USP®

STRUCTURAL CONNECTORS

2015-2016 Product Catalog

Limit States Design

EXCLUSIVELY FROM MITEK
FWH Fire Wall Hanger

USPconnectors.com
1-800-328-5934

MiTek®
Better Technology. Better Building.℠

Integrated Solutions for Optimized Structures

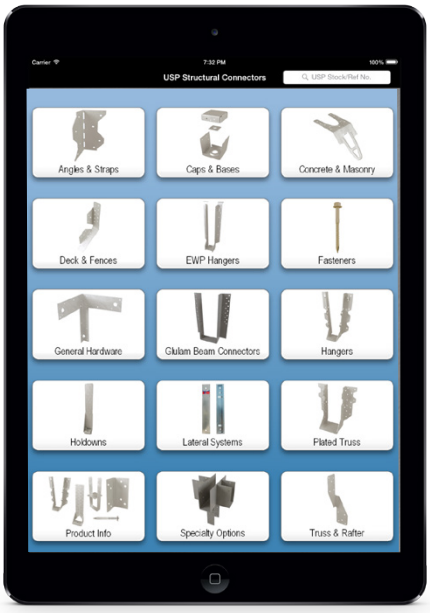
MiTek Builder Products, a division of MiTek, USA, combines three previously independent companies: **USP Structural Connectors®**, ***Hardy Frame®* Shear Wall System**, and **Z4™ Continuous Tie-Down System**. Aligned in its purpose, our combined team serves the construction industry with a full range of structural and design solutions for a more efficient construction process and optimized structures.

The **USP Structural Connectors** brand offers a comprehensive line of code-evaluated connectors, framing hardware, fasteners, anchors and epoxy solutions for the residential, commercial and DIY markets. Our structural products are supported by a nationwide team of knowledgeable engineering, sales and customer service professionals who are complemented by leading edge specification, design and modeling software.

Our single goal: to serve you seamlessly with industry-leading technological innovation, products and support with a passionate commitment to your success. It's how we deliver Better Technology. Better Building.℠

To connect with all of the MiTek Builder Products visit **www.MiTekBuilderProducts.com**.

MiTek® BUILDER PRODUCTS



USP CATALOG IPAD APP

Browse our entire connector product line on your Apple iPad. The free USP Catalog app includes product and application illustrations, installation instructions, fastening schedules and load ratings.
USPConnectors.com/resources/ipad-app

Our diverse software applications help you find the right connection solutions to all your structural needs.

SAPPHIRE™ Supply

Whole house design software tailored to the lumber dealers EWP design and estimating operations. Sapphire Supply is available exclusively to USP stocking dealers. **MiTek-us.com/SAPPHIRE**

USP Specifier™

Free software for specification, conversion and project estimating simplifies access to information and documentation on over 3,000 USP structural connectors through an intuitive and graphical desktop interface.
USPConnectors.com/resources/usp-specifier

USP Deck Designer™

Free online interactive software program that will help you and your clients design the deck of their dreams. Easy to use, visualize and collaborate.
USPConnectors.com/resources

2015 NEW PRODUCTS

USP STRUCTURAL CONNECTORS MiTek

Fasteners

HDG Hex Head Wood Screws

USP's WS Structural Wood Screws in Hot-Dip Galvanized finish are designed for installation with our Triple-Zinc G-185 and hot-dip galvanized connector products as well as wood-to-wood installations. They are recommended for outdoor applications and with treated wood.

See **Page 20** for more information.

Concrete & Masonry

Adhesive Anchoring Systems

A complete line of high performance epoxy for heavy industrial seismic and wind applications to household projects.

See **Pages 25-26** for more information.

FA4 Foundation Anchor

The FA4 foundation anchors can be installed as a replacement for anchor bolts while achieving the same load capacity. They can also be used to replace 1/2" diameter anchor bolts.

See **Page 37** for more information.

Adj. Steel Column Products

T2JPMD Adjustable Support Columns

Medium-Duty Type 2 Support Columns are an intermediate offering to our Type 2 Heavy Duty Adjustable Support Columns series. Available in (8) sizes in adjustable heights from 80" to 120". Tested to meet or exceed the CAN/CGSB-7.2-94 Adjustable Steel Columns Standard.

See **Page 43** for more information.

Holdowns

HTT45 Tension Ties

The newest addition to our line of Tension Ties is the HTT45 which provides an increased load carrying capacity by utilizing the diamond hole nailing pattern. Easily installs with 10d or 16d nails. The 16d Max nailing can be used when lower deflections are required by design.

See **Page 48** for more information.

Angles & Straps

JA Joist Anchor

The JA Joist Anchor is designed to laterally connect a joist to a concrete wall. The anchor is embedded into the wall at one end and nailed to the joist at the strap end, typically used where there is a fire separation wall such as in town houses.

See **Page 92** for more information.

Hangers

FWH Fire Wall Hangers

The FWH Fire Wall Hanger series is the best solution for attaching floor framing to fire rated walls in wood frame construction. The advanced design allows the installation of the FWH before the drywall is attached and permits the building project to be completely framed-up, and weather-tight before the drywall sheathing work starts.

See **Pages 109-110** for more information.

EWP Hangers

THFI Face Mount I-Joist Hangers

The THFI is a face mount hanger designed to attach EWP I-Joist members to wood headers. The unique design of the THFI combines the installation ease of a top mount hanger with the installation flexibility of a face mount hanger. The side flanges extend to the top chord of the I-Joist so web stiffeners are not required. The THFI hangers also feature strategically placed Seat Cleats® which lock the bottom flange of the I-joist to the hanger eliminating the need for joist nails to be installed.

See **Pages 128 and 133** for more information.

HBPH Top Mount Hangers

HBPH Top Mount Hangers are designed to support LVL, LSL and PSL beams and purlins in heavy capacity load conditions.

See **Pages 138, 145-154** for more information.

Plated Truss

MSHA Adjustable Strap Skewed Hangers

The MSHA Series hanger offers the most flexible field solution for truss-to-truss connections accommodating a range of skews and challenging web-chord geometry often found in truss framing. Eliminating the need for special order hangers, the MSHA Series provides economical solutions for 2x and 4x trusses skewed between 22½° to 75° and can be used in top mount, face mount or combination installation.

See **Pages 180-181** for more information.

THDHQ Girder Truss Hangers

The THDHQ hangers are designed to attach multi-ply girder trusses together using USP's WS Wood Screws for high load capacity. THDHQ hangers can also be used to attach structural composite lumber (SCL) to other framing members.

See **Page 176** for more information.

Directory of Products

USP STRUCTURAL CONNECTORS MiTek

WARRANTY

MiTek USA, Inc. ("MiTek") warrants its USP catalog Products to be free from material defects in manufacture and design, and further warrants that they will perform within the design limitations of its published building code approvals for the applications described, when properly installed and maintained. These warranties do not cover Product deterioration due to environmental conditions, Products that have be modified or damaged, improperly installed or used outside of published design limitations or for other applications. In the event any Product is shown to not conform to these warranties, USP's sole obligation, and Customer's sole and exclusive remedy, shall be, at USP's option, to replace the non-conforming product or refund the full purchase price paid by Customer to USP therefor. USP MAKES NO OTHER PRODUCT WARRANTIES, EXPRESS OR IMPLIED, OF ANY KIND, AND PARTICULARLY EXCLUDES ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL USP BE LIABLE FOR INCIDENTAL, CONSEQUENTIAL OR SPECIAL DAMAGES, REGARDLESS OF THE LEGAL THEORY OF RECOVERY, EVEN IF IT WAS AWARE OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY CASE, USP's MAXIMUM LIABILITY SHALL NOT EXCEED THE PURCHASE PRICE PAID BY CUSTOMER FOR THE NON-CONFORMING PRODUCT. Some states restrict consequential or other liability damage limitations, so some of the above limitations may not apply to you. MiTek reserves the right to change this warranty periodically. Consult MiTek's website www.uspconnectors.com or contact MiTek for a current warranty statement.

USP Alphabetical Product Index

USP STRUCTURAL CONNECTORS MiTek

Continued on next page

USP Alphabetical Product Index

USP STRUCTURAL CONNECTORS MiTek

Reference Number Index

USP STRUCTURAL CONNECTORS MiTek

About the Reference Numbers
Reference numbers shown throughout the charts in this catalog are part numbers which may be more familiar to customers in various regions. These are included for the convenience of our new customers who have recently switched from a competitor's product line to USP.

The reference numbers in this catalog are for general application comparison only and should not be used as a substitution tool. The user is responsible to compare specific load values, fastener schedules, material specifications, and other factors to determine suitability of use for any particular product.

Continued on next page

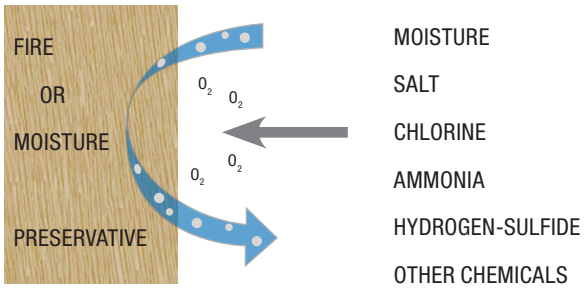
Reference Number Index

Corrosion Information

For the majority of applications, metal hangers and connectors are used in interior, above ground, dry service conditions. They are typically not being exposed to corrosive environments which can significantly reduce their strength and longevity.

What is Corrosion?
Corrosion is the destructive degradation of steel due to its interaction with the environment. Here the steel is the connector and the environment is whatever the connector interacts with, namely wood and air. Each environment may contain one or more corrodents (substances that cause corrosion) acting independently or in combination to degrade the strength of the connectors.

Wood Environment	Air Environment



Electrochemical oxidation is the most common type of corrosion affecting metal connectors. It is a process in which iron (Fe) reacts with oxygen (O_2) in the presence of an electrolyte such as water (H_2O) to form iron oxide (Fe_2O_3), a brown and flaky by-product commonly known as rust.

$$\text{Iron} + \text{Oxygen} \xrightarrow[\text{(Electrolyte)}]{\text{Water}} \text{Rust}$$

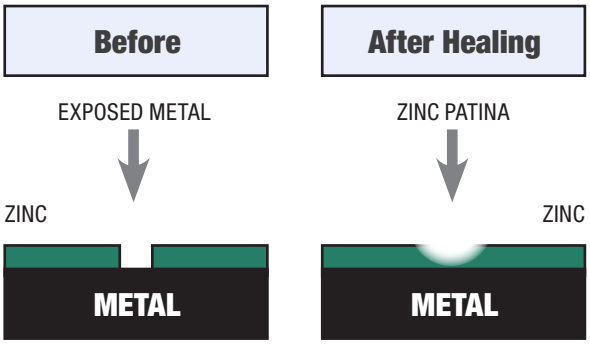
Steel is an iron-based metal alloy which is susceptible to this type of corrosion, even when exposed to normal atmospheric air, since air contains oxygen and water as part of its normal composition. While steel is very strong, rust is not. Over time, the continuous formation of rust eats away the base metal and reduces the strength of the connector. The rate of oxidation generally increases with increasing moisture content, the presence of salt, or when galvanic corrosion is a contributing factor.

Galvanic Series (Abbreviated)
More Active (Anodic-)
Zinc
Aluminum
Steel
Brass
Copper Nickel
Stainless Steel - Type 304
Stainless Steel - Type 316
More Passive (Cathodic +)

Galvanic corrosion occurs when there is an interaction between dissimilar metals that are in contact with one another. The degree of corrosion depends on where the metals reside in the galvanic series, which is a compilation of known metals and their relative reactivity. The more active metal (anode) will corrode preferentially while shielding the more passive metal (cathode) from further degradation. For example, with galvanized steel, zinc is used as a coating on the steel because it sacrificially corrodes to protect the steel substrate underneath. The coupling between zinc and steel is said to have a lower galvanic potential than the coupling between zinc and stainless steel because zinc and steel are closer to each other in the galvanic series. In general, the coupling with a lower galvanic potential would result in a slower corrosion rate.

Corrosion Protection Options

Zinc Galvanizing:
Most connectors are manufactured from pre-galvanized sheet steel or coiled steel, which is typically made by the hot-dip process in accordance with ASTM-A653 and ASTM-A924 standards. Fasteners are galvanized in accordance with ASTM-A153. In the manufacturing of the connectors, the punching and shearing processes create exposed bare metal surfaces. Thankfully, zinc has an incredible ability to 'heal' itself; the zinc around the exposed metal corrodes and deposits a layer of zinc corrosion by-product called zinc patina (white powdery appearance) over the exposed metal to further protect it.



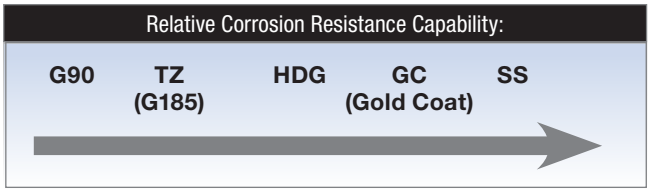
By being more reactive than steel, zinc sacrificially corrodes at a steady rate over time to shield the steel from the effect of corrosion. The protection ability of zinc is proportional to its thickness, which is proportional to the amount of zinc applied. Zinc coating is specified as the total weight on both sides of the sheet steel, measured in ounces per square foot (oz/ft2). For example, G90 means that there are 0.90 oz/ft2; G185 has 1.85 oz/ft2 and would last about two times longer than G90. G90 is the minimum protection for connectors and is standard in MiTek connectors.

Design Guidelines:
Where there are governing national or local building code requirements, they should be used in the selection of the connectors and their protection against corrosion. In the absence of such requirements, the decision rests on the experience and judgment of the building designer/engineer. Design guidelines are presented in this section to aid the building designer/engineer in this selection process, but it is the responsibility of the building designer/engineer to determine the most viable solution based on an evaluation of the connectors to the specific corrosive environment(s). The guidelines consist of best practices, recommended protection levels for the connectors, and strength modification factors for the lumber/connectors.

Where there are multiple options suggested, do not automatically default to the lowest protection level. The lower protection level is intended to address less severe conditions while the higher protection level is meant to address more severe conditions. Select the option that eliminates or adequately reduces the vulnerability of the connectors to the corrodents. When in doubt, use a higher level of protection than anticipated or seek professional consultation.

Continued on next page

Relative Corrosion Resistance Capability:
The chart below ranks the available options in terms of their relative effectiveness against corrosion. As expected, the ability to resist corrosion increases with increasing zinc thickness, so G185 is the most durable pre-galvanized product available. Gold Coat offers enhanced protection compared to G185 while stainless steel offers the best protection for most applications.



Galvanic Corrosion:
The simplest and most practical solution to minimize galvanic corrosion is to make sure that the components that are in direct contact with each other are made of the same material or coating. Once this is achieved, there is no net galvanic potential between the components and galvanic corrosion is eliminated or significantly reduced. For example, use galvanized nails for galvanized connectors and stainless steel nails for stainless steel connectors.

Wet Service Condition:
For lumber, this refers to any service condition in which the average equilibrium moisture content is 15% or more over a year or may exceed 19% at any time. For lumber to get above 19% moisture, the relative humidity in the air needs to reach above 80%. Unfortunately, this is above the critical humidity level for the electrochemical oxidation of steel, which is around 70%. Beyond 70%, the rate of corrosion in the connectors increases rapidly due to the abundant availability of moisture.

G90 may not be suitable for use in wet service condition.

Preservative (Pressure) Treated Wood:
Although most preservatives do not reduce the strength of the lumber, some are corrosive to the metal hangers. Chromated copper arsenate (CCA), which had been the industry's standard preservative for many years, is no longer permitted for use in residential applications. It had been replaced by other preservatives such as alkaline copper quaternary (ACQ) and copper azole (CA) for exterior applications, and borates-based formulations such as disodium octaborate tetrahydrate (SBX or DOT) for interior applications.

Research conducted by USP Structural Connectors and others in the industry have concluded that ACQ and CA are more corrosive to the metal connectors than CCA, while borates-based preservatives are no more corrosive than untreated lumber. It is generally agreed and recommended that G185 should be used as the minimum protection for use with ACQ and CA treated lumber.

Fire Retardant Treated (FRT) Wood:
Although most common FRT products are not corrosive to metal connectors, not all products are non-corrosive. Additionally, they typically require proprietary strength reductions applied to the lumber in accordance with the manufacturer's specifications. Since the lumber strength is lower, the lateral and withdrawal resistance of nails must also be reduced accordingly. It is important to note that some fire retardants cause the wood to absorb more moisture from the air than untreated lumber. Consequently, the connector may be exposed to a higher level of moisture, resulting in more corrosion.

Swimming Pools:
This is one of the most hazardous environments for steel connectors due to continuous exposure to high temperature, high moisture content, and corrosive chemicals such as chlorine, bromine, and other disinfectants. The combination of all these factors can lead to accelerated corrosion and premature structural failure. This environment is so corrosive that all possible preventive measures should be employed to prevent the hanger from being exposed to the pool water. These include the use of a vapor barrier and a ventilation system that does not take the air from the pool environment.

Additionally, it has been known that certain grades of stainless steel (304, 316, and others) are susceptible to a mode of structural failure known as stress corrosion cracking (SCC) when exposed to a swimming pool environment. SCC is usually localized near areas of high residual stress and small cracks can rapidly propagate and cause catastrophic failures. See warning below.

⚠ WARNING

Stainless steel connectors and fasteners shall not be used for metal hangers over swimming pools due to stress corrosion cracking. SCC has been known to occur under the following conditions:

- Use of certain grades of stainless steel (grades 304, 316 and others).
- Structural members subjected to high tensile stress.
- Presence of certain chemicals, including chlorine and bromine.

Gold Coat may be the best choice in this environment.

Continued on next page

Corrosion Information

The **Structural Connectors Coating Recommendations** chart below was developed by reviewing field service performance and accelerated corrosion test results. They are offered as general guidelines and are not intended to cover all possible service conditions. Additional consideration may also be needed for:

wet service conditions
preservation treated lumber
fire retardant treated lumber
strength reducing chemicals
building near salt water coastal areas.

Additionally, the **Corrosion Protection Guidelines** to the right may also be used to assist in making the proper choice of corrosion protection.

The building designer/engineer has the ultimate responsibility of selecting the most viable protective coating based on knowledge of project specific corrosive environments and local building code requirements.

Corrosion Protection Guidelines:

- USP recommends stainless steel connectors for the highest level of corrosion protection. As an economical alternative to stainless steel our new Gold Coat connectors are specifically designed for exterior application when in contact with preservative treated wood.
- For connectors in contact with preservative treated wood, the Triple Zinc option provides the minimum G-185 coating thickness required by code and is an economical alternative for exterior applications.
- The use of correct fastener with the connector is critical. Stainless steel connectors require stainless steel fasteners. For exterior applications, hot-dip galvanized fasteners (HDG) must be used with both Triple Zinc and hot-dip galvanized finishes. Gold Coat connectors require gold coat or hot-dip galvanized fasteners.
- USP's zinc dichromate WS Wood Screws are not recommended for use with preservative or fire-retardant treated wood. Some wood screws are available in Gold Coat or hot-dip galvanized.
- USP clearly differentiates standard interior G90 connectors from the corrosion resistant connectors. Gold Coat connectors are distinguishable from other connectors due to their gold color.

Structural Connectors Coating Recommendations

AWPA[9] Use Category	Service Conditions	Use Environment	Example Applications	Preservatives and Retentions[6,7,10]	Minimum Coating Requirements[1,2,3,4]
UC1 Interior/Dry	Interior construction, Above ground, Dry	Continuously protected from weather or other sources of moisture	General framing, interior construction	Untreated	G90
UC2 Interior/Damp	Interior construction, Above ground, Damp	Protected from weather, but may be subject to sources of moisture	Sill plates	SBX-DOT, Organic	G90
				ACQ-D (0.15), CA-B (0.10), CA-C (0.06), MCQ (0.06), µCA-C (0.05)	Triple Zinc (G-185)[8,9]
UC3A Above Ground Protected	Exterior construction, Above ground, Rapid water runoff	Exposed to all weather cycles, not exposed to prolonged wetting	Exposed exterior beams or columns in an open, covered structure	ACQ-D (0.25), MCQ (0.15), CA-B (0.10), CA-C (0.06), µCA-C (0.05), Organic	Triple Zinc (G-185) or USP Gold Coat
UC3B Above Ground Exposed	Exterior construction, Above ground, Poor water runoff	Exposed to all weather cycles, including prolonged wetting	Deck beams and joists	ACQ-D (0.25), MCQ (0.15), CA-B (0.10), CA-C (0.06), µCA-C (0.05), Organic	Triple Zinc (G-185) or USP Gold Coat
UC4A Ground Contact General Use	Ground contact, Fresh water; includes above ground applications	Ground contact or fresh water exposed to all weather cycles, Normal exposure	Deck posts, beams and joists. Fresh water docks[11]	ACQ-D (0.40), MCQ (0.23), CA-B (0.21), CA-C (0.15), µCA-C (0.14)	Triple Zinc (G-185) or USP Gold Coat[5]
UC4B Ground Contact Heavy Duty	Exterior construction, Ground contact, Critical components	Ground contact, fresh/salt water water splash exposed to all weather cycles	Permanent wood foundations, critical structural members	ACQ-D (0.60), MCQ (0.23), CA-B (0.31), CA-C (0.25), µCA-C (0.23)	Stainless Steel

1) G90 and G-185 refer to galvanization requirements for ASTM A653 material.
2) Connectors galvanized to ASTM A123 may be used in place of either G90 or G185 coatings.
3) Other coating may be suitable for a given environment if the conditions are known and predictable.
4) For G185 connectors use fasteners galvanized per ASTM A153. For Gold Coat connectors, use Gold Coat fasteners and for stainless steel connectors, use stainless steel fasteners.
5) If the enviroment has the potential to contain elements which may make it more corrosive, the use of stainless steel is recommended.
6) MCQ is a micronized copper treatment such as *Micro Pro* by Koppers. µCA-C is a dispersed copper treatment manufactured by Arch Treatment Technologies. Organic preservatives include L^3 from Arch Treatment Technologies and EcoLife II from Viance, LLC.
7) For wood treatments not shown, contact USP or the wood preservative manufacturer for recommended coatings.
8) Testing by USP has found that in interior applications where the treated wood will remain relatively dry during its service life the use of G90 connectors with MCQ or µCA-C treated wood is appropriate.
9) American Wood Protection Assocation Standard U1-16.
10) SBX/DOT= Sodium Borate; ACQ-D = Alkaline Copper Quat Type D; CA-B = Copper Azole Type B; CA-C = Copper Azole Type C; MCQ = Micronized Copper Quat; µCA-C = Dispersed Copper Azole Type C. The number listed in the parenthesis is the required retention level in pounds per cubic foot, or PCF.
11) Deck joists and beams must be treated to Use Category UCA4 when they are difficult to maintain, repair or replace and are critical to the performance and safety of the deck.

Continued on next page

Corrosion Information

USP STRUCTURAL CONNECTORS MiTek

USP offers several corrosion resistant finishes to cover a range of corrosion performance. For products available in corrosion resistant finishes, reference the "Corrosion Finish" column in the charts and Corrosion Key located by the chart footnotes or our Corrosion Protection Advisory Technical Bulletin www.USPconnectors.com/pdf/resources/technical-bulletins.

Corrosion Protection Level	Finish	Description	Required Fastener	Ordering
INTERIOR USE G90	G90 Galvanizing	Galvanizing provides a prefabrication coating of 0.90 ounces of zinc per square foot of surface area measured in accordance with ASTM A 653.	Bright fasteners	Stock number as listed in the chart
EXTERIOR USE G185-TZ	Triple Zinc (TZ) (G-185 Galvanizing)	TZ galvanizing provides a prefabrication coating of 1.85 (G-185) ounces of zinc per square foot of surface area (both sides) measured in accordance with ASTM A 653.	Hot-dip galvanized fasteners	To order, add **TZ** to stock number, as in C44-TZ
EXTERIOR USE G185-TZ	Hot-Dip Galvanized (HDG)	HDG coating provides an after-fabrication hot-dipped zinc coating. The coating thickness is dependent on the connector material, but generally ranges from 1.2 to 2.3 ounces of zinc per square foot of surface area (both sides). Hot-dip products meet requirements set forth in ASTM A 123.	Hot-dip galvanized fasteners	To order, add **HDG** to stock number, as in KCC44-HDG
EXTENDED LIFE GOLD COAT	Gold Coat (GC)	Gold Coat is a proprietary multi-layer protection system. It is comprised of an organic top coat barrier layer and a zinc layer placed over a steel substrate.	Gold Coat or Hot-dip galvanized fasteners	To order, add **GC** to stock number, as in AC7-GC
EXTREME LIFE STAINLESS	Stainless Steel (SS)	Best option for corrosion protection. Quality stainless steel (316SS grade steel) is used to fabricate connectors. Although costs are higher, some applications may need the virtual corrosion proof quality of stainless steel.	Stainless Steel fasteners	To order, add **SS** to stock number, as in PBES44-SS

DISCLAIMER

The general information and guidelines provided in this USP Product Catalog shall not be used as a substitute for competent professional examination and verification. It is the responsibility of the building designer/engineer to determine the applicability and suitability of the information provided. Anyone making use of this information assumes all responsibility and liability arising from such use.

USP STRUCTURAL CONNECTORS MiTek

U.S. Standard Steel Gauge Equivalents in Nominal Dimensions

Gauge	Approximate Dimensions		Decimals (inches)		
	Inches	Millimeters	Uncoated Steel	Galvanized Steel (G90)	Triple Zinc (G-185)
3	1/4	6.0	0.238	-- --	-- --
7	3/16	4.5	0.171	0.186	-- --
10	9/64	3.4	0.129	0.138	0.140
11	1/8	3.0	0.114	0.123	0.125
12	7/64	2.7	0.099	0.108	0.110
14	5/64	2.0	0.070	0.078	0.080
16	1/16	1.5	0.055	0.063	0.065
18	3/64	1.2	0.044	0.052	0.054
20	1/32	1.0	0.033	0.040	0.042
22	1/32	0.8	0.029	0.033	0.036

*Actual steel dimensions will vary from nominal dimensions according to industry tolerances.

Maximum Shear Capacity of Joist or Rafter

The table below indicates the calculated shear capacity of different dimensional lumber sizes for various wood species.

Nom Dim	DF Factored Shear Resistance[1,2,4]				S-P-F Factored Shear Resistance[1,2,4]			
	Lbs		kN		Lbs		kN	
	100%	115%[3]	100%	115%[3]	100%	115%[3]	100%	115%[3]
2 x 4	1476	1697	6.57	7.55	1165	1340	5.18	5.96
2 x 6	1910	2197	8.50	9.77	1508	1734	6.71	7.71
2 x 8	2158	2482	9.60	11.04	1703	1958	7.58	8.71
2 x 10	2524	2903	11.23	12.91	1992	2291	8.86	10.19

1) Applies to nominally dimensioned joist as listed in dry service conditions and temperatures less than 38º C.
2) Loads apply to: DF: Douglas Fir-Larch (G=0.49), fv=1.9 Mpa; S-P-F: Spruce-Pine-Fir (G=0.42), fv=1.5 Mpa
3) 115% loads are increased for short term loading in accordance with the code. $K_D = 1.15$.
4) Assumes system factor $K_H = 1.00$.

Roof Pitch

If common Rafter Roof Pitch is . . .

Rise / Run (inches)	Slope (degrees)
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 (inches)	Slope (degrees)
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

Slope Conversion Table

Rise / Run (inches)	Slope (degrees)
0/12	Flat
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

1) Use this conversion table only for hip/valley rafters that are skewed 45° right or left. All other skews or dual pitch roofs will cause the slope to change from that listed above.

Special & Custom Connectors

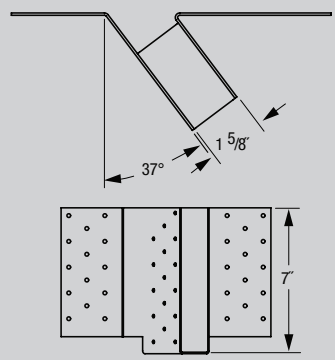
USP is committed to meeting every need you have and we understand that stock connectors will not meet all application or design requirements. Our Technical Assistance Representatives will work with you to develop and fabricate the Special or Custom connector you need.

What is the difference between a "Special" and a "Custom" connector?

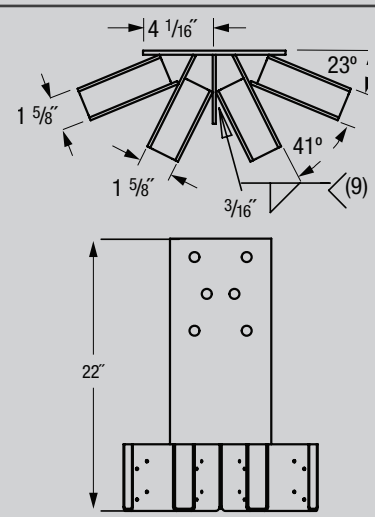
A "Special" is a stock USP connector that is modified within the limits listed in the Specialty Options chart for that connector. A summary of Specialty Options can be found on page 220 of this catalog.

A "Custom" is a connector that does not closely resemble a stock or special part offered in our catalog. Also, a "Custom" connector may be a stock connector that is modified outside of the limits listed in the Specialty Options charts or is not listed in the catalog as having a specialty option available. Product drawings must be provided by the customer and will be manufactured by USP in accordance to customer specifications.

See pages 220-224 for additional information.



Special Order EXAMPLE: Skewed HD < 45°



Custom Order EXAMPLE: 4-Pocket Girder Truss Hanger

Product Notes

1) This catalog reflects the most current information available at the time of printing. However, we are continually improving our products through better engineering design and development and recommend visiting our website for the latest on-line version of the catalog. USP Structural Connectors reserves the right to change specifications, designs, and models at any time without notice and liability for such changes. This catalog may not be reproduced in whole or in part without the prior written approval of USP Structural Connectors.

2) This catalog reflects changes to product design and factored resistance to some USP Structural Connectors products. The information presented in this publication supersedes all previously published Product Catalogs and is valid until December 31, 2016.

3) This Product Catalog was designed as a general reference for the USP Structural Connectors Product Line. Various specialized publications have also been developed for design professionals, truss manufacturers, contractors, and building material distributors. Consequently, product information may vary from one publication to another due to product development testing and revisions to code evaluation report upgrades. We recommend visiting our website for the latest on-line version of these specialized publications.

4) The type and quantity of fasteners used to install USP Structural Connectors products is critical to connector performance. To achieve the factored resistance presented in this catalog, all specified fasteners must be used and proper installation procedures observed. Verify that the dimensions of the supporting members are sufficient to receive the specified fasteners. All product modifications will void the warranty unless prior written consent from USP Structural Connectors has been obtained.

5) Some connector models are listed more than once to indicate installation and/or fastener options.

6) New products or updated product information are designated in **blue**.

7) Throughout this catalog, dimensions are expressed in inches and loads in pounds unless specifically noted otherwise.

8) Some USP Structural Connectors products show both nail fastening and bolt schedules. In those cases, specific loads for each has been identified. Nail and bolt values cannot be combined unless noted otherwise.

9) Load values for 8d, 10d, 16d, and 20d designations in the fastener schedules throughout this catalog refer to common wire nails unless noted otherwise. Nails shall conform to a recognized national standard, such as ASTM F1667, as prescribed by the model building codes.

10) Diamond holes are for optional nailing.

11) Fastener installation may cause wood to split and reduce a fastener's ability to transfer loads into the supporting member. If wood splitting occurs, consider pre-drilling holes not exceeding 75% of the nail diameter (per the National Design Specification for Wood Construction (NDS) Section 11.1.6.3).

12) Bolts specified in this catalog are through-bolts and must conform to requirements for ASTM A 307 Grade A, or ASME SAE Grade 2, or better unless noted otherwise.

13) Anchor Bolts must conform to ASTM F 1554.

14) USP connectors listed in this catalog are manufactured for specific sizes of standard dimensional lumber, plated trusses, or structural composite lumber. For applications involving unusual supporting conditions environments, contact USP. Wood shrinkage or expansion, caused by lack of moisture or excessive moisture, may adversely affect connector installation. Evaluate potential shrinkage or expansion to ensure proper connector installation and performance.

15) The load values listed in this catalog are based on installation to wood with a moisture content of less than 19%, and used in dry service conditions. Load reductions, in accordance with the applicable local Building Code, shall be taken where wood moisture content is greater than 19% at the time of installation or where used in wet service conditions.

16) Unless otherwise noted, USP products may not be bent or cut for any reason unless prior written consent from USP Structural Connectors has been obtained. Field alterations may significantly reduce the published factored resistances values in this catalog.

1) 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 / Factored uplift resistance + Factored parallel to plate / Factored parallel to plate resistance + Factored perpendicular to plate / Factored perpendicular to plate <= 1.0

2) Connector ratings may exceed the tensile strength or other aspects of the wood members involved in the connection. A qualified designer should verify wood member capacities when specifying connectors.

3) Verify that the size of the supporting member can accommodate the connector's specified fasteners.

4) Some illustrations in this catalogue may not reflect additional mechanical reinforcements which may be required to reduce cross grain tension or wood member bending under loading. The design professional is responsible for determining if additional mechanical reinforcement is required.

5) USP recommends the hanger height be a minimum of 60% of the joist height for stability.

Limit States Design

The factored resistance values presented in this catalogue are for Limit States Design (LSD) in accordance with the 2010 National Building Code of Canada (NBCC). The values have been developed by either testing to CSA O86, or soft converted from working stress design. These procedures are summarized as follows:

(a) Testing to CSA O86

Products that have been evaluated to the CSA Standard are listed under the Codes heading in each product series section if applicable. Visit USP's Web Site, <http://www.USPconnectors.com/>, or specific code agencies web site for current listing. Code evaluation numbers listed in this catalogue may not apply to all stock numbers or product series listed.

Standard term resistance values have been established by testing to ASTM and the CSA-O86 using the following criteria:

- Lowest corrected ultimate load multiplied by 0.91 and a resistance factor of 0.6.
- The average load at 1/8" deflection multiplied by 2.42 and a resistance factor of 0.6.

(b) Soft Conversion from Working Stress Design

The soft converted values use the allowable working loads developed in the United States using the 2005 National Design Specification and the ICC-ES AC13 "Acceptance criteria for Joist Hangers and Similar Devices." These allowable working loads are based on testing to ASTM D7147, D1761 and calculations on the fasteners and wood bearing using the NDS. They were soft converted by multiplying the floor load case ((K_D)=1.0) by 1.44 to obtain standard term load resistance in Limit States Design.

