection from truss or rafter to stud. A flexible nailing pattern allows installation where the stud is offset from the rafter up to 1". Suitable for wood-to-wood and wood-to-GFCMU/concrete application.

The HM9 is designed to retrofit roof trusses/rafters for masonry construction. The HM9 provides high uplift and lateral capacity using Simpson Strong-Tie® Titen® 2 concrete and masonry screws.

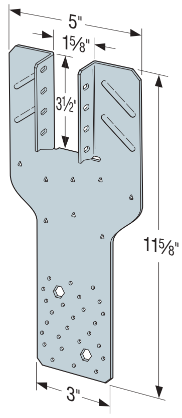
The presloped 5:12 seat of the H16 provides for a tight fit and reduced deflection. The strap length provides for various truss height up to a maximum of 13½". Minimum heel height for H16 series is 4".

Material: See table

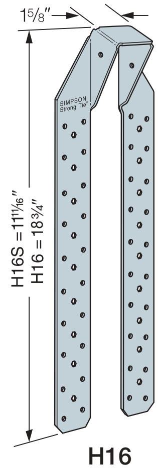
Finish: Galvanized; other models available in stainless steel or ZMAX®. See Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes.
- HGAM10 can be installed into grouted concrete block. Screws are provided.
- The HM9KT and the HGAM10KTA are sold with Strong-Drive® SDS Heavy-Duty Connector screws and Titen® 2 screws. 1¾" Titen 2 screws for concrete sold separately.
- Hurricane ties do not replace solid blocking.
- Attach to grouted concrete block with a minimum one 15M rebar horizontal in the top lintel block.
- Titen 2 and Titen HD® are not recommended for exposed exterior applications or wet service conditions.
- See pp. 43–46 for more information on Titen screw and Titen HD screw anchor.

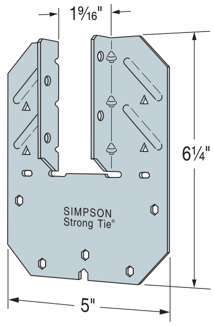


H10S

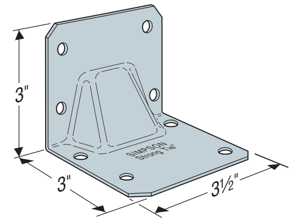


Presloped at 5/12. Truss/rafter pitch of 3/12 to 7/12 is acceptable.

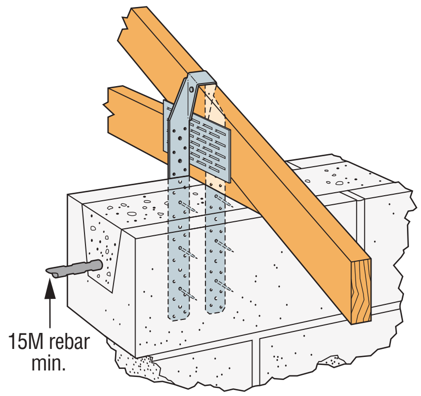
H16
(H16-2 similar)



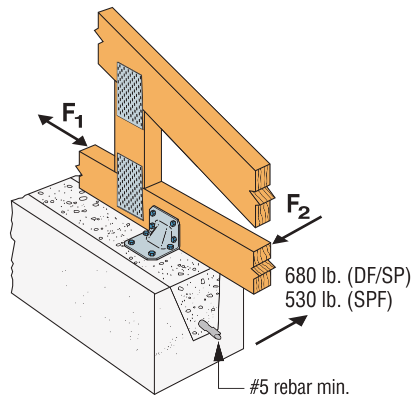
HM9



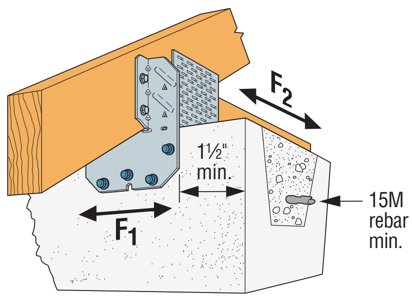
HGAM10



❶ H16S Installed into Masonry

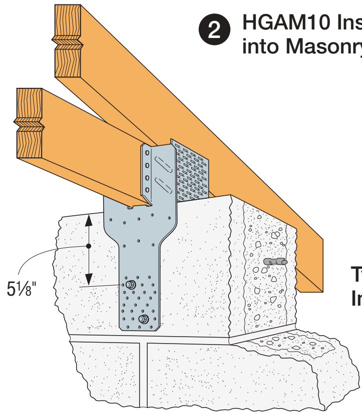


❷ HGAM10 Installed into Masonry



❸ HM9 Attaching Truss to Masonry

Moisture barrier not shown (typ.)



Typical H10S Installation

Seismic and Hurricane Ties (cont.)

Model No.	Ga.	Dimensions (in.)		Fasteners			Factored Resistance (K_D = 1.15)					
							D.Fir-L			S-P-F		
		W	L	Rafters/ Truss	GFCMU	Concrete	Uplift	Lateral F_1	Lateral F_2	Uplift	Lateral F_1	Lateral F_2
							lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN	lb. / kN
HM9KT	18	1 9/16	6¼	(4) ¼" x 1½" SDS	(5) ¼" x 2¼" Titen® 2	(5) ¼" x 1¾" Titen® 2	815 3.63	580 2.58	285 1.27	585 2.60	580 2.58	285 1.27
HGAM10KT	14	—	—	(4) ¼" x 1½" SDS	(4) ¼" x 2¾" Titen 2	(4) ¼" x 1¾" Titen 2	1470 6.54	1305 5.81	1495 6.66	1060 4.72	940 4.18	1310 5.83
H10S	18	1⅝	11⅝	(8) 10d x 1½"	(2) ⅜" x 4" Titen HD	(2) ⅜" x 4" Titen HD	1655 7.36	— —	— —	1175 5.23	— —	— —
H16	18	1⅝	18¾	(2) 10d x 1½"	(6) ¼" x 2¼" Titen 2	(6) ¼" x 1¾" Titen 2	2075 9.23	— —	— —	1470 6.54	— —	— —
H16S	18	1⅝	11 11/16	(2) 10d x 1½"	(6) ¼" x 2¼" Titen 2	(6) ¼" x 1¾" Titen 2	2075 9.23	— —	— —	1470 6.54	— —	— —
H16-2	18	3¼	18¾	(2) 10d x 1½"	(6) ¼" x 2¼" Titen 2	(6) ¼" x 1¾" Titen 2	2075 9.23	— —	— —	1470 6.54	— —	— —
H16-2S	18	3¼	11 11/16	(2) 10d x 1½"	(6) ¼" x 2¼" Titen 2	(6) ¼" x 1¾" Titen 2	2075 9.23	— —	— —	1470 6.54	— —	— —

1. Factored resistances have been increased 15% for earthquake or wind loading with no further increase allowed.
2. Factored resistances are for one anchor. A minimum rafter thickness of 2½" must be used when framing anchors are installed on each side of the joist and on the same side of the plate.
3. When cross-grain bending or cross-grain tension cannot be avoided, mechanical reinforcement to resist such forces should be considered.
4. HGAM10KTA factored F_2 resistances shown are for loading applied into the connector. For loading applied away from the connector, the factored resistances are 960 lb. (4.27 kN) for D.Fir-L and 690 lb. (3.07 kN) for S-P-F.
5. Minimum edge distance for Titen 2 screws is 1½".
6. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
7. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
8. Designer to design wall reinforcing to carry the applied loads.
9. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long, 8d x 1½" = 0.131" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

LGT/MGT/VGT

Heavy Girder Tiedowns

The LGT and VGT 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 SDS 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 overhang.

Material: VGT — 7 gauge; LGT2 — 14 gauge; MGT/LGT3/LGT4 — 12 gauge

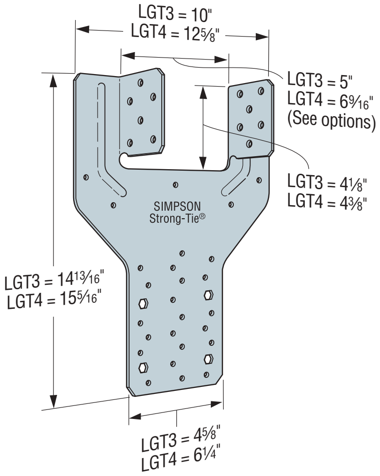
Finish: Galvanized

Installation:

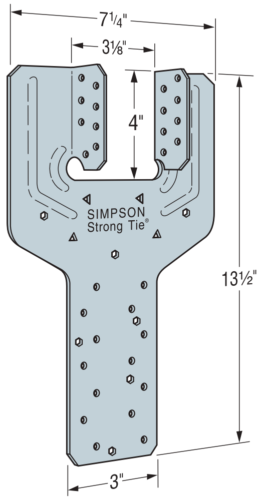
- Use all specified fasteners; see General Notes.
- Minimum grout or concrete strength f'_C = 2500 psi (17.25 MPa).
- To achieve the values listed in the table on p. 343, the product shall be attached to a grouted and reinforced block wall or a reinforced concrete wall designed by others to transfer the high concentrated uplift forces to the foundation.
- SDS screws included with LGT3, LGT4 and VGT series.
- VGT — Screw holes are configured to allow for double installation on a two-ply (minimum) truss.
- VGT — Can be installed on roof pitches up to 8:12 or on a bottom chord designed to transfer the loads.
- 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.
- MGT — Install a minimum of (6) 10d nails into the face of roof member that is on same side as MGT base.
- Titen® 2 screws and Titen HD® heavy-duty screw anchors are not recommended for exposed exterior applications or wet service conditions.
- See pp. 43–46 for more information on Titen 2 screw and Titen HD heavy-duty screw anchor.

Options:

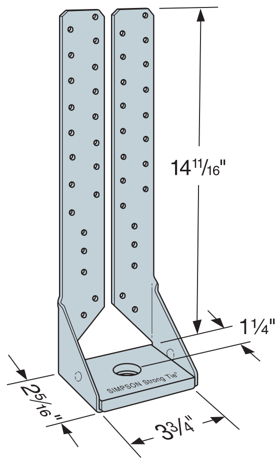
- LGT3 is available with reduced widths of W = 4¹³⁄₁₆" – order as LGT3N-SDS2.5.



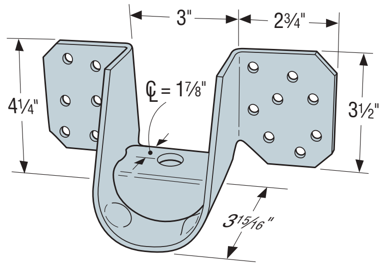
LGT3-SDS2.5
(LGT4-SDS3 similar)



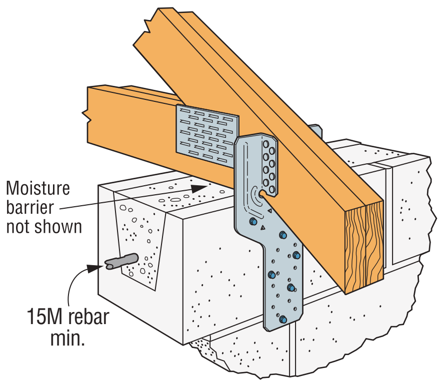
LGT2



MGT



VGT
U.S. Patent 7,707,785



Typical LGT2 Installation into Masonry
(LGT3 and LGT4 similar, but installed with Titen HD)

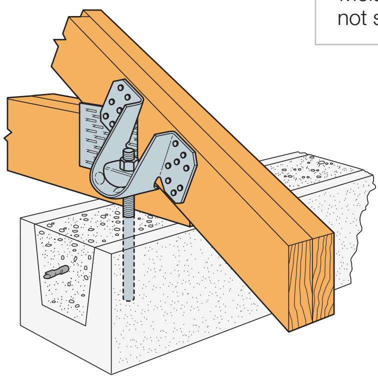
SIMPSON Strong-Tie®

Heavy Girder Tiedowns (cont.)

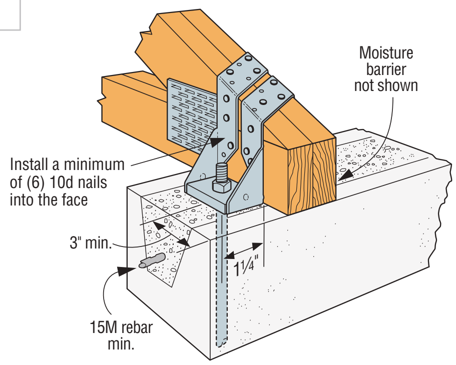
Model No.	Qty.	No. of Plies	Fasteners		Factored Resistance (K_D = 1.15)	
			Girder Truss	Wall Anchorage	D.Fir-L	S-P-F
					lb.	lb.
					kN	kN
LGT2	1	2 ply	(16) 10d	(7) ¼" x 2¼" Titen® 2	2620	2205
					11.65	9.81
LGT3-SDS2.5	1	3 ply	(12) ¼" x 2½" SDS	(4) ⅜" x 5" Titen HD	5220	3770
					23.22	16.77
LGT4-SDS3	1	4 ply	(16) ¼" x 3" SDS	(4) ⅜" x 5" Titen HD	5220	3770
					23.22	16.77
MGT	1	2 ply min.	(22) 10d	(1) ⅝" diameter	5610	3985
					24.96	17.73
VGT	1	2 ply min.	(16) ¼" x 3" SDS	(1) ⅝" diameter	8600	6195
					38.26	27.56
	2	2 ply min.	(32) ¼" x 3" SDS	(2) ⅝" diameter	11690	8420
					52.00	37.46
VGTR/L	1	2 ply min.	(16) ¼" x 3" SDS	(1) ⅝" diameter	3475	2505
					15.46	11.14
	2	2 ply min.	(32) ¼" x 3" SDS	(2) ⅝" diameter	6950	5010
					30.92	22.28

1. Factored resistances have been increased 15% for earthquake or wind load; reduce where other load durations govern.
2. Attached members must be designed to resist the factored loads.
3. The MGT can be installed with straps vertical for full capacity provided (26) 10d nails are installed to either a solid header or minimum double 2x6 web.
4. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
5. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
6. Products shall be installed such that the Titen 2 screws and Titen HD® anchors are not exposed to the weather.
7. For concrete wall applications use ¼" x 1¾" Titen 2 screws.
8. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

Moisture barrier not shown (typ.)



Typical VGT Installation



Typical MGT Installation

Heavy Girder Tiedowns

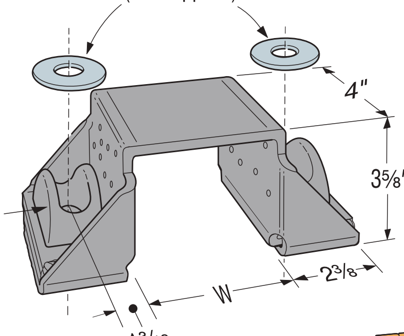
The HGT heavy girder tiedown offers the highest uplift capacity for girders and can be installed on trusses and beams with top chord slopes from 3:12 to 8:12. The HGT is available in sizes for 2-, 3- and 4-ply widths.

Material: 7 gauge

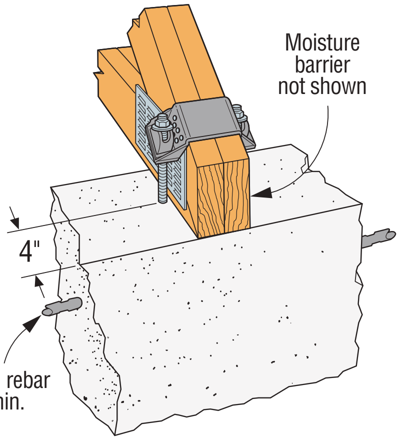
Finish: Simpson Strong-Tie® gray paint

Installation:

- Use all specified fasteners; see General Notes
- Minimum grout or concrete strength f'c = 2500 psi (17.25 MPa)
- To achieve the values 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 forces to the foundation
- Anchorage from HGT to wall below shall be with ¾"-diameter ASTM A307 Grade A bolts or threaded rod
- Standard-cut washers (not supplied) are required between the nut and the HGT
- See p. 308 for wood applications



HGT-2
(HGT-3 and HGT-4 similar)



Typical HGT-2 Installation into Concrete

Model No.	Qty.	No. of Plies	O.C. Dimension Between Anchors (in.)	Fasteners		Factored Uplift Resistance (K$_D$ = 1.15)	
				Girder Truss	Anchor Bolts	D.Fir-L	S-P-F
						lb.	lb.
						kN	kN
HGT-2	1	2 ply	5¾	(16) 10d	(2) ¾" ϕ	12140	9280
						54.00	41.28
HGT-3	1	3 ply	7⅜	(16) 10d	(2) ¾" ϕ	12140	9280
						54.00	41.28
HGT-4	1	4 ply	9	(16) 10d	(2) ¾" ϕ	12140	9280
						54.00	41.28

1. Factored resistances have been increased 15% for earthquake or wind load; reduce where other load durations govern.
2. Attached members must be designed to resist the applied loads.
3. Anchorage must be designed by others.
4. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

MTSM/HTSM

Twist Straps

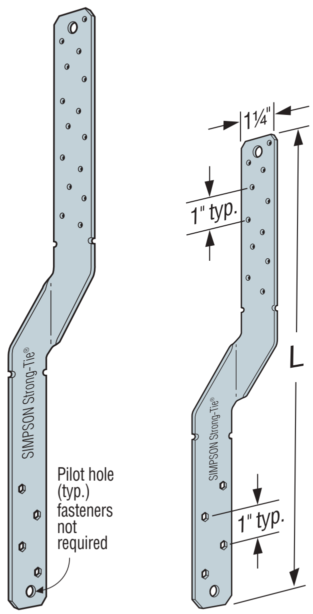
The MTSM and HTSM offer high strength truss-to-masonry connections.

Material: MTSM — 16 gauge; HTSM — 14 gauge

Finish: Galvanized. Some products available in stainless steel or ZMAX®; see Corrosion Information, pp. 20–24.

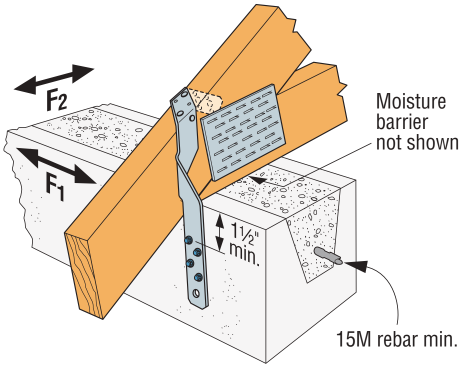
Installation:

- Use all specified fasteners; see General Notes
- Attach to either side of grouted concrete block with a minimum one 15M rebar horizontal in the lintel block
- Titen® 2 screws are not recommended for exposed exterior applications or wet service conditions
- See p. 45 for more information on Titen 2 screws



MTSM20 *(HTSM20 similar)*

MTSM16 *(HTSM16 similar)*



Typical MTSM20 Installation

Model No.	L (in.)	Fasteners			Factored Resistance (K_D = 1.15)	
		Truss	GFCMU	Concrete	D.Fir-L	S-P-F
					lb.	lb.
					kN	kN
MTSM16	16	(7) 10d	(4) ¼" x 2¼" Titen 2	(4) ¼" x 1¾" Titen 2	1240	880
					5.52	3.91
MTSM20	20	(7) 10d	(4) ¼" x 2¼" Titen 2	(4) ¼" x 1¾" Titen 2	1240	880
					5.52	3.91
HTSM16	16	(8) 10d	(4) ¼" x 2¼" Titen 2	(4) ¼" x 1¾" Titen 2	1495	1180
					6.65	5.25
HTSM20	20	(10) 10d	(4) ¼" x 2¼" Titen 2	(4) ¼" x 1¾" Titen 2	1495	1200
					6.65	5.34

1. Factored resistances have been increased 15% for wind or earthquake loading with no further increase allowed; reduce table values where other loads govern as per code.
2. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
3. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
4. Twist straps do not have to be wrapped over the truss to achieve resistances shown.
5. Minimum edge distance for Titen 2 screws is 1½".
6. Products shall be installed such that the Titen 2 screws are not exposed to the weather.
7. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

MSTAM/MSTCM

Strap Ties

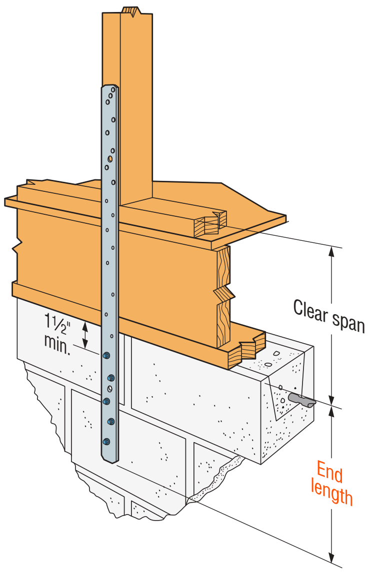
MSTAM and MSTCM models are designed for wood to masonry applications.

The MSTC series has countersunk nail slots for a lower nailing profile. Coined edges ensure safer handling.

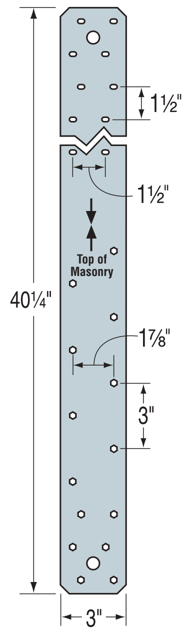
Finish: Galvanized. Some products are available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 27–28.