The soft converted value of each bolted connector has been also compared to the calculated resistance of the bolts as given in CSA O86. The lower of the two values is given in the tables.

Material

USP selects steel for its various products in accordance with application needs and steel properties, including tensile strength, ductility, corrosion resistance, gauge, and weldability. See specific code evaluations or consult USP for steel information on specific products. USP Structural Connectors® are manufactured from steel which meets ASTM A 653, ASTM A 1011, or ASTM A 36.

Product Design Loads

Factored resistance values in this catalogue are given for standard term loading and/or short term loading as described below:

(a) Standard term loading

This includes the effects of dead loads plus loads due to snow or use and occupancy in which the duration of load factor (K_D) in CSA O86 is equal to 1.0. Therefore, connectors carrying roof or floor members should be selected using the standard term load resistance. In many tables this is designated as "vertical (100%)" or "bearing (100%)". The 100% indicates that no duration of load increase is included.

(b) Short term loading

This case refers to loading that will not exceed 7 days throughout the life of the structure and includes wind and earthquake loads. Short term loading has a duration of load factor (K_D) of 1.15 included. In the tables short term loading resistance is also designated as "uplift (115%)".

In some cases the strength of the steel governs the resistance values and therefore no increase for short term loading is included.

Installation Notes

1) Use proper safety equipment during connector installations. Always wear gloves when handling connectors.

2) All field welding should be done in accordance with CSA W59 Codes. Caution: Welding galvanized steel may produce harmful fumes and should only be performed in well-ventilated environments.

3) The type and quantity of fasteners used to install USP products is critical to connector performance. To achieve the factored resistance shown in this catalogue, install with the fasteners specified for that particular product. Some products allow for alternate nail installations. Refer to the "Optional Nails for Face Mount Hangers" chart on page 19 of this catalogue for load adjustments when using alternate nailing. All specified fasteners must be properly installed prior to applying load of any kind to the connection.

4) Drill bolt holes a minimum of 1/32″ and a maximum of 1/16" larger than the diameter of the bolt to be installed. Per CSA O86-14 Clause 12.4.1.2.

5) Washers should always be used under the head or nut of a bolt when not in contact with the connector unless noted otherwise.

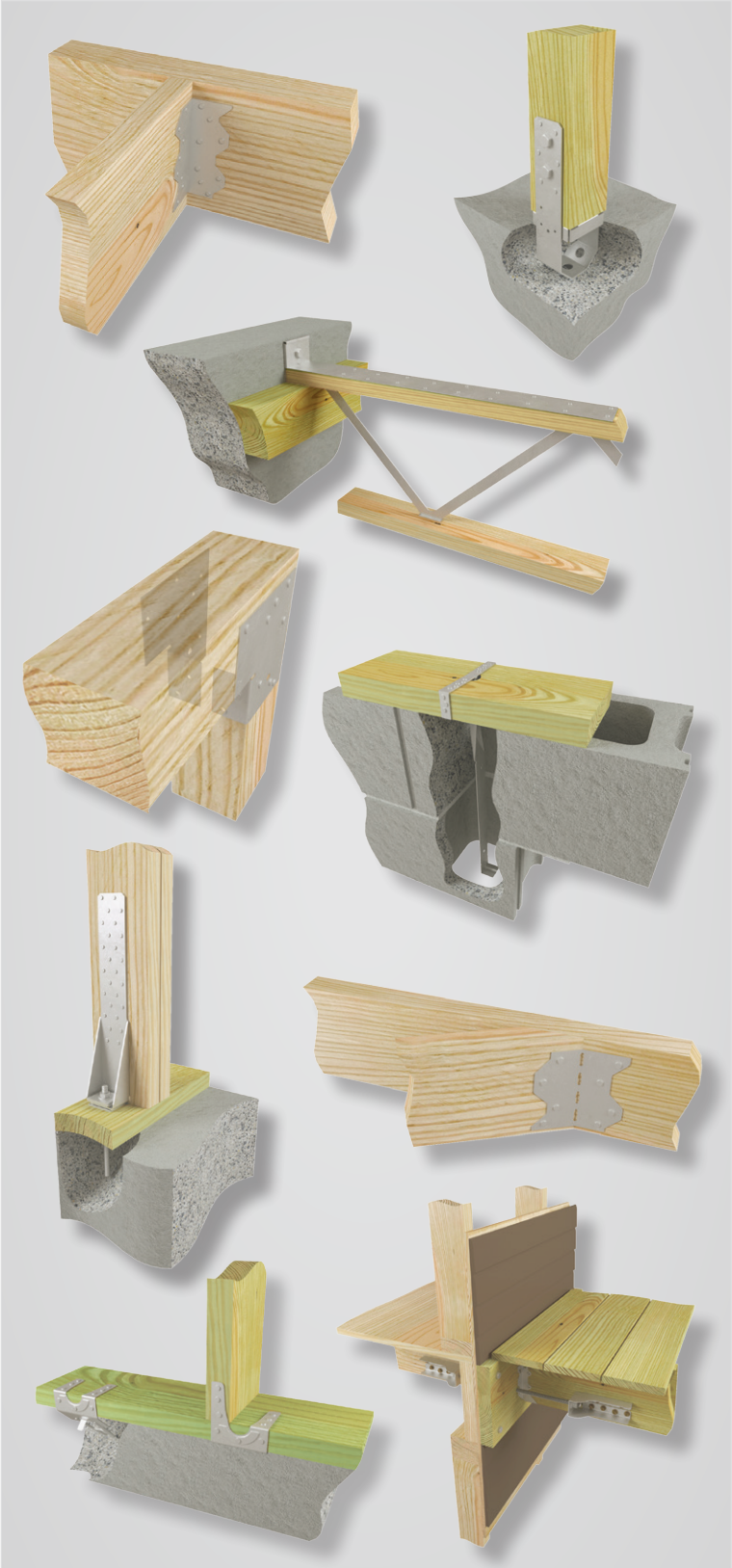
6) It is permissible to use nail guns to install connectors as long as the specified nails are installed through pre-punched nail holes and all specified nail holes are filled. USP recommends the use of nail guns featuring hole-locating mechanisms. Please note that many nail guns use fasteners smaller than the common nail size and load reductions will result. Contact USP or visit our Web Site for additional information. Caution: Always follow nail gun manufacturer's safety guidelines.

7) Joists installed in hangers should bear fully on the connector seat and shall be cut to fit against the header with a gap no greater than 1/8" between the joist end and header face.

8) Multiple-ply members must be fastened securely together to act as one member.

9) Top mount hangers shall be installed with the face of the hanger tight to the face of the header

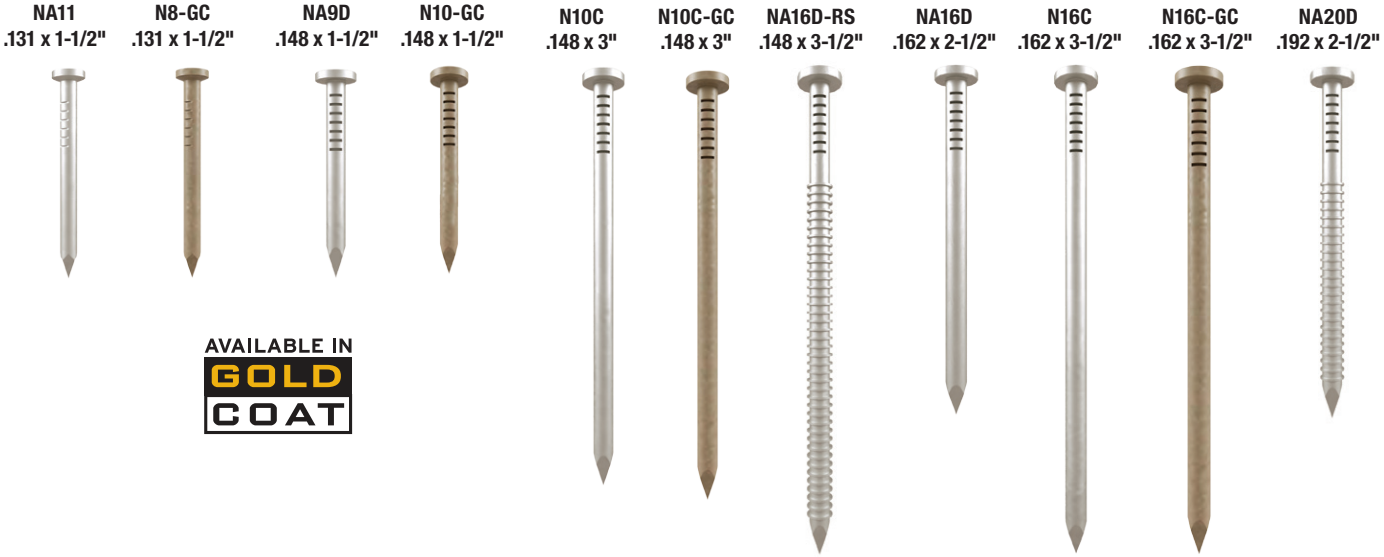
10) Top mount hangers installed in floor systems may produce unevenness. This may vary by the thickness of the hanger top flange steel and the nail heads. If a problem is anticipated, the effects can be mitigated by dapping the beam or cutting the subfloor at hanger locations. The use of face mount hangers will eliminate this problem.



Example of Product Installation Illustrations

N / NA Nails

Proper fasteners are a critical component in a sound wood frame structure. To ensure successful installations of its connectors, USP offers a full range of structurally-rated nails. All galvanized nails supplied by USP are Hot-dipped for greater corrosion resistance. Any USP connector requiring a NA16D-RS or NA20D nail is shipped with the nails attached to the connector in convenient poly bags.



Nail Specification Table

Finish	Size (in)	USP Stock No.	Ref. No.	Metric (mm) Dia	Metric (mm) Length	DF Factored Shear Resistance[3] Lbs	DF Factored Shear Resistance[3] kN	S-P-F Factored Shear Resistance[3] Lbs	S-P-F Factored Shear Resistance[3] kN
HDG	8d (0.131) x 1-1/2	NA11	N8	3.33	38.1	178	0.79	163	0.72
	10d (0.148) x 1-1/2	NA9D	N10	3.76	38.1	200	0.89	184	0.82
	10d (0.148) x 3	N10C	10DHDG	3.76	76.2	218	0.97	201	0.90
	16d (0.162) x 2-1/2	NA16D	N16, N16EG	4.11	63.5	250	1.11	230	1.02
	16d (0.162) x 3-1/2	N16C	16DHDG	4.11	88.9	250	1.11	230	1.02
	20d (0.192) x 2-1/2	NA20D	-- --	4.88	63.5	323	1.44	296	1.32
GC	8d (0.131) x 1-1/2	N8-GC	-- --	3.33	38.1	178	0.79	163	0.72
	10d (0.148) x 1-1/2	N10-GC	-- --	3.76	38.1	200	0.89	184	0.82
	10d (0.148) x 3	N10C-GC	-- --	3.76	76.2	218	0.97	201	0.90
	16d (0.162) x 3-1/2	N16C-GC	-- --	4.11	88.9	250	1.11	230	1.02
SS	8d (0.131) x 1-1/2	SSNA8D	SSN8	3.33	38.1	178	0.79	163	0.72
	10d (0.148) x 1-1/2	SSNA10D	SSN10	3.76	38.1	200	0.89	184	0.82
	8d (0.131) x 2-1/2	SSN8C	SS8D	3.33	63.5	181	0.81	168	0.75
	10d (0.148) x 3	SSN10C	SS10D	3.76	76.2	218	0.97	201	0.90
	16d (0.162) x 3-1/2	SSN16C	SS16D	3.76	82.6	250	1.11	230	1.02
Bright	8d (0.131) x 2-1/2	8d Common	-- --	3.33	63.5	181	0.81	168	0.75
	10d (0.148) x 3	10d Common	-- --	3.76	76.2	218	0.97	201	0.90
	16d (0.148) x 3-1/4	16d Sinker	-- --	3.76	82.6	218	0.97	201	0.90
	16d (0.148) x 3-1/2 Ring Shank	NA16D-RS	-- --	3.76	88.9	218	0.97	201	0.90
	16d (0.162) x 3-1/2	16d Common	-- --	4.11	88.9	250	1.11	230	1.02
	20d (0.192) x 4	20d Common	-- --	4.88	101.6	323	1.44	296	1.32
	8d (0.110) x 2-1/2 Spiral Shank	2-1/2" Common Spiral	-- --	2.77	63.5	139	0.62	130	0.58
	10d (0.122) x 3 Spiral Shank	3" Common Spiral	-- --	3.10	76.20	163	0.73	151	0.67
	12d (0.122) x 3-1/4 Spiral Shank	3-1/4" Common Spiral	-- --	3.10	82.60	163	0.73	151	0.67
	16d (0.152) x 3-1/2 Spiral Shank	3-1/2" Common Spiral	-- --	3.86	88.9	227	1.01	209	0.93

1) Factored shear resistance values determined in accordance with **CSA 086-14 Section 12.9**.
2) Factored shear resistance values apply to DF: Douglas Fir (SG=0.49, fv=1.9 MPa) and S-P-F: Spruce-Pine-Fir (SG=0.42, fv=1.5 MPa).
3) Fastener values shown in this table are for 16Ga steel side member with Fu=45,000 psi and design metal thickness of 0.058 inch (1.47mm).
Approximate fastener values for other steel thicknesses can be determined as follows:
For 18Ga steel (0.046 inch, 1.17mm), multiply table values by 0.91
For 14Ga steel (0.074 inch, 1.88mm), multiply table values by 1.05
For 12Ga steel (0.104 inch, 2.64mm), multiply table values by 1.05
4) Fastener values shown are based on standard-term load duration of K_D = 1.00. Values may be adjusted for other load durations.
5) HDG = Hot-Dip Galvanized; SS = Stainless Steel; GC = Gold Coat; Bright = No Finish.
6) Bright finish common, sinker, and spiral nails are listed for reference only. USP does not stock these type nails.
New products or updated product information are designated in **blue font**.

Gun-Nails:

It is permissible to use nail guns to install connectors.

Note:

1. Many nail guns use fasteners smaller than the common nail size specified with USP product, factored resistance must be reduced accordingly.
2. Drive through pre-punched nail holes only.
3. Do not over drive.
4. Recommend the use of guns featuring hole-locating mechanisms.

N / NA Nails

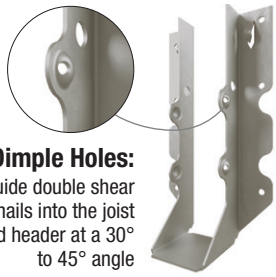
Round Holes:
Always fill all (normal-size) round nail holes, unless otherwise noted.

Diamond Holes:
For maximum listed capacity.

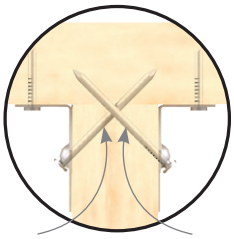
When there are **MIN** and **MAX** values:
MIN: fill all round nail holes
MAX: fill all round and diamond holes

Large Round Holes:
For concrete/masonry installation; no need to be filled when connected to wood.

Obround Holes:
For ease of nailing at a tight location; always fill.

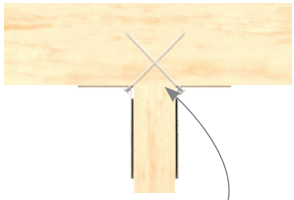


Dimple Holes:
Guide double shear nails into the joist and header at a 30° to 45° angle



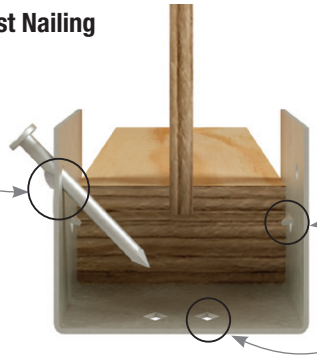
Use specified standard length common nails. 16d common and 10d common nails are 3-1/2" and 3" long respectively.

Bend-line Holes



Drive bend line nails into header at 45º to achieve published strength

Typical I-Joist Nailing



Common Nailing Errors

Wrong Angle
When a nail is driven into the bottom flange of the wood I-Joist parallel to the glue lines, separation of veneers can occur which substantially reduces the design loads of the connection.

Nail Too Long
When using nails longer than USP's recommended nails, bottom flange splitting may occur. Also, this can raise the wood I-Joist off the seat, resulting in uneven surfaces and squeaky floors along with reduced factored resistance.

Optional Nails for Face Mount Hangers

(Does not apply to slant nail hangers: HUS, JUS, MSH, MUS, THDH)

Specified Nail	Replacement Nail	Strength Adjustment Factor
10d x 1-1/2 (0.148" x 1-1/2")	8d x 1-1/2 (0.131" x 1-1/2")	0.88
10d common (0.148" x 3") 12d common (0.148" x 3-1/4")	8d common (0.131" x 2-1/2")	0.82
	10d spiral (0.122" x 3")	0.73
	10d x 1-1/2 (0.148" x 1-1/2")	0.90
16d common (0.162" x 3-1/2")	8d common (0.131" x 2-1/2")	0.71
	10d common (0.148" x 3")	0.86
	12d common (0.148" x 3-1/4")	0.86
	10d spiral (0.122" x 3")	0.61
	12d spiral (0.122" x 3-1/4")	0.61
	16d spiral (0.152" x 3-1/2")	0.90
	10d x 1-1/2 (0.148" x 1-1/2")	0.78
	16d x 2-1/2 (0.162" x 2-1/2")	1.00

1. This chart does not apply to custom hangers or hangers modified to skew and/or slope.
2. This chart applies to metal side member of 14Ga or thinner. For steel thicker than 14Ga, contact USP for exceptions.
3. Strength adjustment factor is the multiplier to the published factored resistance when a nail of different size and/or type is used in lieu of a Specified Nail.
4. Roofing nails shall not be substituted for any nail size or type.
5. Decking nails are not to be used as a substitution for any load carrying nails.

WS Structural Wood Screws

USP STRUCTURAL CONNECTORS MiTek

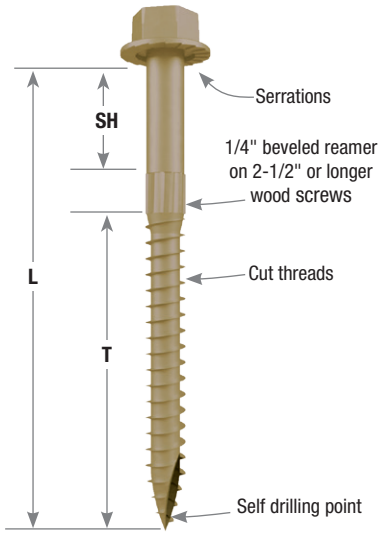
The WS Wood Screw is a self-drilling screw used for numerous framing applications. This screw features a reverse locking serration on the bottom of the screw head to help prevent over tightening against a steel plate. The USP head stamp identifies screws for easy inspection.

Screw shear capacities are based on a diameter of 0.242" when the shear plane is on the screw shank (SH) and 0.185" when the shear plane is on the knurl or threads (T). USP WS Wood Screws have a bending yield strength of 180,000 psi. For conditions not charted here, screw loads may be calculated in accordance with CSA 086-14 Clause 12.11.

Materials: 1/4" diameter Grade 5 steel
Finish: See chart
Options: See chart for Corrosion Finish Options.

Installation:

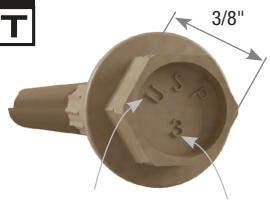
- Screws are self-drilling.
- Install using a low speed clutch drill with 3/8" hex head driver. The washer head should be flat to the surface and the serrations will oppose turning and release the clutch. Do not over-tighten the screws.
- Installing the screw at an angle may introduce additional bending and tension forces into the fastener if the screw head is not flat on the bearing surface. Care should be given to ensure the fastener is installed perpendicular to the plane of the side plate.
- For attaching multi-ply wood trusses or LVL or PSL members, or floor trusses, see pages 21-23.



WS

WS15-GC

AVAILABLE IN GOLD COAT



Size in	Size mm	USP Stock No.	Ref. No.	Dimensions (in) L	SH	T	Finish[1]	Unit	DF Factored Shear Resistance[2,3,4,5] Wood to Wood (DF to DF) 100%	Steel to Wood 14 Gauge 100%	10 Gauge 100%	7 Gauge 100%	3 Gauge 100%	S-P-F Factored Shear Resistance[2,3,4,5] Wood to Wood (S-P-F to S-P-F) 100%	Steel to Wood 14 Gauge 100%	10 Gauge 100%	7 Gauge 100%	3 Gauge 100%	Corrosion Finish
1/4 x 1-1/2	6.1 x 38	WS15	SDS25112	1-1/2	1/4	1-1/4	Zinc	Lbs	-- --	358	496	660	807	-- --	332	471	635	692	
								kN	-- --	1.59	2.21	2.93	3.59	-- --	1.48	2.09	2.83	3.08	
1/4 x 2	6.1 x 50.8	WS2	SDS25200	2	1/4	1-3/4	Zinc	Lbs	-- --	423	561	724	1031	-- --	387	526	691	900	
								kN	-- --	1.88	2.49	3.22	4.58	-- --	1.72	2.34	3.07	4.00	
1/4 x 2-1/2	6.1 x 63.5	WS25	SDS25212	2-1/2	1/4	2	Zinc	Lbs	323	487	625	789	1031	277	443	582	746	900	
								kN	1.44	2.17	2.78	3.51	4.58	1.23	1.97	2.59	3.32	4.00	
1/4 x 3	6.1 x 76.2	WS3	SDS25300	3	3/4	2	Zinc	Lbs	387	552	690	853	1031	332	498	637	801	900	
								kN	1.72	2.46	3.07	3.80	4.58	1.48	2.21	2.83	3.56	4.00	
1/4 x 3-1/2	6.1 x 88.9	WS35	SDS25312	3-1/2	3/4	2-1/2	Zinc	Lbs	452	616	754	918	1031	387	553	692	857	900	
								kN	2.01	2.74	3.36	4.08	4.58	1.72	2.46	3.08	3.81	4.00	
1/4 x 4-1/2	6.1 x 114.3	WS45	SDS25412	4-1/2	1-1/4	3	Zinc	Lbs	543	680	825	997	1031	480	618	763	890	900	
								kN	2.42	3.02	3.67	4.44	4.58	2.14	2.75	3.40	3.96	4.00	
1/4 x 5	6.1 x 127	**WS5**	SDS25500	5	1-3/4	3	Zinc	Lbs	543	680	825	997	1031	480	618	763	890	900	
								kN	2.42	3.02	3.67	4.44	4.58	2.14	2.75	3.40	3.96	4.00	
1/4 x 6	6.1 x 152.4	WS6	SDS25600	6	1-3/4	4	Zinc	Lbs	543	680	825	997	1031	480	618	763	890	900	
								kN	2.42	3.02	3.67	4.44	4.58	2.14	2.75	3.40	3.96	4.00	
1/4 x 8	6.1 x 203.2	**WS8**	SDS25800	8	4-3/4	3	Zinc	Lbs	543	680	825	997	1031	480	618	763	890	900	
								kN	2.42	3.02	3.67	4.44	4.58	2.14	2.75	3.40	3.96	4.00	

1) Zinc = Yellow zinc dichromate.
2) Factored Resistance values determined in accordance with **CSA O86-14 Clause 12.11**.
3) Steel side plate factored resistance based on a minimum Fu = 45,000 psi.
4) Wood-to-wood loads are based on 1-1/2" thick wood side members.
5) Loads are for 100% duration of load factors, and may be increased for other duration factors allowed per governing building code.
6) Loads are for shear applications when used as described in this catalog. Please contact USP for applications and installations involving tension forces.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

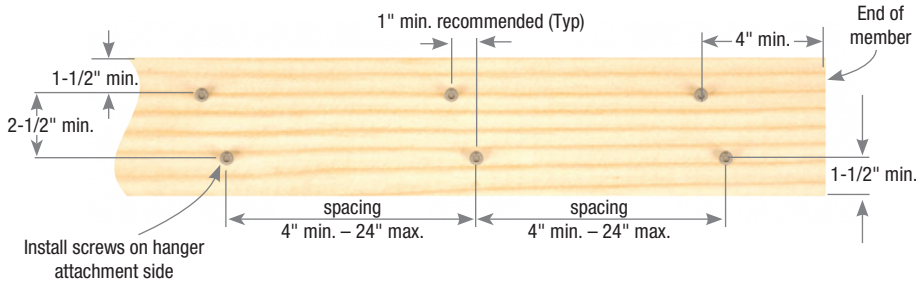
WS Structural Wood Screw Applications

Joining 2, 3, or 4 Ply Wood Trusses

The installation instructions and design example shown below are intended for a design professional who will be responsible for determining the location and number of wood screws to adequately transfer all loads on the truss.

Installation:

- Screw spacing shall not be greater than 24" on center and less than 4" on center. However, the location of any individual screw may be adjusted up to one-half the required screw spacing to avoid lumber defects or interference with other hardware.
- Load or hanger spacing shall not be greater than 24" center-to-center.
- The last truss ply must have a minimum of 1-1/4" of screw penetration and no more than 1/8" gap between each ply.
- Screws cannot be installed through metal truss plates unless the Truss Engineer approves pre-drilling.
- On 2x4 members, use one row of wood screws. On 2x6 and 2x8 use two rows, and on 2x10 use three rows. Stagger all rows.
- The truss bottom chord shall have lateral bracing installed as called out by the Truss Engineer to prevent any displacement from torsional forces.
- Install screws from one side without flipping the truss.
- Top and bottom chords require screws and in some cases the webs may require screws.
- All lateral bracing should be attached to each truss ply.
- Increase edge and end distance if wood splitting occurs.



Size		USP Stock No.	Dimensions (in)			Finish	Shear Plane Location	DF Factored Resistance Shear 100%[1,2,3,4]		S-P-F Factored Resistance Shear 100%[1,2,3,4]	
in	mm		L	SH	T			Lbs	kN	Lbs	kN
1/4 x 3	6.1 x 76.2	WS3	3	3/4	2	Zinc	SH, T	387	1.72	332	1.48
1/4 x 4-1/2	6.1 x 114.3	WS45	4-1/2	1-1/4	3	Zinc	SH, T	543	2.42	480	2.14
1/4 x 6	6.1 x 152.4	WS6	6	1-3/4	4	Zinc	SH, T	543	2.42	480	2.14

1) Factored Resistance values determined in accordance with **CSA O86-14 Clause 12.11**.
2) The Truss Engineer shall apply all applicable adjustment factors.
3) Table values are based on 1-1/2" thick wood side members. **Where the side and main members are of different specific gravities, use the lower of the two.**
4) Table values depicted assume the wood screws installed with the screw heads in the loaded ply.

Design Example

3 Ply with Mixed Wood Species:
Bottom Chord: 2x6 Douglas Fir-Larch
Top Chord: 2x4 Spruce-Pine-Fir

WS45 Wood Screw Factored Resistance:
Douglas Fir-Larch: 543 lbs. each at 100%
Spruce-Pine-Fir: 480 lbs. each at 100%

Bottom Chord Wood Screw Spacing:
Using 2 rows of WS45 Wood Screws in 2x6

$$2 \times 543/1000 \times \frac{\#\ \text{Plies}}{\#\ \text{Plies} - 1} = 1.63\ \text{ft.}$$

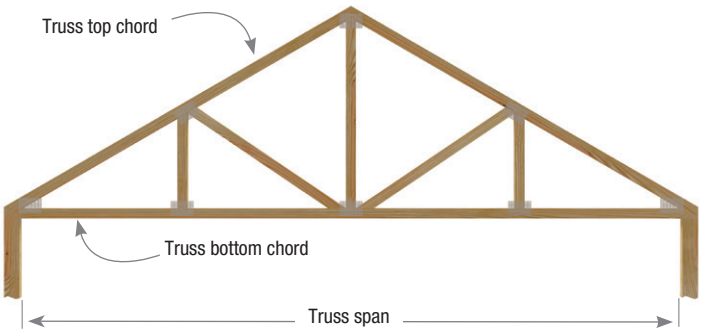
Use maximum spacing of 19".

Top Chord Wood Screw Spacing:
Only 1 row of WS45 Wood Screws in 2x4 member

$$1 \times 480/120 \times \frac{\#\ \text{Plies}}{\#\ \text{Plies} - 1} = 6\ \text{ft.}$$

Use maximum spacing of 24".

Required Loads:
Bottom Chord Factored Load: 1000 plf
Top Chord Factored Load: 120 plf



Typical Truss Profile (profile may vary)

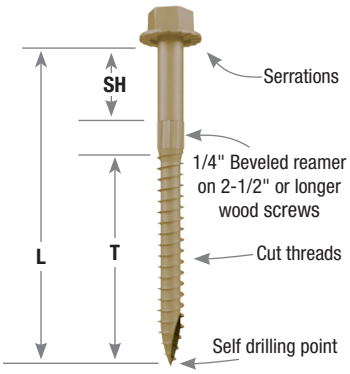
WS Structural Wood Screw Applications

USP STRUCTURAL CONNECTORS MiTek

Joining 2, 3, or 4 Ply LVL, LSL or PSL Members

Installation Notes:

- For 2 ply members, wood screws shall be installed with the screw heads in the loaded ply.
- For 3 or 4 ply members, wood screws shall be installed in both outer plies.
- Designer shall specify all wood screws locations.
- Increase edge and end distances if wood splitting occurs.
- Stagger all screws installed into the opposite face.
- A minimum of 2 rows of screws shall be used for all members with H = 5-1/2" and larger.



WS

Size (in)	USP Stock No.	Dimensions (in) L	SH	T	Multiple Members Installation Figure[3,7,9,10]	Maximum Factored Uniform Loads that can be applied to either outside member[1,2,3,4,5,6] — Wood Screw Spacing: 12-in O.C. 2 Rows Lbs/ft	kN/m	12-in O.C. 3 Rows Lbs/ft	kN/m	18-in O.C. 2 Rows Lbs/ft	kN/m	18-in O.C. 3 Rows Lbs/ft	kN/m	24-in O.C. 2 Rows Lbs/ft	kN/m	24-in O.C. 3 Rows Lbs/ft	kN/m
1/4 x 3-1/2	WS35	3-1/2	3/4	2-1/2	1	1845	26.93	2765	40.35	1230	17.95	1845	26.93	920	13.43	1385	20.21
					2	1385	20.21	2075	30.28	920	13.43	1385	20.21	690	10.07	1035	15.11
					4	1385	20.21	2075	30.28	920	13.43	1385	20.21	690	10.07	1035	15.11
					5	1230	17.95	1845	26.93	820	11.97	1230	17.95	615	8.98	920	13.43
1/4 x 6	WS6 [8]	6	1-3/4	4	3	1560	22.77	2340	34.15	1040	15.18	1560	22.77	780	11.38	1170	17.08
					6	5470	79.83	8210	119.82	3650	53.27	5470	79.83	2735	39.92	4105	59.91

1) Factored Resistance values determined in accordance with CSA O86-14 **Clause 12.11**.
2) Loads are based on SCL with an equivalent S.G. = 0.50 and a side member thickness of 1-3/4", except for Figure 6 installation with a side member thickness of 3-1/2".
3) Load values depicted assume that the uniform load is applied to the most narrow outside ply only.
4) Except for Figure 6 installation, load values neglect any contribution of screws installed to opposite side, even if they extend significantly into the loaded ply.
5) Loads are for normal (100%) duration of load, and may be increased in accordance with the code.
6) Uniform loads in table represent the capacity of the fasteners. The capacity of the LVL or PSL beam may be less and should be checked by a qualified designer or with the manufacturer's literature.
7) A qualified designer shall ensure the adequacy of a 7" wide beam to resist the applied load on one edge; otherwise, the loads shall be uniformly distributed across the width or applied equally on both sides.
8) Wood screws longer than 3-1/2" are not recommended for use with Parallam® PSL or TimberStrand® LSL.
9) For Figure 1: The head of the wood screw is on the same side as the loaded ply.
10) For Figures 2, 3, 5, and 6: Stagger the screws on opposite face by half minimum spacing requirements.
New products or updated product information are designated in **blue font**.

Figure 1

WS35 installed in (2) 1-3/4" Ply

Figure 2

WS35 installed in (3) 1-3/4" Ply

Figure 3

WS6 installed in (4) 1-3/4" Ply

Figure 4

WS35 installed in (1) 1-3/4", (1) 3-1/2" Ply

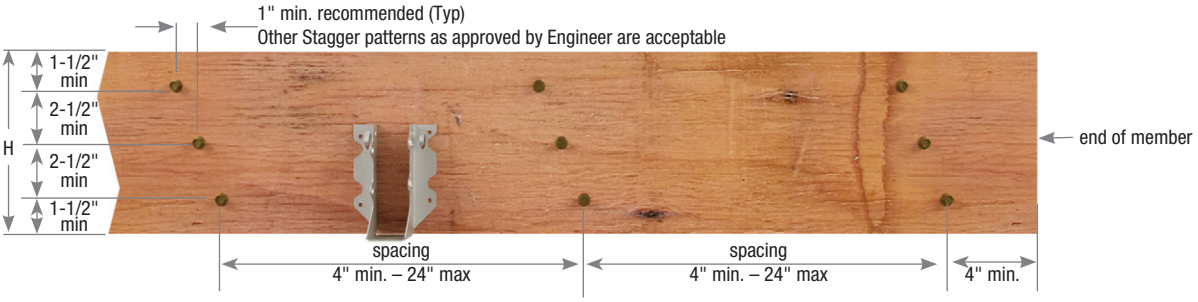
Figure 5

WS35 installed in (2) 1-3/4", (1) 3-1/2" Ply

Figure 6

WS6 installed in (2) 3-1/2" Ply

Recommended Row Guidelines



WS Structural Wood Screw Applications

Joining 2 Ply 4x2 Floor Trusses

The following information pertains to the use of the USP's WS6 Wood Screws to fasten together a two-ply 4x2 floor truss girder, such that the induced loads are supported by both truss plies. Screw spacing and the location of each specific screw may vary depending on the design criteria for each application, and therefore must be determined by the truss or building designer. However, in the determination of screw locations, the following criterion shall also be considered. These criterion are varying dependent upon how trusses are loaded as follows:

Uniform/Distributed Load

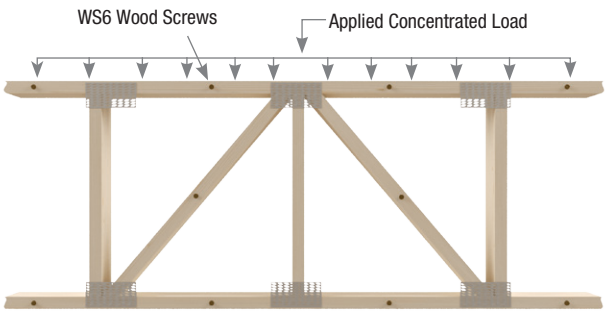
- Screws shall be installed into the top chord with a horizontal spacing between screws of not less than 4-inches on center and not more than 24-inches on center.
- A minimum end distance of 4-inches must be maintained. If necessary, additional screws may be installed in the bottom chord.
- Center screw vertically on 1-1/2" dimension of top chord. If splitting occurs, it may be necessary to predrill the holes in accordance with the code.
- The screws shall be installed with the headed end of the screw on the loaded truss. If either ply is "the loaded truss", the screws shall be divided between the two plies, with the spacing on each side twice the minimum indicated above.
- The screws shall not be installed through the metal truss plates, unless approved by the truss designer and the plates are predrilled, on each side to a 1/4-inch diameter. Do not drill through the wood.
- The maximum gap between the wood members of the two trusses shall be 1/8-inch.
- Individual screw locations may need to be adjusted to avoid conflicts with connectors, problematic wood or other framing members. Adjustments should follow the criteria described in this section.

Concentrated/Point Load

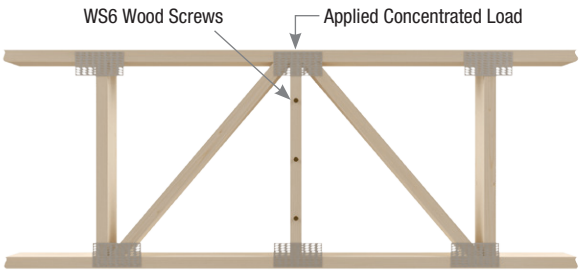
The placement of fasteners for concentrated loading includes all requirements of uniform loading with the following additional criteria:

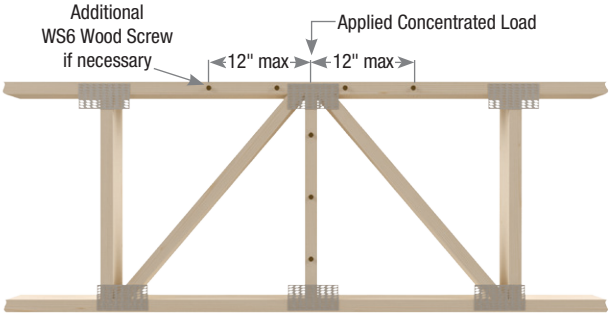
- Loads must occur over a vertical member, and the necessary concentration of screws shall be installed in the vertical member.
- Additional screws may be installed on the top chord and adjacent web members if necessary.
- The fasteners should be grouped as close to the concentrated load as possible, but satisfy the same minimum spacing indicated for uniform loading.
- In no case shall the required group of fasteners extend beyond 12-inches from the location of the concentrated load.

Uniform/Distributed Load

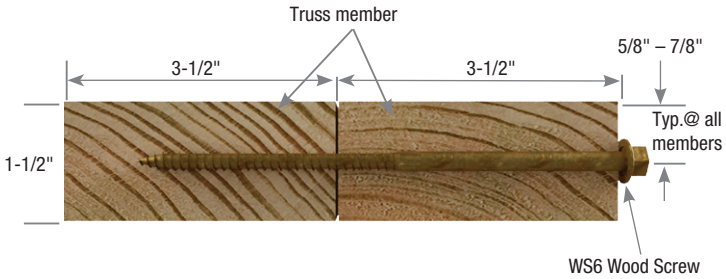


Concentrated/Point Load





Screw Detail



USP Stock No.	DF Factored Resistance		S-P-F Factored Resistance	
	Shear 100%[1]		Shear 100%[1]	
	Lbs	kN	Lbs	kN
WS6	672	2.99	591	2.63

1) Factored Resistance values determined in accordance with **CSA O86-14 Clause 12.11.**

New products or updated product information are designated in **blue font**.

LL Lumberlok Structural Connector Screws

USP STRUCTURAL CONNECTORS MiTek

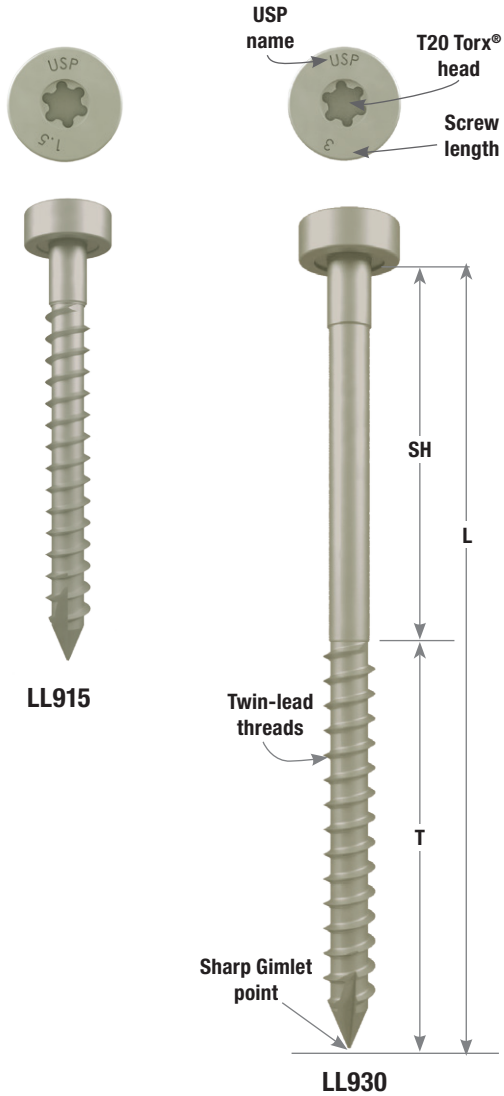
The LumberLok Structural Connector Screw is a self-drilling screw that can be used with a number of USP Structural Connectors and also for wood-to-wood applications. The screws feature a T20 Torx® head with integral washer and gimlet point for ease of installation. The twin-lead threads drive in twice as fast as the single lead threads significantly reducing installation time. The USP head stamp identifies the screw length for easy inspection.

Screw shear capacities are based on a diameter of 0.162" when the shear plane is on the screw shank (SH) and 0.109" when the shear plane is on the threads (T). USP LumberLok Structural Connector Screws have a bending yield strength of 180,000 psi.

Materials: Low carbon hardened steel
Finish: Gold Coat

Installation:

- Screws are self-drilling.
- Install using a low speed clutch drill with T20 Torx® bit (not included). The washer head should be flat to the surface. Do not over-tighten the screws.
- Installing the screw at an angle may introduce additional bending and tension forces into the fastener if the screw head is not flat to the bearing surface. Care should be given to ensure the fastener is installed perpendicular to the plane of the fastener hole.
- **Impact drills are not recommended for use with LumberLok Screws**



Size	USP Stock No.	Ref. No.	Dimensions (in.) L	SH	T	Finish[2]	Unit	DF Factored Resistance (100%)[3,4,5,6] Shear: Wood-to-Wood	Steel-to-Wood: Withdrawal Capacity	Shear 18 Ga	Shear 16 Ga	S-P-F Factored Resistance (100%)[3,4,5,6] Shear: Wood-to-Wood	Steel-to-Wood: Withdrawal Capacity	Shear 18 Ga	Shear 16 Ga
#9 x 1-3/8	LL915	SD9112	1-3/8	1/4	1-1/8	GC	Lbs	-- --	237	190	208	-- --	180	173	191
							kN	-- --	1.05	0.85	0.93	-- --	0.80	0.77	0.85
#9 x 2-7/8	LL930	SD9212	2-7/8	1-3/8	1-1/2	GC	Lbs	228	288	249	265	196	219	226	243
							kN	1.01	1.28	1.11	1.18	0.87	0.97	1.01	1.08

1) Factored Resistance values determined in accordance with **CSA O86-14 Section 12.9**.
2) GC = Gold Coat over Clear Zinc Trivalent.
3) Factored shear resistance for steel-to-wood assumes a side plate tensile strength of 45 ksi.
4) Withdrawal loads for steel-to-wood connections assume a side plate thickness of 1/4" or less.
5) Shear loads for wood-to-wood connections assume a side member thickness of 1-1/2".
6) Loads are for 100% duration of load factors, and may be increased for other duration factors allowed per governing building code.
New products or updated product information are designated in **blue font.**

CIA-GEL 7000-C Epoxy

CIA-GEL 7000-C Epoxy is an adhesive designed to attach anchor bolts into concrete that is, or may become, cracked due to cyclic loading from wind or earthquakes. It may also be used with fully grouted CMU construction. It is a low odor, solvent free, non-shrink, non-sag adhesive. The two-component (resin and hardener) epoxy is supplied in equal volume cartridges, which are combined in a 1:1 ratio when dispensed through the attached mixing nozzle. Either a hand powered or air-powered dispenser may be used. The cartridges are sealed with a D-plug which opens easily on the job-site and allows partially used cartridges to be saved for later use. The epoxy has a two year shelf life when stored in unopened containers at temperatures between 10ºC / 50°F and 25ºC/ 77°F.

Applications:

- Anchors continuously threaded steel rod and deformed rebar into concrete.
- Holdowns into concrete for high seismic zones ($I_E F_a S_a(0.2) \geq 0.35$).
- Horizontal and overhead anchoring applications (requires special inspection).

Available in:
8.5 oz. – GEL7C-10
20.3 oz. – GEL7C-22

CIA-GEL 7000 Epoxy

CIA-GEL 7000 Epoxy is a structural adhesive specifically designed to attach anchor bolts into fully grouted concrete masonry units (CMU) and has recently been evaluated for seismic, sustained load, elevated temperature and freeze-thaw suitability conditions. It can also be used to install anchor bolts into uncracked concrete and reinforced brick. It is a low odor, solvent free, non-shrink adhesive. The two-component (resin and hardener) epoxy is supplied in equal volume cartridges, which are combined in a 1:1 ratio when dispensed through the attached mixing nozzle. Either a hand powered or air-powered dispenser may be used. The cartridges are sealed with a D-plug which opens easily on the job-site and allows partially used cartridges to be saved for later use. The epoxy has a one year shelf life when stored in unopened containers at a temperature of 21ºC/ 70°F.

Applications:

- Anchors All-Thread rod and deformed rebar into fully grouted CMU.
- Brick veneer anchoring.
- Crack injection of medium to wide cracks.
- Anchors rebar and threaded steel rod into uncracked concrete.

Available in:
8.6 oz. – GEL7-10
21.2 oz. – GEL7-22

CIA-GEL 6000-GP Epoxy

CIA-GEL 6000-GP is a superior epoxy specifically designed for general purpose structural applications that require quick load times and for doweling applications. It is a two-component (1:1 ratio) adhesive epoxy with 100% solids and is solvent free, moisture insensitive, non-sag and has no odor. It provides exceptional strength in anchoring and doweling applications and can be used in temperatures between 1°C / 35°F and 45°C / 110°F. The epoxy has a two year shelf life when stored in unopened containers at temperatures between 4°C / 40°F and 35°C / 95°F.

Applications:

- Doweling applications for rebar and tie bars for full depth concrete pavement repairs.
- Anchoring and bracing for short term tensile load where dynamic, vibratory, wind or intermittent loads exist.
- Use in concrete, grout filled block and unreinforced masonry for general purpose anchoring and doweling applications.
- Concrete doweling road repairs where DOT approval is required.

Available in:
21.2 oz. – GEL6GP-22

Continued on next page

CIA-EA Epoxy Acrylate

CIA-EA Adhesive Anchoring System is an epoxy acrylate specifically designed to be a high strength, fast cure structural adhesive for anchoring threaded rod and deformed rebar into uncracked concrete. It has the added advantage of being formulated to be used in colder temperatures 0°C / 32°F while maintaining excellent flowability. CIA-EA may also be used with fully grouted CMU and reinforced brick construction. It is a 2-component, 100% solids, moisture insensitive adhesive that is ideally suited for a wide range of applications. It is composed of a proprietary blend of solvent free epoxy acrylate resin and is backed by independent research and testing. The epoxy has a 15 month shelf life when stored in unopened containers at temperatures between 5°C / 41°F to 25°C / 77°F.

Applications:

- Anchors All-Thread rod into concrete
- May also be used to anchor rebar, starter bars and dowels
- Applications requiring fast cure times
- Cold weather applications
- Can be used in horizontal anchoring applications
- Can be used in overhead anchoring applications (requires special inspection)

Available in:
9.4 oz. – EA-10
27.9 oz. – EA-28

IB-9 Incredi-Bond® Epoxy

Incredi-Bond® is a high strength two-component epoxy specifically designed to be a bonding agent for almost all household materials including wood, steel, concrete, brick, stone and CMU block. It is moisture insensitive and can also be used to fill cracks in concrete, block and stone. The epoxy has a 2 year shelf life when stored in unopened containers in dry conditions between 4°C / 40°F to 35°C / 95°F.

Applications:

- Bonding applications for:
  - Concrete
  - Brick
  - CMU block
  - Stone
  - Metal
  - Wood
- Repair vertical and overhead cracks in concrete (non-structural)
- Repair vertical and overhead spalls in concrete (5/8" deep & 3" diameter max)
- Non-sag consistency makes this ideal for corner repairs to concrete and block walls
- Repair and replace brick
- Replace pool tile (no need to empty pool)
- Fill holes and cracks

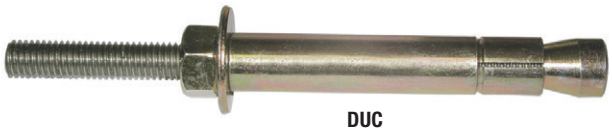
Available in:
8.6 oz. – IB-9

DUC Ductile Undercut Anchors

Mechanical anchor expanded into a hole that has been undercut at the bottom using an undercutting drill bit creating a true bearing type anchor that performs like a cast-in-place headed anchor. Load is transferred into the concrete through bearing, not friction like traditional expansion anchors. Excellent performance in seismic and dynamic loading conditions.

Rod Materials: ASTM A36 (L Series), A193 Grade B7 (H Series), or AISI 316 Stainless Studs

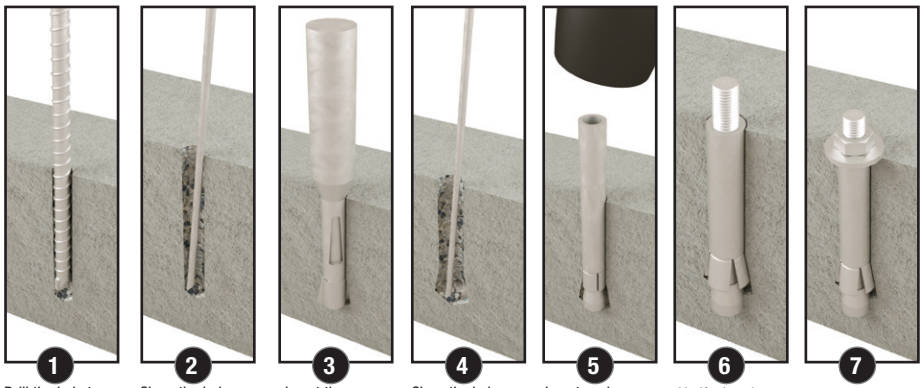
Anchor Body Materials: ASTM A 513 Type 5, or AISI 316 Stainless



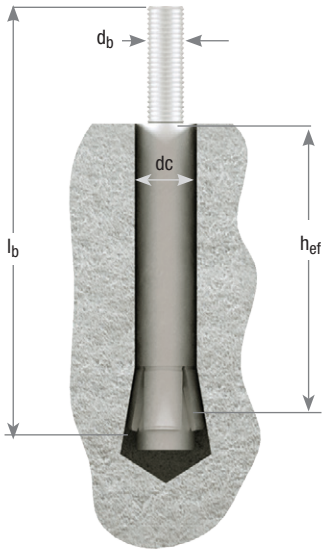
DUC Undercut Anchor

UCB Undercut Drill Bit

Installation:



1. Drill the hole to proper depth and diameter per specifications using rotohammer and stop drill.
2. Clean the hole using a blow-out bulb or compressed air.
3. Insert the undercut bit and start rorohammer. Undercutting is complete when the stopper sleeve is fully compressed (gap closed).
4. Clean the hole again using a blow-out bulb or compressed air.
5. Insert anchor into hole. Place setting sleeve over anchor and drive the expansion sleeve over the expansion coupling.
6. Verify that the setting mark is visible on the threaded rod above the sleeve.
7. Apply proper torque.



Tension and shear capacities for DUC Anchors in f'c ≥ 2,500 psi concrete

USP Stock No.	Rod Dia. d_b		Anchor Length, l_b		Expansion Coupling Dia. d_c		Drilled Hole Depth of Stop Bit		Effective Embedment h_{ef}		Ultimate Tensile Capacity		Ultimate Shear Capacity	
	in	mm	in	mm	in	mm	in	mm	in	mm	Lbs	kN	Lbs	kN
DUC38-275L	3/8	9.5	5-1/2	139.7	5/8	15.9	3-1/8	79.4	2-3/4	69.9	4650	20.69	2790	12.41
DUC38-275LT														
DUC38-400H			6-3/4	171.5			4-3/8	111.1	4	101.6	9690	43.10	5815	25.87
DUC38-400HT														
DUC12-400L	1/2	12.7	7	177.8	3/4	19	4-1/4	107.9	4	101.6	8515	37.88	5110	22.73
DUC12-400LT														
DUC12-500H			8	203.2			5-1/4	133.4	5	127	17740	78.91	10645	47.35
DUC12-500HT														
DUC12-675H			9-3/4	247.6			7	177.8	6-3/4	171.5				
DUC12-675HT														
DUC58-450L	5/8	15.9	7-3/4	196.9	1	25.4	5	127	4-1/2	114.3	13560	60.32	8135	36.19
DUC58-450LT														
DUC58-750H			10-3/4	273.1			8	203.2	7-1/2	190.5	28250	125.67	16950	75.40
DUC58-750HT														
DUC58-900H			12-1/4	311.2			9-1/2	241.3	9	228.6				
DUC58-900HT														
DUC34-500L	3/4	19	8-5/8	219.1	1-1/8	28.6	5-7/8	149.2	5	127	20040	89.15	12025	53.49
DUC34-500LT														
DUC34-1000H			13-5/8	346.1			10-7/8	276.2	10	254	41750	185.72	25050	111.43
DUC34-1000HT														

1) Factored resistance and shear capacities are for anchors installed at standard edge distance and spacing in uncracked concrete.

SD Wedge-Bolt®+ Anchors

The Wedge-Bolt®+ anchor is a one piece, heavy duty screw anchor with a finished hex head. It is simple to install, easy to identify and fully removable. The Wedge-Bolt®+ has features and benefits that make it well suited for many applications. The steel threads along the anchor body tap into the hole during installation to provide key engagement. Suitable base materials include normal-weight concrete, structural sand-lightweight concrete, concrete over steel deck, concrete masonry and solid clay brick. The anchor is designed for structural loading in cracked and uncracked concrete.

Wedge-Bolt®+ (Zinc Plated)

Wedge-Bolt®+ (Mechanically Galvanized)

Wedge-Bolt®+

Finish	USP Stock No.[2]	Ref. No.	Anchor Size (in)[1]
Zinc Plated	7204SD	-- --	1/4 x 1-1/4
	7206SD	THD25134H	1/4 x 1-3/4
	7208SD	THD25214H	1/4 x 2-1/4
	7210SD	THD25300H	1/4 x 3
	7220SD	THD37134H	3/8 x 1-3/4
	7222SD	THD37212H	3/8 x 2-1/2
	7224SD	THD37300H	3/8 x 3
	7226SD	THD37400H	3/8 x 4
	7228SD	THD37500H	3/8 x 5
	7230SD	THD37600H	3/8 x 6
	7240SD	THD50200H	1/2 x 2
	7242SD	THD50212H	1/2 x 2-1/2
	7244SD	THD50300H	1/2 x 3
	7246SD	THD50400H	1/2 x 4
	7248SD	THD50500H	1/2 x 5
	7250SD	THD50600H	1/2 x 6
	7268SD	THD50800H	1/2 x 6-1/2
	7252SD	THDA62300H	1/2 x 8
	7260SD	THD62400H	5/8 x 3
	7262SD	THD62500H	5/8 x 4
	7264SD	THD62600H	5/8 x 5
	7266SD	THD50612H	5/8 x 6
	7270SD	THD62800H	5/8 x 8
	7280SD	-- --	3/4 x 3

Finish	USP Stock No.[2]	Ref. No.	Anchor Size (in)[1]
Zinc Plated	7282SD	THD75400H	3/4 x 4
	7284SD	THD75500H	3/4 x 5
	7286SD	THD75600H	3/4 x 6
	7288SD	-- --	3/4 x 8
	7290SD	THD75100H	3/4 x 10
Mechanically Galvanized	7726SD	THD37400HMG	3/8 x 4
	7728SD	THD37500HMG	3/8 x 5
	7730SD	THD37600HMG	3/8 x 6
	7746SD	THD50400HMG	1/2 x 4
	7748SD	THD50500HMG	1/2 x 5
	7750SD	THD50600HMG	1/2 x 6
	7751SD	THD50612HMG	1/2 x 6-1/2
	7752SD	THD50800HMG	1/2 x 8
	7764SD	THD62500HMG, THDB62500HMG	5/8 x 5
	7766SD	THD62612HMG, THDB62600HMG	5/8 x 6
	7768SD	THDB62612HMG	5/8 x 6-1/2
	7770SD	THD62800HMG, THDB62800HMG	5/8 x 8
	7786SD	-- --	3/4 x 6
	7789SD	THD75812HMG	3/4 x 8-1/2
	7790SD	THD75100HMG	3/4 x 10

1) The anchor size includes the diameter and length of the anchor measured from under the head.
2) Wedge-Bolt®+ is marked with a blue tip and must be installed with a matched tolerance Wedge-Bit. Wedge-Bits must be ordered seperately.

Wedge-Bits

USP Stock No.	Ref. No.	Description	Usable Length (in)
1314	-- --	SDS 1/4" x 6"	4"
1318	-- --	SDS 3/8" x 8"	6"
1384	-- --	HD Straight Shank 3/8" x 13"	4"
1322	-- --	SDS 1/2" x 10"	8"
1354	-- --	SDS-Max 1/2" x 13"	8"
1394	-- --	HD Straight Shank 1/2" x 13"	11"
1324	-- --	SDS 5/8" x 8"	6"
1326	-- --	SDS 5/8" x 12"	10"
1356	-- --	SDS-Max 5/8" x 13"	8"
1396	-- --	HD Straight Shank 5/8" x 13"	11"
1328	-- --	SDS 3/4" x 8"	6"
1358	-- --	SDS-Max 3/4" x 13"	8"

SDS-Max Wedge Bit

SDS-Plus Wedge Bit

Power-Stud™ Mechanical Anchors

The Power-Stud™ HD5 anchor is a fully threaded, torque-controlled, wedge expansion anchor. Suitable base materials include normal-weight concrete and structural sand-lightweight concrete. The anchor is manufactured with a hot-dip galvanized carbon steel body and stainless steel expansion clip. Nut and washer are included.

USP Stock No.[2]	Ref. No.	Anchor Size (in)[1]	Thread Length (in)
7723HD5	WA50414MG	1/2 x 4-1/2	2-3/4
7724HD5	WA50512MG	1/2 x 5-1/2	3-3/4
7726HD5	WA50700MG	1/2 x 7	5-1/4
7733HD5	-- --	5/8 x 5	3
7734HD5	WA62600MG	5/8 x 6	4
7738HD5	-- --	5/8 x 8-1/2	6-1/2

1) The anchor size includes the diameter and the overall length of the anchor.
2) All anchors are packaged with nuts and washers.

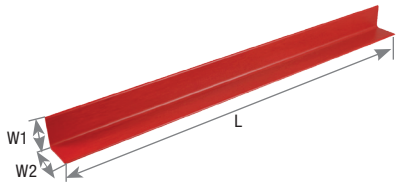
Power-Stud™ HD5

SAL Steel Angle Lintels

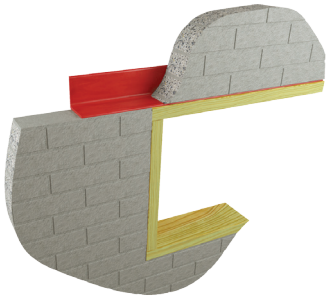
Steel Angle Lintels are used as support headers in door and window framing. For maximum allowable spans and minimum required bearing length check with applicable municipal, provincial or national building codes.

Materials: 3 gauge
Finish: Red primer

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		
			W1	W2	L
SAL36	-- --	3	3-1/2	3-1/2	36
SAL42	-- --	3	3-1/2	3-1/2	42
SAL48	-- --	3	3-1/2	3-1/2	48
SAL60	-- --	3	3-1/2	3-1/2	60
SAL72	-- --	3	3-1/2	3-1/2	72
SAL91	-- --	3	3-1/2	3-1/2	91



SAL



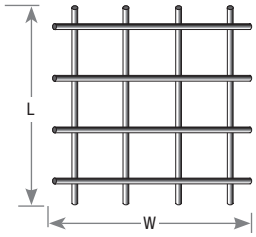
Typical SAL installation

WM Welded Wire Mesh

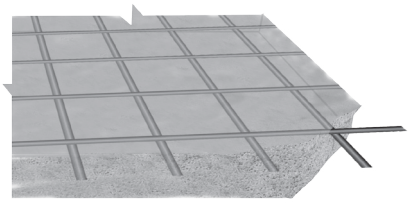
Welded wire adds strength and stability to concrete foundations.

Materials: 9 gauge carbon steel wire
Finish: None

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)	
			W	L
WM48	-- --	9	48	96
WM60	-- --	9	60	600



WM



Typical WM installation

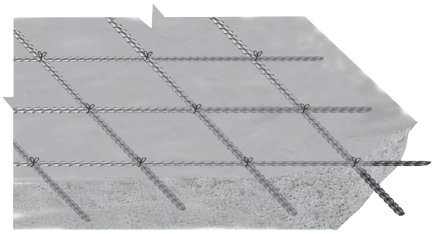
CR Concrete Reinforcing Rod

Concrete Reinforcing Rod provides added strength and stability for any concrete projects.

Materials: Carbon steel conforms to A615 Steel
Finish: None

USP Stock No.	Ref. No.	Dimensions	
		D	L (in)
CR12	-- --	10 mm	12
CR24	-- --	10 mm	24
CR36	-- --	10 mm	36
CR48	-- --	10 mm	48
CR72	-- --	10 mm	72
CR96	-- --	10 mm	96

CR



Typical CR installation

TW / TWTT Tie Wire

TW – Tie Wire is used to secure concrete reinforcing rods in place during concrete forming.

TWTT – Tie Wire Tying Tool.

Materials: See chart
Finish: – Black annealed iron wire

USP Stock No.	Ref. No.	Steel Gauge	Dimensions
TW1	--	18	1-in x 6-in
TW3	--	16	3-in x 340-ft/roll
TW5-1000	--	16	5-in x 1000-pc/roll
TW5-2500	--		5-in x 2500-pc/roll
TW6-1000	--	16	6-in x 1000-pc/roll
TW6-2500	--		6-in x 2500-pc/roll

New products or updated product information are designated in **blue font**.

TW3

Typical TW installation

TW5

TWTT

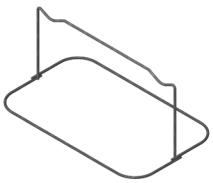
Typical TWTT installation

RCD / RCT Rod Chairs

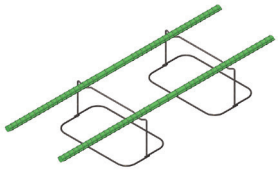
Rod chairs hold reinforcing bars for proper placement during the pouring or application of concrete.

Materials: Welded Wire
Finish: None

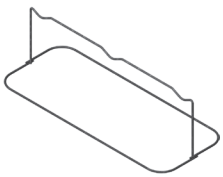
USP Stock No.	Ref. No.	Description	Dimensions (in)
RCD	-- --	Double Rod Chair	4 x 5 x 8-1/4
RCT	-- --	Triple Rod Chair	3-1/2 x 4 x 12



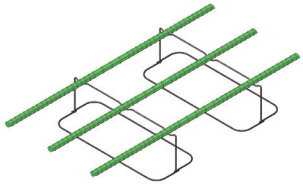
RCD



Typical RCD installation



RCT



Typical RCT installation

SCV / SCH Safety Caps

Brightly colored safety caps protect against injuries from vertical rebar.

Materials: Composite Plastic
Finish: None

USP Stock No.	Ref. No.	Description	Dimensions (in)
SCH	-- --	Horizontal Safety Cap	2-3/8 x 2-1/2 x 2-1/2
SCV	-- --	Vertical Safety Cap	3-1/4 x 3-3/4 x 3-3/4

SCH

Typical SCH installation

SCV

Typical SCV installation

THR Threaded Rods

USP has added longer length THR's to support the new deck oriented code requirements for mechanically reinforced railing post and deck to house ledger board attachments.

Materials: ASTM A 36 Steel, also conforms to ASTM F 1554 Grade 36

Finish: Hot-dip galvanized

Installation:

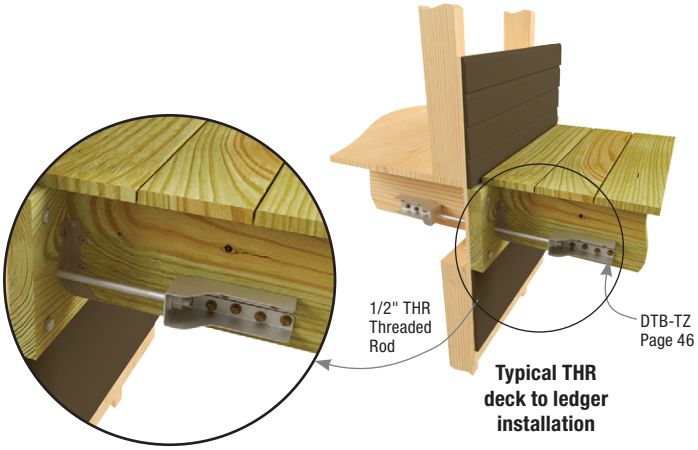
- Install into wet concrete or drill minimum 1/16" oversized hole and secure with anchor epoxy

USP Stock No.	Ref. No.	Bolt Dia.	L (in)	Corrosion Finish
THR125-HDG	RFB#4X5HDG	1/2	5	
THR126-HDG	RFB#4X6HDG	1/2	6	
THR128-HDG	RFB#4X8HDG	1/2	8	
THR1218-HDG	-- --	1/2	18	
THR1224-HDG	-- --	1/2	24	
THR1236-HDG	-- --	1/2	36	
THR585-HDG	RFB#5X5HDG	5/8	5	
THR588-HDG	RFB#5X8HDG	5/8	8	
THR5812-HDG	RFB#5X12HDG	5/8	12	
THR5816-HDG	RFB#5X16HDG	5/8	16	

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

Typical THR installation

THR



Typical THR deck to ledger installation

CRE Epoxy Coated Rebar

Epoxy coated rebar provides maximum protection against corrosion.

Materials: A615 Steel

Finish: Epoxy Dipped

USP Stock No.	Ref. No.	Dimensions	
		Dia	L (in)
CRE12	-- --	10 mm	12
CRE24	-- --	10 mm	24
CRE36	-- --	10 mm	36
CRE48	-- --	10 mm	48

New products or updated product information are designated in **blue font**.

CRE

Typical CRE installation

NSR Round Nail Stake

Nail stakes are used to secure form boards to prevent movement and bowing.

Materials: Steel

Finish: Black Primer

Installation:

- Fastener holes will accommodate up to a 16d duplex nail.

USP Stock No.	Ref. No.	Dimensions (in)	
		Dia	L
NSR	-- --	3/4	18

NSR

Typical NSR installation

RP Retro Plate

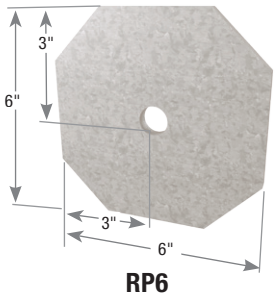
Uses heavy gauge HRPO steel and a large surface area to distribute seismic forces on masonry exteriors.

Materials: 3/8" plate
Finish: USP primer
Options: See chart for Corrosion Finish Options

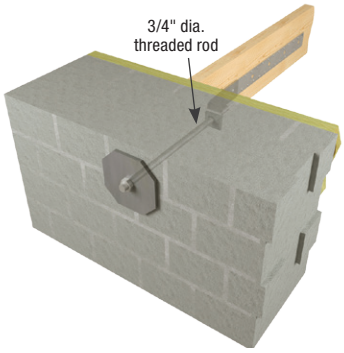
Installation:
• Install with a 3/4″ diameter steel threaded rod.

USP Stock No.	Ref. No.	Corrosion Finish
RP6	RP6	

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc



RP6



Typical RP6 installation

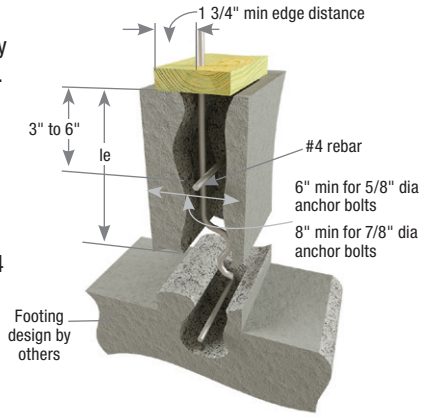
STB / STBL Anchor Bolts

Embossed ends provide guides for embedment angle and depth. An embedment line is embossed on the shaft for easy installation. Features rolled threads for high tensile strength.

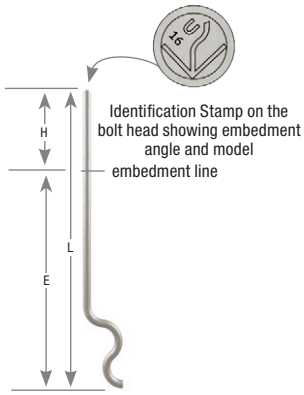
STB – For monolithic slabs and concrete stem walls.

STBL – Designed for use with 3x sill plates. Excellent choice for use with taller holdown washers like those in the PHD series.