Installation:

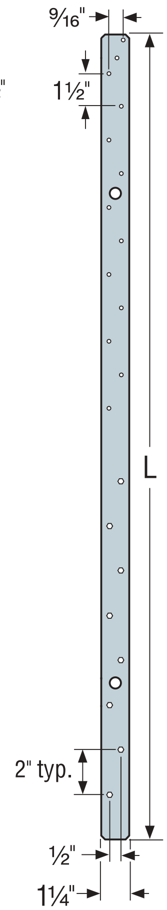
- Use all specified fasteners; see General Notes
- Attaches to grouted concrete block or solid concrete
- Titen® 2 screws are not recommended for exposed exterior applications or wet service conditions
- See p. 45 for more information on Titen 2 screws



Typical MSTAM36 Installation



MSTCM40
(other MSTCM similar)



MSTAM36

These products are available with additional corrosion protection. For more information, see p. 24.

Masonry and Concrete Applications

Model No.	Ga.	Dimensions (in.)		Fasteners (Total)			Factored Tensile Resistance			
							D.Fir-L		S-P-F	
		W	L	Nails	GFCMU	Concrete	(K_D = 1.00) lb. / kN	(K_D = 1.15) lb. / kN	(K_D = 1.00) lb. / kN	(K_D = 1.15) lb. / kN
MSTAM24	18	1¼	24	(8) 10d	(5) ¼" x 2¼" Titen 2	(5) ¼" x 1¾" Titen 2	1790	1870	1660	1870
							7.96	8.32	7.38	8.32
MSTAM36		1¼	36	(12) 10d	(8) ¼" x 2¼" Titen 2	(8) ¼" x 1¾" Titen 2	2685	2685	2685	2685
							11.94	11.94	11.94	11.94
MSTCM40	16	3	40¼	(26) 10d	(14) ¼" x 2¼" Titen 2	(14) ¼" x 1¾" Titen 2	5235	5235	5235	5235
							23.29	23.29	23.29	23.29
MSTCM60		3	59½	(26) 10d	(14) ¼" x 2¼" Titen 2	(14) ¼" x 1¾" Titen 2	5235	5235	5235	5235
							23.29	23.29	23.29	23.29

1. Minimum edge distance 1½" using Titen 2 screws.
2. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
3. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
4. **Nails:** 10d = 0.148" dia. x 3" long. See pp. 27–28 for other nail sizes and information.

Floor-to-Floor Clear Span Table

Model No.	Clear Span (in.)	Fasteners (Total)			Factored Tensile Resistance			
					D.Fir-L		S-P-F	
		Nails	GFCMU	Concrete	(K_D = 1.00) lb. / kN	(K_D = 1.15) lb. / kN	(K_D = 1.00) lb. / kN	(K_D = 1.15) lb. / kN
MSTAM36	16 or 18	(6) 10d	(4) ¼" x 2¼" Titen 2	(4) ¼" x 1¾" Titen 2	1480	1495	1355	1495
					6.58	6.65	6.03	6.65
MSTCM60	22¼	(26) 10d	(14) ¼" x 2¼" Titen 2	(14) ¼" x 1¾" Titen 2	5235	5235	5235	5235
					23.29	23.29	23.29	23.29

LTA2

Lateral Truss Anchor

The LTA2 is an embedded truss anchor for grouted 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.

Features:

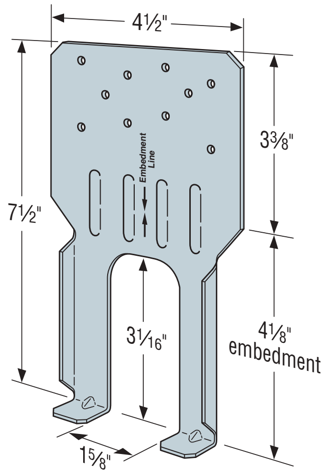
- Simplified design of the embedded portion allows for easy positioning close to rebar
- Ideal for anchoring trusses running perpendicular or parallel to the wall
- Embedment line stamped on part simplifies installation and helps avoid installation errors

Material: 18 gauge

Finish: Galvanized; see Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes
- Whether in grouted CMU or concrete, the LTA2 must be embedded to the depth of the embedment line stamped on the part
- A minimum of one horizontal 15M rebar is required at top of concrete or in the top course of grouted CMU
- For parallel-to-wall applications, install the LTA2 with flanges facing the centre of the wall. Minimum edge distance of 1½" required

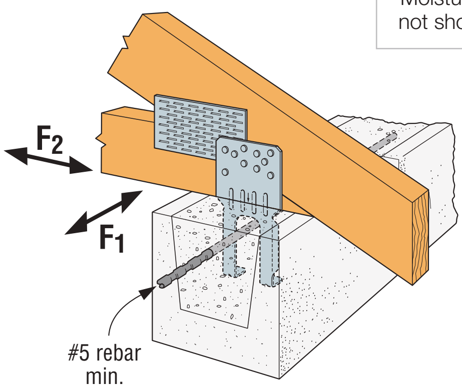


LTA2

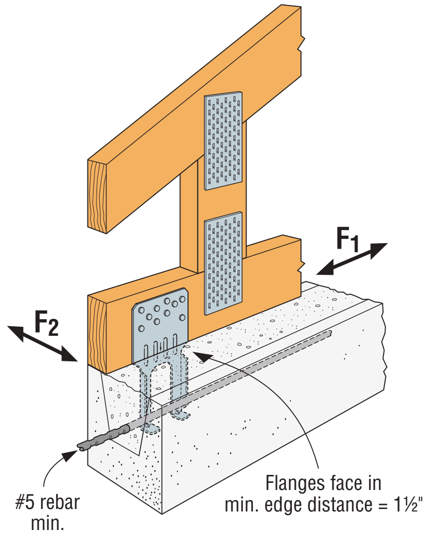
Model No.	Fasteners	Installation	Factored Resistance (K_D = 1.15) D.Fir-L Uplift	D.Fir-L F_1	D.Fir-L F_2	S-P-F Uplift	S-P-F F_1	S-P-F F_2
			lb.	lb.	lb.	lb.	lb.	lb.
			kN	kN	kN	kN	kN	kN
LTA2	(10) 10d x 1½"	Perpendicular to wall	1845	495	1330	1310	350	945
			8.21	2.20	5.92	5.83	1.56	4.20
		Parallel to wall	1825	1305	370	1295	930	265
			8.12	5.81	1.65	5.76	4.14	1.18

1. Factored resistances require one 15M horizontal rebar in the shear cone.
2. Factored uplift resistances have been increased 15% for wind loading with no further increase allowed.
3. Factored resistances assume Type S mortar with f'_m = 1087 psi (7.5 MPa) for 15 MPa concrete block masonry as per Table 4 CSA S304-14. For values of f'_m < 1085 psi (7.5 MPa) multiply the tabulated values by $(f'_m / 1085)^{0.5}$.
4. Factored resistances assume a 28-day concrete compressive strength of f'_c = 2500 psi (17.25 MPa). For values of f'_c < 2500 psi (17.25 MPa) multiply the tabulated values by $(f'_c / 2500)^{0.5}$.
5. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

Moisture barrier not shown (typ.)



LTA2 Perpendicular-to-Wall Installation



LTA2 Parallel-to-Wall Installation

Masonry and Concrete Connectors

Decks and Fences

DTT2Z/DTT2SS

Deck Post Connectors

The DTT2 is a safe, cost-effective way to attach deck-railing posts to the deck framing. Because the post is tied back into the deck joists, rather than to the rim joist alone, the connection is stronger than typical through-bolt installations. The DTT2 can be used for laterally tying the deck to the house. Additionally, the versatile DTT2 is load rated as a holdown for light-duty shearwalls and braced-wall panel applications. The DTT2 fastens easily to a single 2x joist or stud using Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws (included) and accepts a ½" machine bolt or anchor bolt.

The DTT2SS is made from stainless steel for applications in higher-exposure environments. Whether it's a deck guardrail post application or the lateral-load connection from the deck to the adjacent structure, the stainless-steel DTT2 is the best choice for seaside applications or those calling for more corrosive preservative-treated lumber formulations. It fastens to the framing members with stainless-steel Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws (included).

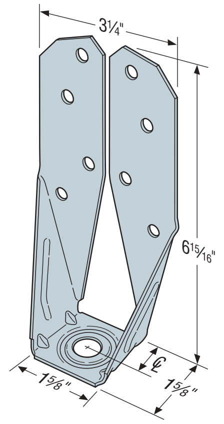
The DTT2Z-SDS2.5 is our standard DTT2Z packaged with 2½" Simpson Strong-Tie Strong-Drive SDS Heavy-Duty Connector screws instead of the standard 1½" fasteners. These longer screws allow the DTT2Z to achieve a higher capacity when used as a holdown on double S-P-F studs in a shearwall application. The DTT2Z-SDS2.5 is also suitable in deck applications when double 2x members are used for deck joists or blocking.

Material: 14 gauge

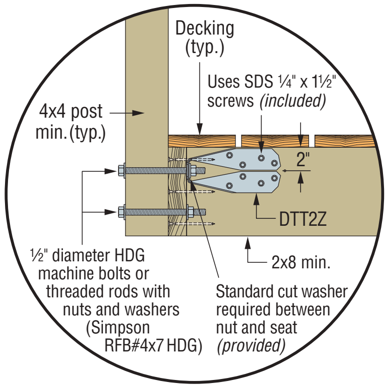
Finish: DTT2Z — ZMAX® coating; DTT2SS — Stainless steel; see Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes
- A standard-cut washer (refer to General Notes) must 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 ⅜" hex-head driver



DTT2Z
U.S. Patent 8,555,580

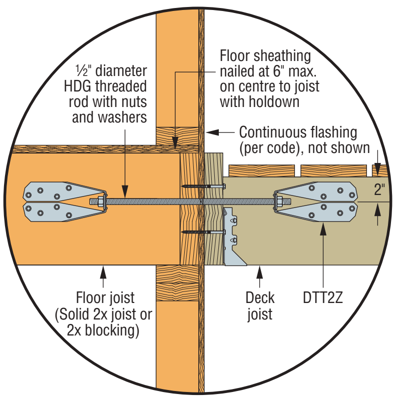


DTT2Z Installed as a Lateral Connector for a Deck Guardrail Post
For more information on guardrail post connections, see technical bulletin T-C-GRDRLPST at **strongtie.com**

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	℄ (in.)	Fasteners: Anchor Bolt Dia. (in.)	Fasteners: Fasteners	Minimum Wood Thickness (in.)	Factored Tensile Resistance (K_D = 1.15): D.Fir-L	Factored Tensile Resistance (K_D = 1.15): S-P-F	Deflection[3,4] at Factored Resistance
					lb.	lb.	in.
					kN	kN	mm
SS DTT2Z/DTT2SS	13/16	½	(8) ¼" x 1½" SDS	1½	2805	2520	0.250
					12.48	11.21	6.35
				3	3060	2565	0.250
					13.61	11.41	6.35
SS DTT2Z-SDS2.5	13/16	½	(8) ¼" x 2½" SDS	3	3060	2950	0.250
					13.61	13.12	6.35

1. Factored resistances have been increased 15% for short term load duration; reduce where other load durations govern.
2. Tension values are valid for holdowns flush or raised off of the sill plate.
3. Installations shown are for post to joist connections, however these products can be used as a holdown or tension tie for other applications. If used as a holdown or tension tie, the following apply:
   a. The Designer must specify anchor bolt type, length and embedment to ensure adequate anchorage to concrete.
   b. When using structural composite lumber columns, screws must be applied to the wide face of the column.
   c. Post design shall be by the Designer. Tabulated values are based on a minimum wood member thickness in the direction of the fastener penetration. Post may consist of multiple 2x members provided they are designed to act as one unit independently of the holdown fasteners.
   d. Holdowns shall be installed centred along the width of the attached post.
   e. Deflection at Factored Resistance includes fastener slip, holdown elongation and anchor bolt elongation (L = 6"). Additional elongation of anchor bolts shall be accounted for by the Designer when the length of the anchor bolt above the top of the concrete to the attachment at the holdown is longer than 6". Similar consideration for floor to floor connections must be addressed by the Designer.
4. Deflection values may be reduced linearly for lesser loads including specified wind loads at h/500.



Typical Deck-to-House Lateral Load Connection

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.

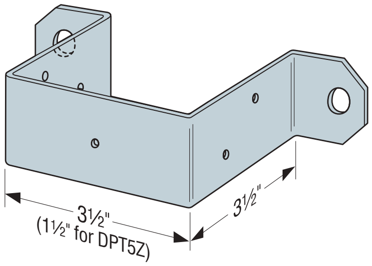
Material: 14 gauge

Finish: ZMAX® coating; see Corrosion Information, pp. 20–24

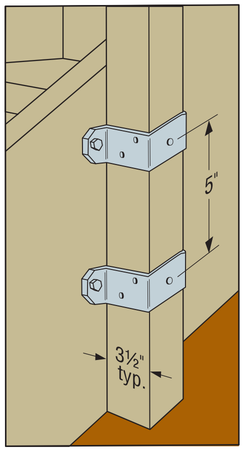
Installation:

- Use specified HDG fasteners; see General Notes
- Typically installed in pairs
- Install with two ⅜" through bolts into side member (lag screws not permitted) and (5) 10d x 1½" to post for DPT5Z or (5) 10d for DPT7Z

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.



DPT7Z
(DPT5Z similar)



Typical DPT7Z Stairway Installation
(DPT5Z similar)

DJT14Z

Deck Joist Tie

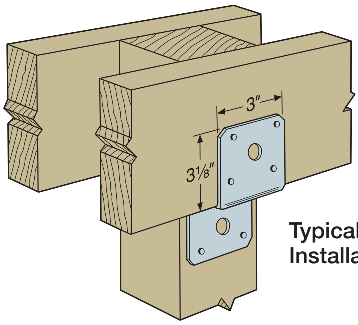
The DJT14Z deck joist tie is designed to attach 2x deck joists to the side of 4x or larger support posts. The DJT14Z can be installed with either nails or bolts.

Material: 14 gauge

Finish: ZMAX® coating; see Corrosion Information, pp. 20–24

Installation:

- Use specified HDG fasteners; see General Notes
- Recommended: install on post first
- Minimum 2x4 joist and 4x4 post



Typical DJT14Z Installation

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Ga.	Fasteners	Factored Normal Resistance (K_D = 1.00) D.Fir-L	S-P-F
			lb.	lb.
			kN	kN
SS DJT14Z	14	(8) 16d	1925	1630
			8.56	7.25
		(2) ⅝" dia. MB	2295	1630
			10.21	7.25

1. Resistances assume a dry service condition (K_{SF} = 1.00). Reduce values for other conditions as per 12.2.1.5 CSA O86-14.
2. Resistances shown are for one DJT14Z.
3. Install bolts or nails as specified by the Designer. Bolt and nail values may not be combined.
4. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

SIMPSON Strong-Tie®

TA

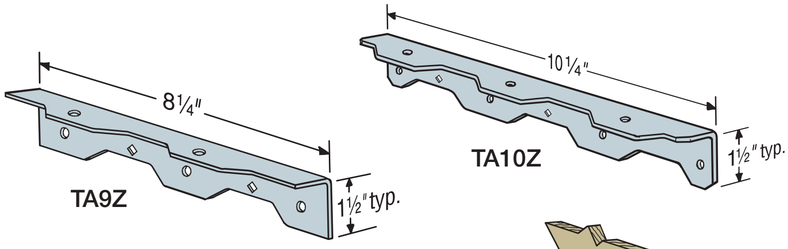
Staircase Angle

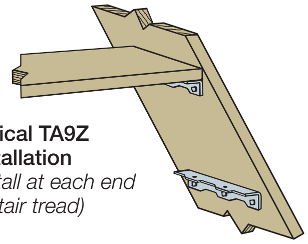
For use in structurally-sound staircase framing. The TA eliminates costly conventional notching.

Material: 12 gauge

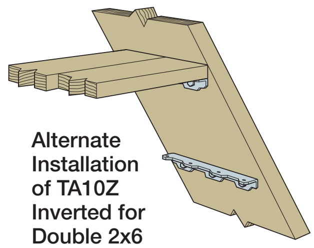
Finish: TA9Z/TA10Z — ZMAX® coating; TA9SS/TA10SS — stainless steel; see Coosion Information, pp. 20–24

Order: May be ordered TA9ZKT and TA10ZKT with two ZMAX TAs and Simpson Strong-Tie® ¼" x 1½" Strong-Drive® SDS Heavy-Duty Connector screws.





Typical TA9Z Installation
(install at each end of stair tread)



Alternate Installation of TA10Z Inverted for Double 2x6 Treads

These products are available with additional corrosion protection. For more information, see p. 24.

	Model No.	Fasteners		Factored Resistance (K_D = 1.00)	
		Stringer	Tread	D.Fir-L	S-P-F
				lb.	lb.
				kN	kN
SS	TA9Z	(3) ¼" x 1½" SDS	(2) ¼" x 1½" SDS	1025	945
				4.56	4.23
SS	TA10Z	(3) ¼" x 1½" SDS	(4) ¼" x 1½" SDS	1025	1260
				4.56	5.60
SS	TA10Z	(4) ¼" x 1½" SDS	(3) ¼" x 1½" SDS	1370	1260
				6.10	5.60

1. Values may be adjusted for other load durations according to code.
2. See p. 35 for SDS information.
3. HDG ¼" lag screws may be used. Resistances must be calculated in accordance with CSA O86-14 but may not be greater than tabulated values. Predrill in accordance with code.
4. Values assume dry service conditions. Multiply values by 0.67 for wet service conditions.

ML

Angle

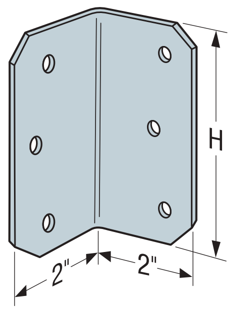
The ML angle combines strength and versatility through the use of Simpson Strong-Tie® Strong-Drive® SDS Heavy-Duty Connector screws. Fastener holes are staggered to minimize wood splitting and opposing hole patterns allows for back-to-back installation without fastener interference.

Material: 12 gauge

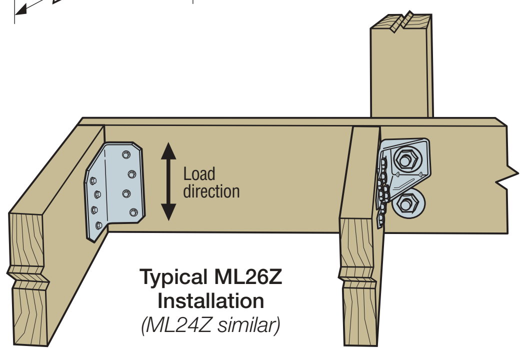
Finish: ML24Z/ML26Z — ZMAX® coating; ML24SS/ML26SS — stainless steel; see Corrosion Information, pp. 20–24

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



ML24Z
(ML26Z similar)



Typical ML26Z Installation
(ML24Z similar)

These products are available with additional corrosion protection. For more information, see p. 24.

	Model	H (in.)	Fasteners (Total)	Factored Normal Resistance (K_D = 1.00)	
				D.Fir-L	S-P-F
				lb.	lb.
				kN	kN
SS	ML24	4	(6) ¼" x 1½" SDS	765	550
				3.40	2.45
SS	ML26	6	(8) ¼" x 1½" SDS	1360	1160
				6.05	5.16

1. Factored resistances may be increased 15% for short term load duration; reduce where other load durations govern.
2. Multiply values by 0.67 for wet service conditions.

SIMPSON Strong-Tie®

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 joist while replacing costly framing. Field slopeable to all common stair stringer pitches, the LSC connector is suitable for either solid or notched stringers.