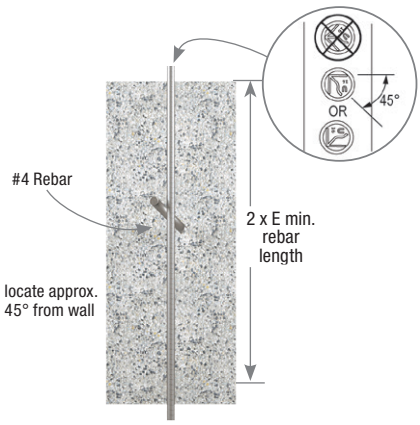
Materials: ASTM A 36 steel, also conforms to ASTM F1554 and ASTM A 307 requirements for bolts.
Finish: None
Options: See Chart for Corrosion Finish Options on page 33.
Codes: Load values are derived from data submitted to various North American building code evaluators.



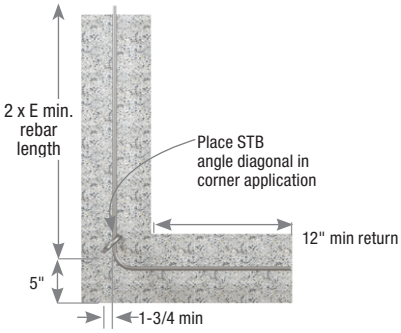
Typical STB Anchor Bolt installation



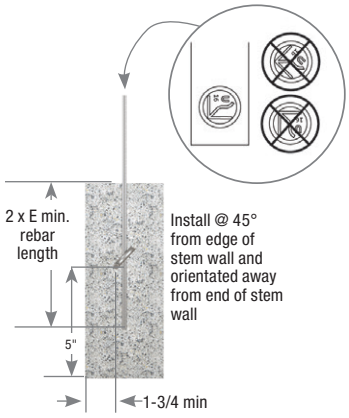
STB/STBL



Plain view along continuous stem wall installation



Plain view of corner of stem wall installation



Plain view of End of Stem Wall installation

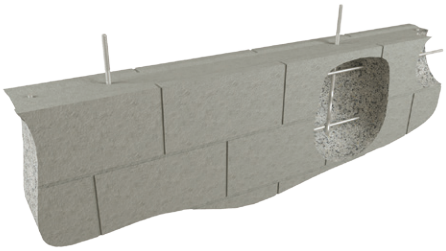
Continued on next page

STB / STBL Anchor Bolts

USP STRUCTURAL CONNECTORS MiTek

Monolithic or Stem Wall Foundations – Prior to pour, install the STB or STBL in an upright position and at a 45° angle to the wall. Install one horizontal #4 rebar at a depth of 4" (minimum). (See illustrations.)

Concrete Block Applications – Prior to cell pour, install the STB or STBL in an upright position and at a 45° angle to the wall. (See illustrations.) Use the embossed angle guide on the end of the STB or STBL shaft as a guide. Install one horizontal #4 rebar at a depth of 4" and one vertical #4 rebar maximum 48" o.c. spacing. Fill all cells with concrete having a minimum 2,500 psi compressive strength.



Typical STB/STBL concrete block installation

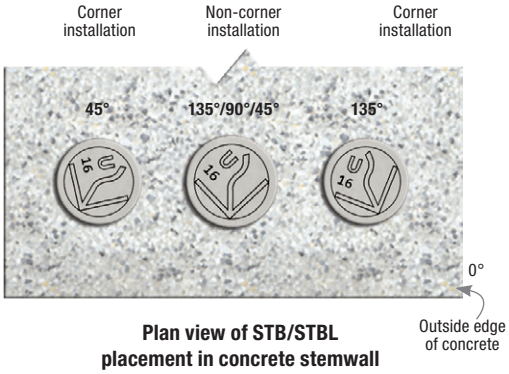
Installation:

- Select appropriate STB or STBL Anchor Bolt.
- Use normal weight concrete with minimum compressive strength of 2,500 psi.
- Minimum center-to-center spacing between bolts is 3(E) for anchors acting simultaneously in tension.
- Match embedment depth with embedment line on the STB or STBL shaft.
- The STB or STBL does not need to be tied to the rebar.
- Nuts and washers are not included.

Anchor Bolt Selection Table

USP Stock No.	2x, 3x, (2) 2x Sill Plates[1] Mono Pour
PHD2A	STB16 STBL16
TDX2-TZ	
LTS20B	
HTT45	
HTT4	
HTT16	
PHD4A	STB20 STBL20
HTT45	
TDX5	
HTT45	STB24 STBL24
HTT5	
PHD8	STB28 STBL28
UPHD8	
TD7	
TD9	
TD12	

* Recommend installation of washer under nut of anchor bolt.
1) STBL model are recommended for use with PHD and UPHD8 holdowns on (2) 2x and 3x sill plates.



Plan view of STB/STBL placement in concrete stemwall

USP Stock No.	Ref. No.	Dimensions (in) Stemwall Width	Dia.	L	H	Min. Embed. (E)	Unit	Factored Tensile Resistance[1,2] Seismic $I_eF_aS_a(0.2) < 0.35$ Midwall	Corner	End Wall	Wind $I_eF_aS_a(0.2) < 0.35$ Midwall	Corner	End Wall	Seismic $I_eF_aS_a(0.2) \geq 0.35$ Midwall	Corner	End Wall	Corrosion Finish
STB16	SSTB16	6	5/8	17-13/16	5	12-13/16	Lbs	5920	5920	5920	6770	6770	6770	4935	4935	4935	
							kN	26.33	26.33	26.33	30.12	30.12	30.12	21.95	21.95	21.95	
STB20	SSTB20	6	5/8	21-13/16	5	16-13/16	Lbs	7170	6635	6635	8185	6770	6770	5970	4975	4975	
							kN	31.90	29.52	29.52	36.41	30.12	30.12	26.56	22.13	22.13	
STB24	SSTB24	6	5/8	25-13/16	5	20-13/16	Lbs	8385	8280	8280	9585	8910	8910	6985	6545	6545	
							kN	37.30	36.83	36.83	42.64	39.64	39.64	31.07	29.11	29.11	
STB28	SSTB28	8	7/8	31	5	26	Lbs	14140	13285	13285	14575	14575	14575	10710	10710	10710	
							kN	62.90	59.10	59.10	64.84	64.84	64.84	47.64	47.64	47.64	
STB34	SSTB34	8	7/8	36	6	30	Lbs	15980	14735	14350	18225	16840	15050	13320	12280	11060	
							kN	71.09	65.55	63.83	81.07	74.91	66.95	59.25	54.63	49.20	
STB36	SSTB36	8	7/8	38	8	30	Lbs	15980	14735	14350	18225	16840	15050	13320	12280	11060	
							kN	71.09	65.55	63.83	81.07	74.91	66.95	59.25	54.63	49.20	
STBL16	SSTBL16	6	5/8	19-9/16	6-3/4	12-13/16	Lbs	5920	5920	5920	6770	6770	6770	4935	4935	4935	
							kN	26.33	26.33	26.33	30.12	30.12	30.12	21.95	21.95	21.95	
STBL20	SSTBL20	6	5/8	23-9/16	6-3/4	16-13/16	Lbs	7170	6635	6635	8185	6770	6770	5970	4975	4975	
							kN	31.90	29.52	29.52	36.41	30.12	30.12	26.56	22.13	22.13	
STBL24	SSTBL24	6	5/8	27-9/16	6-3/4	20-13/16	Lbs	8385	8280	8280	9585	8910	8910	6985	6545	6545	
							kN	37.30	36.83	36.83	42.64	39.64	39.64	31.07	29.11	29.11	
STBL28	SSTBL28	8	7/8	32-3/4	6-3/4	26	Lbs	14140	13285	13285	14575	14575	14575	10710	10710	10710	
							kN	62.90	59.10	59.10	64.84	64.84	64.84	47.64	47.64	47.64	

1) Loads may not be increased for short term loading.
2) Minimum center to center spacing between bolts is 3(E) for anchors acting in tension simultaneously.
3) Minimum edge distance is 1-3/4".
4) Concrete stemwall shall be a minimum of 6" thick for 5/8" anchor bolts and 8" for 7/8" anchor bolts.
5) End distance shall be no less than 5".
6) Connection is limited by lowest of bolt or holdown capacity.
7) Concrete block shall be minimum 10" block.

New products or updated product information are designated in **blue font**.

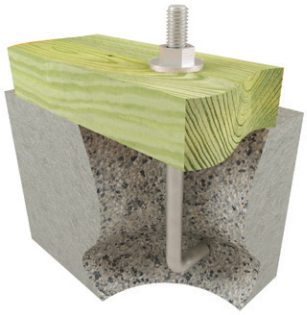
Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

AB / ABP Anchor Bolts

Anchor bolts are used to secure wood plates to foundation walls. Washers are available in various package combinations.

Materials: Bolt: ASTM F 1554, Nut: ASTM A 563, Washers: ASTM F 844
Finish: AB126-HDG, AB128-HDG, AB1212-HDG, AB5812-HDG – Hot-dip galvanized; All others – None

Installation:
- Select appropriate AB or ABP Anchor Bolt.
- Use concrete with minimum compressive strength of 2,500 psi at 28 days.
- Nuts and washers are included.
- Anchor bolts intended for use to satisfy code prescribed anchoring of mudsill plates, and shall be installed as defined in the code.
- Factored resistance shall be derived in accordance with the code.

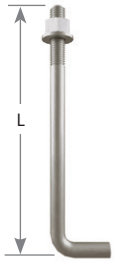


Typical AB128-HDG installation

USP Stock No.	Ref. No.	Bolt Dia.	L (in)	Corrosion Finish
AB126-HDG	-- --	1/2	6	
AB128-HDG	-- --	1/2	8	
AB1212-HDG	-- --	1/2	12	
AB5812-HDG	-- --	5/8	12	
AB6NW	-- --	1/2	6	
AB8NW	-- --	1/2	8	
ABP6NW	-- --	1/2	6	
ABP8NW	-- --	1/2	8	

Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc

ABP



AB128-HDG

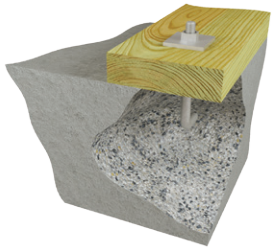
BP / HBPS / LBP / LBPS Bearing Plates

BP / LBP – Designed to meet code requirements for mudsill-to-foundation.

HBPS / LBPS – Offers anchor bolt adjustment slots.

Materials: See chart
Finish: BP / HBPS – none; LBP / LBPS – G-185 galvanizing
Options: See Chart for Corrosion Finish Options

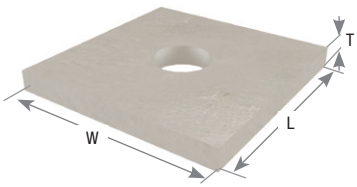
Installation:
- Bolt holes are sized 1/16" larger than Bolt Dia. shown in chart.



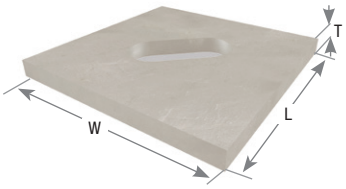
Typical Bearing Plate installation

USP Stock No.	Ref. No.	Plate Thickness (T)		Dimensions (in) W	Dimensions (in) L	Bolt Dia. (in)	Corrosion Finish
LBP12-TZ	LBP1/2, LBP1/2Z	10 Ga	9/64	2	2	1/2	
LBP58-TZ	LBP5/8, LBP5/8Z	10 Ga	9/64	2	2	5/8	
LBPS12-TZ	LBPS1/2, LBPS1/2Z	10 Ga	9/64	3	3	1/2	
LBPS58-TZ	LBPS5/8, LBPS5/8Z	10 Ga	9/64	3	3	5/8	
HBPS12	BPS1/2-3	3 Ga	1/4	3	3	1/2	
HBPS34	BPS3/4-3	3 Ga	1/4	3	3	3/4	
HBPS58	BPS5/8-3	3 Ga	1/4	3	3	5/8	
BP12	BP1/2	7 Ga	3/16	2	2	1/2	
BP582	BP5/8-2	7 Ga	3/16	2	2	5/8	
BP583	BP5/8, BP5/8-3	3 Ga	1/4	3	3	5/8	
BP343	BP3/4-3	3 Ga	1/4	3	3	3/4	

Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc



BP/LBP Standard Bearing Plate



HBPS/LBPS Slotted Bearing Plate

FT / WG Concrete Form Ties & Wedge

FT – Connect 1x and 2x nominal form lumber in low foundation walls up to 4 feet high.

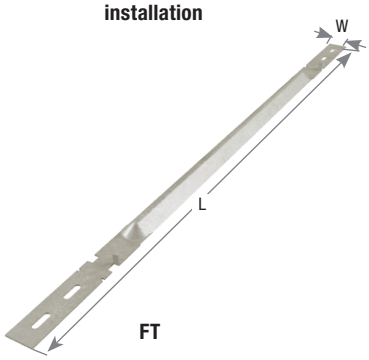
WG – V-shaped wedge assures rigidity and consistent form spacing.

Materials: FT – 18 gauge, WG – 14 gauge
Finish: G90 galvanizing

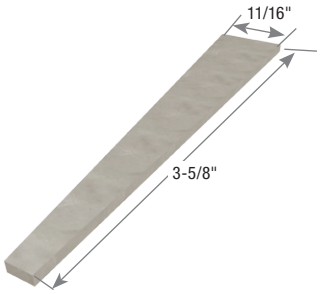
Installation:

- Use the Spacing Guide chart to determine spacing between FT units. Each level in chart assumes 12″ form boards. Wall thickness from 6″ to 12″.
- Install with "V" facing up.
- Use (2) WG wedges for each tie. Insert wedge into inside slots for 1x nominal forms and outside slots for 2x nominal forms.
- No walers or stiff-backs are used.
- Vertical ties to keep forms from separating are not included.
- Form deflection may be substantial. Check deflection, if it is critical, and move ties to compensate.
- Forming lumber is assumed to have fb of 1,000 psi.
- **Not recommended for pours greater than 4 feet in height.**

Typical FT/WG installation



FT



WG Wedge
must order separately

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Wedge		Footing Width or Wall Thickness (ft)
			W	L	Qty	Type	
FT6	WT6	18	5/8	10-5/8	2	WG	6
FT8	WT8	18	5/8	12-5/8	2	WG	8
FT10	WT10	18	5/8	14-5/8	2	WG	10
FT12	WT12	18	5/8	16-5/8	2	WG	12
WG	W1	14	11/16	3-5/8	-- --	-- --	-- --

1) May be used with either 3/4-in or 1-1/2-in forming materials.
2) Breaking strength is approximately 775 pounds ultimate. Space as necessary to prevent form blow-out.

Spacing Guide Chart

Concrete Lift Height (in)	Level 1		Level 2		Level 3		Level 4	
	1x	2x	1x	2x	1x	2x	1x	2x
12 or Less	2' 6"	4' 0"	-- --	-- --	-- --	-- --	-- --	-- --
12 - 24	1' 6"	3' 0"	2' 6"	4' 0"	-- --	-- --	-- --	-- --
24 - 36	1' 0"	2' 0"	1' 6"	3' 0"	2' 6"	4' 0"	-- --	-- --
36 - 48	0' 9"	1' 6"	1' 0"	2' 0"	1' 6"	3' 0"	2' 6"	4' 0"

1) Factor of safety against tensile failure of tie is 1.5 or more.

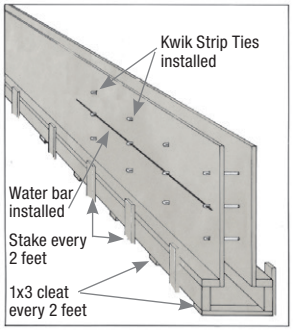
RKS Kwik Strip Ties

For foundation applications where rental forms are used. Ease of form wall erection and removal makes this system very practical and economical. Use Kwik Strip Ties to hold form walls parallel, to prevent bulging and to prevent them from collapsing while concrete is being poured. 2 x 4 studding is not required for form work.

Materials: 16 gauge Cold Roll

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Footing Width or Wall Tickness
			W	L	
RKS200	-- --	16	3/4	12-1/8	approximates 8-in

RKS



Typical RKS installation

FA3 Foundation Anchor

USP STRUCTURAL CONNECTORS MiTek

For installation into concrete slabs. The FA3 features a split flange for nailing to both mudsill and stud for greater framing versatility.

Materials: 16 gauge

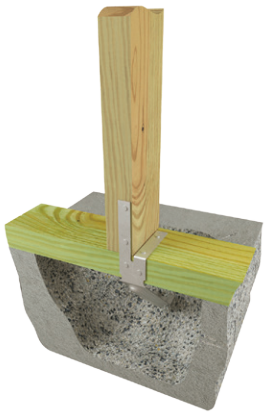
Finish: G90 galvanizing

Options: See chart for Corrosion Finish Options

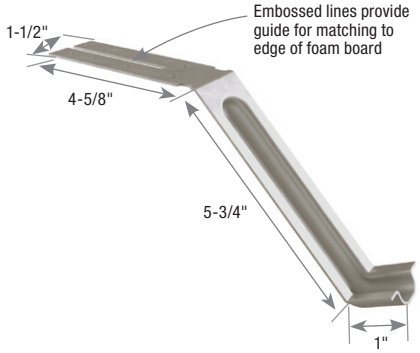
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

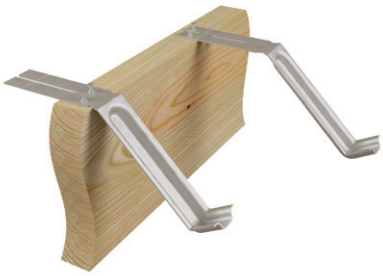
- Use all specified fasteners. See Product Notes, page 15.
- Use a minimum of two anchors per mudsill. An anchor should always be within 12" of the end of each mudsill section.
- Do not rely on these anchors to secure concrete sections together between cold joints.
- Insert into wet concrete (minimum strength of 2,500 psi). Place mudsill after concrete cures. Secure flanges to sill (and stud, if applicable), bending flanges as needed to achieve a tight fit. Fasten as directed in chart.
- Do not use in red clay brick.



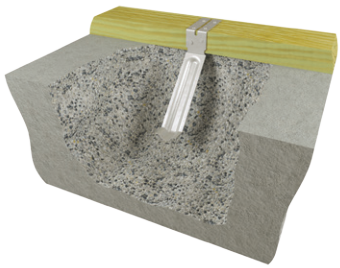
Typical FA3 installation to mudsill and stud



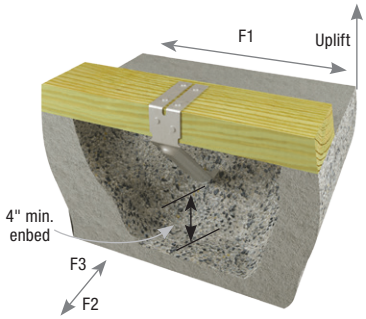
FA3



Typical FA3 form board installation



Alternate FA3 installation



Typical FA3 installation in concrete

Plate Size[3]	USP Stock No.	Ref. No.	Ga.	Fastener Schedule[1,7] Sill Plate Side Qty	Sill Plate Top Qty	Stud Qty	Type	Concrete Condition[6]	Unit	DF-L Factored Resistance[2,3,4,5] $I_EF_aS_a(0.2) < 0.35$ Uplift 115%	F1 115%	F2 115%	$I_EF_aS_a(0.2) \geq 0.35$ Uplift 115%	F1 115%	F2 115%	S-P-F Factored Resistance[2,3,4,5] $I_EF_aS_a(0.2) < 0.35$ Uplift 115%	F1 115%	F2 115%	$I_EF_aS_a(0.2) \geq 0.35$ Uplift 115%	F1 115%	F2 115%	Corrosion Finish
2 x 4 or 2 x 6	FA3 Mudsill Only	-- --	16	2	4	-- --	10d x 1-1/2	Uncracked	Lbs	1045	645	760	1045	645	760	900	555	655	900	555	655	Triple Zinc
									kN	4.65	2.87	3.38	4.65	2.87	3.38	4.00	2.47	2.91	4.00	2.47	2.91	
								Cracked	Lbs	1020	565	760	875	485	670	875	485	655	755	415	575	
									kN	4.54	2.51	3.38	3.89	2.16	2.98	3.89	2.16	2.91	3.36	1.85	2.56	
	FA3 Mudsill & Stud			2	2	2	10d x 1-1/2	Uncracked	Lbs	780	635	480	780	635	480	670	545	415	670	545	415	
									kN	3.47	2.82	2.14	3.47	2.82	2.14	2.98	2.42	1.85	2.98	2.42	1.85	
								Cracked	Lbs	780	565	480	780	485	480	670	485	415	670	415	415	
									kN	3.47	2.51	2.14	3.47	2.16	2.14	2.98	2.16	1.85	2.98	1.85	1.85	

1) Predrilled holes are not required.
2) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
3) FA3 capacities are based on using a single-ply 2x sill plate.
4) Factored resistances are based on a minimum stemwall thickness of 6-inches.
5) Minimum anchor spacing for full capacity is 8 inches. For spacing less than that reduce capacity proportionally.
6) Minimum concrete strength f'c = 2500 psi
7) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long.

Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc

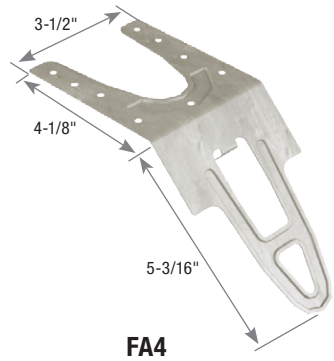
FA4 Foundation Anchor

The FA4 foundation anchors can be installed as a replacement for the 5/8" diameter anchor bolts or also the commonly used 1/2" diameter anchor bolts while achieving the same load carrying capacity.

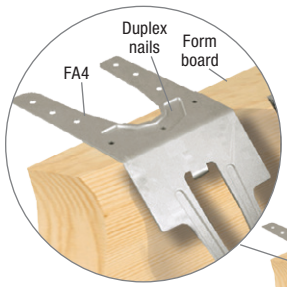
Materials: 16 gauge
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options

Installation:

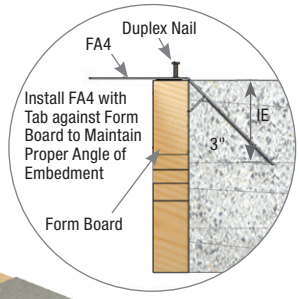
- The FA4 can be mounted to the form board before placing the concrete or inserted into the wet concrete after it is poured. See Detail A installation.
- Place the mudsill in position after the concrete cures. Secure the FA4 to the mudsill (and stud, if applicable) by bending the flanges as needed for a tight fit and nailing into place with the size and quantity of fasteners specified in the chart.



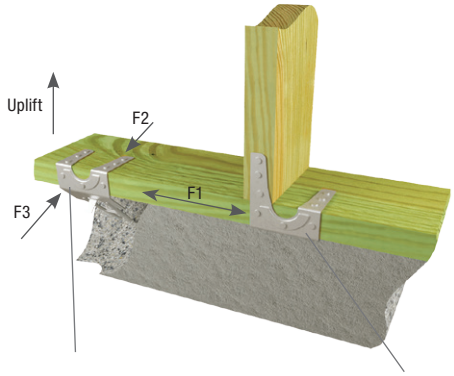
FA4



Detail A



Detail B



Typical FA4 Mudsill only installation

Typical FA4 Mudsill & Stud installation

Typical FA4 form board installation

Plate Size	USP Stock No.	Ref. No.	Ga.	Fastener Schedule[6] Sill Plate[4] Side Qty	Sill Plate[4] Top Qty	Stud Qty	Type	Concrete[3]	Unit	DF Factored Resistance[1,2,5] Wind and $I_E F_a S_a(0.2) < 0.35$ Uplift 115%	F1 115%	F2 115%	F3 115%	$I_E F_a S_a(0.2) \geq 0.35$ Uplift 115%	F1 115%	F2 115%	F3 115%	S-P-F Factored Resistance[1,2,5] Wind and $I_E F_a S_a(0.2) < 0.35$ Uplift 115%	F1 115%	F2 115%	F3 115%	$I_E F_a S_a(0.2) \geq 0.35$ Uplift 115%	F1 115%	F2 115%	F3 115%	Corrosion Finish
2 x 4 or 2 x 6	FA4 Mudsill Only	MASA	16	3	6	-- --	10d x 1-1/2	Uncracked	Lbs	1615	2265	1825	990	1395	2035	1395	990	1450	2030	1635	885	1395	2030	1395	885	
									kN	7.18	10.08	8.12	4.40	6.21	9.05	6.21	4.40	6.45	9.03	7.27	3.94	6.21	9.03	6.21	3.94	
								Cracked	Lbs	1340	1900	1340	975	1005	1425	1005	730	1340	1900	1340	885	1005	1425	1005	730	
									kN	5.96	8.45	5.96	4.34	4.47	6.34	4.47	3.25	5.96	8.45	5.96	3.94	4.47	6.34	4.47	3.25	
	FA4 Mudsill & Stud			3	3	3	10d x 1-1/2	Uncracked	Lbs	1395	1485	1915	780	1395	1485	1395	780	1250	1335	1915	700	1250	1335	1395	700	
									kN	6.21	6.61	8.52	3.47	6.21	6.61	6.21	3.47	5.56	5.94	8.52	3.11	5.56	5.94	6.21	3.11	
								Cracked	Lbs	1340	1485	1340	780	1005	1425	1005	730	1250	1335	1340	700	1005	1335	1005	700	
									kN	5.96	6.61	5.96	3.47	4.47	6.34	4.47	3.25	5.56	5.94	5.96	3.11	4.47	5.94	4.47	3.11	

1) Short-term load duration factor 115% for wind and earthquake has been taken into consideration; no further increased is allowed.
2) Factored resistances are based on a minimum stemwall thickness of 6-inches, minimum end distance of 5-1/2" and minimum spacing of 7 inches.
3) Minimum 28-day concrete compressive strength f'c = 2500 psi (17.25 MPa).
4) Factored resistances are based on using a single-ply 2x sill plate. Sill plate may be treated lumber.
5) When loads in more than one direction are present, interaction effects shall be considered using the unity equation - Refer to USP catalog Design Notes (1).
6) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc

ST Foundation Anchors

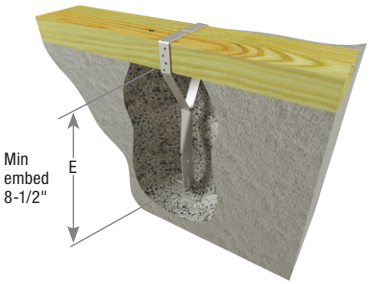
ST1-TZ – For installation into concrete slab or poured stemwalls. The ST1-TZ features a prebent base flange to assure proper anchoring into concrete.

ST2-TZ – For installation into concrete slab, poured stemwalls or concrete/masonry. The ST2-TZ features a prebent base flange to assure proper anchoring into concrete.

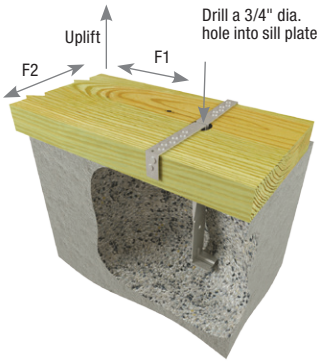
Materials: 18 gauge
Finish: G-185 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

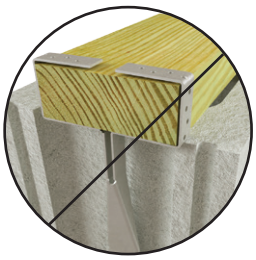
- Use all specified fasteners. See Product Notes, page 15.
- Use a minimum of two anchors per mudsill. An anchor should always be within 12" of the end of each mudsill section.
- Do not rely on these anchors to secure concrete sections together between cold joints.
- Spread sill flanges to mudsill width prior to insertion into wet concrete (minimum strength of 2,500 psi, 13.8 MPa). Alternate installation is possible by inserting unbent flanges through 3/4" center hole predrilled in mudsill. Foundation anchors may also be attached to mudsill and then inserted into wet concrete. When installing ST2-TZ into concrete block, fill cells with grout with a minimum strength of 2,500 psi or 13.8 MPa. Concrete block edges may need to be beveled to facilitate installation.
- ST2-TZ in masonry construction shall be installed in the core of the block and grouted with concrete grout designed for that purpose. In no case, shall they be installed in a mortar joint.
- Do not use in red clay brick.



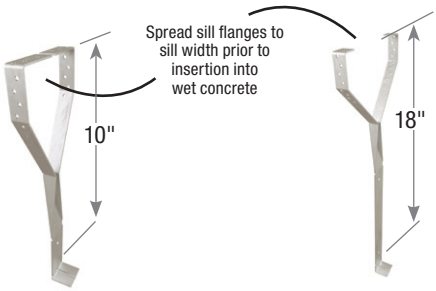
Typical ST1-TZ installation in concrete



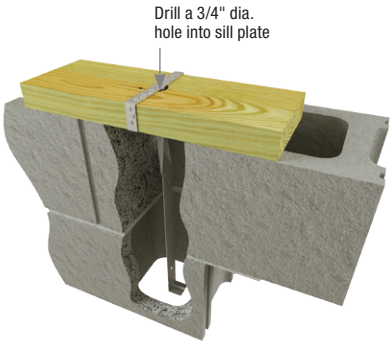
Alternate ST1-TZ installation with 3/4" center hole



DO NOT install ST1-TZ and ST2-TZ without pre-bending sill flanges in "Y" configuration



ST1-TZ **ST2-TZ**



Alternate ST2-TZ installation with 3/4" center hole in mudsill

Plate Size	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2] Mudsill Top Qty	Mudsill Side Qty	Type	Min. Embed (E) (in)	Unit	DF Factored Resistance[1] Uplift 115%	F1 115%	F2 115%	S-P-F Factored Resistance[1] Uplift 115%	F1 115%	F2 115%	Corrosion Finish
2 x 4-6	ST1-TZ	MAB15, MAB15Z	18	4	4	8d x 1-1/2 HDG	8-1/2	Lbs	1000	680	1005	855	585	860	
								kN	4.45	3.02	4.47	3.80	2.60	3.83	
	ST2-TZ	MAB23, MAB23Z	18	4	4	8d x 1-1/2 HDG	16-1/2	Lbs	1000	680	1005	855	585	860	
								kN	4.45	3.02	4.47	3.80	2.60	3.83	

1) Short term load duration has been taken into consideration. No increase allowed.
2) **NAILS:** 8d x 1-1/2 nails are 0.131" diameter by 1-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

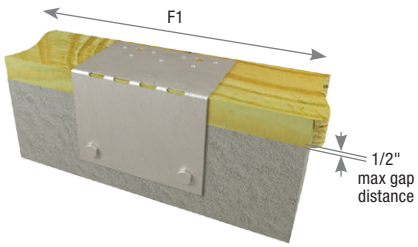
SFA / SFJA Foundation Anchors

SFA – Mudsill anchors for retrofit applications. Features a slotted bend line for easy adjustment when foundation walls are slanted.

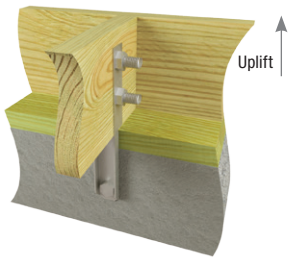
SFJA – Ties floor joists directly to foundations with bolt fastening.

Materials: 12 gauge
Finish: G90 galvanizing

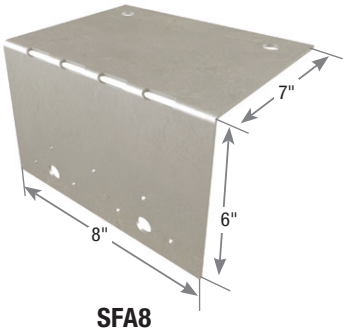
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- A design professional must specify anchor bolt type, length, and embedment. Anchor bolts are laterally loaded. Follow installation instructions for epoxy adhesive.
- Factored resistances assume a minimum concrete compressive strength of 2,500 psi.
- Bolts must be ordered separately.



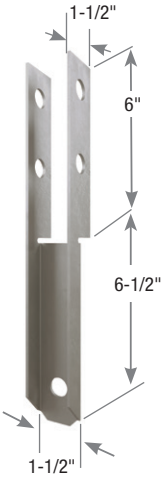
Typical SFA8 installation



Typical SFJA installation



SFA8



SFJA

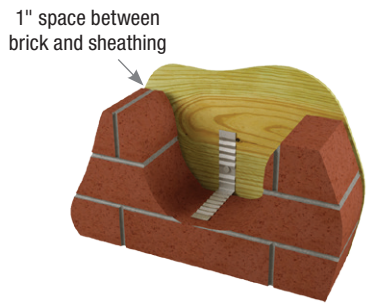
USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule: Anchor Bolts Qty	Anchor Bolts Dia.	Framing: Nails[3] Qty	Nails[3] Type	Bolts[2] Qty	Bolts[2] Dia.	DF Factored Resistance[1] F1 115%	DF Uplift 115%	S-P-F Factored Resistance[1] F1 115%	S-P-F Uplift 115%
SFJA	FJA	12	1	5/8	-- --	-- --	2	5/8	-- --	1620	-- --	1360
SFA8	-- --	12	2	1/2	7	10d x 1-1/2	-- --	-- --	1085	-- --	915	-- --

1) The 115% values are short-term loads such as wind and earthquake.
2) Bolts shall conform to ASTM A 307 or better.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.

WT Wall Ties

Materials: 22 gauge
Finish: G90 galvanizing; WT22B-HDG – Hot-dip galvanized
Options: See chart for Corrosion Finish options

Installation:
- Use nails appropriate for intended use. See Product Notes, page 15.
- The opposite end must be bonded in the mortar joint of brick facade.
- Meets prescriptive requirements of CSA A370 for corrugated strip ties.



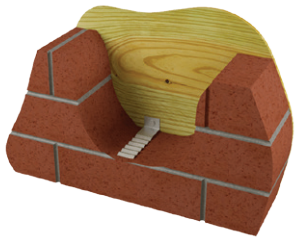
Typical WT17HD/WT22 installation

WT17HD/WT22

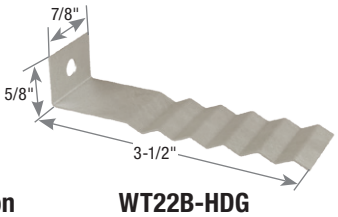
USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2] Qty	Fastener Schedule[2] Type	Corrosion Finish
WT17HD	-- --	22	2	10d	
WT22[1]	BTB	22	2	10d	
WT22B-HDG	-- --	22	1	#10 HDG wood screw	

1) WT22 is bulk packed in 500 pieces.
2) **NAILS**: 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



Typical WT22B-HDG installation



WT22B-HDG

KGLB / KGLBT / KHGLB Laminated Beam Seats

USP STRUCTURAL CONNECTORS MiTek

KGLB – Single bolt, bearing only.