Features:

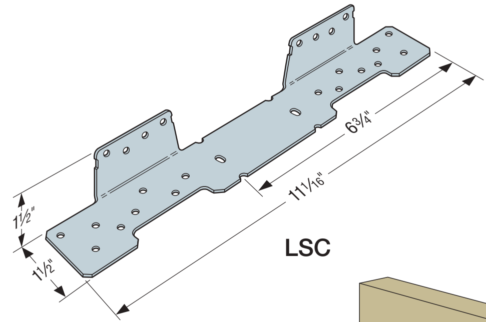
- Replaces additional framing and toe-nailing.
- Suitable for most installations on 2x10 or 2x12 header/rim board.
- May be installed flush with the top of the carrying member or lower on the face.
- Interchangeable for left or right applications.
- LSCZ features a ZMAX® coating for additional corrosion 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

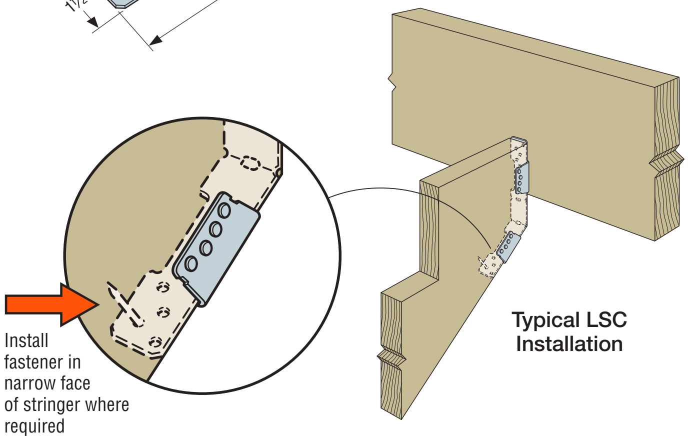
Finish: LSCZ — ZMAX® coating;
LSCSS — Stainless steel

Installation:

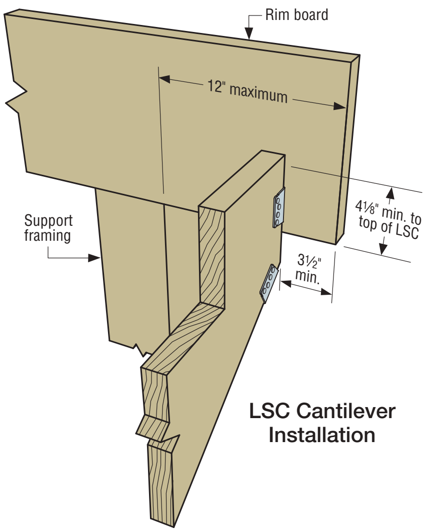
- Use all specified fasteners, see table
- Before fastening, position the stair stringer with the LSC on the carrying member to verify where the bend should be located
- Tabs on the LSC must be positioned to the inside of the stairs
- The fastener that is installed into the bottom edge of the stringer must go into the second-to-last hole



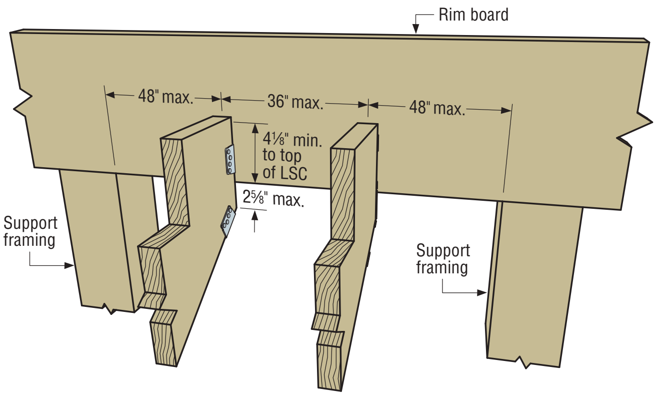
LSC



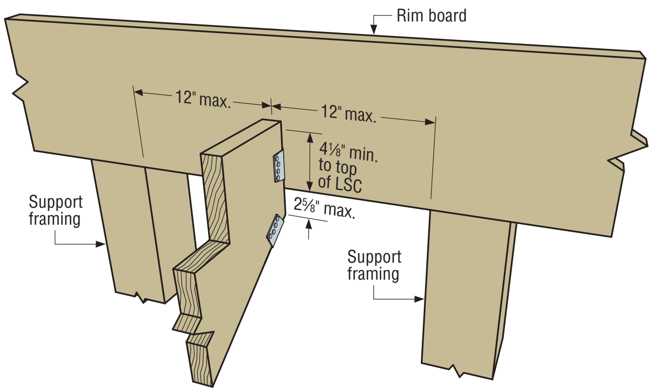
Typical LSC Installation



LSC Cantilever Installation



Standard LSC Installation



Supported LSC Installation

Decks and Fences

LSC

Adjustable Stringer Connector (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Rim Joist Installation	Fasteners: Rim Joist	Fasteners: Stringer Wide Face	Fasteners: Stringer Narrow Edge	Factored Normal Resistance (K_D = 1.00) D.Fir-L lb. / kN	Factored Normal Resistance (K_D = 1.00) S-P-F lb. / kN
LSCZ	Supported[1,7]	(8) 10d x 1½"	(8) 10d x 1½"	(1) 10d x 1½"	1425	1040
					6.34	4.63
		(8) SD #9 x 1½"	(8) SD #9 x 1½"	—	1215	860
					5.40	3.83
	Standard[2]	(8) 10d x 1½"	(8) 10d x 1½"	(1) 10d x 1½"	1165	825
					5.18	3.67
		(8) SD #9 x 1½"	(8) SD #9 x 1½"	(1) SD #9 x 1½"	1165	825
					5.18	3.67
	Cantilevered[5,6]	(8) 10d x 1½"	(8) 10d x 1½"	(1) 10d x 1½"	655	465
					2.91	2.07
		(8) SD #9 x 1½"	(8) SD #9 x 1½"	—	840	600
					3.74	2.67

1. Supported installations require bearing supports within 12" of LSC.
2. Standard installations require bearing support within 4' of LSC.
3. When cross grain tension forces cannot be avoided in the member, mechanical reinforcement to resist such forces may be considered.
4. A minimum distance of ¾" measured from the lowest rim joist fastener to edge of rim joist is required.
5. A minimum distance of 3½" measured from the LSC tabs to the end of the rim joist is required.
6. A maximum rim joist cantilever length of 12" measured from the face of the bearing support to the end of the rim joist is required to achieve the tablulated values.
7. Simpson Strong-Tie® Strong-Drive® SD #9 x 1½" Connector screws may be substituted for 10d x 1½" nails to achieve the published nail values if the extra screw is installed in the narrow face of the stringer.
8. Tabulated values assume seasoned lumber and dry service conditions. Multiply values by 0.67 for wet service conditions.
9. **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. 27–28 for other nail sizes and information.
10. **Screws** (LSCZ only): SD #9 x 1½" (model SD9112) = 0.131" dia. x 1½" long (see pp. 30–31).

FC

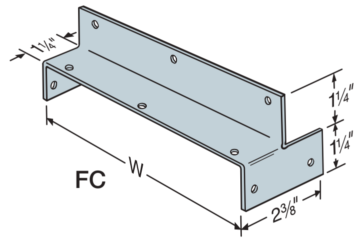
Framing Clips

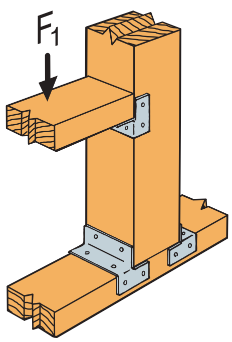
For fast, accurate framing. Three-dimensional nailing pattern results in high-strength joint values. Ideal for fence construction.

Material: 16 gauge **Finish:** Galvanized

Installation:

- Use all specified fasteners; see General Notes





Typical FC Load Installation

Model No.	W (in.)	Fasteners	F1 Factored Resistance (K_D = 1.00) D.Fir-L lb. / kN	F1 Factored Resistance (K_D = 1.00) S-P-F lb. / kN
FC4	3 9/16	(8) 16d	1415	1005
			6.30	4.47
FC6	5½	(10) 16d	1415	1005
			6.30	4.47

1. Resistances may be increased for other load durations as per code.
2. Multiply values by 0.67 for wet service conditions (K_{SF} = 0.67).
3. A 2½" minimum lumber thickness is required to achieve resistances shown.
4. **Nails:** 16d = 0.162" dia. x 3½" long. See pp. 27–28 for other nail sizes and information.

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

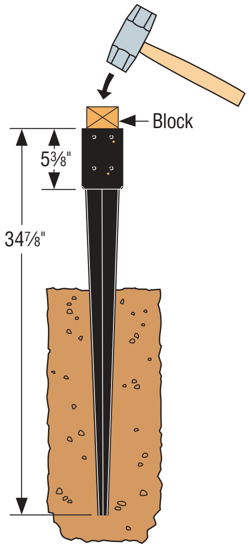
Installation:

- 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

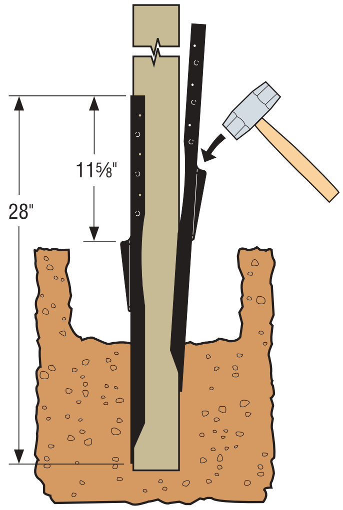
Note:

- 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.

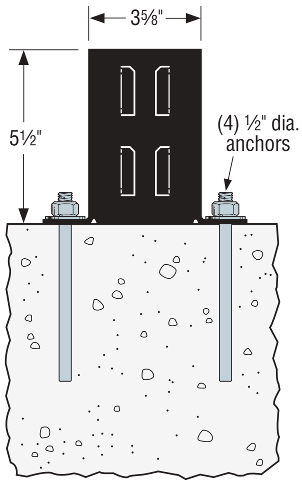
◤ These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.



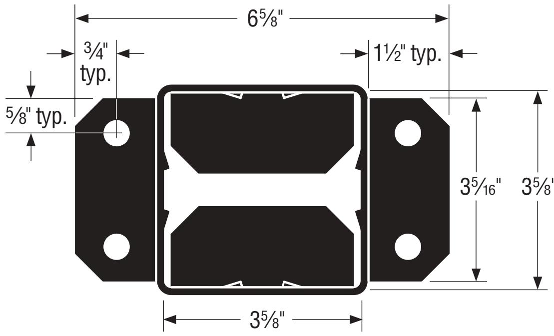
E-Z Spike™
(FPBS44)



E-Z Mender™
(FPBM44E)



E-Z Base™
(FPBB44)



E-Z Base™ (FPBB44) Top View

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.

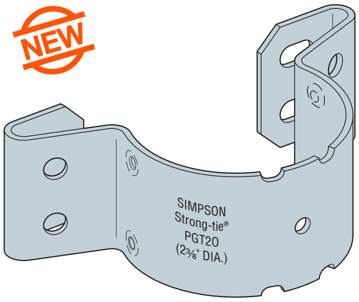
The PGT2OZ is for 2" pipe and features a narrow, 4⅞" width that is easy to conceal in a 1x wood box frame.

Material: PGT2A, PGT2OZ — 14 gauge; all others — 12 gauge

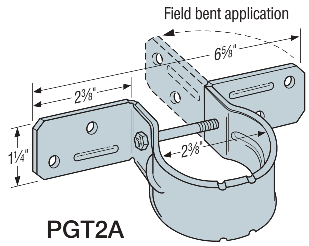
Finish: PGTA, PGT2-R, PGT2E — Galvanized; PGTIC2Z, PGT1.5Z, PGT2Z-R, PGT2OZ — ZMAX®

Installation:

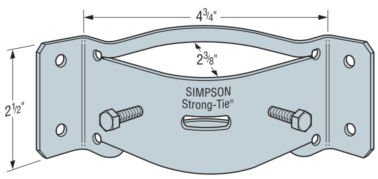
- Use all specified fasteners; see General Notes.
- PGTIC2Z-R to Post — Install two set screws (supplied) with ⅜ socket in predrilled holes.
- PGTIC2Z-R to Rails — Use Simpson Strong-Tie® ¼" x 1½" Strong-Drive® SDS Heavy-Duty Connector screws (not supplied).
- Install on vertical pipes, offsetting corners 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 and PGT2OZ attach to rails with four Simpson Strong-Tie ¼"x1½" Strong-Drive SDS Heavy-Duty Connector screws (not supplied). See p. 35 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 predrilling). See p. 35 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.



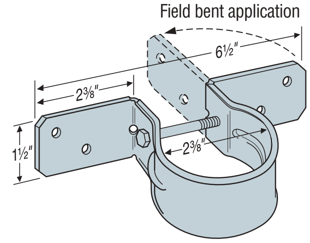
PGT2OZ



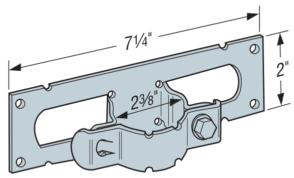
PGT2A



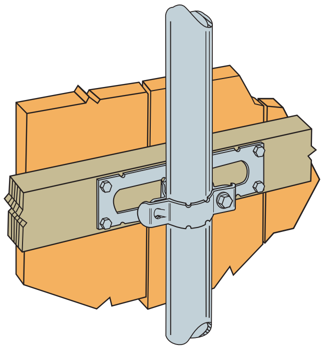
PGTIC2Z-R

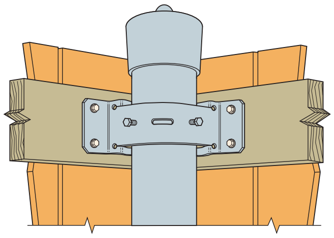


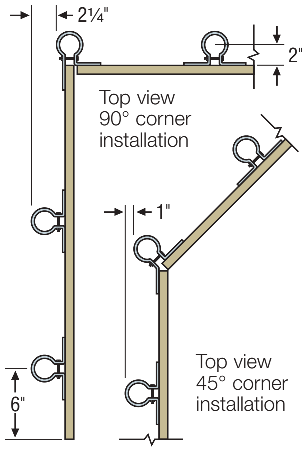
PGT2Z-R
(PGT1.5Z-R similar)



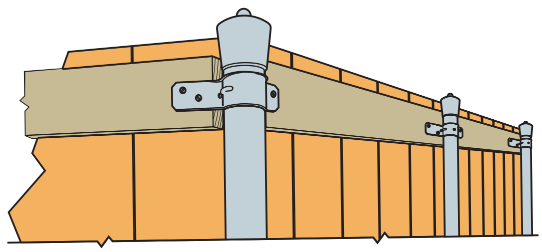
PGT2E
U.S. Patent 8,220,781


Typical PGT2E Installation


Typical PGTIC2Z-R Fence Installation



Corner 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: Galvanized. Some products available in ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

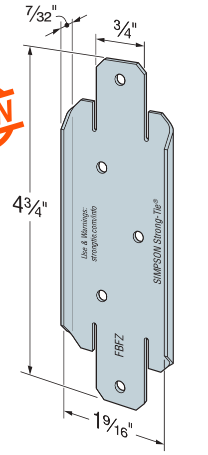
- Holes are sized for 8d x 1½", 8d commons or Simpson Strong-Tie® #9 x 1½" Strong-Drive® SD Connector screws into the supporting member
- FB24R is sized for 10d x 1½" or Simpson Strong-Tie #9 x 1½" Strong-Drive SD Connector screws
- FB26 is sized for Simpson Strong-Tie #9 x 1½" Strong-Drive SD Connector screws

These products are available with additional corrosion protection. For more information, see p. 24.

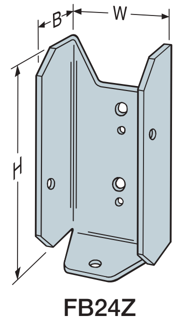
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Ga.	Member Size	Dimensions (in.)		
			W	H	B
FB24Z	20	2x4	1 9/16	3 3/8	3/4
FB24R	20	2x4 RGH	2	3 3/8	3/4
FBR24	18	2x4	1 9/16	2 7/16	1 1/2
FB26	18	2x6	1 9/16	5	1 1/2
FBFZ	18	2x4	1 9/16	4 3/4	7/32

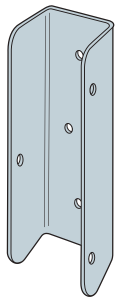
1. FB26 has a factored resistance for F_1 of 460 lb (2.05 kN)
2. FBR24: R = rail (not rough).
3. **Nails:** 10d x 1½" = 0.148" dia. x 1½" long, 8d = 0.131" dia. x 2½" long, 8d x 1½" = 0.131" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.



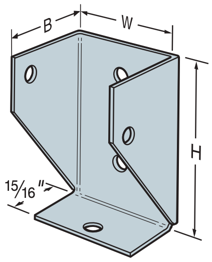
FBFZ
U.S. Patent Pending



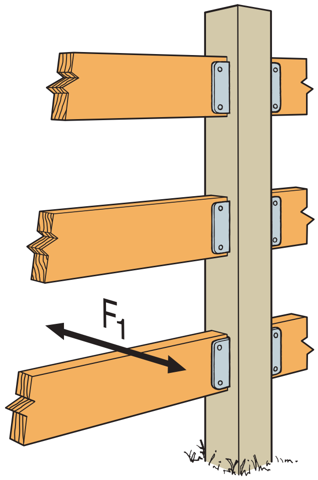
FB24Z
(FB24R similar)



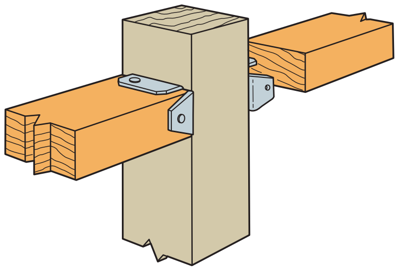
FB26



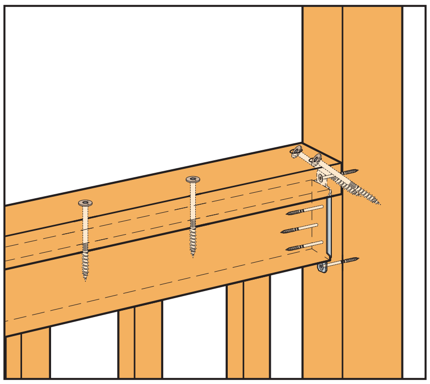
FBR24



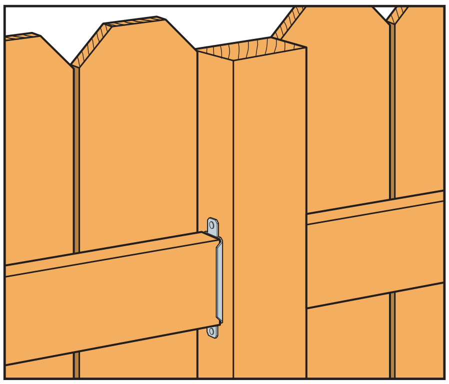
Typical FB26 Fencing Installation



Typical FB24Z Installation



Typical FBFZ Handrail Installation



Typical FBFZ Fence Rail Installation

SIMPSON Strong-Tie®

KBS1Z

Knee-Brace Stabilizer

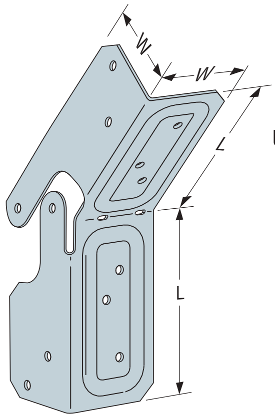
The KBS1Z knee-brace stabilizer makes a structural connection between knee bracing and columns or beams to help stabilize free-standing structures. Factory formed at a 45˚ angle and easily installed with nails, the KBS1Z braces 2x, 4x and 6x in line post-to-beam configurations. Check with your local building department for deck bracing requirements.

Material: 16 gauge

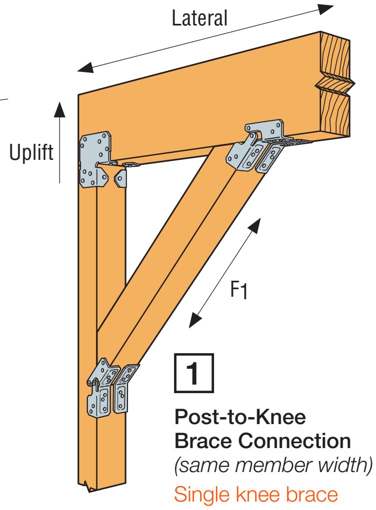
Finish: ZMAX® coating

Installation:

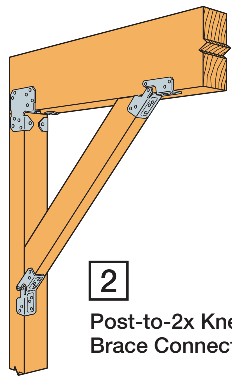
- Use all specified fasteners; see General Notes.
- For installations at an angle other than 45°, bend KBS1Z along slots to desired angle. Bend one time only.
- **Knee Brace:**
  - Cut braces at desired angle
  - Bend KBS1Z to desired angle if required
  - Install fasteners to secure in place
  - For 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



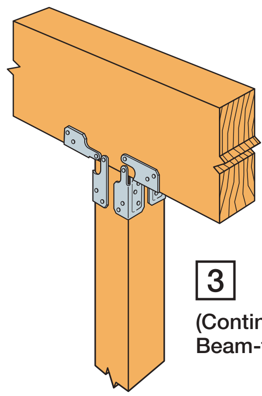
KBS1Z
U.S. Patent 9,045,895



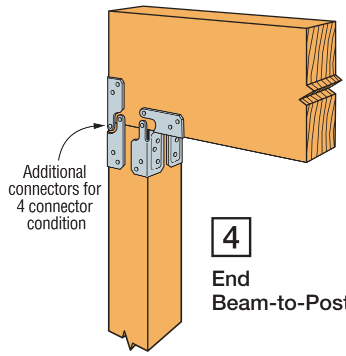
1 **Post-to-Knee Brace Connection**
(same member width)
Single knee brace shown. Double knee brace installation similar.