KGLBT – Double bolt with Structural Tee provides uplift and horizontal resistance.

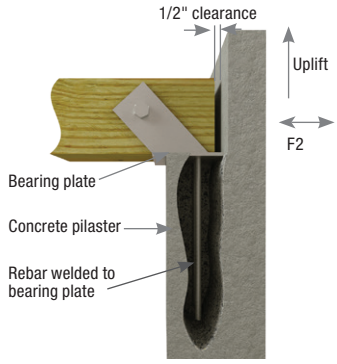
KHGLB – Double bolt design provides uplift and horizontal resistance.

Materials: Flanges – 1/4" steel
Bearing Plate – See chart for "T" dimension
Anchor dowels – 3/4" x 12" rebar

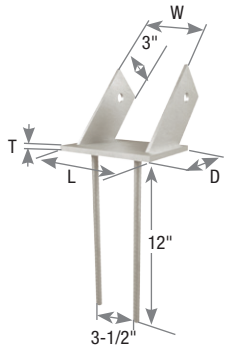
Finish: USP primer
Options: Consult USP for non-catalog variations.
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

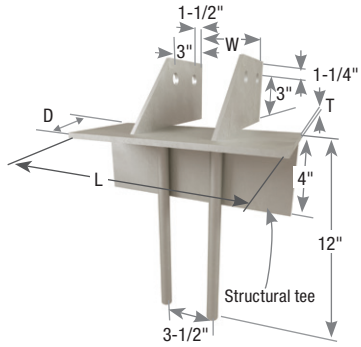
- Use all specified fasteners. See Product Notes, page 15.
- Bolt holes shall be a minimum of 1/32" to a maximum of 1/16" larger than the bolt diameter.
- Concrete or masonry walls must be checked by a design professional for adequacy to resist lateral or uplift loads transferred from the beam seat anchor.
- Bolts must be ordered separately. See page 17 for available sizes.



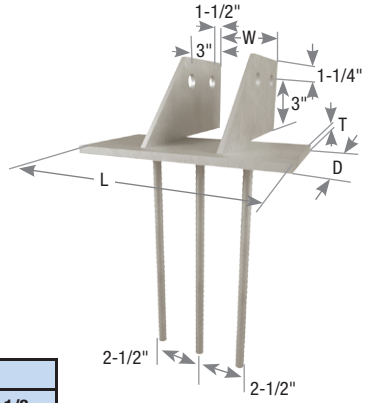
Typical KGLB installation



KGLB



KGLBT



KHGLB

USP Stock No.	Ref. No.	Dimensions (in) W	L	T	D	Bolt Schedule Qty	Dia. (in)	Factored Bearing Resistance[1,4,5] Masonry @ 375 psi[2] Lbs	kN	Concrete[3] Lbs	kN
KGLB5A	GLB5A	5-1/4	7	1/4	5	1	5/8	16980	75.53	16980	75.53
KGLB5B	GLB5B	5-1/4	7	3/8	6	1	5/8	20370	90.61	20370	90.61
KGLB5C	GLB5C	5-1/4	7	3/8	7	1	5/8	23765	105.72	23765	105.72
KGLB5D	GLB5D	5-1/4	7	3/8	8	1	5/8	27160	120.82	27160	120.82
KGLB7A	GLB7A	6-7/8	9	1/4	5	1	3/4	22355	99.44	22355	99.44
KGLB7B	GLB7B	6-7/8	9	3/8	6	1	3/4	26825	119.33	26825	119.33
KGLB7C	GLB7C	6-7/8	9	3/8	7	1	3/4	31300	139.23	31300	139.23
KGLB7D	GLB7D	6-7/8	9	3/8	8	1	3/4	35770	159.12	35770	159.12

1) Beams must fully bear on plates.
2) Factored bearing resistances are based on the bearing value listed times the bearing area equal to W x D. (Note that full bearing plate area is not used.) Factored bearing resistances shall be reduced where limited by wood bearing on the plate.
3) Factored bearing resistances on concrete are based on factored bearing strength in compression perpendicular to grain (ϕ fcp) of 662 psi and actually beam width times beam bearing length.
4) Designer shall specify minimum edge and spacing requirements in masonry or concrete structure.
5) Concrete or masonry support structure is assumed adequate to support loads listed.

USP Stock No.	Ref. No.	Dimensions (in) Range W	D	L	T	Bolt Schedule Qty	Dia. (in)	Factored Bearing Resistance[1,5] Unit	Masonry @ 375 psi	On Concrete with Beam Width[1] 5-1/8	6-3/4	8-3/4	10-3/4	F2[3,4] 100%	Min. 3-1/8 Beam Width (W) Uplift 115%[3]
KHGLBA	HGLBA	3-1/4 to 9	5	10	3/8	2	3/4	Lbs	27000	16980	22355	28980	-- --	9445	4045
								kN	120.11	75.53	99.44	128.91	-- --	42.02	17.99
KHGLBB	HGLBB	3-1/4 to 9	6	10	3/8	2	3/4	Lbs	32400	20370	26825	34775	-- --	9445	4045
								kN	144.13	90.61	119.33	154.69	-- --	42.02	17.99
KHGLBC	HGLBC	3-1/4 to 9	7	10	3/8	2	3/4	Lbs	37800	23765	31300	40570	-- --	9445	4045
								kN	168.15	105.72	139.23	180.47	-- --	42.02	17.99
KHGLBD	HGLBD	3-1/4 to 9	8	10	3/8	2	3/4	Lbs	43200	27160	35770	46370	-- --	9445	4045
								kN	192.17	120.82	159.12	206.27	-- --	42.02	17.99
KGLBT512	GLBT512	3-1/4 to 11	5-1/2	12	1/3	2	3/4	Lbs	35640	18670	24595	31880	39170	9445	4045
								kN	158.54	83.05	109.41	141.81	174.24	42.02	17.99
KGLBT612	GLBT612	3-1/4 to 11	6-1/2	12	3/8	2	3/4	Lbs	42120	22070	29065	37680	46290	9445	4045
								kN	187.37	98.18	129.29	167.62	205.92	42.02	17.99
KGLBT516	GLBT516	3-1/4 to 15	5-1/2	16	1/3	2	3/4	Lbs	39170	18670	24595	31880	39170	9445	4045
								kN	174.24	83.05	109.41	141.81	174.24	42.02	17.99
KGLBT616	GLBT616	3-1/4 to 15	6-1/2	16	3/8	2	3/4	Lbs	46290	22070	29065	37680	46290	9445	4045
								kN	205.92	98.18	129.29	167.62	205.92	42.02	17.99
KGLBT520	GLBT520	3-1/4 to 19	5-1/2	20	1/3	2	3/4	Lbs	39170	18670	24595	31880	39170	9445	4045
								kN	174.24	83.05	109.41	141.81	174.24	42.02	17.99
KGLBT620	GLBT620	3-1/4 to 19	6-1/2	20	3/8	2	3/4	Lbs	46290	22070	29065	37680	46290	9445	4045
								kN	205.92	98.18	129.29	167.62	205.92	42.02	17.99

1) Beams must fully bear on plates.
2) Factored bearing resistances on concrete are based on factored bearing strength in compression perpendicular to grain (Φ fcp) of 662 psi and actually beam width times beam bearing length.
3) The 115% values are short-term loads such as wind and earthquake and are based on bolt in wood values only. Factored resistances assume concrete or masonry structure is adequate to resist loads in those directions.
4) Factored resistances must be be reduced if the allowable lateral load (F2) for masonry or concrete column governs.
5) Designer shall specify minimum edge and spacing requirements in masonry or concrete structure.

KGH Floor Girder Hangers

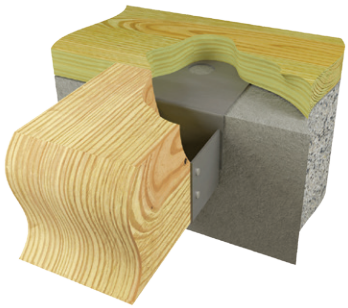
USP STRUCTURAL CONNECTORS MiTek

Connects girder beams to foundation walls and eliminates the need to block out pockets or inserts while forming foundation.

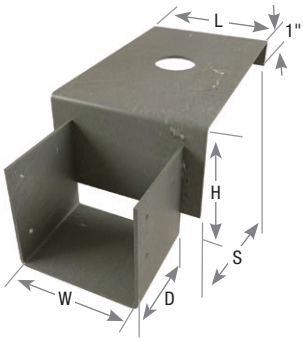
Materials: 12 gauge
Finish: USP primer
Options: Consult USP for non-catalog design variations.
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- H dimension assumes 2x mudsill. For 3x or larger mudsill, please contact factory.
- The 1-1/2" hole, centered in the saddle, allows for installation over any protruding foundation bolts. This is not required.
- Placement of a wood sill over the top of the KGH top flange is required to achieve factored resistance.



Typical KGH installation



KGH

Girder Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	L	D	S	H	Fastener Schedule[3] Qty	Type	DF Factored Resistance Download 100%[1,2] Lbs	kN	SPF Factored Resistance Download 100%[1,2] Lbs	kN
4 x 6	KGH46-6	GH46-6	12	3-9/16	5	3-1/4	6	4	4	16d	2975	13.23	2335	10.39
	KGH46-8	GH46-8	12	3-9/16	5	3-1/4	8	4	4	16d	2975	13.23	2335	10.39
4 x 8	KGH48-6	GH48-6	12	3-9/16	5	3	6	6	4	16d	2975	13.23	2335	10.39
	KGH48-8	GH48-8	12	3-9/16	5	3	8	6	4	16d	2975	13.23	2335	10.39
6 x 6	KGH66-6	GH66-6	12	5-1/2	6-1/4	3	6	4	4	16d	2955	13.14	2320	10.32
	KGH66-8	GH66-8	12	5-1/2	6-1/4	3	8	4	4	16d	2955	13.14	2320	10.32
6 x 8	KGH68-6	GH68-6	12	5-1/2	6-1/4	3	6	6	4	16d	2955	13.14	2320	10.32
	KGH68-8	GH68-8	12	5-1/2	6-1/4	3	8	6	4	16d	2955	13.14	2320	10.32

1) Factored download resistances shall not be increased for short-term load duration.
2) Placement of a wood sill over the top of the KGH top flange is required to achieve listed factored download resistances.
3) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Specialty Options Chart –
refer to Specialty Options pages 220, 222-223 for additional details.

Option	Skewed[1,2]	Saddle
Range	1° to 45°	-- --
Factored Resistance	100% of table load.	100% of table load per side.
Ordering	Add *SK*, angle required, right (*R*) or left (*L*), and square cut (*SQ*) or bevel cut (*BV*) to product number. Ex. KGH46-6_SK45R_BV	Add SA, and saddle width required to product number. Ex. KGH46-6_SA=5-1/2″

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.

KGH saddle

JP Adjustable Support Columns

Adjustable Support Columns may be used to support carport roofs and beams carrying loads not more than two wood frame floors, where the length of joists carried by such beams does not exceed 16' and a live load on any floor does not exceed 50 lbs/ft^2.

Materials: 3 gauge steel plates (3-1/2″ x 6″); 12 gauge outer tube (2-3/4″ O.D); 11 gauge inner tube (2-1/2″ O.D.)
Finish: Grey Primer Paint
Codes: Conforms to NBC 2010, Article 9.17.3.4.(1) and to CAN/CGSB-7.2-94.

Installation:

- Elevate top tubing to approximate height and insert locking pin. Rotate jack screw to desired height, then fasten top plate in position. Ensure top and bottom plates are properly fastened to supported beam members and properly aligned to the supported base footing. Always ensure product is installed 90º to beam and footing.
- **Fasten the supported beam to the top plate with two (2) 1/4" x 2" lag screws.**

JP

Typical JP installation

USP Stock No.	Ref. No.	Adjustable Height		Allowable Load[1,3]		Factored Resistance[2,3]	
		in	mm	Lbs	kN	Lbs	kN
JP24	-- --	17 - 24	432 - 610	8555	38.06	12320	54.80
JP36	-- --	24 - 36	610 - 914	8555	38.06	12320	54.80
JP60	-- --	36 - 60	914 - 1524	8555	38.06	12320	54.80
JP96	-- --	60 - 96	1524 - 2438	8555	38.06	12320	54.80
JP108	-- --	72 - 108	1829 - 2743	8177	36.37	11775	52.38

1) Allowable loads were established in accordance with CAN/CGSB-7.2-94.
2) The factored resistances given above were soft converted by multiplying the allowable loads by 1.44.
3) The bearing resistance of the supported beam should be checked by the building designer using the appropriate CSA standard.
New products or updated product information are designated in **blue font**.

Replacement Parts for Adjustable Support Columns

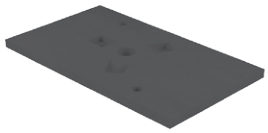
USP Stock No.	Description	Qty/ Package
JPCP	Setting Pin	1
JPSN	Screw & Nut Assembly	1
JPSP	6" x 7" Steel Plate	15
JPSSN	Screw & Nut Assembly	1
JPTP	Top Plate	1

JPCP

JPSN

JPSP

JPSSN



JPTP

T2JP Type 2 Adjustable Support Columns

USP STRUCTURAL CONNECTORS MiTek

Type 2 Adjustable Support Columns are designed and tested to meet or exceed the CAN/CGSB-7.2-94 Adjustable Steel Columns standard.

Materials: Top & Bottom Plates (4-1/2" x 6") – 3 gauge
T2JPLD Tube (2-1/2" x 2-1/2") – 11 gauge
T2JPMD Tube (3" x 3") – 10 gauge
T2JPHD Tube (3" x 3") – 8 gauge

Finish: T2JPLD & T2JPHD Tube – Powder-Coated Red Paint
T2JPMD Tube – Powder-Coated Black Paint
Plates – Grey Primer Paint

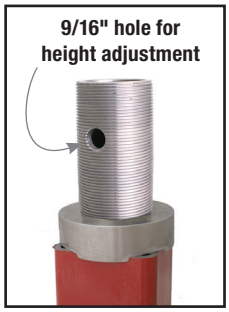
Installation:
Turn threaded collar to extend the column to the desired height.
Secure the top plate to wood beam with four (4) ¼" x 2" lag screws.

- Ensure column is installed in a vertical and plumb position.
- Column base shall be aligned and secured to a proper supporting slab.
- Top plate shall cover the full width of the supported beam. Beam shall be centered on the top plate and continuous across the entire length of the plate.

Light & Heavy duty

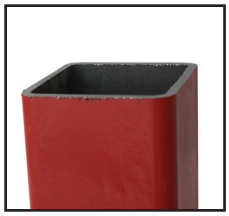
Medium duty

Light Duty Type 2 Column										
USP Stock No.	Adjustable Height		Extended Length		Allowable Load (100%)[1,3]			Factored Resistance (100%)[2,3]		
	in	mm	in	mm	kN	Lbs	kg	kN	Lbs	kg
T2JPLD84	80 - 84	2032 - 2134	84	2134	75.2	16900	7665	115.8	26000	11815
T2JPLD88	84 - 88	2134 - 2235	88	2235	68.9	15500	7030	108.1	24300	11020
T2JPLD90	86 - 90	2184 - 2286	90	2286	66.7	15000	6805	105.4	23700	10750
T2JPLD96	92 - 96	2337 - 2438	96	2438	60.5	13600	6170	97.4	21800	9935
T2JPLD102	98 - 102	2489 - 2591	102	2591	56.9	12800	5805	89.2	20050	9095
T2JPLD108	104 - 108	2642 - 2743	108	2743	54.3	12200	5535	82.2	18400	8385
T2JPLD114	110 -114	2794 - 2896	114	2896	51.2	11500	5215	75.7	17000	7710
T2JPLD120	116 - 120	2946 - 3048	120	3048	48.5	10900	4945	69.8	15600	7120



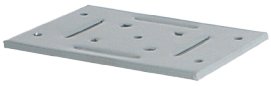
Adjustment assembly

Medium Duty Type 2 Column										
USP Stock No.	Adjustable Height		Extended Length		Allowable Load (100%)[1,3]			Factored Resistance (100%)[2,3]		
	in	mm	in	mm	kN	Lbs	kg	kN	Lbs	kg
T2JPMD84	80 - 84	2032 - 2134	84	2134	135.2	30400	13790	184.6	41500	18825
T2JPMD88	84 - 88	2134 - 2235	88	2235	122.8	27600	12520	176.1	39600	17960
T2JPMD90	86 - 90	2184 - 2286	90	2286	117.4	26400	11975	171.7	38600	17510
T2JPMD96	92 - 96	2337 - 2438	96	2438	106.8	24000	10885	160.6	36100	16375
T2JPMD102	98 - 102	2489 - 2591	102	2591	101.9	22900	10385	149.7	33650	15265
T2JPMD108	104 - 108	2642 - 2743	108	2743	99.2	22300	10115	139.7	31400	14245
T2JPMD114	110 - 114	2794 - 2896	114	2896	97.9	22000	9980	133.0	29900	13560
T2JPMD120	116 - 120	2946 - 3048	120	3048	97.4	21900	9935	121.0	27200	12340



Square tube design

Heavy Duty Type 2 Column										
USP Stock No.	Adjustable Height		Extended Length		Allowable Load (100%)[1,3]			Factored Resistance (100%)[2,3]		
	in	mm	in	mm	kN	Lbs	kg	kN	Lbs	kg
T2JPHD84	80 - 84	2032 - 2134	84	2134	176.1	39600	17960	222.5	49900	22685
T2JPHD88	84 - 88	2134 - 2235	88	2235	162.8	36600	16600	210.4	47300	21455
T2JPHD90	86 - 90	2184 - 2286	90	2286	157.9	35500	16100	206.4	46400	21045
T2JPHD96	92 - 96	2337 - 2438	96	2438	142.8	32100	14560	193.5	43400	19730
T2JPHD102	98 - 102	2489 - 2591	102	2591	133.4	30000	13610	179.3	40300	18280
T2JPHD108	104 - 108	2642 - 2743	108	2743	125.9	28300	12835	167.7	37600	17105
T2JPHD114	110 -114	2794 - 2896	114	2896	122.3	27500	12475	156.2	35100	15920
T2JPHD120	116 - 120	2946 - 3048	120	3048	119.2	26800	12155	145.5	32700	14840
T2JPHD144	140 - 144	3556 - 3658	144	3658	94.7	21300	9660	110.6	24800	11250



Universal plate

1) The Allowable Load values have been determined thru testing standards prescribed in the National Research Council Evaluation Directive for Adjustable Steel Columns using a safety factor of 2.25.
2) The Factored Resistance (ΦPn) values are established in accordance with the Canadian Standards Association S16, Design of Steel Structures, using a Resistance Factor Φ = 0.90.
3) The bearing resistance of the supported beam should be checked by the building designer using the appropriate CSA standard.

New products or updated product information are designated in **blue font**.

- **HEAVY DUTY ADJUSTMENT ASSEMBLY FOR MAXIMUM LOADS**
- **MODULAR DESIGN FOR GREATEST JOB SITE FLEXIBILITY**
- **SQUARE POST FOR EASY AND ACCURATE CUT DOWN**
- **USE REBAR/ROD THROUGH 9/16" HOLE FOR HEIGHT ADJUSTMENT**

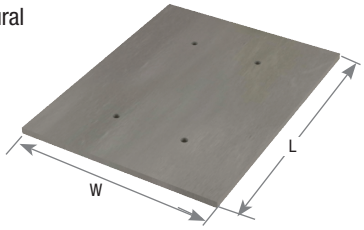
T2TP Type 2 Top Plates

Type 2 Top Plates are compatible with Type 2 Adjustable Support Columns and provide additional bearing for Structural Composite Lumber (SCL) beams and dimensional lumber. They are easily placed and aligned on top of the standard steel column top plate supplied with each USP Type 2 column and can be quickly fastened to the supported beam.

T2TP527 – 5-1/4" bearing width (Typical: 3 ply 1-3/4" LVL or 6x beam)

T2TP79 – 7" bearing width (Typical: 4 ply 1-3/4" LVL or 8x beam)

Materials: 3 gauge ASTM A 36 steel
Finish: USP primer



T2TP79
(T2TP527 similar)

Installation:
- Place Top Plate on top of standard Type 2 Top Plate.
- Align holes in Top Plate with holes in standard Type 2 Top Plate.
- Install appropriate lag screws through stacked top plates into bottom of supported beam.
- T2TP shall cover the full width of the supported beam. Beam shall be centered on the T2TP and continuous across the entire length of the plate.

Typical T2TP79 installation
(T2TP527 similar)

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Fastener Schedule Qty	Fastener Schedule Type	DF Factored Resistance Bearing (100%) Lbs	DF Factored Resistance Bearing (100%) kN	S-P-F Factored Resistance Bearing (100%) Lbs	S-P-F Factored Resistance Bearing (100%) kN
T2TP527	--	3	5-1/4	7	4	1/4" x 2" Lag Screw	29300	131.3	22600	101.3
T2TP79	--	3	7	9	4	1/4" x 2" Lag Screw	38500	172.6	34000	152.4

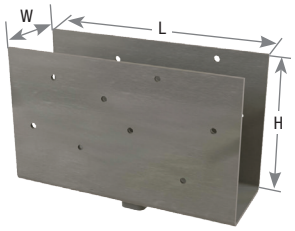
1) Factored resistances are for standard term loading; reduce or increase for other load durations in accordance with the code.
2) Bearing loads are based on compression perpendicular to grain values published in the Canadian Standards Association CSA-O86-14 and having the top plate in full contact with the supported member.
3) Factored resistances are based on lumber with a specific gravity of DF = 0.49 and S-P-F = 0.42 and a moisture content of 19% or less.
4) Lag Screws are not supplied. WS2 Wood Screws (1/4" dia. x 2" long) may be ordered separately and used in lieu of lag screws.
5) Beams shall be designed to support the required loads. Beam shear may limit loads to less than listed loads for device.
6) The factored resistance of the T2TP may exceed the column capacity. Refer to the Type 2 Column load tables for the maximum factored resistance based on column length.

New products or updated product information are designated in **blue font**.

T2CC Type 2 Column Caps

Cap only version for Type 2 Adjustable Support Columns. Adds bearing capacity and resists beam rotation.

Materials: T2CC35: 7 gauge ASTM A1011; T2CC525, T2CC71: 3 gauge ASTM A 36 steel
Finish: USP primer



T2CC35

Installation:
- Replaces standard Type 2 Top Plate.
- Slide column cap tube into top of existing threaded pipe component for complete adjustability.
- WS3 Wood Screws, 1/4"dia. x 3" long, are supplied with T2CC Column Caps.
- Beam shall be continuous across the entire length of the column cap.

Typical T2CC installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Dimensions (in) L	Fastener Schedule[4] Beam Qty	Fastener Schedule[4] Beam Type	DF Factored Resistance Bearing (100%) Lbs	DF Factored Resistance Bearing (100%) kN	S-P-F Factored Resistance Bearing (100%) Lbs	S-P-F Factored Resistance Bearing (100%) kN
T2CC35	--	7	3-5/8	6-1/2	11	16	WS3	31270	139.1	23675	105.3
T2CC525	--	3	5-1/4	8	13	16	WS3	54115	240.7	40970	182.2
T2CC71	--	3	7-1/8	6-1/2	11	16	WS3	62540	278.2	47350	210.6

1) Factored resistances are for standard term loading; reduce or increase for other load durations in accordance with the code.
2) Bearing loads are based on compression perpendicular to grain values published in CSA O86-14 and having the bucket base in full contact with the supported member.
3) Factored resistances are based on lumber with a specific gravity of DF-L = 0.49 and S-P-F = 0.42 and a moisture content of 19% or less.
4) WS3 Wood Screws (1/4" dia. x 3" long) are included with T2CC Column Caps.
5) Beams shall be designed to support the required loads. Beam shear may limit loads to less than listed loads for device.
6) The factored resistance of the T2CC may exceed the column capacity. Refer to the Type 2 Column load tables for the maximum factored resistance based on column length.

New products or updated product information are designated in **blue font**.

PHD / PHDA Predeflected Holdowns

Reduces eccentricity in the studs/post with decreased centerline dimension. No thru-bolts to countersink.

Materials: See chart.

Finish: G90 galvanizing

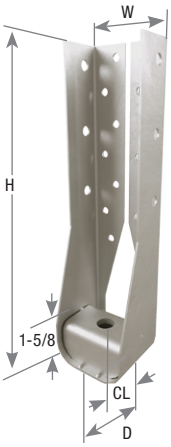
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- **Place the PHD/PHDA over the anchor bolt. No washer is required.**
- Install with USP's code evaluated WS3 (1/4" x 3") Wood Screws, which are provided with the holdown.
- Tighten anchor bolt nuts finger tight, snug, to base, plus 1/3 to 1/2 additional turns with a wrench.
- **PHD/PHDA Predeflected Holdowns may be installed off sill plate with no load reduction.**
- The design engineer may specify any alternate anchorage calculated to resist the tension load for a specific application. Anchorage exposure length should take the bearing plate height of 1-5/8" into account, anchor bolt thread should visibly extend above nut.
- If used to anchor a built-up post, such as a double 2 x 4, the post component shall be designed to act as a single unit. Holdown fasteners specified shall not be considered to attach multiple plies together.
- For anchorage options see STBL Anchor Bolt section on pages 32-33.

Typical PHD5A installation

PHD8



PHD5A

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)				Fastener Schedule				Unit	DF Factored Resistance	S-P-F Factored Resistance
							Anchor Bolts[2]		Wood Screws[4]			Uplift 115%[1,5]	Uplift 115%[1,5]
			W	H	D	CL[6]	Qty	Dia.	Qty	Type			
PHD2A	HDU2-SDS2.5	14	3	7-3/4	2-5/8	1-3/8	1	5/8	6	WS3	Lbs	3330	2795
											kN	14.81	12.43
PHD4A	HDU4-SDS2.5	14	3	9-3/4	2-5/8	1-3/8	1	5/8	10	WS3	Lbs	5400	4535
											kN	24.02	20.17
PHD5A	HDU5-SDS2.5	14	3	11-11/16	2-5/8	1-3/8	1	5/8	14	WS3	Lbs	6755	5670
											kN	30.05	25.22
PHD8	HDU8-SDS2.5	12	3-1/4	16-1/2	3	1-3/8	1	7/8	24	WS3	Lbs	8470	7115
											kN	37.68	31.65

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) The designer must specify anchor bolt type, length, and embedment.
3) The PHD/PHDA may be elevated off the sill.
4) WS3 wood screws are 1/4" x 3" and are included with PHD/PHDA models.
5) Minimum post thickness is 3". Consult USP for installations less than 3".
6) "CL" denotes the distance between the post and center of the anchor bolt.

DTB Deck Tie Back

The DTB-TZ Deck Tie Back provides positive anchorage between the deck framing and the exterior wall. When used in conjunction with USP triple-zinc or gold-coat joist hangers, the DTB-TZ transfers the lateral loads into the exterior wall while the joist hangers support the vertical loads. The DTB-TZ can also be used to reinforce the connection between the rail post and the deck.

Finish: G-185 galvanizing

Options: See chart for Corrosion Finish Options

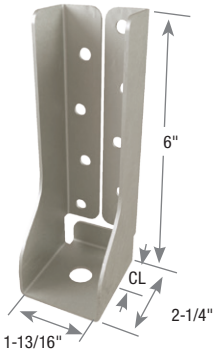
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Install with USP's THR 1/2" threaded rod or equivalent.
- Position DTB-TZ on deck joist in a location where the 1/2" threaded rod or bolt may be threaded through the bolt hole.
- Drive WS15-HDG wood screws into joist.
- Re-install threaded rod or anchor bolt. Secure with washer and nut.
- Tighten anchor bolt nuts finger tight, snug, to base plus 1/3 to 1/2 additional turns with wrench.

Typical DTB-TZ installation

Typical DTB-TZ deck to ledger installation



DTB-TZ

USP Stock No.	Ref. No.	Steel Gauge	Rod / Bolt Anchor Dia. (in)	CL (in)	Fastener Schedule[2]		DF Factored Resistance				S-P-F Factored Resistance				Corrosion Finish
							Lbs		kN		Lbs		kN		
					Qty	Wood Screws	100%	115%[1]	100%	115%[1]	100%	115%[1]	100%	115%[1]	
DTB-TZ	DTT2Z, FSC	14	1/2	1-1/8	8	**WS15-HDG**	2640	2640	11.74	11.74	2220	2220	9.88	9.88	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) WS15-HDG Wood Screws are 1/4" dia. x 1-1/2" long and are included with DTB-TZ Deck Tie-Backs.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

LTS / LTTI Tension Ties

USP STRUCTURAL CONNECTORS MiTek

LTS series – The LTS19 is designed for nail-on installation to 2x joists or studs, and the LTS20B provides a nail or bolt fastening option. The LTS20B will accommodate wood I-Joists if 10d x 1-1/2" nails are used instead of the specified 16d nails.

LTTI31 – An open web joist tension tie designed for use with masonry or concrete construction.

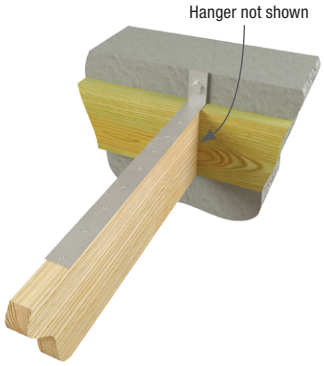
Materials: See chart

Finish: G90 galvanizing; LTS19-TZ — G-185 galvanizing

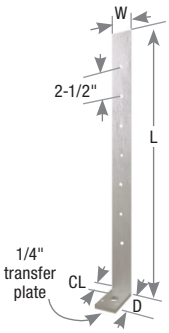
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

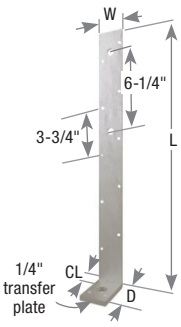
- Use all specified fasteners to attach the strap portion of the connector to the side of stud, post, joist, purlin, or beam. Secure the base to the concrete or masonry wall with specified anchor bolt. A design professional shall specify the type, length, and embedment of the anchor bolt. No washers required.
- Washers are not required on transfer plates that fit over the anchor bolt.
- LTTI31 and LTS connectors must be mounted flush to the surface of the mudsill.
- Factored resistances are based on either nail or bolt fastening; nail and bolt values cannot be combined.
- Tighten anchor bolt nuts finger tight, snug, to base plus, 1/3 to 1/2 additional turns with a wrench.
- Bolts must be ordered separately.



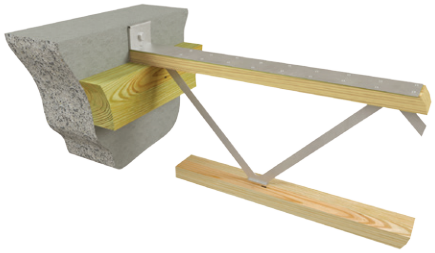
Typical LTS installation



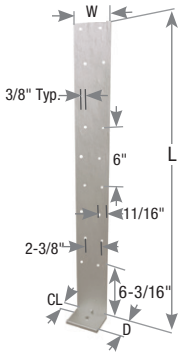
LTS19-TZ



LTS20B



Typical LTTI131 installation



LTTI131

USP Stock No.	Ref. No.	Steel Gauge		Dimensions (in)				Nail Spacing (in)	Fastener Schedule				DF Factored Resistance		S-P-F Factored Resistance		Corrosion Finish
									Anchor Bolt[3]		Strap[2,5]		Tensile 115%[1]		Tensile 115%[1]		
		Strap	Plate	W	L	D	CL		Qty	Dia. (in)	Qty	Type	Lbs	kN	Lbs	kN	
LTTI31 [4]	LTTI31	18	3	3-3/4	31	2-5/8	1-3/8	3	1	5/8	18	10d x 1-1/2	2905	12.92	2440	10.85	
LTS19-TZ [4]	LTT19	16	3	1-3/4	22-1/4	3	1-1/2	2-1/2	1	3/4	8	10d	1245	5.54	1045	4.65	
LTS20B	LTT20B	12	3	2	20	3	1-1/2	3-3/4	1	3/4	10	10d x 1-1/2	1140	5.07	960	4.27	
											10	16d	1145	5.09	960	4.27	
											2	1/2	1215	5.40	1020	4.54	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers may be substituted for the specified 10d common nails with no load reduction.
3) The designer must specify anchor bolt type, length and embedment depth.
4) LTTI and LTS holdowns shall be installed tight to the sill plate.
5) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

HTT Tension Ties

Secures multi-ply studs or posts to mudsills or foundation. Nail fastening makes for a convenient connection to studs or posts in cramped retrofit installations.

Materials: 10 gauge

Finish: G90 galvanizing

Codes: Load values are derived from data submitted to various North American building code evaluators.

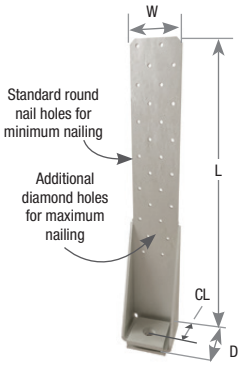
Installation:

- Use all specified fasteners to attach the strap portion of the connector to the side of stud, post, joist, purlin, or beam. Secure the base to the concrete or masonry wall with specified anchor bolt. A design professional shall specify the type, length, and embedment of the anchor bolt.
- HTT45 Max – Fill all round and diamond nail holes.
- Washers are not required on transfer plates that fit over the anchor bolt.
- Tighten anchor bolt nuts finger tight snug to base plus, 1/3 to 1/2 additional turns with a wrench.

Typical HTT16 installation

Typical HTT45 Max installation

HTT16



HTT45

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)				Nail Spacing (in)	Fastener Schedule				DF Factored Resistance		S-P-F Factored Resistance	
								Anchor Bolt[3]		Strap[2,5]		Tensile 115%[1]		Tensile 115%[1]	
			W	L	D	CL		Qty	Dia. (in)	Qty	Type	Lbs	kN	Lbs	kN
HTT16	-- --	10	2-1/2	16	2	1-3/8	1-3/4	1	5/8	18	10d	**5355**	**23.82**	**3800**	**16.90**
HTT45 (Min)	HTT4, HTT5	10	2-1/2	16	2	1-3/8	1-3/4	1	5/8	18	10d	**5590**	**24.87**	4905	21.82
											16d x 2-1/2	**6600**	**29.36**	5780	25.71
HTT45 (Max)										26	10d	7280	32.38	**6390**	**28.42**
											16d x 2-1/2	**8255**	**36.72**	**7230**	**32.16**

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers may be substituted for the specified 10d common nails with no load reduction.
3) The designer must specify anchor bolt type, length and embedment depth.
4) **NAILS:** 10d nails are 0.148" dia. x 3" long, 16d x 2-1/2" nails are 0.162" dia. x 2-1/2" long.
New products or updated product information are designated in **blue font.**

TD / TDX Holdowns

TD – Different welded configurations and sizes achieve a great deal of versatility within the TD series.