2 **Post-to-2x Knee Brace Connection**



3 **(Continuous) Beam-to-Post**



4 **End Beam-to-Post**

These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Dimensions (in.)		Type of Connection	Connectors per Joint	Direction of Load	Fasteners per Connector	Factored Resistance (K_D = 1.15)	
	W	L					D.Fir-L	S-P-F
							lb.	lb.
							kN	kN
KBS1Z	1½	3	1	2	F_1 – Brace angle = 45°	(12) 8d	1765	1610
							7.85	7.16
					F_1 – Brace angle = 30° or 60°	(12) 8d	1285	1110
							5.72	4.94
			2	1	F_1 – Brace angle = 45°	(12) 8d x 1½"	745	685
							3.31	3.05
					F_1 – Brace angle = 30° or 60°	(12) 8d x 1½"	735	680
							3.27	3.02
			3	4	Uplift	(12) 8d	1750	1590
							7.78	7.07
					Lateral	(12) 8d	2415	2205
							10.74	9.81
			4	2	Uplift	(12) 8d	845	730
							3.76	3.25
					Lateral	(12) 8d	1255	1080
							5.58	4.80
				4	Uplift	(12) 8d	1550	1170
							6.90	5.20
					Lateral	(12) 8d	2290	1625
							10.19	7.23

1. Factored resistances have been increased 15% for short term load duration; no further increase is permitted.
2. For wet service conditions, multiply the tabulated values x 0.67.
3. For all braces installed at intermediate angles between 45° and 30° or 45° and 60°, interpolation between tabulated values may be used.
4. **Nails:** 8d = 0.131" dia. x 2½" long, 8d x 1½" = 0.131" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

Miscellaneous

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-centre 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

- Snap a chalk line for the bottom of the ledger
- Mark required on-centre spacing
- Use ICFVL to mark kerfs locations
- Cut kerfs as marked
- Insert ICFVL flush to the face of the ICF
- Pour concrete

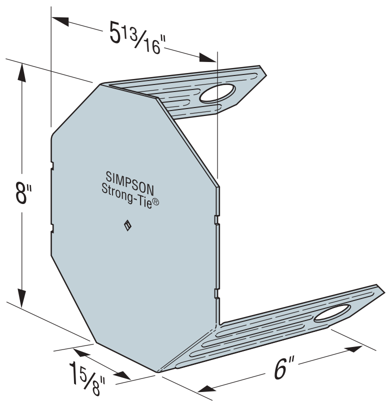
Wood Ledger Attachment — ICFVL-W or ICFVL-CW

- Slip appropriate ledger connector underneath the ledger
- Install the eight ICF-D3.62 screws (included) 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

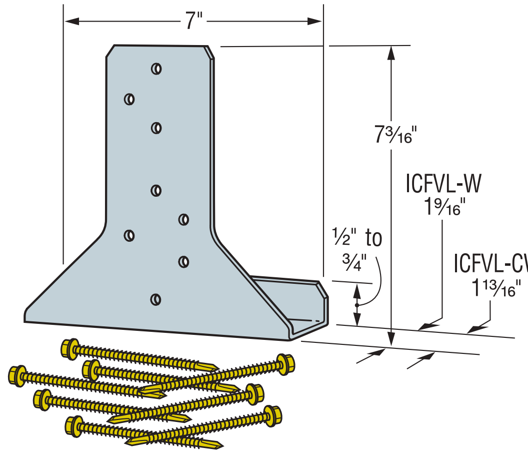
Steel Ledger Attachment

- Position bottom of the ledger level to the chalk line and against the ICFVL
- Attach with four ¼ – 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

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	Model No.	Factored Resistance Vertical	Factored Resistance Lateral
		lb.	lb.
		kN	kN
2x D.Fir-L/S-P-F	ICFVL w/ ICFVL-W	2820	3075
		12.56	13.70
1¾" SCL	ICFVL w/ ICFVL-CW	2820	3075
		12.56	13.70
Steel	ICFVL	2590	2470
		11.54	11.00

1. Minimum steel ledger specification is F_y = 33 ksi (230 Mpa) and F_u = 45 ksi (310 Mpa) in accordance with CSA S136-12.
2. No load duration increase allowed.
3. Minimum concrete compressive strength, f'_c 2500 psi (17.25 Mpa).
4. Connector spacing to be determined by the design professional up to a maximum of 4'–0".
5. Values shown apply to ICF foam thickness of 3¼" or less. Contact factory for values with thicker foam.
6. When combining vertical and lateral loads designer shall evaluate as follows: Vertical Load/Vertical Resistance + Lateral Load/Lateral Resistance ≤ 1.0.
7. The ICFVL must be installed no closer than 4" below the top of the wall to achieve the tabulated resistances shown. For installations where the ICFVL is installed less than 4" from the top of the wall (including flush applications) multiply the factored resistances by 0.94.

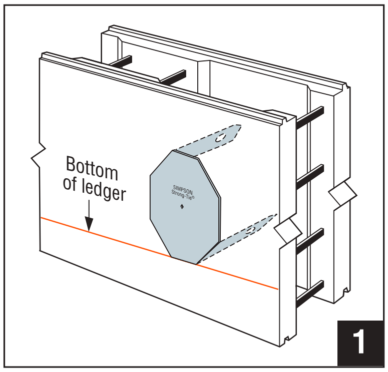
ICFVL

Ledger Connector System (cont.)

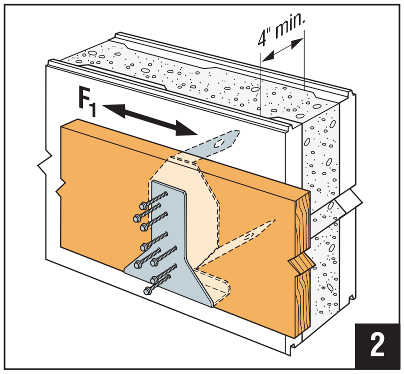
This tables address vertical load applications for ICF foam thickness of 3¼" or less only.

Ledger Type	Connector Type	ICFVL Spacing To Replace Anchor Bolts (in.)[1,2,3]															
		½"-Diameter Anchors at				⅝"-Diameter Anchors at				(2) ⅝"-Diameter Anchors at				¾"-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																	
2x D.Fir-L/S-P-F	ICFVL w/ ICFVL-W	48	48	48	48	38	48	48	48	19	38	48	48	34	48	48	48
1¾" SCL	ICFVL w/ ICFVL-CW	48	48	48	48	34	48	48	48	17	34	48	48	28	48	48	48
Steel Ledgers																	
16 gauge (0.060")	ICFVL	20	40	48	48	16	32	48	48	—	—	—	—	—	—	—	—
14 gauge (0.057")	ICFVL	16	32	48	48	13	26	39	48	—	—	—	—	—	—	—	—

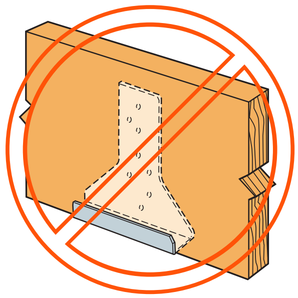
1. The Designer may specify different spacing based on the load requirements. It is recommended to space the components at multiples of the joist spacing to help reduce the chance of interference with joist hangers.
2. Spacings are based on perpendicular-to-grain capacity of bolt in wood ledger compared to tested value of ICFVL.
3. See flier F-C-ICFVL at **strongtie.com** for additional connection details.
4. For steel ledgers, the 14-gauge spacing is closer than the 16-gauge ledger due to the calculated resistance of a bolt being higher when using a thicker piece of steel.
5. Steel-ledger values are based on steel. F_u = 45 ksi (310 Mpa).
6. The ICFVL must be installed no closer than 4" below the top of the wall to achieve the connector spacings shown. For installations where the ICFVL is installed less than 4" from the top of the wall (including flush applications) multiply the connector spacings by 0.94.



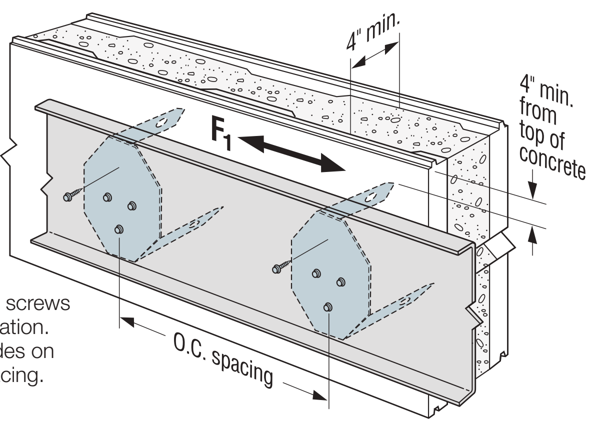
ICFVL



Typical Wood Ledger Installation with ICFVL and ICFVL-W



Misinstallation



Requires four screws at each location. Table provides on centre spacing.

Typical Steel Ledger Installation with ICFVL
(minimum 16-gauge steel ledger)

Miscellaneous

Ledger Connector System (cont.)

The following spacing tables are an alternative to the ICFVL spacing to replace the building code prescribed anchor bolts spacing for vertical loads only. They provide the recommended spacing of the ICFVL ledger connectors based on the factored vertical resistance of the connector, the load on the floor, and the span of the joist. The Designer must determine the design load, the ledger design and the joist design. This table is useful if the Designer already has loads and spans, but not necessarily anchor bolt spacing.

ICFVL Spacing for Wood Ledger (in.)

Specified Load (psf)		Joist Span (ft.)											
Live	Dead	10	12	14	16	18	20	22	24	26	28	30	32
40	10	48	48	48	46	41	37	33	31	28	26	24	23
	15	48	48	48	42	38	34	31	28	26	24	22	21
	20	48	48	45	39	35	31	28	26	24	22	21	19
	25	48	48	42	37	32	29	26	24	22	21	19	18
	30	48	46	39	34	30	27	25	23	21	19	18	17
50	10	48	48	44	38	34	30	28	25	23	22	20	19
	20	48	45	38	33	30	27	24	22	20	19	18	16
	30	48	40	34	30	26	24	21	20	18	17	16	15
	40	43	36	30	27	24	21	19	18	16	15	14	13
100	10	33	27	23	20	18	16	15	13	12	—	—	—
	20	30	25	22	19	17	15	14	12	—	—	—	—
	30	28	24	20	18	16	14	13	12	—	—	—	—
	40	27	22	19	16	15	13	12	—	—	—	—	—

Values in the cells highlighted in yellow represent the maximum allowable spacing of 48".

See footnotes below.

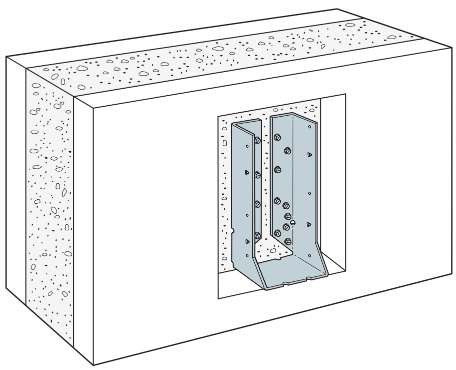
ICFVL Spacing for Steel Ledger (in.)

Specified Load (psf)		Joist Span (ft.)											
Live	Dead	10	12	14	16	18	20	22	24	26	28	30	32
40	10	48	48	48	42	38	34	31	28	26	24	22	21
	15	48	48	45	39	35	31	28	26	24	22	21	19
	20	48	48	41	36	32	29	26	24	22	20	19	18
	25	48	45	38	34	30	27	24	22	20	19	18	17
	30	48	42	36	31	28	25	23	21	19	18	17	15
50	10	48	47	40	35	31	28	25	23	21	20	18	17
	20	48	41	35	31	27	24	22	20	19	17	16	15
	30	44	36	31	27	24	22	20	18	17	15	14	13
	40	39	33	28	24	22	19	18	16	15	14	13	12
100	10	30	25	21	19	17	15	13	12	—	—	—	—
	20	28	23	20	17	15	14	12	—	—	—	—	—
	30	26	22	18	16	14	13	12	—	—	—	—	—
	40	24	20	17	15	13	12	—	—	—	—	—	—

1. Values shown are maximum spacing distances (inches) based on two-span ledger and simple supported joists. It does not consider concentrated loads. The engineer of record can modify the spacing accordingly for other conditions.
2. Joist and ledger are to be designed by others.
3. Table above address vertical loads only. If connection is designed to resist lateral loads, spacing will decrease. Contact Simpson Strong-Tie for current information.
4. The ICFVL must be installed no closer than 4" below the top of wall to achieve the connector spacing.
5. The maximum distance between the end of the ledger and the first ICFVL is 12" as per the recommended splicing installation.
6. Tables above assume principal loads only with importance factor = 1.00. For other cases adjust spacing accordingly.

Alternative Retrofit Solution for Direct Attachment of Joist to Wall

The HU and HUC hangers are heavy-duty face-mount joist hangers made from 14-gauge galvanized steel. These hangers can be directly attached to concrete wall using Simpson Strong-Tie® ¼" x 1¾" Titen® 2 hex head screws. See p. 45 for more information on installation and use.



HUC410 Installed on Face of Concrete in ICF

RTC/FWH/RTA/RTB/RTF/RTR/RTT/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

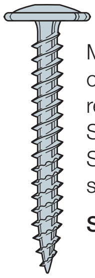
Finish: Galvanized. Some products available in stainless steel or ZMAX® coating; see Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes
- Always follow manufacturer's instructions when using power tools and building equipment

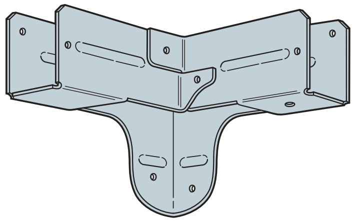
These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.



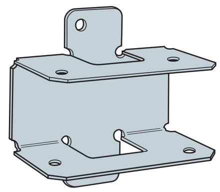
Most Rigid-Tie connectors require Simpson Strong-Tie® Strong-Drive® screws.

SD8x1.25



RTC2Z
(RTC22 similar)

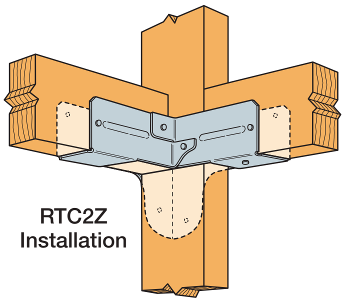
Warning: Industry studies show that hardened fasteners can experience performance problems in wet and corrosive environments. Accordingly, use the SD8x1.25 screw in dry, interior, and non-corrosive environments only.



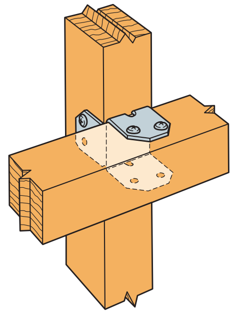
RTR

Model No.	Post Size	Joist Size	Fasteners (Total) Post	Fasteners (Total) Joist	Factored Normal Resistance (K_D = 1.00) D.Fir-L	Factored Normal Resistance (K_D = 1.00) S-P-F
					lb.	lb.
					kN	kN
FWH2	2x	2x	(8) SD8x1.25	(8) SD8x1.25	—	—
					—	—
RTA12	1x	1x	(4) SD8x1.25	(4) SD8x1.25	—	—
					—	—
RTA2Z	2x	2x	(4) SD8x1.25	(4) SD8x1.25	—	—
					—	—
RTA4	4x	4x	(7) SD8x1.25	(5) SD8x1.25	—	—
					—	—
RTB22	2x	2x	(4) SD8x1.25	(4) SD8x1.25	—	—
					—	—
RTC22Z	2x	2x	(5) SD8x1.25	(6) SD8x1.25	—	—
					—	—
RTC2Z	2x4	2x	(6) SD8x1.25	(6) SD8x1.25	1080	985
					4.80	4.38
RTC42	4x4	2x	(14) SD8x1.25	(8) SD8x1.25	1905	1750
					8.47	7.78
	4x4	2x	(14) 10d	(8) 10d x 1½"	2700	2480
					12.01	11.03
RTC44	4x4	4x	(14) 10d	(15) 10d	3190	2980
					14.19	13.26
RTF2Z	2x	2x	(4) SD8x1.25	(8) SD8x1.25	—	—
					—	—
RTT22	2x	2x	(3) SD8x1.25	(7) SD8x1.25	—	—
					—	—
RTR	2x	2x	(2) SD8x1.25	(4) SD8x1.25	—	—
					—	—
RTU2	2x	2x	(2) SD8x1.25	(4) SD8x1.25	—	—
					—	—

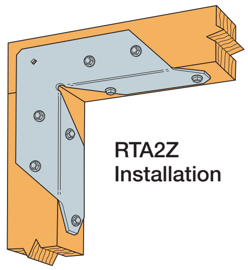
1. Factored loads must be equally distributed on both joists.
2. Factored resistances may not be increased for short-term loading.
3. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.
4. **Screws:** SD8x1.25 = 0.156" dia. x 1¼" long,



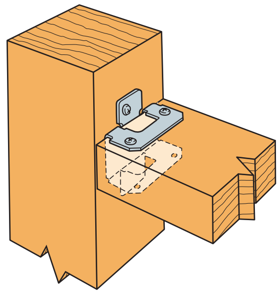
RTC2Z Installation



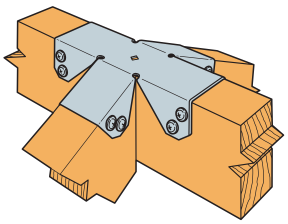
RTB22 Installation



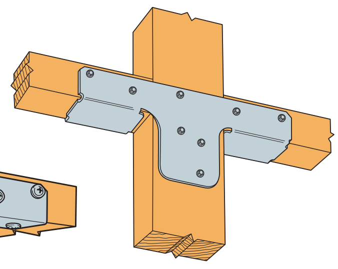
RTA2Z Installation



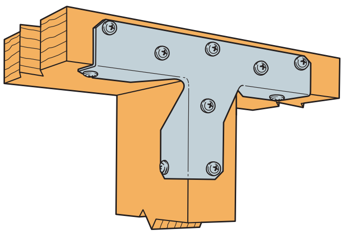
RTR Installation



FWH2 Installation



RTF2Z Installation



RTT Installation

NS/NSP/PSPNZ

Nail Stoppers

Nail stoppers help prevent nails from piercing pipes and electrical lines. Installed over utilities that pass through framing members.

Material: 16 gauge

Finish: Galvanized; PSPN — ZMAX® coating; see Corrosion Information, pp. 20–24

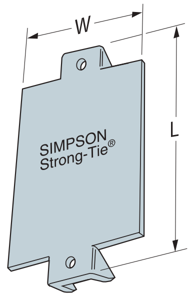
Installation:

- NS/NSP/PSPN58Z — 8d commons or prongs
- PSPN516Z — 16d commons

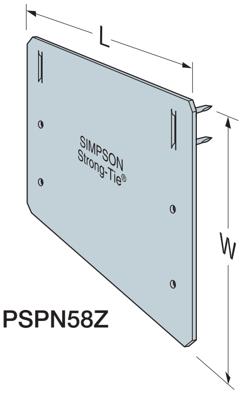
These products are available with additional corrosion protection. For more information, see p. 24.

These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

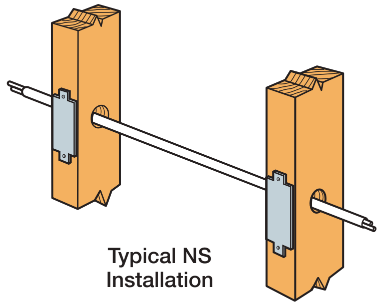
Model No.	W (in.)	L (in.)
NS1	1½	3
NS2	1½	6
PSPN58Z	5	8
PSPN516Z	5	16⁵⁄₁₆

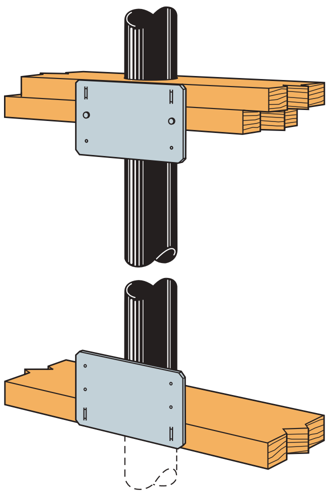


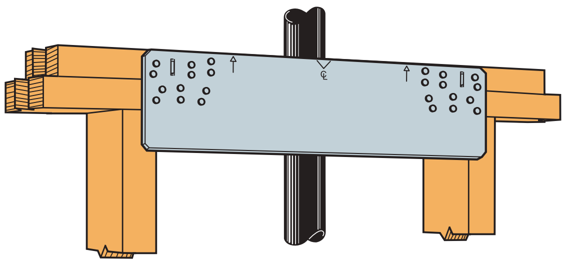
NS

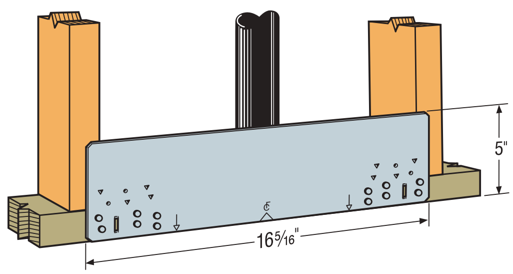


PSPN58Z


Typical NS Installation


Typical PSPN58Z Installation


PSPN516Z Installed to Double Top Plates



PSPN516Z Installation to Sill Plate

HSS/SS

Stud Shoes

Stud shoes reinforce studs notched in construction. They are not a total replacement of removed material.

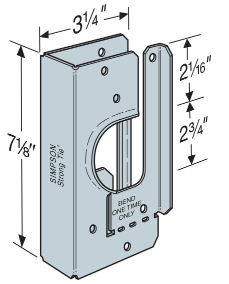
HSS2-3 is designed for triple 2x studs. HSS stud shoes provide tension resistances as well as increased compression resistances. Flared flange provides greater strength. Installs over pipe up to 2⅜" outside diameter.

Material: 16 gauge

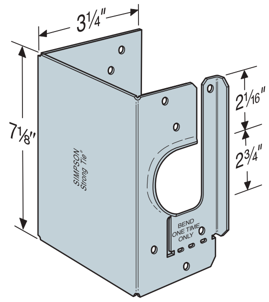
Finish: Galvanized

Installation:

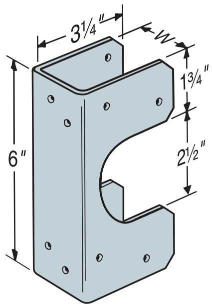
- Use all specified fasteners; see General Notes
- HSS — Bend flanges at 90° angle during installation, then bend back and screw into position (screws supplied)
- Bend flanges one cycle only



HSS
US Patent 6,176,057



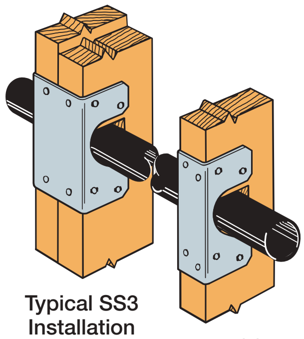
HSS2-3



SS

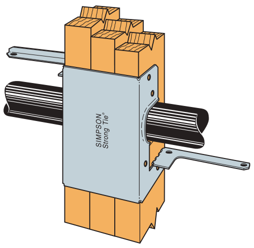
Model No.	Stud Size	Fasteners	Factored Resistance			
			D.Fir-L		S-P-F	
			Compression	Tension	Compression	Tension
			(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)
			lb.	lb.	lb.	lb.
			kN	kN	kN	kN
SS1.5	2x	(12) 10d x 1½"	875	—	620	—
			3.89	—	2.76	—
SS2.5	3x	(12) 10d x 1½"	1170	—	920	—
			5.20	—	4.09	—
SS3	(2) 2x	(12) 10d	1255	—	970	—
			5.58	—	4.31	—
SS4.5	(3) 2x	(14) 10d	1375	—	975	—
			6.12	—	4.34	—
HSS2-SDS1.5	2x	(12) ¼" x 1½" SDS	1860	1450	1430	1040
			8.27	6.45	6.36	4.63
HSS2-2-SDS3	(2) 2x	(12) ¼" x 3" SDS	1980	1370	1425	990
			8.81	6.09	6.34	4.40
HSS2-3-SDS3	(3) 2x	(12) ¼" x 3" SDS	1635	1370	1175	990
			7.27	6.09	5.23	4.40
HSS4-SDS3	4x	(12) ¼" x 3" SDS	1995	1370	1435	990
			8.87	6.09	6.38	4.40

1. Factored compression resistances cannot be increased for short term load durations.
2. **Nails:** 10d = 0.148" dia. x 3" long, 10d x 1½" = 0.148" dia. x 1½" long. See pp. 27–28 for other nail sizes and information.