TDX – The TDX2 and TDX5 feature formed designs, all others are welded. All are self-jigging.

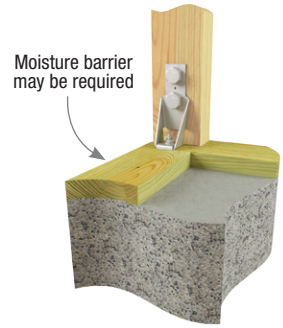
All models, except TD2, TD5, and TD7, feature a self-jigging design with code required end distances built in.

Materials: See chart
Finish: TDX2-TZ – G-185 galvanizing; All others – USP primer
Codes: Load values are derived from data submitted to various North American building code evaluators.

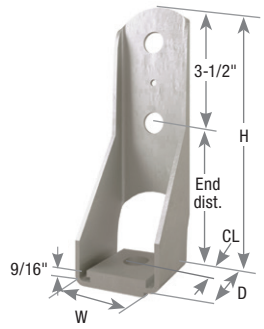
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Do not use lag bolts. Washers are not required for anchor bolts or between holdown and bolt hex head, but standard washers should be used against stud or post under the nut. See page 34 for BP/LBP Bearing Plates.
- Bolt holes should be a minimum of 1⁄32" to a maximum of 1⁄16" larger than the bolt diameter.
- See pages 32-33 for STB Anchor Bolt section for anchorage options. A design professional may specify alternate anchorage with conventional anchor bolts.
- A design professional shall determine the adequacy of the stud to resist published loads. When installing to multi-ply 2x studs, the designer must specify the fasteners required to bind the plies together and resist splitting.
- Tighten anchor bolt nuts to finger tight, plus 1/3 to 1/2 additional turns with a wrench. Wood members may shrink over time; if possible, nut tightness should be checked periodically.
- If used to anchor a built-up post, such as a double 2 x 4, the post component shall be designed to act as a single unit. Holdown fasteners specified shall not be considered to attach multiple plies together.
- Bolts must be ordered separately.

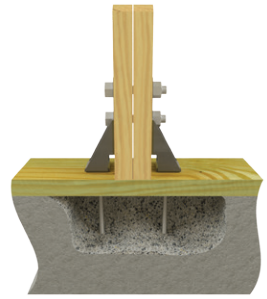
Typical TDX6 installation



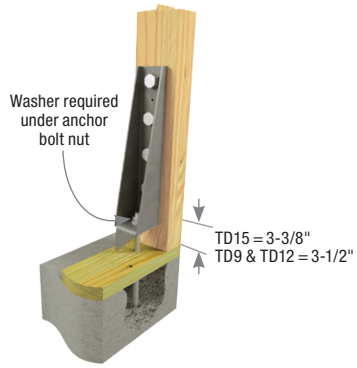
Typical TDX2-TZ installation



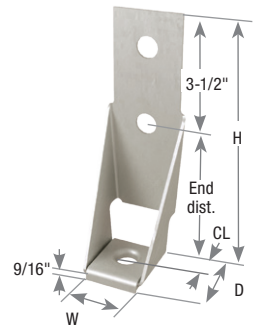
TDX6



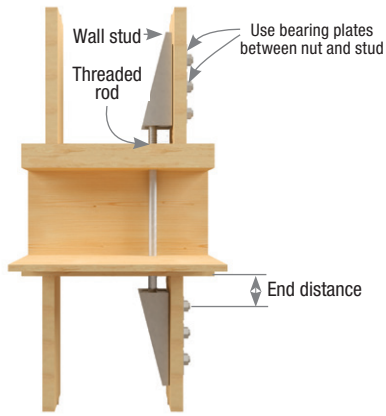
Typical TDX2-TZ back-to-back installation



Typical TD15 installation



TDX2-TZ



Holdown installation between floors

Continued on next page

TD / TDX Holdowns

USP STRUCTURAL CONNECTORS MiTek

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	CL	Fastener Schedule[4] Anchor Bolt Dia. (in)	Bolts Qty	Bolts Dia. (in)	Min. Required Bolt End Distance[5] (in)	Length of Bolt in Vertical Member (in)	DF Factored Tensile Resistance (115%)[1,2,3] Lbs	DF kN	S-P-F Factored Tensile Resistance (115%)[1,2,3] Lbs	S-P-F kN	Corrosion Finish
TD5	-- --	7	3	6-3/8	3-3/4	2-1/8	3/4	2	3/4	5-1/4	1-1/2	1560	6.94	1230	5.47	
											3	3115	13.86	2460	10.94	
											3-1/2	3635	16.17	2870	12.77	
											5-1/2	5710	25.40	4510	20.06	
TD7	-- --	7	3-3/8	11-7/8	3-5/8	2-1/8	1-1/8	3	7/8	6-1/8	1-1/2	2725	12.12	2150	9.56	
											3	5450	24.24	4300	19.13	
											3-1/2	6360	28.29	5020	22.33	
											5-1/2	9995	44.46	7890	35.10	
TD9	-- --	7	3-3/8	16-1/2	4-1/4	2-1/8	1-1/8	3	1	7	3	6225	27.69	4915	21.86	
											3-1/2	7270	32.34	5740	25.53	
											4-1/2	9345	41.57	7375	32.81	
											5-1/2	11420	50.80	9015	40.10	
TD12	HD12	3	3-1/2	20-1/2	4-1/4	2-1/8	1-1/8	4	1	7	3	8310	36.96	6555	29.16	
											3-1/2	9690	43.10	7645	34.01	
											4-1/2	12460	55.42	9835	43.75	
											5-1/2	15225	67.72	12025	53.49	
TD15	-- --	3	3-1/2	25	4-3/8	2-1/8	1-1/4	5	1	7	3	10385	46.19	8195	36.45	
											3-1/2	12110	53.87	9560	42.52	
											4-1/2	15570	69.26	12295	54.69	
											5-1/2	19035	84.67	15025	66.83	
TDX2-TZ	HD3B	12	2-1/16	8-1/8	2-3/4	1-1/2	5/8	2	5/8	4-1/2	1-1/2	1300	5.78	1025	4.56	Triple Zinc
											3	2525	11.23	1795	7.98	
											3-1/2	2525	11.23	1795	7.98	
											5-1/2	2525	11.23	1795	7.98	
TDX5	-- --	10	2-1/2	9-3/8	3-7/8	2	3/4	2	3/4	5-1/4	1-1/2	1560	6.94	1230	5.47	
											3	3115	13.86	2460	10.94	
											3-1/2	3635	16.17	2870	12.77	
											5-1/2	5695	25.33	4510	20.06	
TDX6	HD5B	7	3-1/2	11-1/8	3-3/4	2	7/8	2	7/8	6-1/8	1-1/2	1815	8.07	1440	6.41	
											3	3635	16.17	2870	12.77	
											3-1/2	4240	18.86	3345	14.88	
											5-1/2	6665	29.65	5260	23.40	
TDX8	-- --	7	3-1/2	14-5/8	3-3/4	2	7/8	3	7/8	6-1/8	1-1/2	2725	12.12	2150	9.56	
											3	5450	24.24	4300	19.13	
											3-1/2	6360	28.29	5020	22.33	
											5-1/2	9995	44.46	7890	35.10	
TDX10	HD7B	7	3-1/2	18-1/8	3-3/4	2	7/8	4	7/8	6-1/8	1-1/2	3635	16.17	2870	12.77	
											3	7270	32.34	5740	25.53	
											3-1/2	8480	37.72	6695	29.78	
											5-1/2	13325	59.27	10515	46.77	
TDX14	HD9B	3	3-1/2	20-1/2	3-5/8	2-1/8	1	4	1	7	1-1/2	4150	18.46	3275	14.57	
											3	8310	36.96	6555	29.16	
											3-1/2	9690	43.10	7645	34.01	
											5-1/2	15225	67.72	12025	53.49	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) The designer must specify stud or post to resist published factored resistance.
3) The designer must specify anchor bolt type, length, and embedment.
4) All models may be installed with greater than the required anchor end distance with no chart load reduction.
5) The designer shall consider the effect of compression, bearing, tension, and combined bending due to device eccentricity when applicable.
6) Holdowns raised off of the sill plate may have higher deflection values.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

Sources of Deflection at the Shear Wall Holdown Connections

The following are some of the sources of deflection that should be evaluated by the designer. See the illustration, which applies to other holdown configurations.

A. Improperly-sized stud/post bolt holes – increased bolt slip can occur if stud/post bolt holes are oversized and exceed the NDS® recommended bolt hole diameter.

B. Stud/Post bolt holes – bolt slip can occur.

C. Wood crushing at stud/post bolt hole perimeters –the use of larger washers/bearing plates can reduce stress-induced wood crushing at bolt bearing locations.

D. Eccentricity in stud/post caused by holdown – holdowns installed on only one side of a stud or post result in an eccentricity which causes increased stresses and movement in a shear wall system.

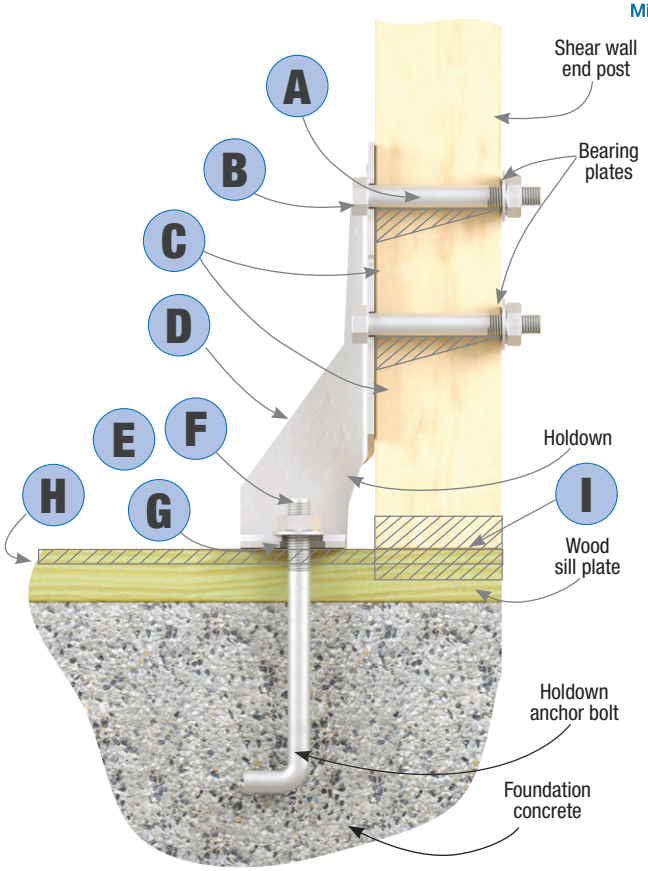
E. Nut spin – anchor bolt nuts that are not restrained can spin loose during cyclic loading, allowing movement; the use of steel nylon locking nuts or thread adhesive may prevent nut spin.

F. Loose nuts – increased movement can occur when nuts are not sufficiently tightened.

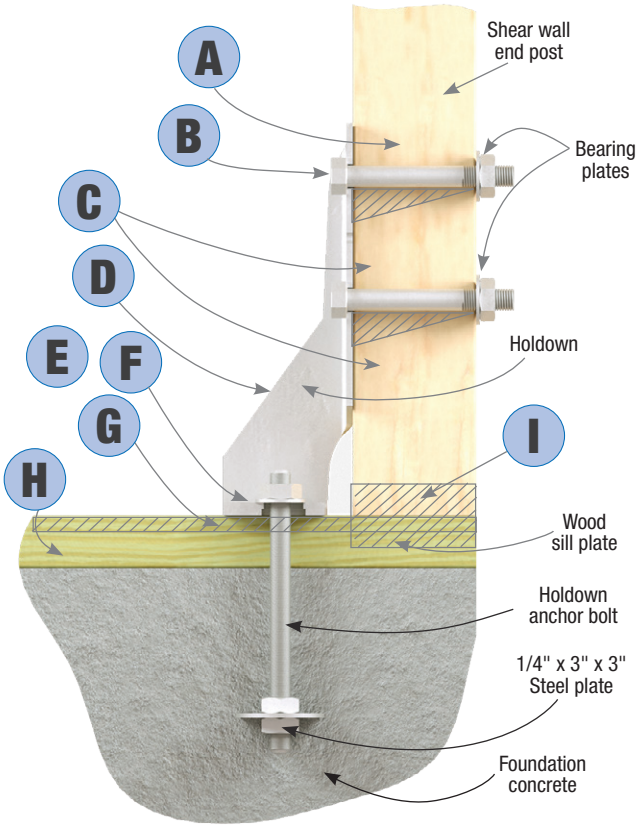
G. Holdown deflection – holdown deflection can occur when the shear wall system is subjected to cyclic stress from earthquakes or high wind.

H. Wood Shrinkage – due to drying, wood may shrink and cause bolted connections to become loose; periodic retightening may be required.

I. Localized crushing at wood-bearing surfaces – excessive crushing at wood-bearing surfaces may result from compressive forces due to overturning during high wind or earthquake loading.



Standard Installation



Alternative Installation

UPHD Holdowns

Engineered for high capacity with minimum deflection and low eccentricity.

Materials: See chart

Finish: USP primer

Codes: Load values are derived from data submitted to various North American building code evaluators.

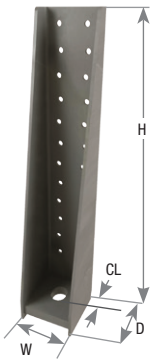
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Place holdown over anchor bolt and drive screws into post.
- Tighten anchor bolt nuts finger tight snug to base, plus 1/3 to 1/2 additional turns with a wrench.
- Holdown may be installed off of the plate with no load reduction.
- Post may be shimmed provided the shim acts as a single unit with the post. Holdown fasteners specified shall not be considered to attach shim to post. Shim shall be a structural material equal or better than the post material. Consult a designer or an engineer of record for appropriate fastening of shim.

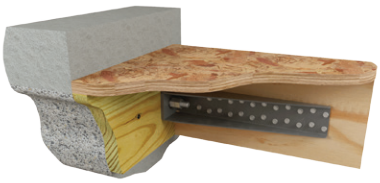
Alternate installations:

- Drill hole in concrete or masonry and insert retrofit anchor (i.e. epoxy anchor) capable of resisting uplift and lateral loading.
- Place holdown over anchor bolt and drive screws into post.
- Tighten anchor bolt nuts finger tight snug to base, plus 2-3 additional turns with a wrench.
- Post may be shimmed provided the shim acts as a single unit with the post. Holdown fasteners specified shall not be considered to attach shim to post. Shim shall be a structural material equal or better than the post material. Consult a designer or an engineer of record for appropriate fastening of shim.

Typical UPHD installation



UPHD



Typical UPHD concrete wall installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)				Fastener Schedule				Minimum Wood Thickness (in)[3]	Minimum Wood Width (in)[4]	DF Factored Resistance		S-P-F Factored Resistance	
							Anchor Bolts[5]		Wood Screws[6]				Uplift 115%[1]		Uplift 115%[1]	
			W	H	D	CL	Qty	Dia. (in)	Qty	Type			Lbs	kN	Lbs	kN
UPHD8	HDQ8-SDS3	10	3-1/4	17-1/2	3	1-3/8	1	7/8	24	WS3	3	3-1/2	13545	60.25	12100	53.82
UPHD9	HDU11-SDS2.5	10	3-1/4	17-1/4	3-1/2	1-1/2	1	1	24	WS3	3	5-1/2	16600	73.84	16510	73.44
UPHD11	HHDQ11-SDS2.5	7	3	15-1/8	3-1/2	1-1/2	1	1	24	WS3	4-1/2	5-1/2	21390	95.15	20130	89.54
UPHD14	HDU14-SDS2.5, HHDQ14-SDS2.5	7	3	18-3/4	3-1/2	1-1/2	1	1	30	WS3	4-1/2	5-1/2	24590	109.38	23570	104.84

1) Short-term load duration factor K_D = 1.15 has been taken into consideration; no further increase allowed.
2) The UPHD may be installed elevated off the sill.
3) Where post is consisted of multiple 2x members, members must be fastened securely together to act as one member.
4) UPHD hold-down shall be installed centered along the width of the post.
5) The designer must specify anchor bolt type, length, and embedment.
6) WS3 wood screws are 1/4" x 3" and are included with UPHD models.
New products or updated product information are designated in **blue font**.

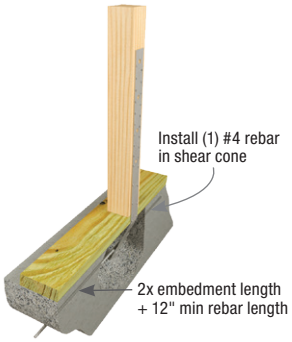
HPAHD / PAHD Foundation Straps

Designed to anchor wood framing to poured concrete foundations.

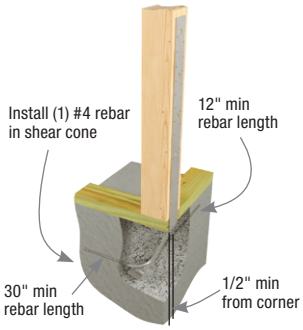
Materials: See chart
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

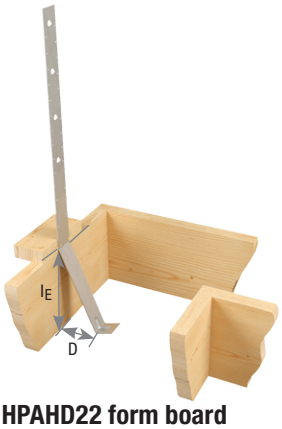
- Use all specified fasteners. See Product Notes, page 15.
- Bending the strap horizontally 90° to facilitate wall placement may cause concrete behind the embedded strap to break away at the top edge (spalling). If the spall is 1" or less from the top edge of the concrete, no load reduction is necessary. If the spall is between 1" and 4", the factored resistance is 0.90 of the published chart load.
- When installing on lumber less than 3-1/2" wide, wood splitting may occur. To reduce splitting, use 10d x 1-1/2" nails or fill every other hole with 16d common nails. Reduce factored resistance in accordance with code requirements.
- Straps are to be installed at the edge of concrete. Install prior to pour by nailing to form. Drive temporary nails through lowest two nail holes into form. Concrete level should reach embedment line; minimum embedment depths are listed in chart.
- Do not rely on these straps to secure concrete sections together between cold joints; take other measures to transfer the load. If there is a cold joint between slab and foundation, the minimum embedment must be made into the foundation. Fastening opportunities may be reduced because the slab pour level may be higher than some nail holes. Using fewer fasteners will reduce factored resistance. Reduce factored resistance by the code capacity for each fastener not installed.
- Factored resistances based on a minimum concrete compressive strength of 2,500 psi at 28 days, with one #4 horizontal rebar in the shear cone. Rebar should be a minimum length of 2x embedment depth plus 12" (see chart for exceptions in corner installations).
- Where fewer fasteners are used in the structural wood member, reduce loads according to the code.
- There may be an increase in the amount of deflection if the strap is installed on the outside of the sheathing, versus directly to the framing members.
- Strap may be bent one complete cycle to aid installation.



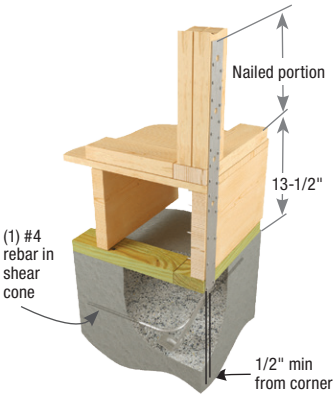
Typical HPAHD22 single pour edge installation



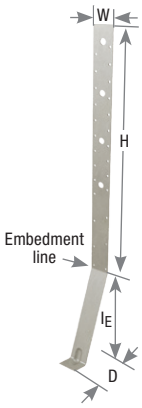
Typical HPAHD22 single pour corner and endwall installation



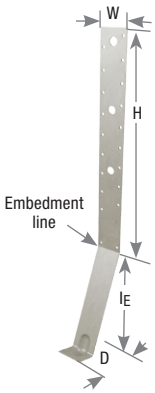
HPAHD22 form board installation



Typical HPAHD22 single pour rim joist installation



HPAHD



PAHD42

USP Stock No	Ref. No.	Steel Ga.	Fastener Schedule[1,2]		Dimensions (in.)				Min Stemwall Thickness (in.)	Edge Distance[3,4] (in)	Concrete[8,9]	DF Factored Tensile Resistance (115%)		S-P-F Factored Tensile Resistance (115%)	
			Qty	Type	W	L	l_E	D				Lbs	kN	Lbs	kN
HPAHD22	-- --	10	23	16d	2-1/16	24-3/4	9-1/2	4-1/8	6	1/2	Uncracked	4780	21.26	4330	19.26
											Cracked	3345	14.88	3345	14.88
										1.5 x l_E	Uncracked	5345	23.78	4330	19.26
											Cracked	3745	16.66	3745	16.66
PAHD42	-- --	12	15	16d	2-1/16	16-5/8	8	5-3/4	6	1/2	Uncracked	2555	11.37	2555	11.37
											Cracked	1785	7.94	1785	7.94
										1.5 x l_E	Uncracked	4675	20.80	3495	15.55
											Cracked	3275	14.57	3275	14.57

1) A 16d Common nail has a diameter of 0.162 inch and a length of 3-1/2 inches.
2) Predrilled holes are not required.
3) An edge distance of 1/2" implies that the distance from the corner of the wall to the edge of the strap is no less than 1/2".
4) An edge distance of 1.5 x IE implies that the minimum distance from the corner of the wall to the centerline of the strap is no less than 1.5 times the embedment depth.
5) For edge distances between 1/2" and 1.5 x IE calculate loads using straight line interpolation.
6) Minimum anchor spacing for full capacity is 2 x IE. For spacing less than that reduce capacity proportionally.
7) Factored resistances are based on lumber with a specific gravity of 0.49 for DF and 0.42 for S-P-F with a moisture content of 19% or less.
8) Minimum concrete strength f'c = 2500 psi
9) Minimum 1-#4 rebar shall be installed in the shear cone

LSTAD / STAD Foundation Straps

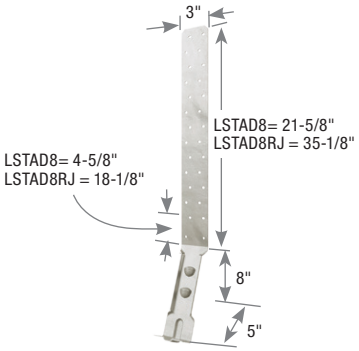
The coined dimples below the embedment line allow for increased concrete bonding. These holdowns retain high uplift capacity even when installed at corners of foundation stemwalls. Ideal for use with built up 2x end posts.

RJ after the model indicates LSTAD or STAD for rim joist applications as in STAD8RJ. Rim joist models provide for a 17" clear span without the loss of strap nailing.

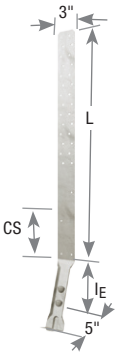
Materials: LSTAD - 14 gauge: STAD - 12 gauge

Finish: G90 galvanizing

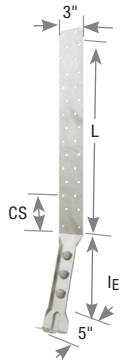
Codes: Load values are derived from data submitted to various North American building code evaluators.



LSTAD8
(LSTAD8RJ similar)



STAD_RJ



STAD

Installation:

- Use all specified fasteners. See Product Notes, page 15. The bottom (2) nails are for form board attachment only and do not contribute to fastener schedule requirements.
- Embed holdown in concrete to the embedment line (bend line).
- See illustrations for requirements on rebar, edge distances, and clear spans.
- Bending the strap horizontally 90° to facilitate wall placement may cause concrete behind the embedded strap to break away at the top edge (spalling). If the spall is 1" or less from the top edge of the concrete, no load reduction is necessary. If the spall is between 1" and 4" the factored resistance is 0.90 of the published chart load.
- When installing on lumber less than 3-1/2" wide, wood splitting may occur. "To reduce splitting, use 10d x 1-1/2" nails or fill every other hole with 16d common nails. Reduce factored resistance per code requirements accordingly.
- These straps do not secure concrete sections together at cold joints; take other measures to transfer the load. If there is a cold joint between slab and foundation, the minimum embedment must be made into the foundation. Fastening opportunities may be reduced because the slab pour level may be higher than some nail holes. Using fewer fasteners will reduce factored resistance. Reduce factored resistance by the code capacity for each fastener not installed.
- To achieve full table loads the minimum center-to-center spacing is twice the embedment depth (I_E) when resisting tension loads at the same time.
- Where fewer fasteners are used in the structural wood member, reduce loads according to the code.
- There may be an increase in the amount of deflection if the strap is installed on the outside of the sheathing, versus directly to the framing members.
- Strap may be bent one complete cycle to aid installation.

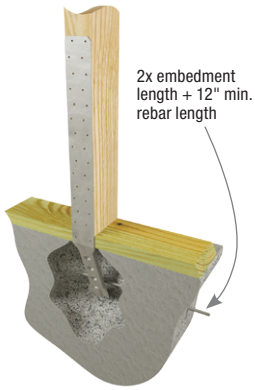
USP Stock No.[5]	Ref. No.	Fastener Schedule[2,3,8]		I_E	Min. Stem Wall (in)	Unit	DF Factored Resistance Uplift (115%)[4]									S-P-F Factored Resistance Uplift (115%)[4]								
							Edge Distance - Concrete									Edge Distance - Concrete								
							2000 psi			2500 psi			3000 psi			2000 psi			2500 psi			3000 psi		
		Qty	Type				1/2"	1-1/2"	8"	1/2"	1-1/2"	8"	1/2"	1-1/2"	8"	1/2"	1-1/2"	8"	1/2"	1-1/2"	8"	1/2"	1-1/2"	8"
LSTAD8	LSTHD8	24	16d Sinker	8	6	Lbs	2765	2765	4000	2765	2765	4000	2765	2765	4000	2320	2320	3360	2320	2320	3360	2320	2320	3360
						kN	12.30	12.30	17.79	12.30	12.30	17.79	12.30	12.30	17.79	10.32	10.32	14.95	10.32	10.32	14.95	10.32	10.32	14.95
					8	Lbs	2765	2765	4000	2765	2765	4000	2765	2765	4000	2320	2320	3360	2320	2320	3360	2320	2320	3360
						kN	12.30	12.30	17.79	12.30	12.30	17.79	12.30	12.30	17.79	10.32	10.32	14.95	10.32	10.32	14.95	10.32	10.32	14.95
LSTAD8RJ	LSTHD8RJ	24	16d Sinker	8	6	Lbs	2765	2765	4000	2765	2765	4000	2765	2765	4000	2320	2320	3360	2320	2320	3360	2320	2320	3360
						kN	12.30	12.30	17.79	12.30	12.30	17.79	12.30	12.30	17.79	10.32	10.32	14.95	10.32	10.32	14.95	10.32	10.32	14.95
					8	Lbs	2765	2765	4000	2765	2765	4000	2765	2765	4000	2320	2320	3360	2320	2320	3360	2320	2320	3360
						kN	12.30	12.30	17.79	12.30	12.30	17.79	12.30	12.30	17.79	10.32	10.32	14.95	10.32	10.32	14.95	10.32	10.32	14.95

1) Factored resistances have been increased 15% for short-term load duration; no further increased is allowed.
2) 10d common (0.148" x 3" long) nails may be substituted with no load reduction.
3) Wood thickness shall be no less than 2".
4) The 115% values are short-term loads such as wind and earthquake.
5) RJ after the model indicates LSTADs for rim joist applications as in LSTAD8RJ.
6) Interpolate allowable loads for edge distances between those listed. Nail quantities may be reduced for less than IE corner distance design loads- use the code allowable loads for fasteners in shear.
7) Where fewer fasteners are used in the structural wood member, reduce loads according to the code.
8) **NAILS:** 16d Sinker nails are 0.148" dia. x 3-1/4" long.

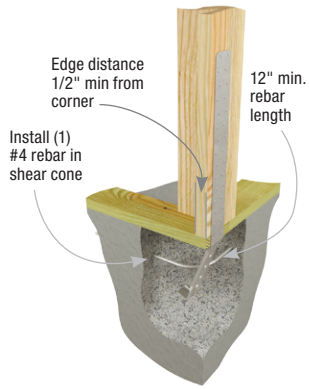
Continued on next page

LSTAD / STAD Foundation Straps

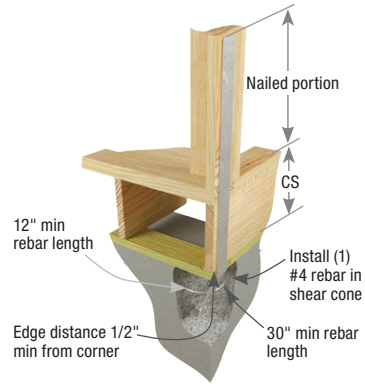
USP STRUCTURAL CONNECTORS
MiTek



Typical STAD10 edge installation



Typical STAD10 corner installation



Typical STAD14RJ corner rim joist installation

USP Stock No	Ref. No.	Fastener Schedule[1,2,12] Qty	Fastener Schedule[1,2,12] Type	Dimensions (in.) L	Dimensions (in.) l_E	Dimensions (in.) CS	Strap Location[6,7,8]	Concrete[10,11]	Unit	D Fir-L Factored Tensile Resistance (115%) Wind and Seismic $I_EF_aS_a(0.2) < 0.35$	D Fir-L Seismic $I_EF_aS_a(0.2) \geq 0.35$	D Fir-L Wood Connection Strength	S-P-F Factored Tensile Resistance (115%) Wind and Seismic $I_EF_aS_a(0.2) < 0.35$	S-P-F Seismic $I_EF_aS_a(0.2) \geq 0.35$	S-P-F Wood Connection Strength
STAD8	-- --	24	16d Sinker	21-5/8	8	4-5/8	Corner	Uncracked	Lbs	3955	2965	7560	3955	2965	6350
									kN	17.59	13.19		17.59	13.19	
								Cracked	Lbs	3320	2490		3320	2490	
									kN	14.77	11.08		14.77	11.08	
							Middle	Uncracked	Lbs	6460	4405		6460	4405	
									kN	28.74	19.60		28.74	19.60	
								Cracked	Lbs	5540	4155		5540	4155	
									kN	24.64	18.48		24.64	18.48	
STAD8RJ	-- --	24	16d Sinker	35-1/8	8	18-1/8	Corner	Uncracked	Lbs	3955	2965		3955	2965	
									kN	17.59	13.19		17.59	13.19	
								Cracked	Lbs	3320	2490		3320	2490	
									kN	14.77	11.08		14.77	11.08	
							Middle	Uncracked	Lbs	6460	4405		6460	4405	
									kN	28.74	19.60		28.74	19.60	
								Cracked	Lbs	5540	4155		5540	4155	
									kN	24.64	18.48		24.64	18.48	
STAD10	STHD10	28	16d Sinker	21-5/8	10	1-5/8	Corner	Uncracked	Lbs	5220	3915	7560	5220	3915	6350
									kN	23.22	17.42		23.22	17.42	
								Cracked	Lbs	4230	3170		4230	3170	
									kN	18.82	14.10		18.82	14.10	
							Middle	Uncracked	Lbs	7560	6105		6350	6105	
									kN	33.63	27.16		28.25	27.16	
								Cracked	Lbs	7465	5600		6320	5600	
									kN	33.21	24.91		28.11	24.91	
STAD10RJ	STHD10RJ	28	16d Sinker	36	10	16-1/8	Corner	Uncracked	Lbs	5220	3915		5220	3915	
									kN	23.22	17.42		23.22	17.42	
								Cracked	Lbs	4230	3170		4230	3170	
									kN	18.82	14.10		18.82	14.10	
							Middle	Uncracked	Lbs	7560	6105		6350	6105	
									kN	33.63	27.16		28.25	27.16	
								Cracked	Lbs	7465	5600		6320	5600	
									kN	33.21	24.91		28.11	24.91	
STAD14	STHD14	38	16d Sinker	32-1/8	14	4-5/8	Corner	Uncracked	Lbs	7535	5540	7535	6330	5540	6330
									kN	33.52	24.64		28.16	24.64	
								Cracked	Lbs	7910	5540		7580	5540	
									kN	35.19	24.64		33.72	24.64	
							Middle	Uncracked	Lbs	7535	5975		6330	5975	
									kN	33.52	26.58		28.16	26.58	
								Cracked	Lbs	8765	5975		7580	5975	
									kN	38.99	26.58		33.72	26.58	
STAD14RJ	STHD14RJ	38	16d Sinker	39-5/8	14	12-1/8	Corner	Uncracked	Lbs	7535	5540		6330	5540	
									kN	33.52	24.64		28.16	24.64	
								Cracked	Lbs	7910	5540		7580	5540	
									kN	35.19	24.64		33.72	24.64	
							Middle	Uncracked	Lbs	7535	5975		6330	5975	
									kN	33.52	26.58		28.16	26.58	
								Cracked	Lbs	8765	5975		7580	5975	
									kN	38.99	26.58		33.72	26.58	

1) Predrilled holes are not required.
2) When 16d Sinker nails are specified, 10d common (0.148" diameter x 3" long) nails may be substituted with no load reduction.
3) Short-term load duration factor 115% for wind and earthquake has been taken into consideration; no further increase is allowed.
4) Wood thickness shall be no less than 3 inches (2 - 2x members).
5) Factored resistances are based on a minimum stemwall thickness of 6-inches.
6) Corner strap location implies that the distance from the corner of the wall to the edge of the strap is no less than 1/2".
7) Middle strap location implies that the minimum distance from the corner of the wall to the centerline of the strap is no less than 1.5 times the embedment depth (le).
8) For edge distances between 1/2" and 1.5 x le calculate loads using straight line interpolation.
9) Minimum anchor spacing for full capacity is 2 x le. For spacing less than that reduce capacity proportionally.
10) Minimum concrete strength f'c = 2500 psi
11) Minimum 1-#4 rebar shall be installed in the shear cone
12) NAILS: 16d Sinker nails are 0.148" dia. x 3-1/4" long.
New products or updated product information are designated in **blue font.**

TA Foundation Straps

Foundation Straps offer an economical, one-piece method of achieving a continuous load path from a 2 x 8, 2 x 10, 2 x 12, or 2 x 14 rim joist through concrete block to foundation. All models require a 6" embedment into concrete footings.