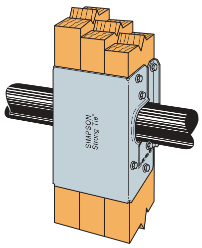


Typical SS3 Installation

Typical SS1.5 Installation



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.

RPS

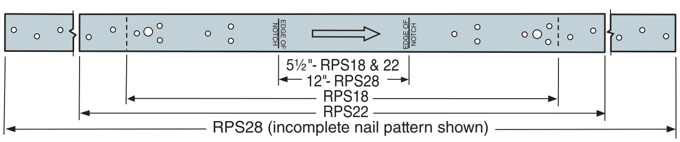
Strap Ties

The RPS can be used to reinforce notches in wall plates for HVAC and pipe penetrations in walls.

Finish: Galvanized, some products available in ZMAX® coating. See Corrosion Information, pp. 20–24.

Installation:

- Use all specified fasteners; see General Notes
- Use RPS22 or RPS28 (16 gauge) to reinforce top plate
- Use RPS18Z, RPS22Z or RPS28Z (16 gauge ZMAX) to reinforce sill plate

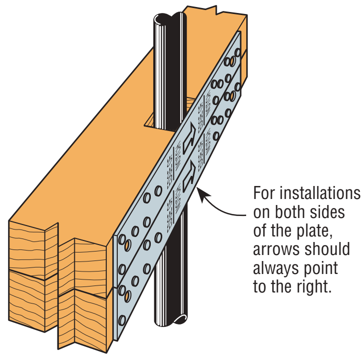


RPS

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Ga.	Dimensions (in.) W	Dimensions (in.) L	Notch Width	Fasteners (Total)	Factored Tensile Resistance D.Fir-L (K_D = 1.00)	D.Fir-L (K_D = 1.15)	S-P-F (K_D = 1.00)	S-P-F (K_D = 1.15)
						lb.	lb.	lb.	lb.
						kN	kN	kN	kN
RPS18	16	1½	18⁵⁄₁₆	≤ 5½"	(12) 8d	1155	1325	1075	1240
						5.14	5.90	4.79	5.52
RPS22		1½	22⁵⁄₁₆	≤ 5½"	(16) 8d	1535	1770	1435	1650
						6.84	7.88	6.39	7.35
RPS28		1½	28⁵⁄₁₆	≤ 12"	(12) 8d	1155	1325	1075	1240
						5.14	5.90	4.79	5.52

1. Factored resistances have been increased 15% for earthquake or wind loading; no further increase is permitted.
2. **Nails:** 8d = 0.131" dia. x 2½" long. See pp. 27–28 for other nail sizes and information.



Typical RPS Installation
(only one strap may be necessary to meet code requirements)

PSCL/PSCA

Panel Sheathing Clips

Simpson Strong-Tie® panel sheathing clips are used to brace unsupported sheathing edges and provide a ⅛" gap to address shrinkage and expansion of roof sheathing.

Material: 20 gauge

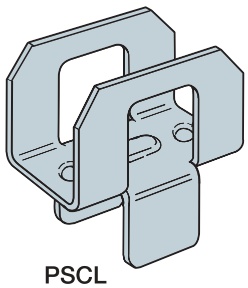
Finish: Galvanized

Installation:

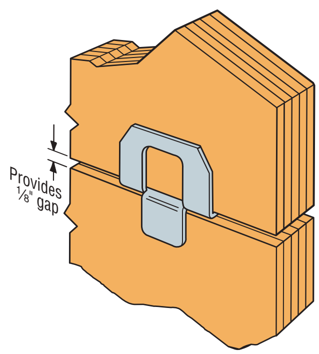
- Use the same size sheathing clip as the panel thickness

Model No.	Panel Thickness
PSCL⅜	⅜
PSCL⁷⁄₁₆, PSCA⁷⁄₁₆	⁷⁄₁₆
PSCL¹⁵⁄₃₂, PSCA¹⁵⁄₃₂	¹⁵⁄₃₂
PSCL½, PSCA½	½
PSCL⅝	⅝
PSCL¹⁹⁄₃₂	¹⁹⁄₃₂
PSCL¾	¾

1. PSCLs and PSCAs meet the requirements of 9.23.16.6 NBC 2015 for required edge support of panel type sheathing.



PSCL
(PSCA similar)



Typical PSCL Installation

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.

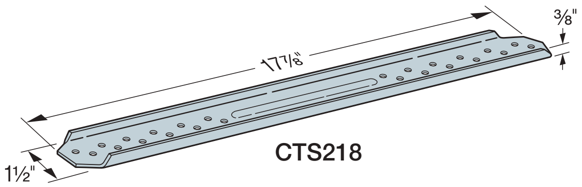
- Tested specifically for top/bottom plate repair with various multi-strap configurations

Material: 14 gauge

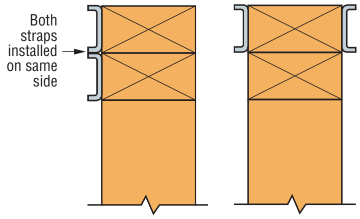
Finish: Galvanized

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.

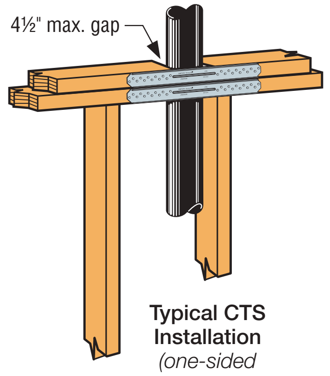


CTS218



One-Sided Installation

Two-Sided Installation

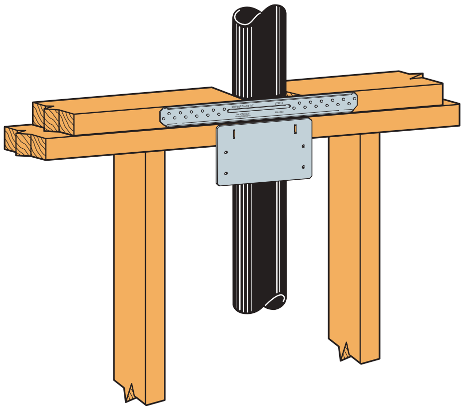


Typical CTS Installation
(one-sided installation shown)

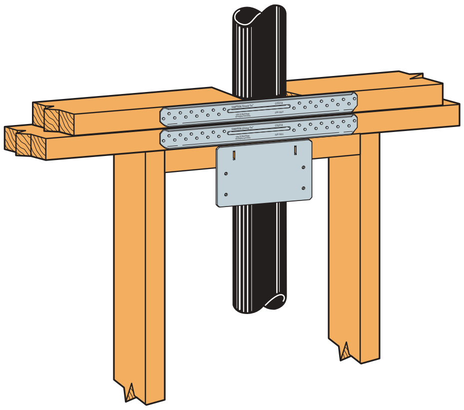
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Strap Qty.	Installation	Fasteners (per strap)	Factored Resistance (K_D = 1.15) D.Fir-L Compression	D.Fir-L Tension	S-P-F Compression	S-P-F Tension
				lb.	lb.	lb.	lb.
				kN	kN	kN	kN
CTS218	1	One sided	(24) 10d x 1½"	1485	1985	1055	1985
				6.61	8.83	4.69	8.83
	2	One sided		2970	3970	2110	3970
				13.21	17.66	9.39	17.66
	2	Two sided		3440	3970	2445	3970
				15.30	17.66	10.88	17.66
	3	Two sided		5405	5955	3840	5955
				24.04	26.49	17.08	26.49
	4	Two sided		6880	7940	4890	7940
				30.60	35.32	21.75	35.32
	1	One sided	(24) SD #9 x 1½"	1705	1985	1210	1985
				7.58	8.83	5.38	8.83
	2	One sided		3410	3970	2420	3970
				15.17	17.66	10.77	17.66
	2	Two sided		3970	3970	2820	3970
				17.66	17.66	12.54	17.66
	3	Two sided		5995	5955	4255	5955
				26.67	26.49	18.93	26.49
	4	Two sided		7940	7940	5640	7940
				35.32	35.32	25.09	35.32

1. Factored resistances have been increased 15% 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. 27–28 for other nail sizes and information.



Single CTS218 and PSPN58 Installation



Double CTS218 and PSPN58 Installation

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 labour.

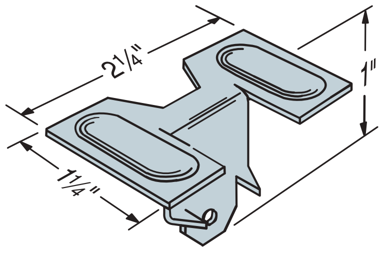
The installation prongs provide even more labour savings.

Material: 20 gauge

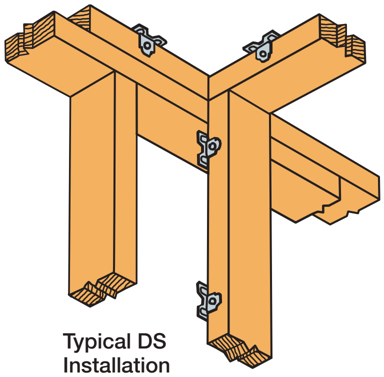
Finish: Galvanized

Installation:

- 16" on centre or less, using 8d commons
- DS should not be used where gypsum board is used for structural loads



DS



Typical DS Installation

BT

Brick Ties

Brick ties provide a connection between the wood structure and brick façade.

Material: 22 gauge

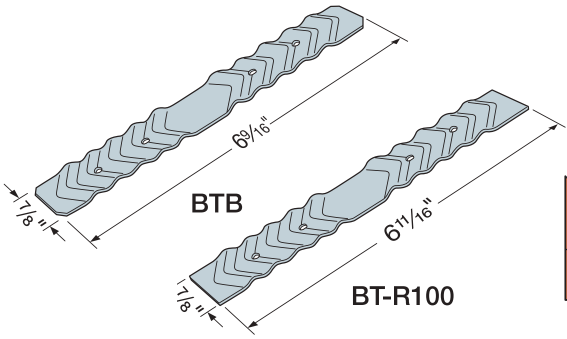
Finish: Galvanized

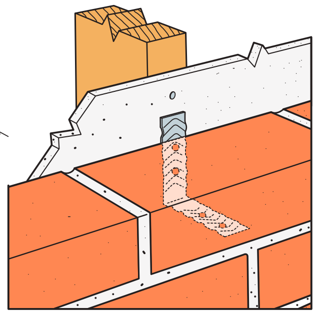
Installation:

- Holes sized for 10d commons. See code for spacing requirements.

To Order:

BT-R100 = retail pack of 100
BTB = bulk carton of 500





Typical BT Installation

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

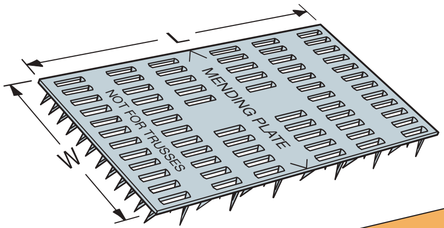
Finish: Galvanized

Installation:

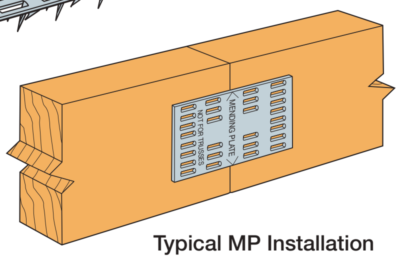
- Place plate over two pieces of aligned wood with arrows aligned at joint
- Place a wood block over the mending plate and hammer the wood block to embed the prongs

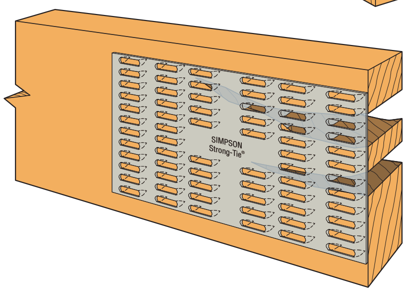
Model No.	Dimensions (in.)	
	W	L
MP14	1	4
MP24	2	4
MP36	3	6

1. Connectors are not load rated.



MP36
(other sizes similar)


Typical MP Installation



Pallet Repair Application

TP/TPA

Tie Plates

TPs are nail-on tie plates. TPAs are flanged for added support.

Material: 20 gauge

Finish: Galvanized

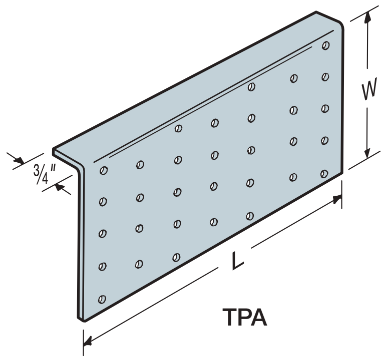
Installation:

- Holes are sized for 8d common or 8d x 1½" nails

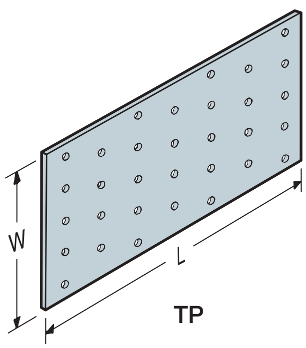
These products are approved for installation with the Strong-Drive® SD Connector screw. See pp. 32–34 for more information.

Model No.	Dimensions (in.)		Number of Nail Holes
	W	L	
TP15	1 13⁄16	5	13
TPA37	3½	7	32
TPA39	3½	9	41
TP35	3⅛	5	23
TP37	3⅛	7	32
TP39	3⅛	9	41
TP311	3⅛	11	50
TP45	4⅛	5	30
TP47	4⅛	7	42
TP49	4⅛	9	54
TP411	4⅛	11	66
TP57	5¾	7	60
TPA57	5	7	49

1. Connectors are not load rated.



TPA



TP

WB/WBC/TWB/RCWB

Wall Bracing

Simpson Strong-Tie® wall bracing products offer effective options to resist racking during construction. 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:

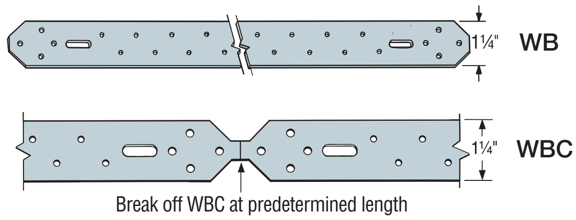
- Use all specified fasteners; see General Notes.

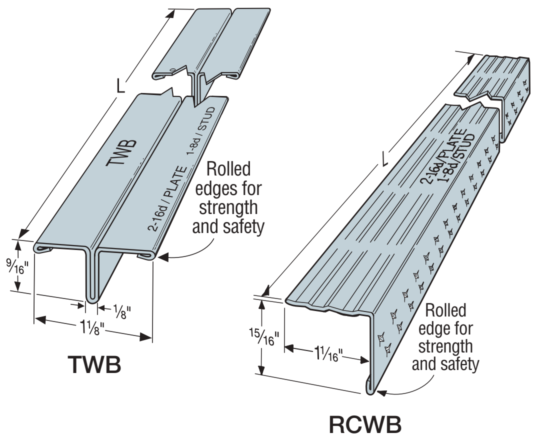
WB and WBC:

- Install in "X" pairs or in opposing "V" fashion.
- Use with 16" or 24" o.c. 2x4 (min.) studs.

RCWB and TWB:

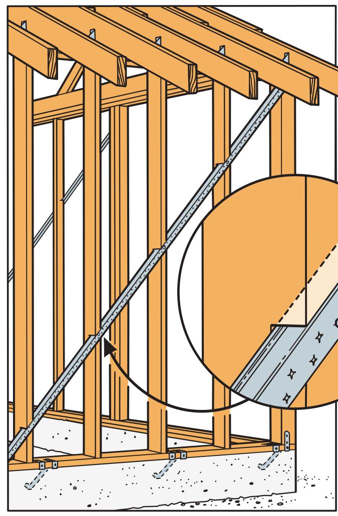
- Use with 16" o.c. studs.
- Use minimum of 2x4 studs with TWB.
- Use minimum of 2x6 studs with RCWB (2x4 min. for interior, non-bearing wall).
- Establish a run-line using the bracing as a straight edge. Single cut a saw kerf ⅝" deep (TWB) or 1⅛" deep (RCWB) along the run line. If the wall is pre-framed 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.





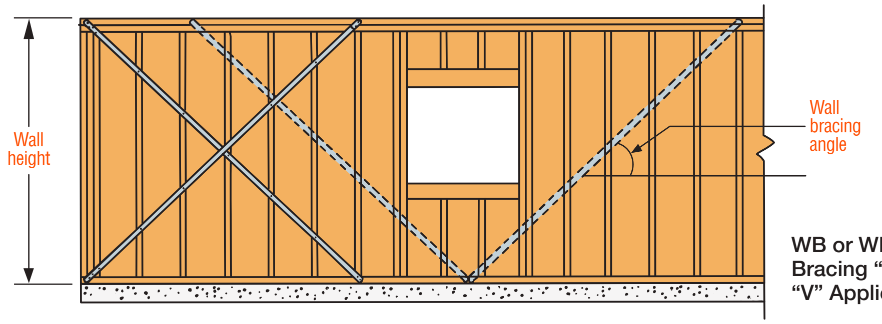
Model No.	L	Wall Height and Angle	Fasteners	
			Plates	Studs
WB106	9'-5⅝"	8' @ 60	(2) 16d	(1) 8d
WB106C	9'-6"	8' @ 60	(2) 16d	(1) 8d
TWB10	9'-9"	8' @ 55	(2) 16d	(1) 8d
RCWB12	11'-4"	8' @ 45	(2) 16d	(1) 8d
WB126	11'-4⅜"	8' @ 45	(2) 16d	(1) 8d
WB126C	11'-4¾"	8' @ 45	(2) 16d	(1) 8d
TWB12	11'-4"	8' @ 45	(2) 16d	(1) 8d
RCWB12	11'-4"	9' @ 53	(2) 16d	(1) 8d
WB126	11'-4⅜"	9' @ 53	(2) 16d	(1) 8d
WB126C	11'-4¾"	9' @ 53	(2) 16d	(1) 8d
TWB12	11'-4"	9' @ 53	(2) 16d	(1) 8d
WB143C	14'-3"	10' @ 45	(2) 16d	(1) 8d
RCWB14	14'-2"	10' @ 45	(2) 16d	(1) 8d
TWB14	14'-2"	10' @ 45	(2) 16d	(1) 8d

1. **Nails:** 16d = 0.162" dia. x 3½" long, 8d = 0.131" dia. x 2½" long. See pp. 27–28 for other nail sizes and information.



Typical RCWB Installation

The WBC handy carry carton is convenient to store, transport and use.



WB or WBC Wall Bracing "X" and "V" Applications

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.

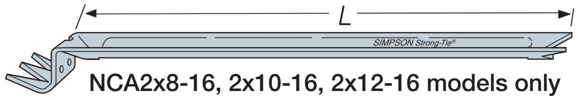
Material: LTB — 22 gauge; NCA and TB — 20 gauge (except NCA2x12-16 — 18 gauge)

Finish: Galvanized

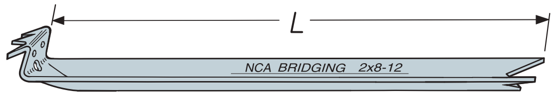
Installation: • Support floor joists with a depth-to-thickness ratio of six or more with bridging at intervals not exceeding 8'. If span is greater than 8', install on 2x8 or larger joists. If span is greater than 16', use more than one pair.

- 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
- **Nail Bridging Only** — When installation for the connection to the top of the stud wall instead of the joist underside, use a strap one size smaller than shown in the table.

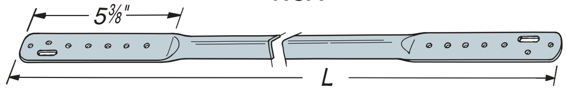
Space bridging to avoid contact noises.



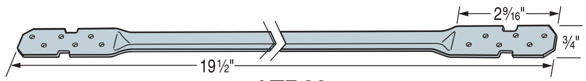
NCA2x8-16, 2x10-16, 2x12-16 models only



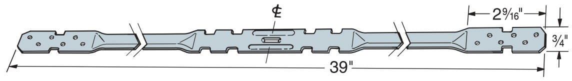
NCA



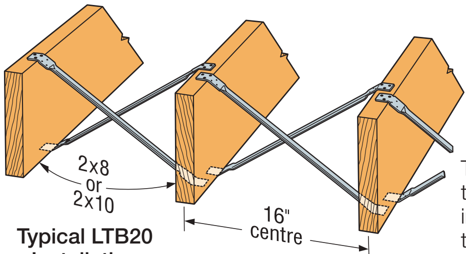
TB



LTB20

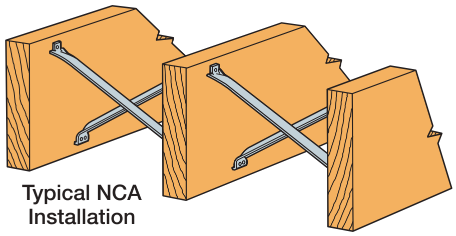


LTB40

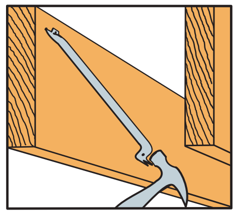


Typical LTB20 Installation

Two to three times faster installation than wood bridging.

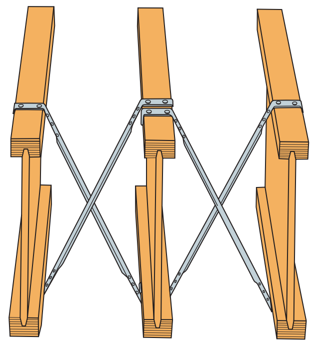


Typical NCA Installation



Install from below as shown, or from above. Drive upper end into joist approximately 1" from the top.

For all bridging avoid contact between steel members (this may cause squeaks).



Typical TB Installation

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	NCA		TB		LTB
		Model No.	L (in.)	Model No.	L (in.)	Model No.
2x10	12" o.c.	NCA2x10-12	12½	TB20	20	—
2x12	12" o.c.	NCA2x12-12	13⅝	TB20	20	—
2x14	12" o.c.	NCA2x8-16	15¼	TB27	27	—
2x16	12" o.c.	NCA2x10-16	15 13/16	TB27	27	—
2x8	16" o.c.	NCA2x8-16	15¼	TB27	27	LTB20 or 40
2x10	16" o.c.	NCA2x10-16	15 13/16	TB27	27	LTB20 or 40
2x12	16" o.c.	NCA2x12-16	16⅞	TB27	27	—

SBV/CF-R

Shelf Brackets / Concrete Form Angles

Use the SBV for shelving, counter brackets, window ledge supports, at a very competitive price.

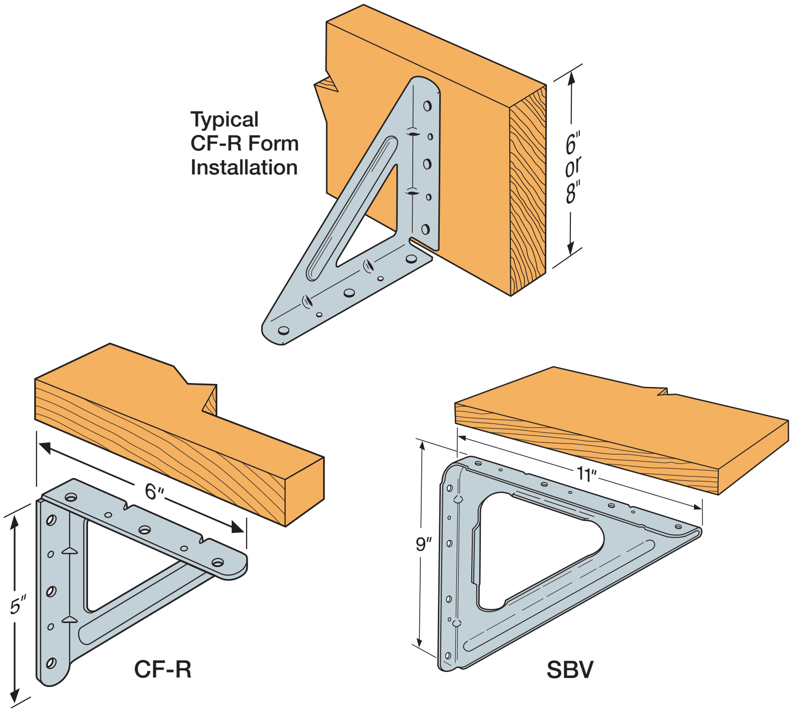
The CF-R is used where a moderate size shelf bracket and reinforcing angle is needed. When used for tilt-up perimeter forming, the nail hole placement ensures substantial re-use.

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.



Model No.	Fasteners	Factored Resistance (K_D = 0.65)	
	Stud	D.Fir-L	S-P-F
		lb.	lb.
		kN	kN
CF-R	(3) ¼" x 2" SDS	140	130
		0.62	0.58
SBV	(4) ¼" x 2" SDS	150	140
		0.67	0.62

1. Factored resistances have been decreased for permanent loading. Values can be increased for other load durations as per code.

Decorative Hardware

Outdoor Accents®

APA/APB/APDJT/APL/APT NEW

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, 6x6, 8x8 and 10x10 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.

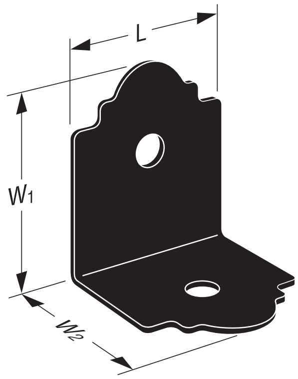
Outdoor Accents angles make connections between beams and posts stronger and provide more consistent, straight corners for a variety of outdoor projects. There are two sizes to accommodate 4x and 6x lumber. Flat T and L straps provide reinforcement for connections where one lumber piece intersects another at a 90-degree angle. The angles and straps are also installed with the Outdoor Accents structural screws and hex-head washers.

Material: APA21 — 14 gauge; APB, see table, all others 12 gauge; APB8x8, APB10x10 standoff base — ZMAX only

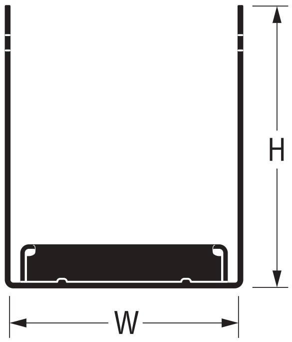
Finish: ZMAX® with textured powder-coated, flat black paint

Installation:

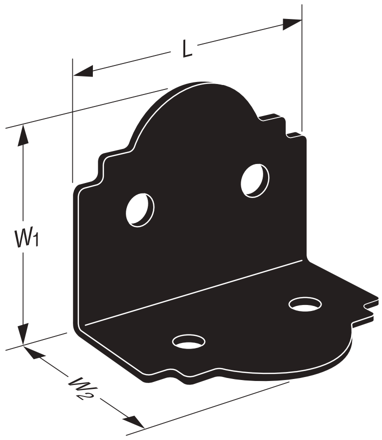
- Use all specified fasteners; see General Notes
- Use of the Outdoor Accents connectors requires the use of Hex-Head Washer (STN22) with Structural Wood screw (SDWSDBB)



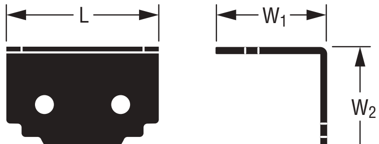
APA4
U.S. Patent Pending



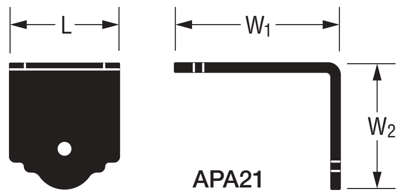
APB



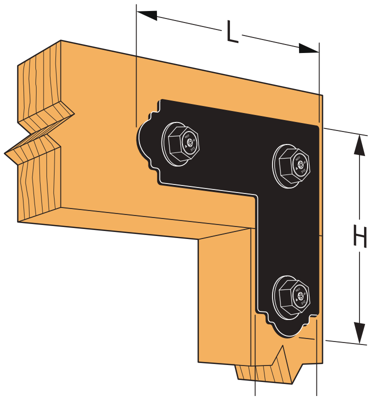
APA6
U.S. Patent Pending



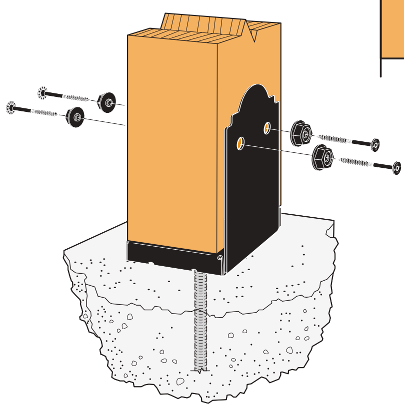
APA6



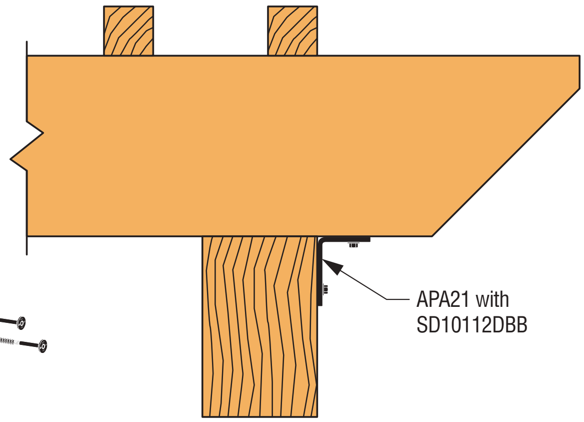
APA21



Typical APL4 Installation



Typical APB Installation



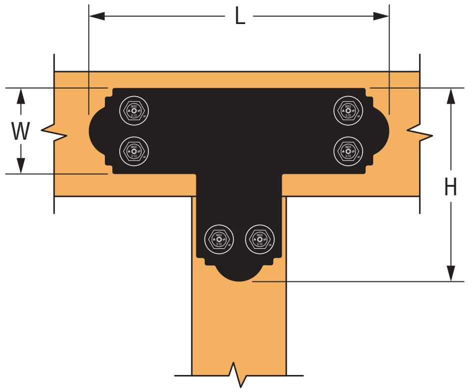
Typical APA21 Installation

APA/APB/APDJT/APL/APT (cont.)

Beam-to-Column Ties

Model No.	Ga.	Dimensions (in.)			Fastener Qty.		Factored Resistance (K_D=1.15)			
							D.Fir-L		S-P-F	
		W	L	H	Column	Beam	Uplift	F_1	Uplift	F_1
							lb.	lb.	lb.	lb.
							kN	kN	kN	kN
APL4	12	3	8¼	8¼	2	4	1255	1120	1150	795
							5.60	5.00	5.10	3.55
APL6	12	5	11¼	11¼	4	6	2505	2235	2290	1585
							11.15	9.95	10.20	7.05
APT4	12	3	13½	8¼	2	4	1255	1255	1150	1150
							5.60	5.60	5.10	5.10
APT6	12	5	17½	11¼	4	8	2505	2380	2300	1690
							11.15	10.60	10.25	7.50

1. Factored resistances have been increased 15% for wind or seismic loads with no further increase allowed. Reduce where other load durations govern.
2. Connectors must be installed in pairs. Factored resistances do not apply to single parts.
3. Lateral resistances are for loading along the plane of the beam (F_1).
4. All fasteners are a Simpson Strong-Tie® SDWS22312DBB inserted through an STN22 washer.
5. Factored resistances assume dry service condition (K_{sf} = 1.00). Reduce uplift resistance per 12.2.1.5 CSA 086-14 for other conditions.

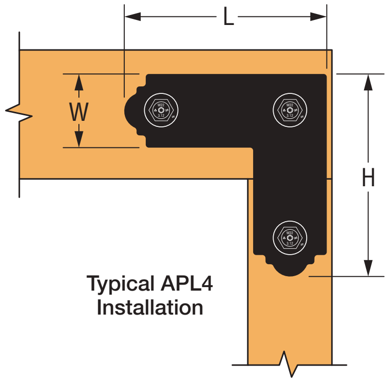


Typical APT6 Installation

Heavy Angles

Model No.	Ga.	Dimensions (in.)			Fastener Qty.		Factored Resistance (K_D=1.15)			
							D.Fir-L		S-P-F	
		L	W_1	W_2	Column	Beam	Uplift	F_1	Uplift	F_1
							lb.	lb.	lb.	lb.
							kN	kN	kN	kN
APA4	12	3	3¼	3	2	2	1250	1255	885	1150
							5.55	5.60	3.95	5.10
APA6	12	5	3¾	3½	4	4	2160	2505	1700	2300
							9.60	11.15	7.55	10.25

1. Factored resistances have been increased 15% for wind or seismic loads with no further increase allowed. Reduce where other load durations govern.
2. Connectors must be installed in pairs. Factored resistances do not apply to single parts.
3. Lateral resistances are for loading along the plane of the beam (F_1).
4. All fasteners are a Simpson Strong-Tie® SDWS22312DBB inserted through an STN22 washer.
5. Factored resistances assume dry service condition (K_{sf} = 1.00). Reduce uplift resistance per 12.2.1.5 CSA 086-14 for other conditions.

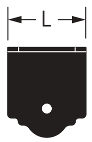


Typical APL4 Installation

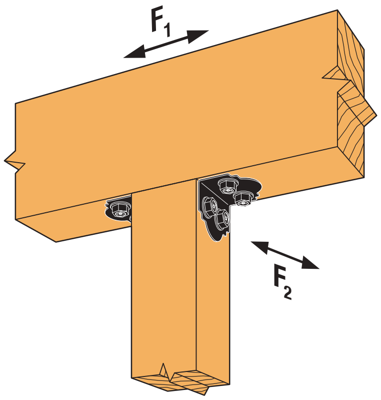
Light Rafter Tie

Model No.	Ga.	Dimensions (in.)			Fastener Qty.		Factored Resistance (K_D=1.15)			
							D.Fir-L		S-P-F	
		L	W_1	W_2	Column	Beam	Uplift	F_2	Uplift	F_2
							lb.	lb.	lb.	lb.
							kN	kN	kN	kN
APA21	14	1⅜	2	1½	1	1	280	200	215	145
							1.25	0.90	0.95	0.65

1. Factored resistances have been increased 15% for wind or seismic loads with no further increase allowed. Reduce where other load durations govern.
2. Factored resistances are for a single part.
3. Lateral resistances are for loading perpendicular to the plane of the beam (F_2).
4. All fasteners are a Simpson Strong-Tie® SD10112DBB.
5. Factored resistances assume dry service condition (K_{sf} = 1.00). Reduce uplift resistance per 12.2.1.5 CSA 086-14 for other conditions.



APA21



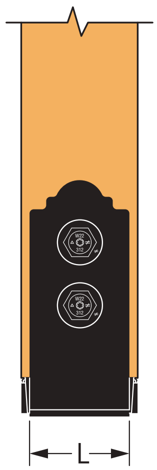
Typical APA6 Installation
(APA21 similar)

APA/APB/APDJT/APL/APT (cont.)

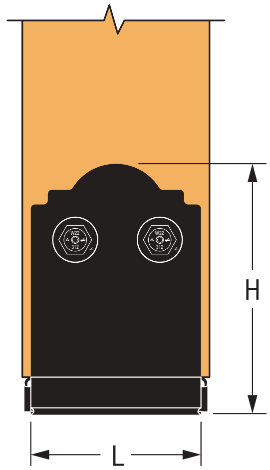
Post Bases

Model No.	Material (Ga.)		Dimensions (in.)			Fasteners		Factored Resistance			
								D.Fir-L		S-P-F	
								Uplift (K_D = 1.15)	Normal (K_D = 1.00)	Uplift (K_D = 1.15)	Normal (K_D = 1.00)
	Base	Strap	W	L	H	Column	Anchor	lb. / kN	lb. / kN	lb. / kN	lb. / kN
APB44	16	12	3⁹⁄₁₆	3	7	4	⅝"	1725 / 7.65	9230 / 41.05	1225 / 5.45	7580 / 33.70
APB44R	16	12	4¹⁄₁₆	3	6¾	4	⅝"	1725 / 7.65	9230 / 41.05	1225 / 5.45	7580 / 33.70
APB66	12	12	5½	5	7½	4	⅝"	2100 / 9.35	15385 / 68.45	1490 / 6.65	11115 / 49.45
APB66R	12	12	6	5	7¼	4	⅝"	2100 / 9.35	15385 / 68.45	1490 / 6.65	11115 / 49.45
APB88	14	12	7½	7	10⁹⁄₁₆	8	(2) ⅝"	4360 / 19.40	27900 / 124.10	3210 / 14.30	20090 / 89.35
APB88R	14	12	8	7	10⁵⁄₁₆	8	(2) ⅝"	4360 / 19.40	27900 / 124.10	3210 / 14.30	20090 / 89.35
APB1010	14	12	9½	9	11	8	(2) ⅝"	3950 / 17.55	33400 / 148.55	2845 / 12.65	24050 / 107.00
APB1010R	14	12	10	9	10¾	8	(2) ⅝"	3950 / 17.55	33400 / 148.55	2845 / 12.65	24050 / 107.00

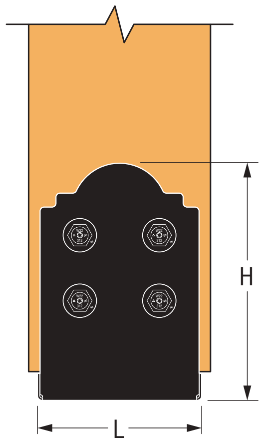
1. Factored uplift resistance has been increased 15% for wind or seismic loads with no further increase allowed. Reduce where other load durations govern.
2. Factored Normal resistance may not be increased for short-term loading.
3. Specifier to design concrete for uplift capacity.
4. Factored Normal resistance 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).



Typical APB44 Installation



Typical APB66 Installation



Typical APB88 Installation

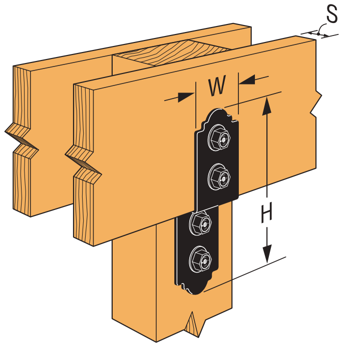
SIMPSON Strong-Tie®

APA/APB/APDJT/APL/APT (cont.)

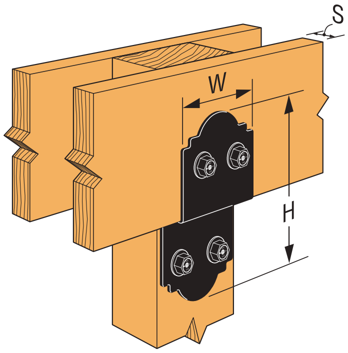
Deck Joist Tie

Model No.	Ga.	Dimensions (in.)			Fastener Qty.		Factored Normal Resistance (K_D = 1.00)	
		S	W	H	Column	Joist	D.Fir-L	S-P-F
							lb.	lb.
							kN	kN
NEW APDJT2-4	12	1½	3	10	2	2	1980	1790
							8.80	7.95
APDJT1.75-4	12	1¾	3	9¾	2	2	1980	1790
							8.80	7.95
NEW APDJT2R-4	12	2	3	9½	2	2	1980	1790
							8.80	7.95
NEW APDJT2-6	12	1½	5	10	2	2	1980	1790
							8.80	7.95
APDJT1.75-6	12	1¾	5	9¾	2	2	1980	1790
							8.80	7.95
NEW APDJT2R-6	12	2	5	9½	2	2	1980	1790
							8.80	7.95

1. Factored resistance shown are per part.
2. 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.
3. Factored resistances assume dry service condition (K_{sf} = 1.00). Reduce resistance per 12.2.1.5 CSA 086-14 for other conditions.



Typical APDJT2-4 Installation



Typical APDJT2-6 Installation

Outdoor Accents Fasteners NEW

Outdoor Accents Connector Screw

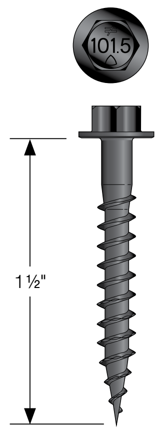
The Outdoor Accents Connector Screw reduces installation time by driving easily without predrilling. Designed for installation with the Outdoor Accents APA21 90-degree angle, the screw's black finish accents any outdoor living project. The sharp point of the screw enables fast starts, and the patented 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 factored resistance of the SD10 exceeds the shear load of a 16d common nail

Material: Heat-treated carbon steel

Finish: Double-barrier black proprietary coating



SD10112DBB

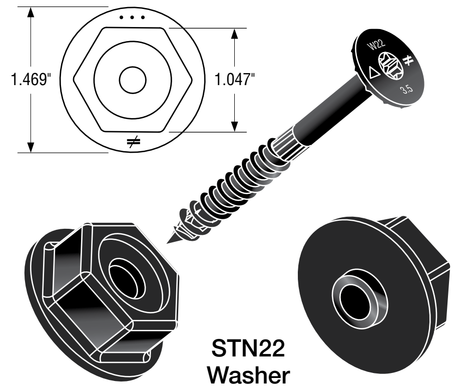
Outdoor Accents Hex-Head Washer

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 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



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
- The point is designed to reduce installation torque and eliminate the need for predrilling in most applications
- Underhead nibs offer greater control when seating the head

Finish: Double-barrier black proprietary coating

SDWS22312DBB
(SDWS22512DBB similar)
U.S. Patent 5,897,280 and 7,161,133

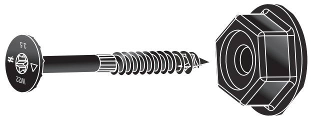
Outdoor Accents Fasteners (cont.)