Materials: 12 gauge

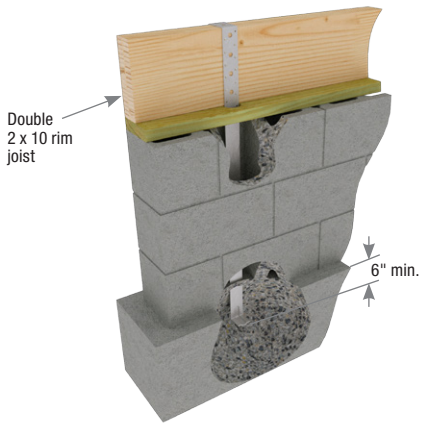
Finish: G90 galvanizing

Options: See Chart for Corrosion Finish Options

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Factored resistances are based on either nail fastening or bolt fastening; nail and bolt values cannot be combined.
- Install by inserting product into footing's wet concrete. All models require a 6" embedment into concrete foundations. Courses of concrete block must be laid over connector. Notch mudsill at connector locations. Wrap strap over rim joist and fasten.
- Do not rely on these straps to secure concrete sections together between cold joints; take other measures to transfer the load. If there is a cold joint between block and foundation, the minimum embedment must be made into the foundation.
- Based on product embedment the exposed number of fastener holes may be reduced. Using fewer fasteners will reduce factored resistance. Reduce factored resistances by the code prescribed factored resistance per fastener, for each fastener not installed.
- Factored resistances are based on a minimum concrete compressive strength of 2,500 psi at 28 days.
- Bolts must be ordered separately.



Typical TA installation

TA

USP Stock No.	Ref. No.	Dimensions (in) W	L	L1	Fastener Schedule[4] Qty	Type	Installation Type	DF Factored Resistance[1] Uplift 115%[2,3] Lbs	kN	S-P-F Factored Resistance[1] Uplift 115%[2,3] Lbs	kN	Corrosion Finish
TA51	PA51	2-1/16	48-1/4	17-5/8	2	1/2	2 x 8	3335	14.84	2615	11.63	Triple Zinc
					8	16d x 2-1/2		2770	12.32	1965	8.74	
					3	1/2	2 x 10	3680	16.37	2615	11.63	
					10	16d x 2-1/2		2770	12.32	1965	8.74	
					4	1/2	2 x 12	3680	16.37	2615	11.63	
					14	16d x 2-1/2		3635	16.17	2580	11.48	
					5	1/2	2 x 14	3680	16.37	2615	11.63	
					16	16d x 2-1/2		3635	16.17	2580	11.48	
TA71	PA68	2-1/16	68-1/4	22-1/8	2	1/2	2 x 8	3335	14.84	2615	11.63	Triple Zinc
					8	16d x 2-1/2		2770	12.32	1965	8.74	
					3	1/2	2 x 10	3680	16.37	2615	11.63	
					10	16d x 2-1/2		2770	12.32	1965	8.74	
					4	1/2	2 x 12	3680	16.37	2615	11.63	
					14	16d x 2-1/2		3635	16.17	2580	11.48	
					5	1/2	2 x 14	3680	16.37	2615	11.63	
					16	16d x 2-1/2		3635	16.17	2580	11.48	

1) Bolt values are for 3" thick rim joist loaded perpendicular to grain.
2) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
3) Factored uplift resistance for bolted connections based on upper most fastener 1-1/2" from top of rim board.
4) **Nails:** 16d x 2-1/2 nails are 0.162" diameter by 2-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

PA / PAI Purlin Anchors

USP STRUCTURAL CONNECTORS MiTek

PA series – For installation into poured concrete or concrete block walls and foundations.

PAI series – For wood I-Joist applications. An expanded 3" on-center nail spacing reduces splitting along I-Joist flange.

Materials: 12 gauge

Finish: G90 galvanizing

Options: See chart for Corrosion Finish Options

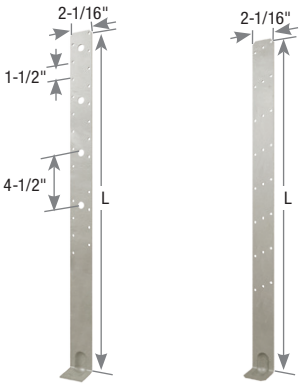
Codes: Load values are derived from data submitted to various North American building code evaluators.

Typical PA holdown installation

Typical PA purlin installation

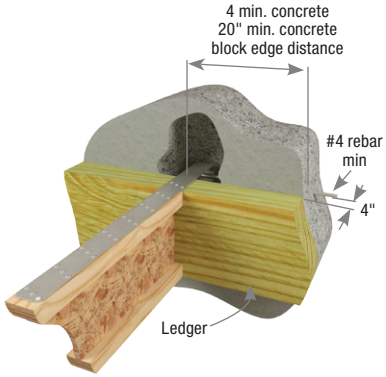
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Minimum concrete strength is 2,500 psi.
- The factored resistance for bolts are based on parallel to grain loading with a 3" minimum member thickness. Reduce load per code requirements when minimum member thickness is not achieved.
- Minimum concrete edge distance is 4" for PA & PAI series.
- Minimum concrete block edge distance is 20".
- Designer may specify alternate fastening schedules. Refer to Nail Specification Table on page 18 for nail shear values. Load values shall not exceed published factored resistances.
- No anchor bolts are needed for achieving efficient stress transfer from framing to concrete walls or foundations.
- Bolts must be ordered separately.



PA PAI

USP Stock No.	Ref. No.	L (in)	Minimum Embedment Concrete	Minimum Embedment Masonry	Fastener Schedule[4,5,6] Min Qty[7]	Fastener Schedule[4,5,6] Type	DF Factored Resistance Tensile (115%)[1,2,3] Concrete Lbs	DF Concrete kN	DF Masonry Lbs	DF Masonry kN	S-P-F Factored Resistance Tensile (115%)[1,2,3] Concrete Lbs	S-P-F Concrete kN	S-P-F Masonry Lbs	S-P-F Masonry kN	Corrosion Finish
Maximum Capacity															
PA18	PA18	18-1/2	4	6	12	16d	3200	14.23	3200	14.23	2685	11.94	2685	11.94	
					2	1/2	2340	10.41	2340	10.41	1965	8.74	1965	8.74	
PA23	PA23	23-3/4	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					3	1/2	3380	15.04	3380	15.04	2840	12.63	2840	12.63	
PA28	PA28	29	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					4	1/2	4185	18.62	3770	16.77	3515	15.64	3165	14.08	
PA35	PA35	35	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					4	1/2	4185	18.62	3770	16.77	3515	15.64	3165	14.08	
PAI18	PAI18	18-1/2	4	6	12	10d x 1-1/2	2565	11.41	2565	11.41	2155	9.59	2155	9.59	
PAI23	PAI23	23-1/2	4	6	18	10d x 1-1/2	3845	17.10	3770	16.77	3230	14.37	3165	14.08	
PAI28	PAI28	28-1/2	4	6	24	10d x 1-1/2	4595	20.44	3770	16.77	3860	17.17	3165	14.08	
PAI35	PAI35	35-1/2	4	6	26	10d x 1-1/2	4595	20.44	3770	16.77	3860	17.17	3165	14.08	
2x & 3x Ledger															
PA18	PA18	18-1/2	4	6	12	16d	3200	14.23	3200	14.23	2685	11.94	2685	11.94	
					2	1/2	2340	10.41	2340	10.41	1965	8.74	1965	8.74	
PA23	PA23	23-3/4	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					3	1/2	3380	15.04	3380	15.04	2840	12.63	2840	12.63	
PA28	PA28	29	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					4	1/2	4185	18.62	3770	16.77	3515	15.64	3165	14.08	
PA35	PA35	35	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					4	1/2	4185	18.62	3770	16.77	3515	15.64	3165	14.08	
PAI18	PAI18	18-1/2	4	6	12	10d x 1-1/2	2565	11.41	1925	8.56	2155	9.59	1615	7.18	
PAI23	PAI23	23-1/2	4	6	18	10d x 1-1/2	3635	16.17	3635	16.17	3050	13.57	3050	13.57	
PAI28	PAI28	28-1/2	4	6	24	10d x 1-1/2	4595	20.44	3770	16.77	3860	17.17	3165	14.08	
PAI35	PAI35	35-1/2	4	6	26	10d x 1-1/2	4595	20.44	3770	16.77	3860	17.17	3165	14.08	
4x Ledger															
PA18	PA18	18-1/2	4	6	12	16d	3200	14.23	3200	14.23	2685	11.94	2685	11.94	
					2	1/2	2340	10.41	2340	10.41	1965	8.74	1965	8.74	
PA23	PA23	23-3/4	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					3	1/2	3380	15.04	3380	15.04	2840	12.63	2840	12.63	
PA28	PA28	29	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					4	1/2	4185	18.62	3770	16.77	3515	15.64	3165	14.08	
PA35	PA35	35	4	6	15	16d	4175	18.57	3770	16.77	3505	15.59	3165	14.08	
					4	1/2	4185	18.62	3770	16.77	3515	15.64	3165	14.08	
PAI18	PAI18	18-1/2	4	6	12	10d x 1-1/2	2355	10.48	1925	8.56	1975	8.79	1615	7.18	
PAI23	PAI23	23-1/2	4	6	18	10d x 1-1/2	3205	14.26	3205	14.26	2690	11.97	2690	11.97	
PAI28	PAI28	28-1/2	4	6	24	10d x 1-1/2	4595	20.44	3770	16.77	3860	17.17	3165	14.08	
PAI35	PAI35	35-1/2	4	6	26	10d x 1-1/2	4595	20.44	3770	16.77	3860	17.17	3165	14.08	



Typical PAI I-Joist purlin face installation

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Values for bolts are based on parallel-to-grain loading with 3" minimum member thickness.
3) Values are based on the use of either nails or bolts; nail and bolt values cannot be combined.
4) 16d sinkers or 10d common nails may be substituted for the specified 16d common nails at 0.85 of the table loads.
5) For alternate nail schedule and load values consult USP.
6) Minimum quantity of fasteners to be installed. Product may have additional fastener holes not needed to meet published factored resistance of product.
7) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish

Stainless Steel, Gold Coat, HDG, Triple Zinc

TDL Concrete Angles

These angles secure wood posts to concrete or wood floors in light-duty applications.

Materials: 12 gauge

Finish: G90 galvanizing

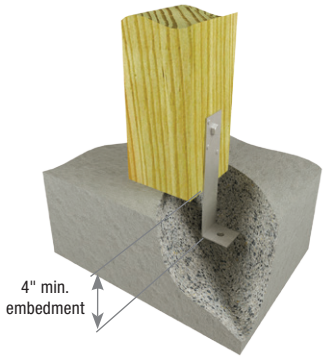
Options: See Chart for Corrosion Finish Options.

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- The TDL10 can be embedded into concrete. Minimum embedment depth is 4" to achieve factored resistances.
- **Moisture barrier may be required.**
- Bolts must be ordered separately.

Typical TDL5 interior installation



Typical TDL10 embedded interior installation

TDL10

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[4,5] Anchor Bolts Qty	Dia. (in)	Strap Qty	Type	DF Factored Resistance[1,2,3] Uplift 115% Lbs	kN	S-P-F Factored Resistance[1,2,3] Uplift 115% Lbs	kN	Corrosion Finish
TDL5	A24	12	2	5-3/16	2-1/4	1	1/2	4	16d	975	4.34	840	3.74	
								1	1/2	1140	5.07	980	4.36	
TDL10	A311	12	2	9-3/4	2-1/4	1	1/2	4	16d	975	4.34	840	3.74	
								1	1/2	1140	5.07	980	4.36	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Values given are based on the use of either nails or bolts; nail and bolt values cannot be combined.
3) The bolt values are based on single shear with a minimum member thickness of 3-1/2".
4) Designer must specify anchor bolt type, length, and embedment.
5) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

PA / PAE / PAU Post Anchors

USP STRUCTURAL CONNECTORS MiTek

Post Anchors are used to secure wood posts to concrete footings. These post anchors also provide moisture damage protection and feature a 1" stand-off plate to elevate wood posts above concrete surfaces.

Materials: See chart

Finish: G90 galvanizing, PA66ER-TZ - G-185 galvanizing

Options: See chart for Corrosion Finish Options

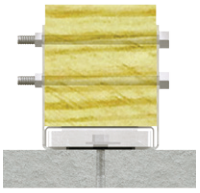
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

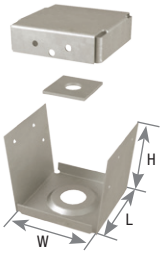
- Use all specified fasteners. Install with supplied washer.
- Anchor bolts and nails are not furnished.
- **Not recommended for fence posts or other unrestrained (not fixed or fastened at top) applications. These anchors are not designed to resist overturning (moment) loads.**
- **Anchor bolt installation** – position specified diameter anchor bolt at desired location with minimum 4" embedment into minimum 2,500 psi concrete. A minimum 2" edge distance is required to achieve factored resistance.
- **For hardened concrete or retrofit installations** – use specified diameter threaded rod with USP's CIA-EA or CIA-GEL 7000-C adhesive epoxy, following installation instructions. Contact USP Engineering for further information on selecting the proper epoxy.
- Bolts must be ordered separately.

Typical PA44E installation

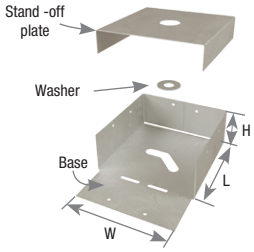
Typical PA installation



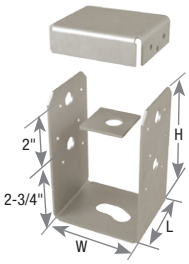
PAU cross-section



PAE
4-sided design



PA
2-sided design



PAU
2-sided design

AVAILABLE IN GOLD COAT

PAU88

Post/ Column Size	USP Stock No.	Ref. No.	Steel Gauge Base	Steel Gauge Stand-off Plate	Dimensions (in) W	Dimensions (in) H	Dimensions (in) L	Fastener Schedule[3] Anchor Bolt Qty	Anchor Bolt Dia. (in)	Post Nails Qty	Post Nails Type	Post Bolts Qty	Post Bolts Dia. (in)	Unit	DF Factored Resistance[2] Bearing 100%	DF Uplift[1] Nails 115%	DF Uplift[1] Bolts 115%	S-P-F Factored Resistance[2] Bearing 100%	S-P-F Uplift[1] Nails 115%	S-P-F Uplift[1] Bolts 115%	Corrosion Finish
4 x 4	PA44	-- --	18	12	3-9/16	2-1/8	3-1/2	1	1/2	8	16d	-- --	-- --	Lbs	8410	720	-- --	5970	510	-- --	
														kN	37.41	3.20	-- --	26.56	2.27	-- --	
	PA44E	-- --	18	16	3-9/16	3-1/2	3-1/2	1	1/2	6	16d	-- --	-- --	Lbs	11095	1655	-- --	7875	1175	-- --	
														kN	49.35	7.36	-- --	35.03	5.23	-- --	
	PAU44	ABU44	12	16	3-9/16	5-7/16	3	1	5/8	12	16d	2	1/2	Lbs	11095	4770	3790	7875	3385	2690	
														kN	49.35	21.22	16.86	35.03	15.06	11.97	
4 x 4 Rough	PA44R	-- --	18	12	4-1/16	3-1/2	4	1	1/2	12	16d	-- --	-- --	Lbs	8410	720	-- --	5970	510	-- --	
														kN	37.41	3.20	-- --	26.56	2.27	-- --	
4 x 6	PA46	-- --	18	12	3-9/16	3-1/2	5-1/2	1	1/2	14	16d	-- --	-- --	Lbs	10290	955	-- --	7305	680	-- --	
														kN	45.77	4.25	-- --	32.49	3.02	-- --	
	PA46E	ABA46	18	12	3-9/16	3-1/2	5-1/2	1	5/8	8	16d	-- --	-- --	Lbs	19895	1025	-- --	17110	880	-- --	
														kN	88.50	4.56	-- --	76.11	3.91	-- --	
	PAU46	ABU46	10	12	3-9/16	6	5	1	5/8	12	16d	2	1/2	Lbs	22625	4770	3790	16065	3385	2690	
														kN	100.65	21.22	16.86	71.46	15.06	11.97	
4 x 6 Rough	PA46R	-- --	18	10	4-1/16	3-1/2	6	1	1/2	14	16d	-- --	-- --	Lbs	10290	955	-- --	7305	680	-- --	
														kN	45.77	4.25	-- --	32.49	3.02	-- --	
6 x 6	PA66	-- --	18	12	**5-1/2**	**2-7/8**	5-1/2	1	1/2	16	16d	-- --	-- --	Lbs	11385	785	-- --	8085	555	-- --	
														kN	50.64	3.49	-- --	35.96	2.47	-- --	
	PA66E	ABA66	14	12	5-1/2	3-1/2	5-1/2	1	5/8	8	16d	-- --	-- --	Lbs	26215	1770	-- --	18615	1255	-- --	
														kN	116.61	7.87	-- --	82.81	5.58	-- --	
	PAU66	ABU66	10	12	5-1/2	6	5	1	5/8	12	16d	2	1/2	Lbs	26215	3975	3790	18615	2820	2690	
														kN	116.61	17.68	16.86	82.81	12.54	11.97	
6 x 6 Rough	PA66R	-- --	18	12	6-1/16	3-1/4	6-1/16	1	1/2	16	16d	-- --	-- --	Lbs	11385	785	-- --	8085	555	-- --	
														kN	50.64	3.49	-- --	35.96	2.47	-- --	
	PA66ER-TZ	ABA66R	14	12	6	3-1/4	5-1/2	1	5/8	8	16d	-- --	-- --	Lbs	26215	1770	-- --	18615	1255	-- --	
														kN	116.61	7.87	-- --	82.81	5.58	-- --	
8 x 8	PAU88	ABU88	12	12	7-1/2	7-3/16	7-1/16	2	5/8	14	16d	-- --	-- --	Lbs	13595	5320	-- --	9650	3775	-- --	
														kN	60.48	23.67	-- --	42.93	16.79	-- --	
8 x 8 Rough	PAU88R	ABU88R	12	12	8-1/16	6-15/16	7-1/16	2	5/8	14	16d	-- --	-- --	Lbs	13595	5320	-- --	9650	3775	-- --	
														kN	60.48	23.67	-- --	42.93	16.79	-- --	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Factored resistances are based on the use of either nails or bolts; nail and bolt values cannot be combined.
3) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

WAS / WE Wet Post Anchors

USP STRUCTURAL CONNECTORS MiTek

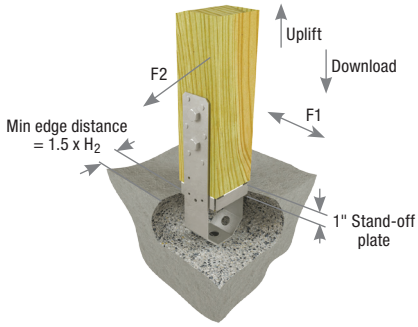
WAS – A formed base providing a 1" stand-off with high bearing capacity.

WE – A formed, one-piece design. Includes embossing for additional lateral strength.

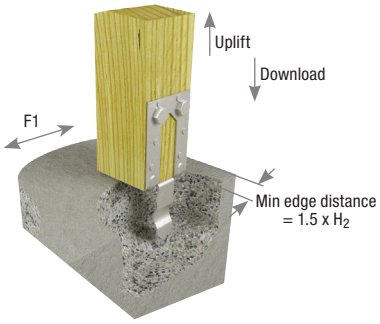
Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

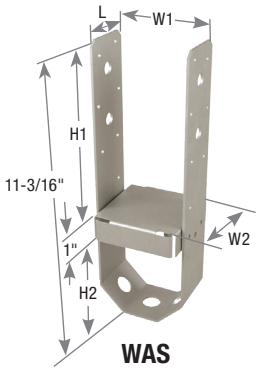
- Use all specified fasteners. See Product Notes, page 15.
- Insert into wet concrete after the pour. For the **WE**, embed the anchor so that the base plate is flush with the surface of the concrete. For the **WAS**, embed the anchor until the concrete surface meets the bottom edge of the stand off base legs. This will provide a 1" stand-off where required. A 2" minimum edge distance is required to achieve factored resistance.
- **Not recommended for fence posts or other unrestrained (not fixed or fastened at top) applications. These anchors are not designed to resist overturning (moment) loads.**
- Bolts must be ordered separately.



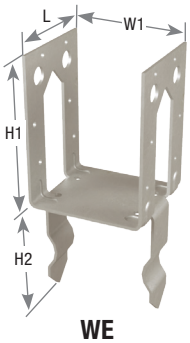
Typical WAS installation



Typical WE installation



WAS



WE

Post Size	USP Stock No.	Ref. No.	Steel Gauge Base	Steel Gauge Strap	Dimensions (in) W1	W2	H1	H2 [2]	L	Fastener Schedule[5] Qty	Type	Unit	DF Factored Resistance[3,4] Download 100%	Uplift 115%[1]	F1 115%[1]	F2 115%[1]	S-P-F Factored Resistance[3,4] Download 100%	Uplift 115%[1]	F1 115%[1]	F2 115%[1]	Corrosion Finish
4 x 4	WE44	PB44	12	12	3-1/2	-- --	4-3/4	3-3/8	3-1/4	12	16d	Lbs	-- --	1750	1415	1470	-- --	1505	1215	1265	
												kN	-- --	7.78	6.29	6.54	-- --	6.69	5.40	5.63	
										2	1/2	Lbs	-- --	1780	1135	1270	-- --	1530	975	1090	
												kN	-- --	7.92	5.05	5.65	-- --	6.81	4.34	4.85	
	WAS44	PBS44A	16	14	3-9/16	3-1/2	6-3/4	3-1/2	2-1/4	14	16d	Lbs	9755	3235	1750	1620	8390	2780	1505	1395	
												kN	43.39	14.39	7.78	7.21	37.32	12.37	6.69	6.21	
										2	1/2	Lbs	9755	3235	1760	1620	8390	2780	1515	1395	
												kN	43.39	14.39	7.83	7.21	37.32	12.37	6.74	6.21	
4 x 4 Rough	WE44R	PB44R	12	12	4	-- --	5	3-5/8	3-3/8	12	16d	Lbs	-- --	1750	1470	1415	-- --	1505	1265	1215	
												kN	-- --	7.78	6.54	6.29	-- --	6.69	5.63	5.40	
4 x 6	WE46	PB46	12	12	5-1/2	-- --	4-3/4	3-3/8	3-1/4	12	16d	Lbs	-- --	1750	1415	1470	-- --	1505	1215	1265	
												kN	-- --	7.78	6.29	6.54	-- --	6.69	5.40	5.63	
										2	1/2	Lbs	-- --	1780	1135	1270	-- --	1530	975	1090	
												kN	-- --	7.92	5.05	5.65	-- --	6.81	4.34	4.85	
	WAS46	PBS46	12	14	3-9/16	5-1/2	6-3/4	3-1/2	2-1/4	14	16d	Lbs	19895	3235	1750	1620	17110	2780	1505	1395	
												kN	88.50	14.39	7.78	7.21	76.11	12.37	6.69	6.21	
										2	1/2	Lbs	19895	3235	1850	1620	17110	2780	1590	1395	
												kN	88.50	14.39	8.23	7.21	76.11	12.37	7.07	6.21	
4 x 6 Rough	WE46R	-- --	12	12	6	-- --	5	3-5/8	3-3/8	12	16d	Lbs	-- --	1750	1470	1415	-- --	1505	1265	1215	
												kN	-- --	7.78	6.54	6.29	-- --	6.69	5.63	5.40	
6 x 6	WE66	PB66	12	12	5-1/2	-- --	5	3-5/8	5-3/8	12	16d	Lbs	-- --	2615	-- --	2790	-- --	2250	-- --	2400	
												kN	-- --	11.63	-- --	12.41	-- --	10.01	-- --	10.68	
	WAS66	PBS66	12	12	5-1/2	5-1/2	6-3/4	5	2-1/4	14	16d	Lbs	23045	3420	2615	1915	19820	2940	2250	1645	
												kN	102.51	15.21	11.63	8.52	88.17	13.08	10.01	7.32	
										2	1/2	Lbs	23045	4530	2695	1915	19820	3895	2320	1645	
												kN	102.51	20.15	11.99	8.52	88.17	17.33	10.32	7.32	
6 x 6 Rough	WE66R	PB66R	12	12	6	-- --	5	3-5/8	5-3/8	12	16d	Lbs	-- --	2615	-- --	2790	-- --	2250	-- --	2400	
												kN	-- --	11.63	-- --	12.41	-- --	10.01	-- --	10.68	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) H2 is mimimum embedment length of anchor into concrete.
3) Minimum concrete compressive strength shall be 2,500 psi at 28 days.
4) Factored resistances are based on the use of either nails or bolts; nail and bolt values cannot be combined.
5) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

EBG / EPB / EPBH Elevated Post Bases

USP STRUCTURAL CONNECTORS
MiTek

These post bases allow installers to pre-align posts and preset post heights above concrete floors or footings. By eliminating post-to-concrete contact, moisture damage is reduced. Elevated post bases are ideal for building carports, decks or porches. All series feature convenient nail fastening to post.

Materials: EPB – 14 gauge tube; 12 gauge steel U-bracket
EBG44 – 16 gauge tube; 16 gauge steel U-bracket
EPBH – 12 gauge steel U-bracket Stem – 15 mm rebar

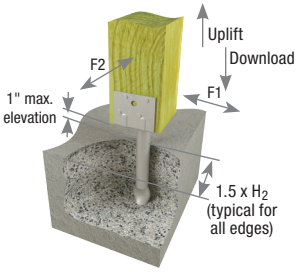
Finish: EPB – USP primer; EBG44-TZ – G-185 galvanizing, EPBH–Hot-dip galvanized

Options: See chart for Corrosion Finish Options

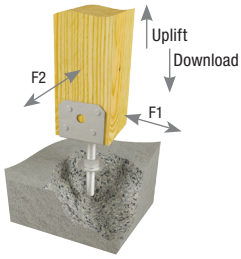
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

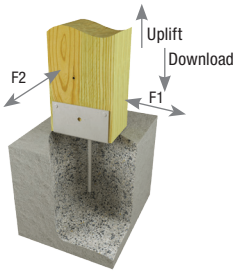
- Use all specified fasteners. See Product Notes, page 15.
- **Not recommended for fence post or other fixed post applications. These anchors are not designed to resist overturning (moment) loads.**
- Maintain 3" minimum edge distance between embedded tube and edge of concrete.



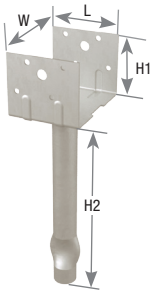
Typical EBG44-TZ installation



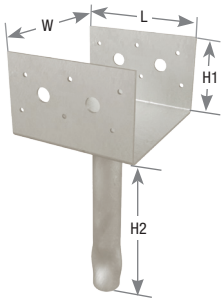
Typical EPB installation



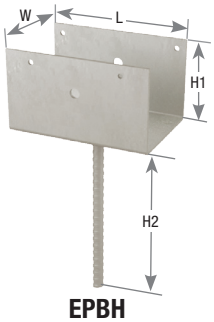
Typical EPBH installation



EBG44-TZ



EPB



EPBH

Post Size	USP Stock No.	Ref. No.	Dimensions (in) W	L	H1	H2	Fastener Schedule[3] Qty	Type	Unit	D Fir-L Wood Connection Factored Resistance Download 100%	Uplift 115%[2]	F1 115%[1,2]	F2 115%[1,2]	S-P-F Wood Connection Factored Resistance Download 100%	Uplift 115%[2]	F1 115%[1,2]	F2 115%[1,2]	Corrosion Finish
4 x 4	EBG44-TZ	EPB44A	3-9/16	2-3/4	2-3/8	7-1/2	8	16d HDG	Lbs	3985	1740	3685	3785	3415	1490	3160	3245	
									kN	17.73	7.74	16.39	16.84	15.19	6.63	14.06	14.43	
	EPBH44	EPB44PHDG, RCPS3.5HDG	3-1/2	3-3/8	2-3/4	7	4	16d HDG	Lbs	7025	1830	1720	1485	6020	1570	1475	1275	
									kN	31.25	8.14	7.65	6.61	26.78	6.98	6.56	5.67	
	EPB4408	EPB44, EPB44-12	3-9/16	3	3	8	8	16d	Lbs	4890	1830	3575	3455	4190	1570	3065	2965	
									kN	21.75	8.14	15.90	15.37	18.64	6.98	13.63	13.19	
4 x 6	EPB4608	EPB46, EPB46-12	3-9/16	5	3	8	12	16d	Lbs	4890	1830	3575	3455	4190	1570	3065	2965	
									kN	21.75	8.14	15.90	15.37	18.64	6.98	13.63	13.19	
4 x 6 Rough	EPBH46R	RCPS46HDG	4-1/8	5-3/8	3	7	4	16d HDG	Lbs	7025	1830	1720	1485	6020	1570	1475	1275	
									kN	31.25	8.14	7.65	6.61	26.78	6.98	6.56	5.67	
6 x 6	EPB6608	EPB66, EPB66-12	5-9/16	5	3-3/16	8	12	16d	Lbs	7490	2455	3575	3455	6420	2105	3065	2965	
									kN	33.32	10.92	15.90	15.37	28.56	9.36	13.63	13.19	
	EPBH66	RCPS5.5HDG	5-1/2	5-3/8	3	7	4	16d HDG	Lbs	7025	1830	1720	1485	6020	1570	1475	1275	
									kN	31.25	8.14	7.65	6.61	26.78	6.98	6.56	5.67	
6 x 6 Rough	EPBH66R	RCPS6HDG	6-1/8	5-3/8	3	7	4	16d HDG	Lbs	7025	1830	1720	1485	6020	1570	1475	1275	
									kN	31.25	8.14	7.65	6.61	26.78	6.98	6.56	5.67	

1) Factored lateral resistances (F1 and F2) are for conditions where pipe extends no more than 1" above the concrete surface.
2) Factored uplift and lateral resistances have taken short-term load duration factor 115% into consideration, no further increase is allowed.
3) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc

APB Height Adjustable Post Bases

Allows height adjustments of post after installation. A maximum height adjustment of 4″ can be achieved with this product. Adjustments may be required if original installation is not exact, if there is a greater slope on a deck than estimated, or if there is heaving or sinking of the post beyond the initial installation. Embed in concrete a minimum of 6″. Useful for reducing moisture damage.

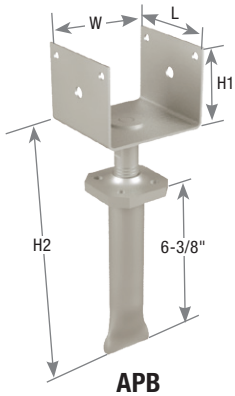
Materials: 16 gauge tube; 12 gauge steel U-bracket

Finish: Hot-dip galvanized

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- **Not recommended for fence posts or other unrestrained (not fixed or fastened at top) applications. These anchors are not designed to resist overturning (moment) loads**

Typical APB installation



APB

Post Size	USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	L	H1	H2	Fastener Schedule Anchor Bolt Qty	Anchor Bolt Dia. (in)	Post Qty	Post Type[3]	Unit	DF Factored Resistance[1,2] Bearing 100%	Uplift 115%	F1 115%	F2 115%	S-P-F Factored Resistance[1,2] Bearing 100%	Uplift 115%	F1 115%	F2 115%	Corrosion Finish
4 x 4	APB44	-- --	16	3-1/2	3-3/8	2-5/8	6-3/4	1	7/8	4	16d HDG	Lbs	7465	1490	975	1495	6400	1280	835	1285	
												kN	33.21	6.63	4.34	6.65	28.47	5.69	3.71	5.72	
6 x 6	APB66	-- --	16	5-1/2	5-3/8	2-7/8	6-3/4	1	7/8	4	16d HDG	Lbs	7465	1490	975	1495	6400	1280	835	1285	
												kN	33.21	6.63	4.34	6.65	28.47	5.69	3.71	5.72	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Concrete compressive strength shall be 2,500 psi or greater at 28 days.
3) **NAILS:** 16d HDG nails are 0.162" dia. x 3-1/2" long and hot-dip galvanized per ASTM A 153.
New products or updated product information are designated in **blue font.**

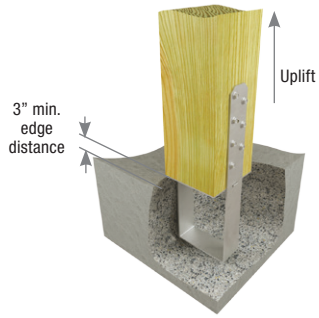
Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

KCBQ Column Bases

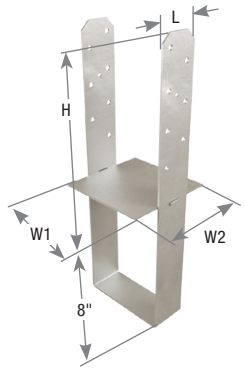
High capacity column base fastens to column with WS wood screws.

Materials: See chart
Finish: G90 galvanizing
Options: KCBQ models available in rough/full sizes
See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- WS2 Wood Screws, 1/4" dia. x 2" long, are supplied with KCBQ Column Bases.
- **Not recommended for fence posts or other unrestrained (not fixed or fastened at top) applications. These bases are not designed to resist overturning (moment) loads.**
- All models require a minimum edge distance of 3".
- Embed column base with bottom of base plate flush to concrete.