Outdoor Accents Connector Screw

Size	Model No.	Thread Length (in.)	Factored Lateral Resistance (K_D = 1.00)					
			20 ga. Steel Side Member			12 ga. Steel Side Member		
			D.Fir-L	S-P-F	Northern	D.Fir-L	S-P-F	Northern
			lb.	lb.	lb.	lb.	lb.	lb.
			kN	kN	kN	kN	kN	kN
#10 x 1½"	SD10112DBB	1	220	200	175	340	320	300
			0.98	0.89	0.78	1.51	1.42	1.33

1. Factored resistances have been developed in accordance with 12.11 CSA O86-14, based on testing per ICC-ES AC233, assuming full penetration into the main member. Apply the adjustment factors K_D, K_{SF} and K_T per 12.11.4.1 when applicable.
2. Factored resistances shown assume steel side plates with F_u=45000 psi (310 MPa).
3. Factored withdrawal resistances may be calcluated in accordance with 12.11.5.2 CSA O86-14 assuming a nominal diameter of 0.20" and a head diameter of 0.38".
4. Minimum spacing, edge and end distance shall be calculated in accordance with 12.9.2.1 CSA O86-14 assuming a diameter of 0.20".

Outdoor Accents Structural Wood Screw with STN22 Hex-Head Washer



Size	Model No.	Thread Length (in.)	Factored Lateral Resistance (K_D = 1.00)					
			2x Wood Side Member			12 ga. Steel Side Member		
			D.Fir-L	S-P-F	Northern	D.Fir-L	S-P-F	Northern
			lb.	lb.	lb.	lb.	lb.	lb.
			kN	kN	kN	kN	kN	kN
0.22 x 3½"	SDWS22312DBB with STN22	2	340	290	240	545	500	450
			1.51	1.29	1.07	2.42	2.22	2.00
0.22 x 5½"	SDWS22512DBB with STN22	2 ¾"	445	395	340	610	565	515
			1.98	1.76	1.51	2.71	2.51	2.29

See footnotes below.

Outdoor Accents Structural Wood Screw (Wood-to-Wood)

Size	Model No.	Thread Length (in.)	Factored Resistance					
			2x Wood Side Member					
			Lateral (K_D = 1.00)			Withdrawal (K_D = 1.15)		
			D.Fir-L	S-P-F	Northern	D.Fir-L	S-P-F	Northern
			lb.	lb.	lb.	lb.	lb.	lb.
			kN	kN	kN	kN	kN	kN
0.22 x 3½"	SDWS22312DBB	2	340	290	240	665	505	365
			1.51	1.29	1.07	2.96	2.25	1.62
0.22 x 5½"	SDWS22512DBB	2 ¾"	445	395	340	935	620	515
			1.98	1.76	1.51	4.16	2.76	2.29

1. Factored resistances have been developed in accordance with 12.11 CSA O86-14, based on testing per ICC-ES AC233, assuming full penetration into the main member. Apply the adjustment factors K_D, K_{SF} and K_T per 12.11.4.1 when applicable.
2. Factored resistances shown for steel side members assume F_u=45000 psi (310 MPa).
3. Minimum spacing, edge and end distance shall be calculated in accordance with 12.9.2.1 CSA O86-14 assuming a diameter of 0.30".

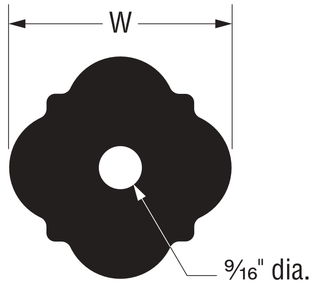
Outdoor Accents®

APDMW56

The APDMW56 decorative washer installs easily with the structural wood screw and hex-head washer combination and can be used in a variety of wood-to-wood connections.

Material: 12 gauge

Finish: ZMAX® with textured, flat black power coat



APDMW56

Model	Ga.	Hole Dia.	W
APDMW56	12	9⁄16"	3

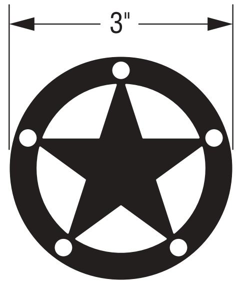
1. Fastener is SDWS22312DBB or SDWS22512DBB, inserted through an STN22 washer.

APDTS3

The APDTS3 decorative star installs easily with the Outdoor Accents Connector screw and is an accent piece for decorative hardware.

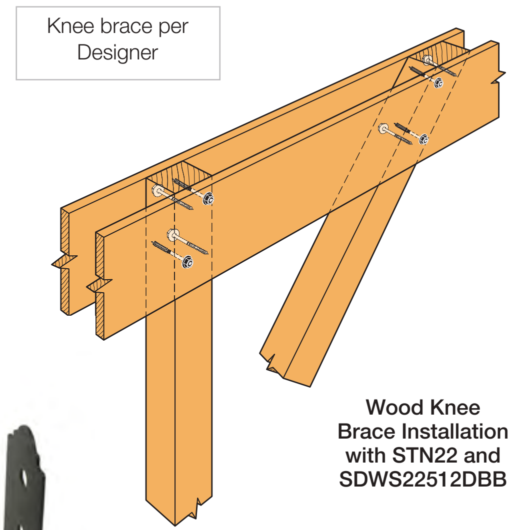
Material: 12 gauge

Finish: ZMAX® with textured, flat black power coat



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



Wood Knee Brace Installation with STN22 and SDWS22512DBB

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.
- **Preengineered 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

BP – Bearing Plates

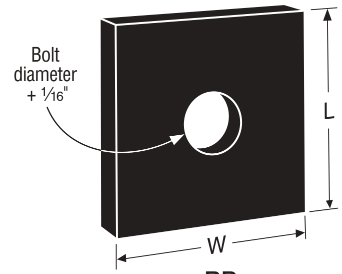
Bearing plates give greater bearing surface than standard cut washers and help distribute the load at critical connections.

Material: See table

Finish: Textured flat black powder coat

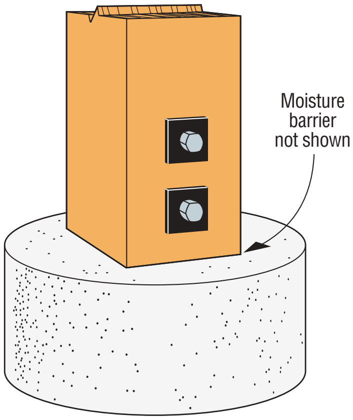
Installation:

- See General Notes



BP

Model No.	Thickness (in.)	Dimensions (in.)		Bolt Dia. (in.)
		W	L	
BP½PC	3⁄16	2	2	½
BP⅝-2PC	3⁄16	2	2	⅝
BP⅝PC	¼	2½	2½	⅝
BP¾PC	5⁄16	2¾	2¾	¾
BP⅞PC	5⁄16	3	3	⅞
BP1PC	⅜	3½	3½	1



Typical BP Installation

Special Order Plates

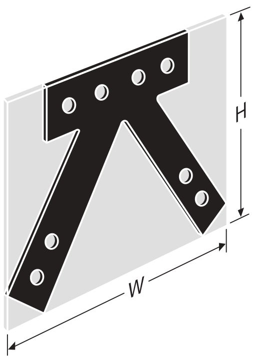
Simpson Strong-Tie can make a variety of flat and bent steel shapes, which include gusset plates for heavy timber trusses, custom ornamental shapes and retaining plates.

Material: 3 gauge maximum

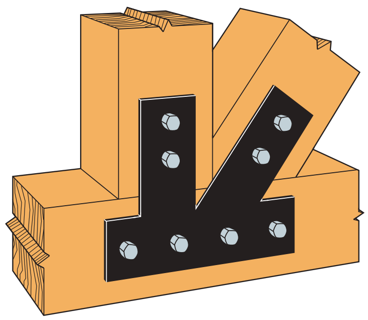
Finish: Galvanized, textured powder-coated flat black, Simpson Strong-Tie® gray paint, stainless steel. Contact Simpson Strong-Tie for availability.

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. 1⁄16" tolerance)
- Simpson Strong-Tie does not provide product engineering or load values for special order plates
- Contact Simpson Strong-Tie for pricing information



"W" and "H" indicate the envelope size of the steel shape.



Typical Installation
(plate shown has black powder-coat)

Classic Collection

Material: As noted in tables
Finish: Textured powder-coated flat black paint
Installation: • Use all specified fasteners; see General Notes

Strap Ties

Model No.	Ga.	Dimensions (in.)		Bolts	
		W	L	Qty.	Dia.
HST2PC	7	2½	21¼	6	⅝"
HST5PC	7	5	21¼	12	⅝"
HST3PC	3	3	25½	6	¾"
HST6PC	3	6	25½	12	¾"
PS218PC	7	2	18	4	¾"
PS418PC	7	4	18	4	¾"
PS720PC	7	6¾	20	8	½"

Beam to Column Ties

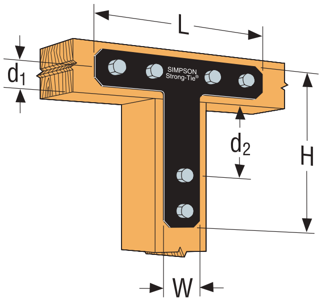
Model No.	Ga.	Dimensions (in.)			Minimum Bolt End and Edge Distances (in.)		Bolts	
		W	H	L	d_1	d_2	Qty.	Dia.
1212HLPC	7	2½	12	12	2½	4⅜	5	⅝"
1616HLPC	7	2½	16	16	2½	4⅜	5	⅝"
1212HTPC	7	2½	12	12	2½	4⅜	6	⅝"
1616HTPC	7	2½	16	16	2½	4⅜	6	⅝"

1. 1212HL, 1616HL, 1212HT and 1616HT are to be installed in pairs with machine bolts in double shear.

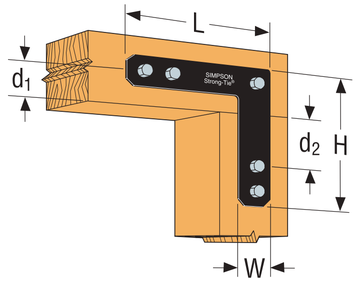
Column Bases

Installation: • Minimum side cover is 3" for CBs.
- Install with bottom of base 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).

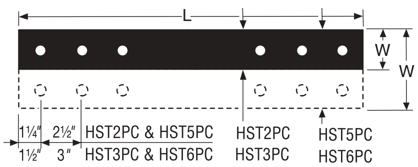
Model No.	Ga.	Dimensions (in.)		Bolts	
		W_1	W_2	Qty.	Dia.
CB44PC	7	3$\frac{9}{16}$	3½	2	⅝"
CB46PC	7	3$\frac{9}{16}$	5½	2	⅝"
CB48PC	7	3$\frac{9}{16}$	7½	2	⅝"
CB66PC	7	5½	5½	2	⅝"
CB68PC	7	5½	7½	2	⅝"
CB88PC	3	7½	7½	2	¾"
CB810PC	3	7½	9½	2	¾"



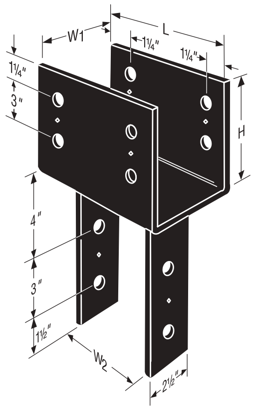
Typical 1212HTPC Installation
(1616HTPC similar)



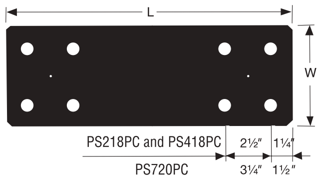
Typical 1212HLPC Installation
(1616HLPC similar)



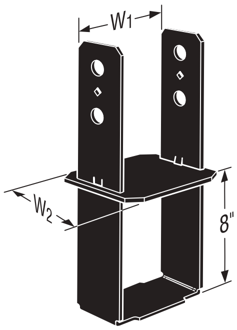
HSTPC



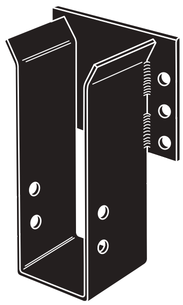
CCPC



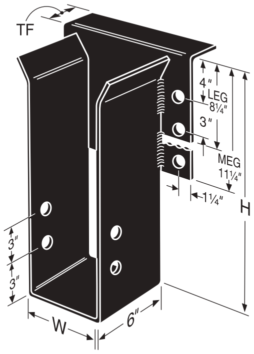
PSPC



CBPC



MEGPC without Top Flange



LEGPC/MEGPC

Beam Hangers

Material: Top flange — 7 gauge, stirrups — 7 gauge

Model No.	Dimensions (in.)			Bolts			
				Header		Joist	
	W	Min. H	TF	Qty.	Dia.	Qty.	Dia.
LEG3PC	3¼	9	2½	4	¾"	2	¾"
LEG5PC	5¼	9	2½	4	¾"	2	¾"
MEG5PC	5¼	9	2½	6	¾"	2	¾"
LEG7PC	6⅞	9	2½	4	¾"	2	¾"
MEG7PC	6⅞	9	2½	6	¾"	2	¾"

1. See Glulam Connectors section of this catalogue for additional information on these products.

Column Caps

Installation: • Bolt holes shall be a minimum of $\frac{1}{32}$" to a maximum of $\frac{1}{16}$" larger than the specified bolt's diameter (12.4.1.2 CSA O86-14).

Model No.	Ga.	Dimensions (in.)				Bolts			
						Beam		Post	
		W_1	W_2	L	H	Qty.	Dia.	Qty.	Dia.
CC44PC	7	3⅝	3⅝	7	4	2	⅝"	2	⅝"
CC46PC	7	3⅝	5½	11	6½	4	⅝"	2	⅝"
CC66PC	7	5½	5½	11	6½	4	⅝"	2	⅝"
CC68PC	7	5½	7½	11	6½	4	⅝"	2	⅝"
CC88PC	3	7½	7½	13	8	4	¾"	2	¾"

Rustic Collection

Material: As noted in tables
Finish: Textured powder-coated flat black paint
Installation: • Use all specified fasteners; see General Notes

Strap Ties

Model No.	Ga.	Dimensions (in.)		Bolts	
		W	L	Qty.	Dia.
OS	12	2	12	4	½"
OHS	7	2½	12	4	⅝"
OHS135	7	6	13½	4	¾"
OHS195	7	6	19½	8	¾"

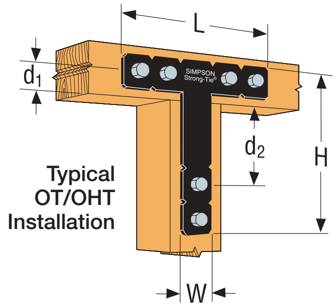
Beam to Column Ties

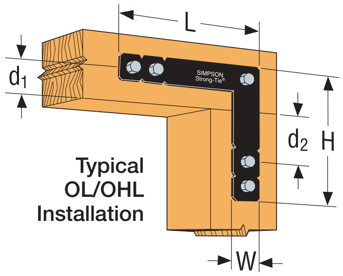
Model No.	Ga.	Dimensions (in.)			Minimum Bolt End and Edge Distances		Bolts	
		W	H	L	d_1	d_2	Qty.	Dia.
OL	12	2	12	12	2	3½	5	½"
OHL	7	2½	12	12	2½	4⅜	5	⅝"
OT	12	2	12	12	2	3½	6	½"
OHT	7	2½	12	12	2½	4⅜	6	⅝"

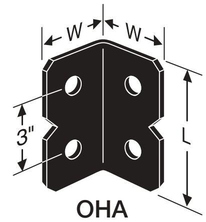
1. OL, OHL, OT and OHT must be installed in pairs with machine bolts in double shear.

Heavy Angles

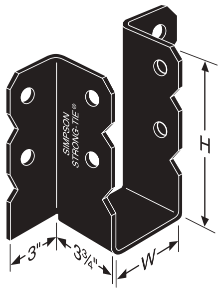
Model No.	Ga.	Dimensions (in.)		Bolts	
		W	L	Qty.	Dia.
OHA33	7	3⅛	3	2	¾"
OHA36	7	3⅛	6	4	¾"



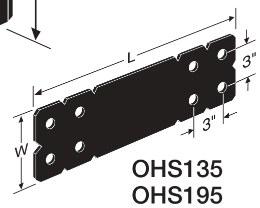




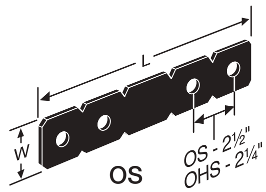
OHA



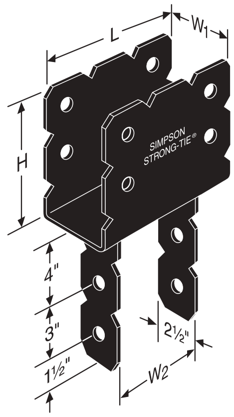
OU (7 ga.)



OHS135
OHS195



OS
OHS



OCC (3 ga.)

Column Bases

Model No.	Ga.	Dimensions (in.)		Bolts	
		W_1	W_2	Qty.	Dia.
OCB44	3	3 9/16	3½	2	⅝"
OCB46	3	3 9/16	5½	2	⅝"
OCB48	3	3 9/16	7½	2	⅝"
OCB66	3	5½	5½	2	⅝"
OCB68	3	5½	7½	2	⅝"
OCB88	3	7½	7½	2	¾"
OCB810	3	7½	9½	2	¾"

1. Minimum side cover is 3" for OCBs.

Column Caps

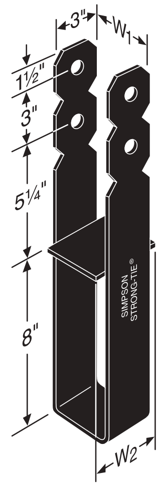
Model No.	Ga.	Dimensions (in.)				Bolts			
						Beam		Post	
		W_1	W_2	L	H	Qty.	Dia.	Qty.	Dia.
OCC44	3	3⅝	3⅝	9	4½	2	⅝"	2	⅝"
OCC46	3	3⅝	5½	12	7½	4	⅝"	2	⅝"
OCC66	3	5½	5½	12	7½	4	⅝"	2	⅝"
OCC68	3	5½	7½	12	7½	4	⅝"	2	⅝"
OCC88	3	7½	7½	15	7½	4	¾"	2	¾"

1. For end conditions specify OECC.

Joist Hangers

Model No.	Dimensions (in.)		Bolts	
	W	H	Header	Joist
OU46	3 9/16	5	(2) ¾"	(1) ¾"
OU48	3 9/16	7	(4) ¾"	(2) ¾"
OU410	3 9/16	9	(4) ¾"	(2) ¾"
OU412	3 9/16	11	(6) ¾"	(3) ¾"
OU414	3 9/16	13	(6) ¾"	(3) ¾"
OU68	5½	7	(4) ¾"	(2) ¾"
OU610	5½	9	(4) ¾"	(2) ¾"
OU612	5½	11	(6) ¾"	(3) ¾"
OU614	5½	13	(6) ¾"	(3) ¾"
OU810	7½	9	(4) ¾"	(2) ¾"
OU812	7½	11	(6) ¾"	(3) ¾"
OU814	7½	13	(6) ¾"	(3) ¾"

1. Glulam beam sizes are available. Add an "X" to the name and specify width, i.e. OU68X, W = 5.25".



OCB (3 ga.)

SIMPSON Strong-Tie®

CPS – Standoff Bases

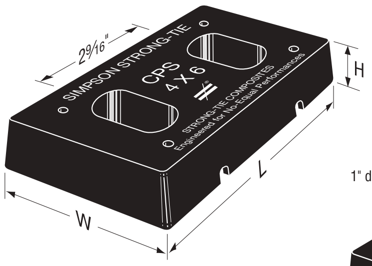
Features:

- Designed for increased concrete surface area
- Corrosion resistant
- Sized for 10d nails
- Can be used with rough lumber

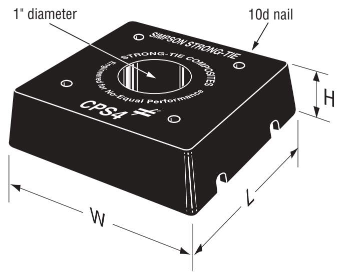
Material: Engineered composite plastic

Installation:

- See General Notes
- Not recommended for non-top-supported installations such as fences
- Attach to post before installation using four nail holes
- Embed minimum ½"-diameter rod into concrete and extend into wood member (two rods required for CPS46)
- For nominal or rough sawn lumber



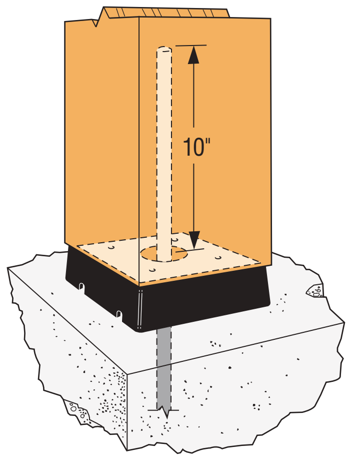
CPS46



CPS4
(other sizes similar)

Model No.	Post or Column Size	Dimensions (in.) L	Dimensions (in.) W	Dimensions (in.) H	Factored Compressive Resistance lb.	Factored Compressive Resistance kN
CPS4	4x4	3¼	3¼	1	5685	25.32
CPS46	4x6	5⁵⁄₁₆	3⁵⁄₁₆	1	8065	35.92
CPS5	5x5	4⅛	4⅛	1	6945	30.94
CPS6	6x6	5⁵⁄₁₆	5⁵⁄₁₆	1	10655	47.46
CPS7	8x8	7¼	7¼	1¼	11430	50.91

1. Resistances may not be increased for short term load duration.
2. Resistance is calculated based on the CPS bearing area and concrete strength of 20 MPa.



Typical CPS4 Installation

Indoor Architectural Products

HL – Heavy Angles and Gussets

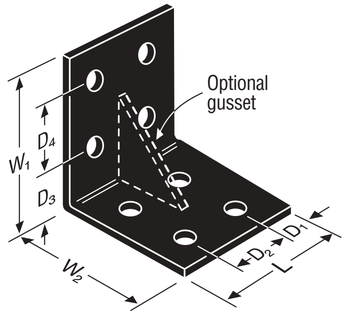
Versatile angle gussets and heavy angles promote standardization and construction economy, and are compatible with Simpson Strong-Tie® structural hardware.

Finish: Textured powder-coated flat black paint; Simpson Strong-Tie® gray paint and also available galvanized

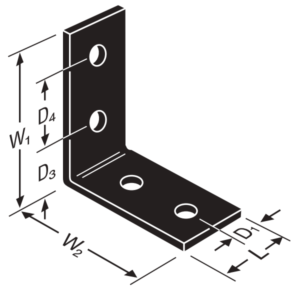
To Order: All products with PC suffix are textured powder-coated flat black paint. 7 gauge products without the PC suffix are galvanized. 3 gauge products without the PC suffix are Simpson Strong-Tie gray paint.

Options:

- Gussets may be added to HL models when L ≥ 5". Specify G after numbers in model number as in HL46GPC.

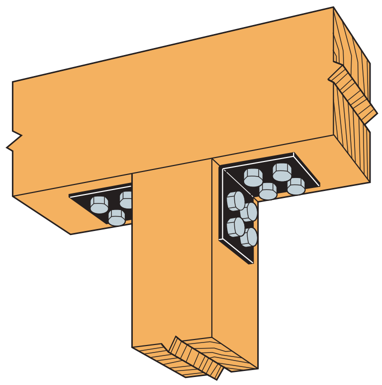


HL55PC



HL53PC

Model No.	Ga.	Dimensions (in.)						Bolts (Total)	
		W_1 and W_2	L	D_1	D_2	D_3	D_4	Qty.	Dia. (in.)
HL33PC	7	3¼	2½	1¼	—	2	—	2	½
HL35PC	7	3¼	5	1¼	2½	2	—	4	½
HL37PC	7	3¼	7½	1¼	2½	2	—	6	½
HL53PC	7	5¾	2½	1¼	—	2	2½	4	½
HL55PC	7	5¾	5	1¼	2½	2	2½	8	½
HL57PC	7	5¾	7½	1¼	2½	2	2½	12	½
HL43PC	3	4¼	3	1½	—	2¾	—	2	¾
HL46PC	3	4¼	6	1½	3	2¾	—	4	¾
HL49PC	3	4¼	9	1½	3	2¾	—	6	¾
HL73PC	3	7¼	3	1½	—	2¾	3	4	¾
HL76PC	3	7¼	6	1½	3	2¾	3	8	¾
HL79PC	3	7¼	9	1½	3	2¾	3	12	¾



Typical HL55PC Installation

CJTZ

SIMPSON Strong-Tie®

Concealed Joist Ties

The CJTZ is a concealed connector. It can be installed three ways: with no routing of header/post or beam; a routed header/post, or a routed beam.

Material: CJTZ — 12 gauge

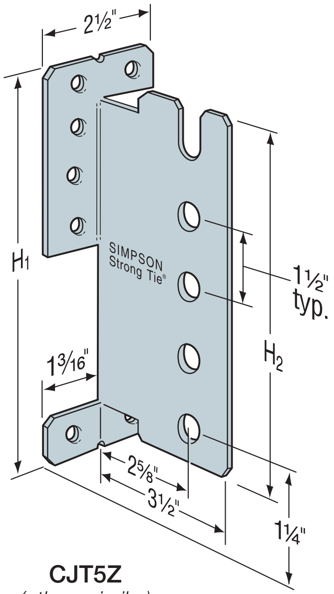
Finish: Galvanized

Installation:

- Use all specified fasteners; see General Notes.
- The CJTZ is supplied with all dowels and screws required. Screws require a hex-head driver.
- Router end of beam for screw heads for flush installation.
- To provide maximum beam width for use with short dowels, centre in beam.
- The joist/beam may be sloped to 45° with full tabulated resistances.
- See technical bulletin T-C-CJTZ at **strongtie.com** for installation instructions and ordering information.

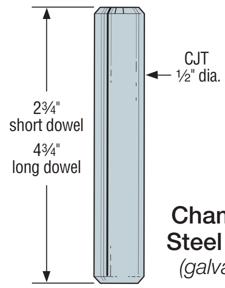
Options:

- To order: specify short (e.g. CJT3ZS) or long dowels (e.g. CJT3ZL).

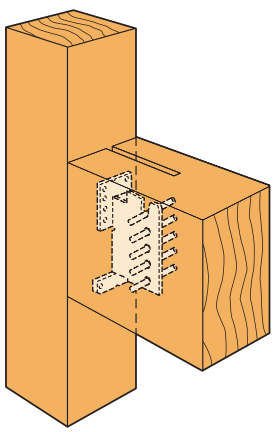


CJT5Z
(others similar)

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

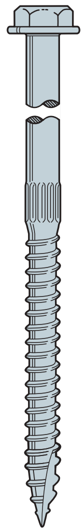


Chamfered Steel Dowel
(galvanized)



Typical CJTZ Installation
(Dowels should be centered in beam.)

Identification on all Strong-Drive® SDS Heavy-Duty Connector screw heads
(¼" x 3" SDS shown)



Strong-Drive® ¼" x 3" SDS Heavy-Duty Connector Screw

U.S. Patents 6,109,850; 5,897,280; 5,044,853

SIMPSON Strong-Tie®

Concealed Joist Ties (cont.)

These products are available with additional corrosion protection. For more information, see p. 24.

Model No.	Minimum Joist Size	Dimensions (in.)		Fasteners		Factored Resistance			
						Short Dowels		Long Dowels	
		H1	H2	¼" x 3" SDS Screws	Dowels Qty. and Diameter (in.)	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN	Uplift (K_D = 1.15) lb. / kN	Normal (K_D = 1.00) lb. / kN
D.Fir-L									
CJT3Z	4x8	5 9/16	4 7/16	6	(3) ½	2580	2510	2580	2510
						11.48	11.17	11.48	11.17
CJT4Z	4x10	7	5 15/16	8	(4) ½	3935	3470	3935	4200
						17.50	15.44	17.50	18.68
CJT5Z	4x12	8 9/16	7 7/16	10	(5) ½	4535	3945	4940	5065
						20.17	17.55	21.98	22.53
CJT6Z	6x12	10	8 15/16	12	(6) ½	—	—	5900	5130
						—	—	26.25	22.82
D.Fir-L Glulam									
CJT3Z	3⅛" x 7½"	5 9/16	4 7/16	6	(3) ½	2460	2140	2580	2660
						10.94	9.52	11.48	11.83
CJT4Z	3⅛" x 9"	7	5 15/16	8	(4) ½	3055	2655	3935	4200
						13.59	11.81	17.50	18.68
CJT5Z	3⅛" x 10½"	8 9/16	7 7/16	10	(5) ½	3635	3160	4940	5215
						16.17	14.06	21.98	23.20
CJT6Z	3⅛" x 12"	10	8 15/16	12	(6) ½	4190	3640	6910	6005
						18.64	16.19	30.74	26.71
Spruce-Pine Glulam									
CJT3Z	3⅛" x 7½"	5 9/16	4 7/16	6	(3) ½	1855	1875	1855	1915
						8.25	8.34	8.25	8.52
CJT4Z	3⅛" x 9"	7	5 15/16	8	(4) ½	2670	2325	2830	3505
						11.88	10.34	12.59	15.59
CJT5Z	3⅛" x 10½"	8 9/16	7 7/16	10	(5) ½	3180	2765	3555	4560
						14.15	12.30	15.81	20.28
CJT6Z	3⅛" x 12"	10	8 15/16	12	(6) ½	3665	3185	6045	5255
						16.30	14.17	26.89	23.38
Parallam									
CJT3Z	3½" x 9½"	5 9/16	4 7/16	6	(3) ½	2580	3150	2580	3150
						11.48	14.01	11.48	14.01
CJT4Z	3½" x 9½"	7	5 15/16	8	(4) ½	3935	4085	3935	4085
						17.50	18.17	17.50	18.17
CJT5Z	3½" x 11⅞"	8 9/16	7 7/16	10	(5) ½	4940	5250	4940	5250
						21.98	23.35	21.98	23.35
CJT6Z	3½" x 11⅞"	10	8 15/16	12	(6) ½	7245	6300	7245	6300
						32.23	28.02	32.23	28.02

1. Centre dowel in beam. Short dowel (2¾") for use with 3⅛ GLB, 4x sawn lumber or 3½"-wide PSL. Long dowel (4¾") for use with 5⅛ GLB, 6x sawn lumber or greater widths.

ETB

Hidden Connector Kit

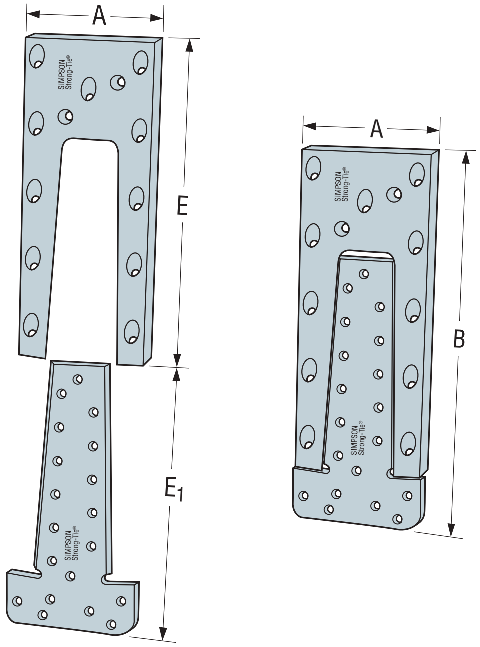
The ETB hidden connector provides a load-tested beam connection without any visible hardware. Interlocking plates are fastened onto each member and lock together for a secure structural connection.

Material: Plates — Aluminum 6082-T6

Finish: Plates — none; screws — Dacromet® corrosion resistant coating

Installation:

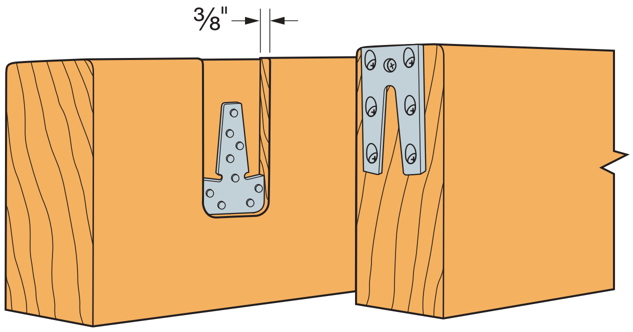
- Use all specified fasteners; see General Notes.
- Rout a ⅜" (10mm) deep pocket into the side of the supporting beam as shown for the lower plate.
- Install lower plate with 16d hot-dip galvanized nails (not included in kit).
- Install horseshoe plate onto end of supported beam using SCRB screws supplied in kit. Screws are installed at a downward angle (approx. 45°).
- Templates are available to make accurate installation more efficient.



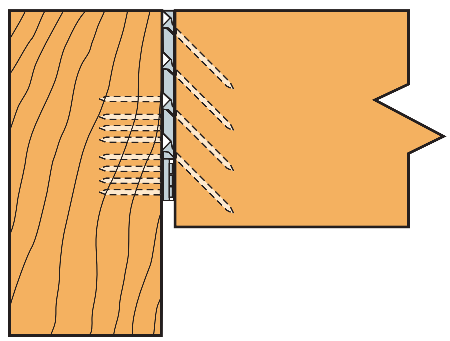
ETB

Dimensional and Fabrication Information

Model No.	Dimensions (in.)					
	A	B	E	E_1	t_1	t_2
ETB90	2.36	3.62	2.72	2.26	0.236	0.393
ETB160	2.36	6.61	5.12	3.74	0.236	0.393
ETB230	2.95	9.13	7.87	5.43	0.236	0.393



Typical ETB Installation


ETB Installation with Non-Routed Header
(side view)

ETB

Hidden Connector Kit (cont.)

Model No.	Fasteners		Joist Size	Factored Resistance (K_D = 1.00)		
	Header	Joist		D.Fir-L (K_D = 1.00)	S-P-F (K_D = 1.00)	Northern (K_D = 1.00)
				lb. / kN	lb. / kN	lb. / kN
ETB90	(6) 16d HDG	(5) SPAX 5x80 SCRB screw	4x6	1870	1525	1325
				8.34	6.78	5.89
			4x8	1675	1325	1145
				7.45	5.89	5.09
			4x10	1545	1220	1060
				6.87	5.43	4.72
			4x12	1415	1120	970
				6.29	4.98	4.31
			6x6	1870	1640	1385
				8.32	7.30	6.16
			6x8	1870	1640	1385
				8.32	7.30	6.16
			6x10	1870	1535	1280
				8.32	6.83	5.69
			6x12	1755	1410	1175
				7.81	6.27	5.23
ETB160	(11) 16d HDG	(10) SPAX 5x80 SCRB screw	4x8	3430	2965	2545
				15.26	13.19	11.32
			4x10	3430	2740	2375
				15.26	12.19	10.56
			4x12	3175	2510	2175
				14.12	11.17	9.68
			6x8	3430	2985	2545
				15.26	13.28	11.32
			6x10	3430	2985	2545
				15.26	13.28	11.32
			6x12	3430	2985	2545
				15.26	13.28	11.32
ETB230	(19) 16d HDG	(16) SPAX 5x80 SCRB screw	4x12	4925	3890	3375
				21.91	17.30	15.01
			6x12	5930	4420	3770
				26.38	19.66	16.77

1. Factored resistances assume standard term load duration; reduce value where other load durations govern. Do not increase value for short term load duration.
2. Factored resistances have been calculated in accordance with CSA O86-14 assuming dry service condition (K_S = 1.00) and seasoned lumber (moisture content ≤ 15%) at time of fabrication. For unseasoned lumber (moisture content > 15%) multiply tablulated values by 0.80. For wet service condition multiply tablulated values by 0.67.
3. Do not use ETB connectors with preservative-treated woods.
4. Factored resistances shown are the lower of the test value, the fastener capacity or the effective shear capacity of the joist assuming joist and headers are same species.
5. Substitution for fasteners is not permitted. All fasteners must be used as specified.
6. **Nails:** 16d HDG = 0.162" dia. x 3½" long hot-dip galvanized.

Ornamental – Joist Hanger

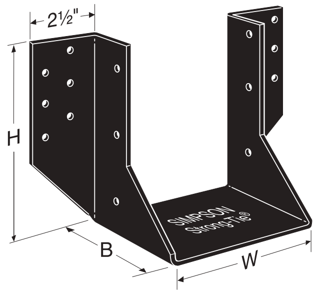
The OHU ornamental joist hangers are heavy-duty, load-rated joist hangers that are attached with Simpson Strong-Tie® Strong-Drive® ¼" x 3" double-barrier coating SDS Heavy-Duty Connector screws (supplied with product).

Material: 12 gauge

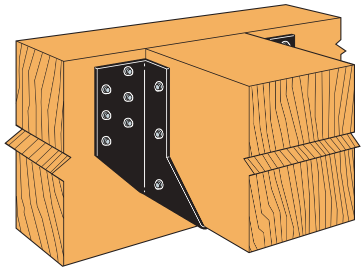
Finish: Textured powder-coated flat black paint

Options:

- No modifications

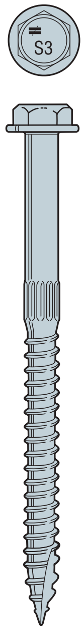


OHU


Typical OHU Installation

Joist Size	Model No.	Ga.	Dimensions (in.)			No. of ¼" x 3" SDS Screws		Factored Resistance			
								D.Fir-L		S-P-F	
								Uplift	Normal	Uplift	Normal
								(K_D = 1.15)	(K_D = 1.00)	(K_D = 1.15)	(K_D = 1.00)
			W	H	B	Face	Joist	lb.	lb.	lb.	lb.
								kN	kN	kN	kN
4x6	OHU46-SDS3	12	3 9/16	5	4	6	4	2415	3885	2080	2795
								10.74	17.28	9.25	12.43
4x8	OHU48-SDS3	12	3 9/16	6¾	4	8	6	2890	3885	2080	2795
								12.86	17.28	9.25	12.43
4x10	OHU410-SDS3	12	3 9/16	8¾	4	12	6	3620	8175	3275	5885
								16.10	36.37	14.57	26.18
4x12	OHU412-SDS3	12	3 9/16	10¾	4	12	8	4755	8175	3425	5885
								21.15	36.37	15.24	26.18
4x14	OHU414-SDS3	12	3 9/16	12¾	4	14	10	4755	8175	3425	5885
								21.15	36.37	15.24	26.18
6x6	OHU66-SDS3	12	5½	5	4	6	4	2415	3885	2080	2795
								10.74	17.28	9.25	12.43
6x8	OHU68-SDS3	12	5½	7	4	12	6	3620	8175	3275	5885
								16.10	36.37	14.57	26.18
6x10	OHU610-SDS3	12	5½	9	4	14	6	3620	8175	3275	5885
								16.10	36.37	14.57	26.18
6x12	OHU612-SDS3	12	5½	11	4	16	8	4830	9435	4370	6795
								21.49	41.97	19.44	30.23
6x14	OHU614-SDS3	12	5½	13	4	18	10	6035	9435	5360	6795
								26.85	41.97	23.84	30.23

1. Factored resistances have been increased 15% for wind or earthquake loading with no further increase allowed.



Strong-Drive® ¼" x 3" SDS Heavy-Duty Connector Screw

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

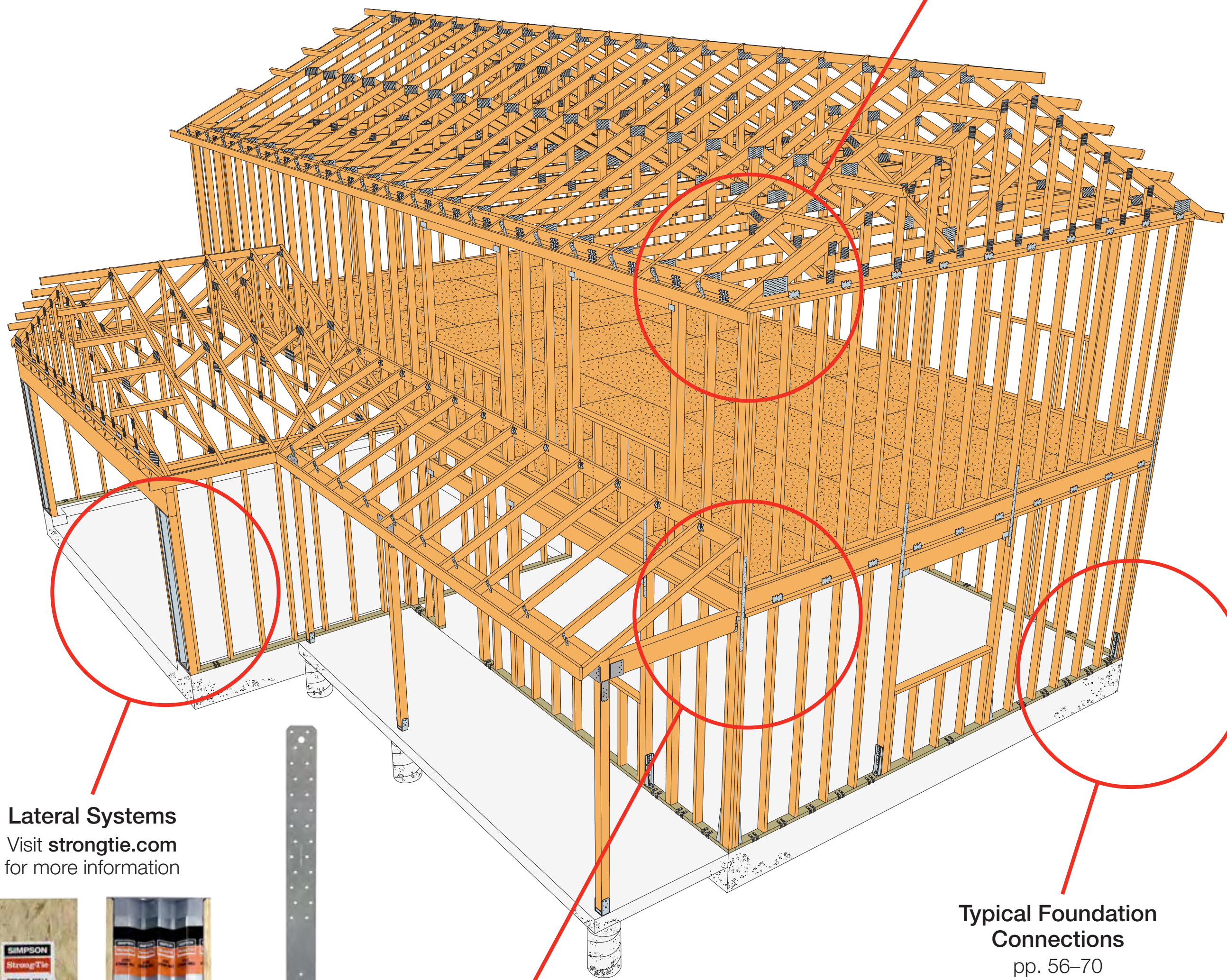
Continuous Load Path

This drawing shows the connection points for a continuous load path from the rafters to the foundation of a two-storey 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 values.

Typical Roof/Wall Connections
pp. 301–305



Lateral Systems
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Typical Floor-to-Floor Connections
pp. 75–88 and 314–320

Typical Foundation Connections
pp. 56–70

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SIMPSON Strong-Tie®

Outdoor Accents®

Introducing Outdoor Accents® decorative hardware. Easily add beauty and strength to your outdoor projects. The new Simpson Strong-Tie® Outdoor Accents line of structural connectors features an innovative screw and washer set that combines the ease of installing a screw with the look of a bolt. And, with a black powder-coat finish, this hardware offers style and durability.

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