Typical KCBQ66 installation



KCBQ66

Column Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W1	W2[4]	H	L	Fastener Schedule[3] Qty	Type	DF Factored Resistance[2] Uplift (115%)[1] Lbs	kN	S-P-F Factored Resistance[2] Uplift (115%)[1] Lbs	kN	Corrosion Finish
4 x 4	KCBQ44	CB44, CBQ44-SDS2	10	3-9/16	3-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
4 x 6	KCBQ46	CB46, CBQ46-SDS2	10	3-9/16	5-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
4 x 8	KCBQ48	CB48	10	3-9/16	7-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
6 x 4	KCBQ64	-- --	10	5-1/2	3-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
6 x 6	KCBQ66	CB66, CBQ66-SDS2	10	5-1/2	5-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
6 x 8	KCBQ68	CB68	10	5-1/2	7-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
7-1/8 x 3-1/2	KCBQ71-4	CB71/8-4	10	7-1/8	3-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
7-1/8 x 5-1/2	KCBQ71-6	CB71/8-6	10	7-1/8	5-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
7-1/8 x 7-1/8	KCBQ71-7	CB71/8-7	10	7-1/8	7-1/8	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
8 x 6	KCBQ86	CB86	10	7-1/2	5-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
8 x 8	KCBQ88	CB88	10	7-1/2	7-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
10 x 10	KCBQ1010	CB1010	10	9-1/2	9-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
10 x 12	KCBQ1012	CB1012	10	9-1/2	11-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
12 x 12	KCBQ1212	CB1212	10	11-1/2	11-1/2	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
Glulam Sizes														
5-1/8 glulam	KCBQ5	CB5-4.5, CB5-6	10	5-1/4	Specify	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
6-3/4 glulam	KCBQ7	CB7-6, CB7-7.5, CB7-9, CB7-10.5	10	6-7/8	Specify	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	
8-3/4 glulam	KCBQ9	CB9-6, CB9-7.5, CB9-9, CB9-10.5	10	8-7/8	Specify	8-3/4	2-1/4	14	WS2	14345	63.81	10605	47.17	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Concrete compressive strength shall be 2,500 psi or greater at 28 days.
3) WS2 Wood Screws are 1/4" x 2" long and are included with KCBQ Column Bases.
4) "Specify" denotes the required width that must be specified at the time of ordering.

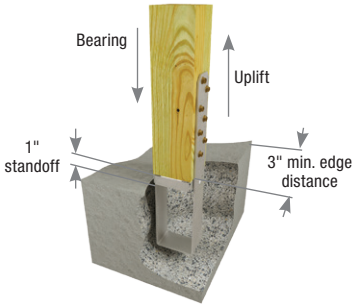
Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

CBSQ Column Bases

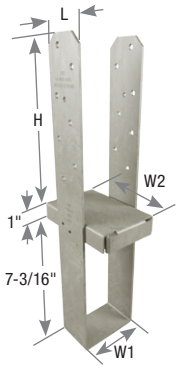
These column bases install using USP's WS2-HDG Wood Screws, reducing installation time and cost. Designed for high uplift in high wind or seismic applications. Includes a stand-off plate to protect the wood from ground contact moisture.

Materials: See chart
Finish: G-185 galvanizing
Options: See chart for Corrosion Finish Options

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- WS2-HDG Wood Screws, 1/4" dia. x 2" long, are supplied with CBSQ Bases.
- Maintain 3" minimum edge distance between embedded tube and edge of concrete.
- Embed the column base until the concrete surface meets the bottom edge of the stand-off plate.
- **Not recommended for fence posts or other unrestrained (not fixed or fastened at top) applications. These bases are not designed to resist overturning (moment) loads.**



Typical CBSQ44-TZ installation



CBSQ46-TZ

Column Size	USP Stock No.	Ref. No.	Steel Gauge		Dimensions (in)				Fastener Schedule[2]		Unit	DF Factored Resistance[3]		S-P-F Factored Resistance[3]		Corrosion Finish
			Strap	Base	W1	W2	H	L	Qty	Type		Bearing 100%	Uplift 115%[1]	Bearing 100%	Uplift 115%[1]	
4 x 4	CBSQ44-TZ	CBSQ44-SDS2	10	16	3-9/16	3-1/2	8-3/4	2-1/4	14	WS2-HDG	Lbs	9725	9895	8365	8510	
											kN	43.26	44.02	37.21	37.86	
4 x 6	CBSQ46-TZ	CBSQ46-SDS2	10	12	3-9/16	5-7/16	8-3/4	2-1/4	14	WS2-HDG	Lbs	19895	9895	17110	8510	
											kN	88.50	44.02	76.11	37.86	
6 x 6	CBSQ66-TZ	CBSQ66-SDS2	10	12	5-1/2	5-7/16	8-3/4	3	14	WS2-HDG	Lbs	23045	9895	19820	8510	
											kN	102.51	44.02	88.17	37.86	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) WS2-HDG Wood Screws are 1/4" x 2" and are included with CBSQ Column Bases.
3) Concrete compressive strength shall be 2,500 psi or greater at 28 days.

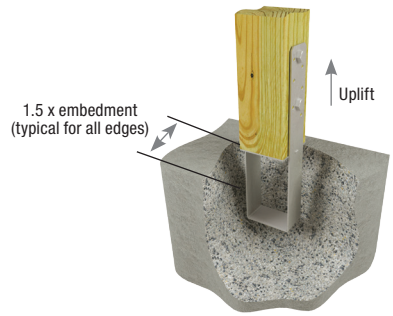
Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

CBE Column Bases

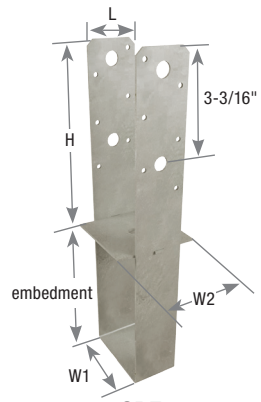
12 gauge base for carports, patios, or other residential framing.

Materials: 12 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- **Not recommended for fence posts or other unrestrained (not fixed or fastened at top) applications. These bases are not designed to resist overturning (moment) loads.**
- All models require a minimum edge distance of 3".
- Bolted models feature diamond holes for temporary nail fastening to facilitate drilling and bolting.
- Embed column base with bottom of base plate flush to concrete.
- Bolts must be ordered separately.



Typical CBE installation



CBE

Column Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W1	W2	H	L	Embedment[5]	Fastener Schedule[2,6] Qty	Type	DF Factored Resistance Uplift (115%)[1,3,4] Lbs	kN	S-P-F Factored Resistance Uplift (115%)[1,3,4] Lbs	kN
4 x 4	CBE44	LCB44	12	3-9/16	3-1/2	7-1/2	2	6-1/2	2	1/2	6305	28.05	5420	24.11
									12	16d	4060	18.06	3490	15.52
4 x 6	CBE46	LCB46	12	3-9/16	5-1/2	7-1/2	2	6-1/2	2	1/2	6295	28.00	5415	24.09
									12	16d	4060	18.06	3490	15.52
6 x 6	CBE66	LCB66	12	5-1/2	5-1/2	7-1/2	2	6-1/2	2	1/2	6280	27.93	5400	24.02
									12	16d	4060	18.06	3490	15.52

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) All bolts shall meet or exceed the specifications of ASTM A 307.
3) Concrete compressive strength shall be 2,500 psi or greater at 28 days.
4) Factored resistances are based on the use of either nails or bolts; nail and bolt values cannot be combined.
5) CBE column base shall be embedded into concrete up to this depth.
6) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

D / RSCH Post Anchors

Secures nominal sized posts to wood surfaces for light-duty applications.

Materials: See chart

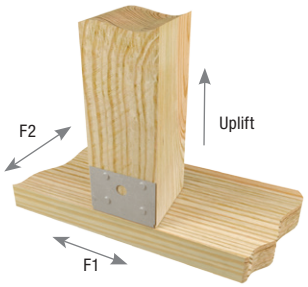
Finish: G90 galvanizing; D44-TZ & D46R-TZ - G-185 galvanizing; RSCH – Hot-dip galvanized

Options: See chart for Corrosion Finish Options

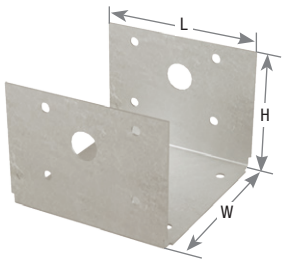
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- **Not recommended for fence posts or other unrestrained (not fixed or fastened at top) applications. These anchors are not designed to resist overturning (moment) loads.**
- While D series post anchors offer some lateral and uplift resistance, they are not recommended as a primary means of anchorage for posts in railings. They may be used only for intermediate posts between fully anchored corner / end posts in rail systems.



Typical D installation



D

RSCH

Post Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	L	Fastener Schedule[2] Post Qty	Post Nails	Beam Qty	Beam Nails	Unit	DF Factored Resistance[1] Uplift 115%	F1 115%	F2 115%	S-P-F Factored Resistance[1] Uplift 115%	F1 115%	F2 115%	Corrosion Finish
4 x 4	D44-TZ	BC40, BC40Z	18	3-9/16	2-1/2	3-3/8	8	16d HDG	4	16d HDG	Lbs	1345	1920	2065	955	1365	1465	
											kN	5.98	8.54	9.19	4.25	6.07	6.52	
	RSCH44	-- --	12	3-9/16	2-5/8	3-3/8	4	16d HDG	1	-- --	Lbs	-- --	-- --	-- --	-- --	-- --	-- --	
											kN	-- --	-- --	-- --	-- --	-- --	-- --	
4 x 4 Rough	D44R	BC40R	18	4	3	3-3/4	8	16d	4	16d	Lbs	1345	1920	2065	955	1365	1465	
											kN	5.98	8.54	9.19	4.25	6.07	6.52	
4 x 6	D46	BC460	18	3-9/16	3	5-3/8	10	16d	5	16d	Lbs	1345	1920	2065	955	1365	1465	
											kN	5.98	8.54	9.19	4.25	6.07	6.52	
4 x 6 Rough	D46R-TZ	-- --	18	4	3	5-3/8	10	16d HDG	5	16d HDG	Lbs	1345	1920	2065	955	1365	1465	
											kN	5.98	8.54	9.19	4.25	6.07	6.52	
6 x 6	D66	BC60	18	5-1/2	3	5-3/8	10	16d	5	16d	Lbs	1345	1920	2065	955	1365	1465	
											kN	5.98	8.54	9.19	4.25	6.07	6.52	
	RSCH66	-- --	12	5-9/16	2-7/8	5-3/8	4	16d HDG	1	-- --	Lbs	-- --	-- --	-- --	-- --	-- --	-- --	
											kN	-- --	-- --	-- --	-- --	-- --	-- --	
6 x 6 Rough	D66R	BC60R	18	6	3	5-3/8	10	16d	5	16d	Lbs	1345	1920	2065	955	1365	1465	
											kN	5.98	8.54	9.19	4.25	6.07	6.52	
8 x 8	D88	BC80	18	7-1/2	3	7-3/8	12	16d	5	16d	Lbs	1345	1920	2065	955	1365	1465	
											kN	5.98	8.54	9.19	4.25	6.07	6.52	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.

2) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

EPCM / PCM Post Caps

USP STRUCTURAL CONNECTORS MiTek

PCM – Provides a positive connection for medium-duty, post-to-beam applications.

EPCM – End column caps.

Materials: See chart

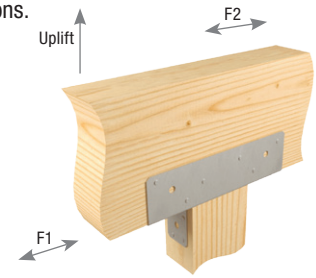
Finish: G90 galvanizing

Options: See chart for Corrosion Finish Options

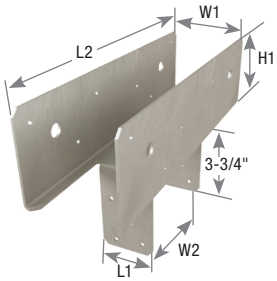
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- PCM 16 gauge post caps should not be substituted for PCM 12 gauge post caps unless approved by the Engineer of Record.

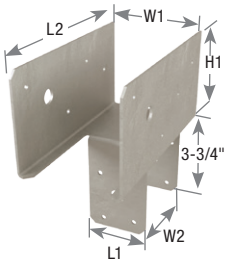


Typical PCM46 center cap installation



PCM

Typical EPCM end cap installation



EPCM

USP Series	Ref. Series	Steel Gauge	Fastener Schedule[1] Post Qty	Post Type	Beam Qty	Beam Type
PCM_16	PC_16	16	8	16d	12	16d
PCM	PC	12	8	16d	12	16d
EPCM_16	EPC_16	16	8	16d	8	16d
EPCM	EPC	12	8	16d	8	16d

1) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

USP Stock No.	Ref. No.	Beam	Post	Dimensions (in) W1	W2	H1	L1	L2	DF Factored Resistance (115%)[1] Lbs Uplift	Lbs F1	Lbs F2	kN Uplift	kN F1	kN F2	S-P-F Factored Resistance (115%)[1] Lbs Uplift	Lbs F1	Lbs F2	kN Uplift	kN F1	kN F2	Corrosion Finish
Centre Column Caps																					
PCM4416	PC44-16	4x	4x	3-9/16	3-9/16	3-9/16	2-7/16	11	1140	1345	1530	5.07	5.98	6.81	960	1130	1285	4.27	5.03	5.72	
PCM44	PC44	4x	4x	3-9/16	3-9/16	3-9/16	2-7/16	11	1965	1600	1915	8.74	7.12	8.52	1650	1345	1610	7.34	5.98	7.16	
PCM46	PC46	4x	6x	3-9/16	5-9/16	3-9/16	2-7/16	13	1965	1600	1915	8.74	7.12	8.52	1650	1345	1610	7.34	5.98	7.16	
PCM4616	PC46-16	4x	6x	3-9/16	5-9/16	3-9/16	2-7/16	13	1140	1345	1530	5.07	5.98	6.81	960	1130	1285	4.27	5.03	5.72	
PCM4816	PC48-16	4x	8x	3-9/16	7-9/16	3-9/16	2-7/16	15	1140	1345	1530	5.07	5.98	6.81	960	1130	1285	4.27	5.03	5.72	
PCM48	PC48	4x	8x	3-9/16	7-9/16	3-9/16	2-7/16	15	1965	1600	1915	8.74	7.12	8.52	1650	1345	1610	7.34	5.98	7.16	
PCM6416	PC64-16	6x	4x	5-1/2	3-9/16	3-1/2	3-13/16	11	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
PCM64	PC64	6x	4x	5-1/2	3-9/16	3-1/2	3-13/16	11	1860	2190	1970	8.27	9.74	8.76	1560	1840	1655	6.94	8.19	7.36	
PCM6616	PC66-16	6x	6x	5-1/2	5-9/16	3-1/2	3-13/16	13	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
PCM66	PC66	6x	6x	5-1/2	5-9/16	3-1/2	3-13/16	13	1860	2190	1970	8.27	9.74	8.76	1560	1840	1655	6.94	8.19	7.36	
PCM6816	-- --	6x	8x	5-1/2	7-9/16	3-1/2	3-13/16	15	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
PCM68	PC68	6x	8x	5-1/2	7-9/16	3-1/2	3-13/16	15	1860	2190	1970	8.27	9.74	8.76	1560	1840	1655	6.94	8.19	7.36	
PCM77	-- --	7-1/8	7-1/8	7-1/8	7-1/8	3-11/16	5-5/8	14-9/16	1860	2190	1970	8.27	9.74	8.76	1560	1840	1655	6.94	8.19	7.36	
PCM8416	-- --	8x	4x	7-1/2	3-9/16	3-1/2	5-5/8	11	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
PCM84	PC84	8x	4x	7-1/2	3-9/16	3-1/2	5-5/8	11	1860	2190	1970	8.27	9.74	8.76	1560	1840	1655	6.94	8.19	7.36	
PCM8616	-- --	8x	6x	7-1/2	5-9/16	3-3/8	5-5/8	13	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
PCM86	PC86	8x	6x	7-1/2	5-9/16	3-1/2	5-5/8	13	1860	2190	1970	8.27	9.74	8.76	1560	1840	1655	6.94	8.19	7.36	
PCM8816	-- --	8x	8x	7-1/2	7-9/16	3-1/2	5-5/8	15	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
PCM88	PC88	8x	8x	7-1/2	7-9/16	3-1/2	5-5/8	15	1860	2190	1970	8.27	9.74	8.76	1560	1840	1655	6.94	8.19	7.36	
End Column Caps																					
EPCM4416	EPC44-16	4x	4x	3-9/16	3-9/16	3-9/16	2-7/16	7-1/4	1140	1345	1530	5.07	5.98	6.81	960	1130	1285	4.27	5.03	5.72	
EPCM44	EPC44	4x	4x	3-9/16	3-9/16	3-9/16	2-7/16	7-1/4	1965	1600	1915	8.74	7.12	8.52	1650	1345	1610	7.34	5.98	7.16	
EPCM46	EPC46	4x	6x	3-9/16	5-9/16	3-9/16	2-7/16	9-1/4	1965	1600	1915	8.74	7.12	8.52	1650	1345	1610	7.34	5.98	7.16	
EPCM4616	EPC46-16	4x	6x	3-9/16	5-9/16	3-9/16	2-7/16	9-1/4	1140	1345	1530	5.07	5.98	6.81	960	1130	1285	4.27	5.03	5.72	
EPCM4816	EPC48-16	4x	8x	3-9/16	7-9/16	3-9/16	2-7/16	11-1/4	1140	1345	1530	5.07	5.98	6.81	960	1130	1285	4.27	5.03	5.72	
EPCM48	EPC48	4x	8x	3-9/16	7-9/16	3-9/16	2-7/16	11-1/4	1965	1600	1915	8.74	7.12	8.52	1650	1345	1610	7.34	5.98	7.16	
EPCM6416	EPC64-16	6x	4x	5-1/2	3-9/16	3-1/2	3-13/16	7-1/4	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
EPCM64	EPC64	6x	4x	5-1/2	3-9/16	3-1/2	3-13/16	7-1/4	1860	1970	1970	8.27	8.76	8.76	1560	1655	1655	6.94	7.36	7.36	
EPCM6616	EPC66-16	6x	6x	5-1/2	5-9/16	3-1/2	3-13/16	9-1/4	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
EPCM66	EPC66	6x	6x	5-1/2	5-9/16	3-1/2	3-13/16	9-1/4	1860	1970	1970	8.27	8.76	8.76	1560	1655	1655	6.94	7.36	7.36	
EPCM6816	-- --	6x	8x	5-1/2	7-9/16	3-1/2	3-13/16	11-1/4	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
EPCM68	EPC68	6x	8x	5-1/2	7-9/16	3-1/2	3-13/16	11-1/4	1860	1970	1970	8.27	8.76	8.76	1560	1655	1655	6.94	7.36	7.36	
EPCM77	-- --	7-1/8	7-1/8	7-1/8	7-1/8	3-11/16	5-5/8	10-13/16	1860	1970	1970	8.27	8.76	8.76	1560	1655	1655	6.94	7.36	7.36	
EPCM8416	-- --	8x	4x	7-1/2	3-9/16	3-1/2	5-5/8	7-1/4	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
EPCM84	EPC84	8x	4x	7-1/2	3-9/16	3-1/2	5-5/8	7-1/4	1860	1970	1970	8.27	8.76	8.76	1560	1655	1655	6.94	7.36	7.36	
EPCM8616	-- --	8x	6x	7-1/2	5-9/16	3-3/8	5-5/8	9-1/4	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
EPCM86	EPC86	8x	6x	7-1/2	5-9/16	3-1/2	5-5/8	9-1/4	1860	1970	1970	8.27	8.76	8.76	1560	1655	1655	6.94	7.36	7.36	
EPCM8816	-- --	8x	8x	7-1/2	7-9/16	3-1/2	5-5/8	11-1/4	1160	1825	1825	5.16	8.12	8.12	975	1535	1535	4.34	6.83	6.83	
EPCM88	EPC88	8x	8x	7-1/2	7-9/16	3-1/2	5-5/8	11-1/4	1860	1970	1970	8.27	8.76	8.76	1560	1655	1655	6.94	7.36	7.36	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.

BC / BCS / C Post Caps

USP STRUCTURAL CONNECTORS MiTek

BC – One-piece design for double 2x's to a 4x post.

BCS – One-piece design connects 2-ply or 3-ply beams to the tops of 4x4 or 6x6 post. Slant nailing reduces the amount of nails required.

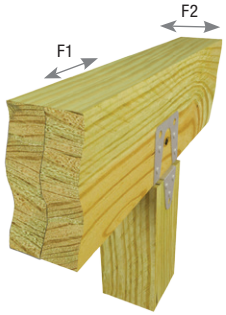
C – One-piece design.

Materials: 18 gauge

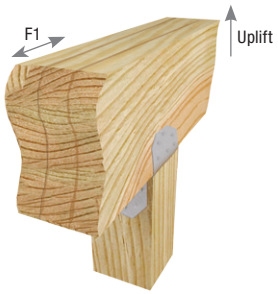
Finish: G90 galvanizing;
BC400-TZ – G-185 galvanizing

Options: See chart for Corrosion Finish Options

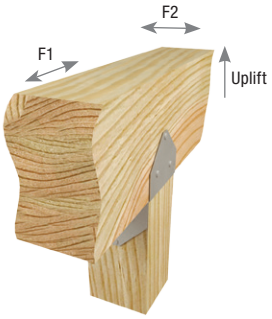
Codes: Load values are derived from data submitted to various North American building code evaluators.



Typical BC400-TZ installation



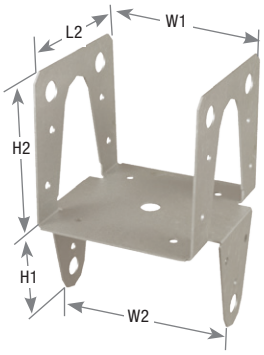
Typical BCS23-6 installation



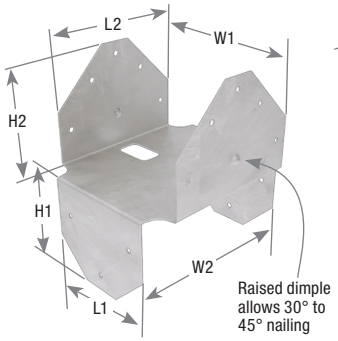
Typical C44 installation

Installation:

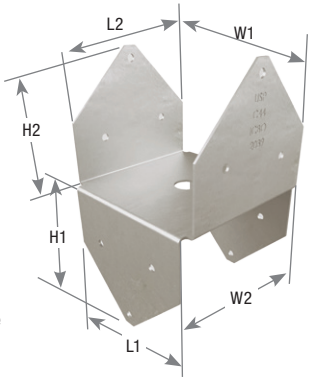
- Place post cap on top of post and fasten cap to post using specified nails.
- Place beam between top flanges of the cap and install all specified nails into beam.
- **BCS** - Slant nails must be installed through dimple holes at a 30° to 45° angle through the beam into the post to achieve listed loads. **Standard length "common" nails must be used to achieve listed load values.**



BC400-TZ



BCS23-6



C44

Post Size	USP Stock No.	Ref. No.	Dimensions (in) W1	W2	H1	H2	L1	L2	Fastener Schedule[2] Post Qty	Beam Qty	Type	Unit	DF Factored Resistance[1] Uplift 115%	F1 115%	F2 115%	S-P-F Factored Resistance[1] Uplift 115%	F1 115%	F2 115%	Corrosion Finish
4 x 4	**BCS22-4**	BCS2-2/4	3-1/8	3-9/16	2-15/16	2-15/16	2-7/8	2-7/8	6	8	10d	Lbs	1265	1555	--	1150	1485	--	
												kN	5.63	6.92	--	5.12	6.61	--	
	BC400-TZ	-- --	3-1/8	3-9/16	2-3/8	3	--	3-5/16	10	8	10d x 1-1/2 HDG	Lbs	**935**	**1185**	**840**	**800**	**1015**	**720**	
												kN	**4.16**	**5.27**	**3.74**	**3.56**	**4.51**	**3.20**	
	C44	BC4	3-9/16	3-9/16	2-7/8	2-7/8	3-1/4	3-1/4	6	6	16d	Lbs	1885	2220	2220	1340	1575	1575	
												kN	8.39	9.88	9.88	5.96	7.01	7.01	
4 x 4 Rough	C44R	BC4R	4	4	2-5/8	2-5/8	3-1/4	3-1/4	8	8	16d	Lbs	1885	2220	2220	1340	1575	1575	
												kN	8.39	9.88	9.88	5.96	7.01	7.01	
4 x 6	C46	BC46	3-9/16	5-1/2	2-9/16	2-5/8	3-3/8	5-1/4	6	10	16d	Lbs	1885	2220	2220	1340	1575	1575	
												kN	8.39	9.88	9.88	5.96	7.01	7.01	
4 x 6 Rough	C46R	-- --	4	6	2-3/4	2-3/4	3-1/4	5-1/4	8	10	16d	Lbs	1885	2220	2220	1340	1575	1575	
												kN	8.39	9.88	9.88	5.96	7.01	7.01	
6 x 6	**BCS23-6**	BCS2-3/6	4-5/8	5-5/8	3	3-3/8	3-1/2	4-3/8	6	12	16d	Lbs	1460	2385	--	1315	2295	--	
												kN	6.49	10.61	--	5.85	10.21	--	
	C66	BC6	5-1/2	5-1/2	2-7/8	2-7/8	5-1/4	5-1/4	12	12	16d	Lbs	2270	4125	4125	1610	2925	2925	
												kN	10.10	18.35	18.35	7.16	13.01	13.01	
6 x 6 Rough	C66R	BC6R	6	6	2-13/16	2-13/16	5-1/4	5-1/4	10	10	16d	Lbs	2055	4360	4360	1455	3095	3095	
												kN	9.14	19.40	19.40	6.47	13.77	13.77	
8 x 8	C88	BC8	7-1/2	7-1/2	5	5	7-3/8	7-3/8	16	16	16d	Lbs	2120	4360	4360	1505	3095	3095	
												kN	9.43	19.40	19.40	6.69	13.77	13.77	

1) Short-term load duration factor K_D = 1.15 has been taken into consideration; no further increase allowed.

2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

PB / PBES / PBS Post Caps

USP STRUCTURAL CONNECTORS MiTek

PB – Two-piece design.

PBES / PBS – Two-piece design with extended side plates and wrap around post design. Easy retrofit installations.

Materials: 18 gauge

Finish: G90 galvanizing; PB44-6TZ & PB66-6TZ – G-185 galvanizing

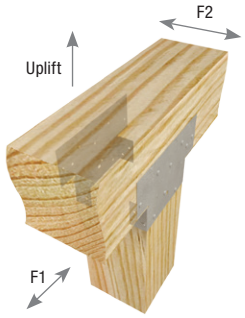
Options: See chart for Corrosion Finish Options

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

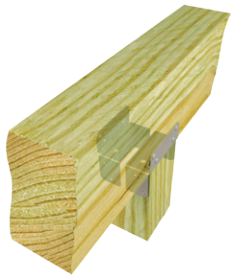
- Use all specified fasteners. See Product Notes, page 15.
- These products are designed for single, solid-sawn beams with matching post width. Multi-ply beams must have same width as post. Use shims as required.
- **PB, PBES, PBS post caps are to be installed in pairs.**

AVAILABLE IN GOLD COAT

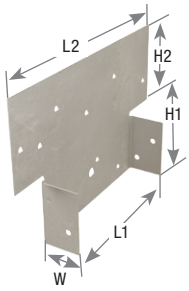


Typical PBS installation

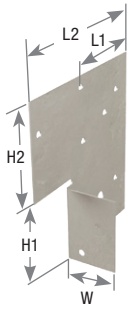
Typical PBES installation



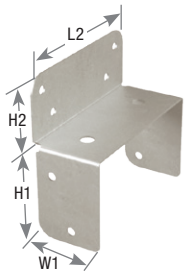
Typical PB-TZ installation



PBS



PBES



PB44-6TZ

Post Size	USP Stock No.	Ref. No.	Dimensions (in) W	H1	H2	L1	L2	Fastener Schedule[2,3] Post Qty	Post Type	Beam Qty	Beam Type	Unit	DF Factored Resistance[1,2] Uplift 115%	F1 115%	F2 115%	S-P-F Factored Resistance[1,2] Uplift 115%	F1 115%	F2 115%	Corrosion Finish
4 x 4	PB44-6TZ	LPC4Z	1-1/2	2-1/8	1-1/2	--	3-5/8	8	16d HDG	8	16d HDG	Lbs	1210	1885	665	855	1340	470	Triple Zinc / Gold Coat
												kN	5.38	8.39	2.96	3.80	5.96	2.09	
	PBS44	AC4	1-7/16	2-5/16	2-13/16	3-9/16	6-1/2	12	16d	12	16d	Lbs	5850	3800	2250	4150	2695	1600	Triple Zinc / Stainless Steel
												kN	26.02	16.90	10.01	18.46	11.99	7.12	
	PBES44	ACE4, LCE4	1-1/2	2-3/8	2-3/4	3-1/4	4-3/4	8	16d	8	16d	Lbs	4150	1915	1050	2950	1355	745	Triple Zinc / Stainless Steel
												kN	18.46	8.52	4.67	13.12	6.03	3.31	
4 x 4 Rough	PBS44R	AC4R	1-1/2	2-5/16	2-3/16	4	7	8	16d	8	16d	Lbs	4150	1915	1050	2950	1355	745	
												kN	18.46	8.52	4.67	13.12	6.03	3.31	
6 x 6	PB66-6TZ	LPC6Z	1-1/2	2-1/2	3	--	5-9/16	8	16d HDG	8	16d HDG	Lbs	1210	1885	665	855	1340	470	Triple Zinc / Gold Coat
												kN	5.38	8.39	2.96	3.80	5.96	2.09	
	PBES66	ACE6	1-1/2	2-3/8	2-1/8	5-1/2	7	8	16d	8	16d	Lbs	3480	2400	1685	2475	1700	1195	Triple Zinc / Stainless Steel
												kN	15.48	10.68	7.50	11.01	7.56	5.32	
	PBS66	AC6	1-1/4	2-5/16	2-7/8	5-1/2	8	14	16d	12	16d	Lbs	4295	3785	2190	3045	2685	1560	Triple Zinc / Stainless Steel
												kN	19.11	16.84	9.74	13.55	11.94	6.94	
6 x 6 Rough	PBS66R	AC6R	1-1/4	2-5/16	2-3/16	6	8-1/2	10	16d	10	16d	Lbs	3480	2400	1685	2475	1700	1195	Triple Zinc
												kN	15.48	10.68	7.50	11.01	7.56	5.32	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Factored resistances and nail schedules for two-piece models are per pair of post caps.
3) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

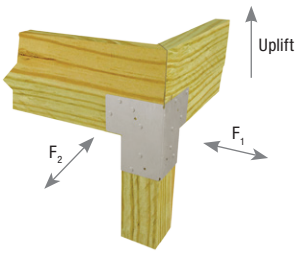
PBC Post Beam Corner Connectors

USP STRUCTURAL CONNECTORS MiTek

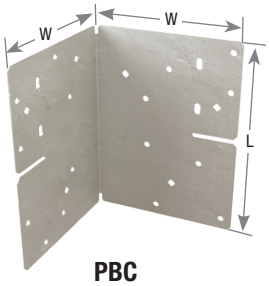
The PBC series is a one-piece connector designed to secure two mitered beams on a corner post while providing uplift capacity.

Materials: 18 gauge
Finish: G-185 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Install PBC on outside corner of post forming tabs to inner side of post.
- Assumes beam members are bevel cut at corner.



Typical PBC installation



PBC

Post Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Fastener Schedule[2] Post Qty	Post Type	Beam Qty	Beam Type	Unit	DF Factored Resistance[1] Uplift 115%	DF F1 115%	DF F2 115%	S-P-F Factored Resistance[1] Uplift 115%	S-P-F F1 115%	S-P-F F2 115%	Corrosion Finish
4 x 4	PBC44-TZ	-- --	18	4-15/16	6-1/2	8	16d HDG	8	16d HDG	Lbs	1800	900	900	1555	775	775	
										kN	8.01	4.00	4.00	6.92	3.45	3.45	
6 x 6	PBC66-TZ	-- --	18	6-15/16	6-1/2	8	16d HDG	8	16d HDG	Lbs	1800	900	900	1555	775	775	
										kN	8.01	4.00	4.00	6.92	3.45	3.45	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

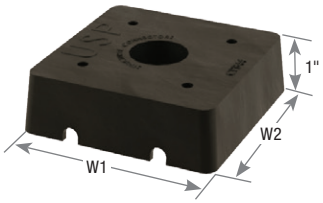
CPB Composite Post Bases

The CPB is made of corrosion resistant composite material compatible with preservative treated lumber. Provides code required 1" stand-off and can be used with rough lumber sizes.

Materials: High Strength composite

Installation:
- Attach base to post with (4) 10d HDG nails.
- Attach post to concrete using 1/2" diameter rod into concrete and extend into wood member.
- **Not recommended for fence posts or other unrestrained (not fixed or fastened at top) applications. These anchors are not designed to resist overturning (moment) loads.**

Typical CPB installation



CPB

Post Size	USP Stock No.	Ref. No.	Dimensions (in) W1	Dimensions (in) W2	Bottom Surface Bearing Area	Fastener Schedule[5] Qty	Fastener Schedule[5] Type	Factored Resistance[1,2] Lbs	Factored Resistance[1,2] kN	Concrete Bearing Strength[3,4] Lbs	Concrete Bearing Strength[3,4] kN
4 x 4	CPB44	CPS4	3-1/4	3-1/4	2.2	4	10d HDG	5235	23.29	6545	29.11
4 x 6	CPB46	CPS46	3-5/16	5-5/16	3.3	4	10d HDG	6810	30.29	9820	43.68
5 x 5	CPB55	CPS5	4-1/8	4-1/8	3.0	4	10d HDG	6295	28.00	8925	39.70
6 x 6	CPB66	CPS6	5-5/16	5-5/16	3.9	4	10d HDG	8570	38.12	11600	51.60
8 x 8	CPB88	CPS7	7-1/4	7-1/4	6.4	4	10d HDG	12490	55.56	19040	84.70

1) Loads shall not be increased for short-term loading.
2) Loads require a minimum 650 psi wood compressive strength.
3) Concrete Design Bearing Strength = Ø (0.85 $f'_c A_1$) with f'_c = 2,500 psi. ACI 318-02, Section 10.17.1.
4) Design Bearing Strength has been increased assuming $(A_2 / A_1)^{0.5}$ per ACI 318-02, Section 10.17.1.
5) **NAILS:** 10d nails are 0.148" dia. x 3" long.

KCCQ / KECCQ Column Caps

Designed to be installed without the need to drill bolt holes, simplifying installation and maintaining the wood cross section. Installs with WS Wood Screws offering high uplift capacity.

KCCQ — Standard column cap.

KECCQ — End column cap.

Materials: See chart

Finish: USP primer

Options: See chart for Corrosion Finish Options and Specialty Options on page 73.

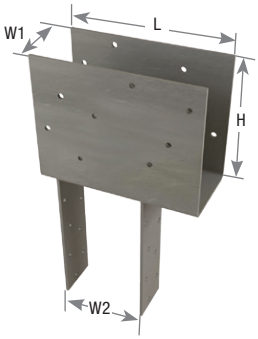
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

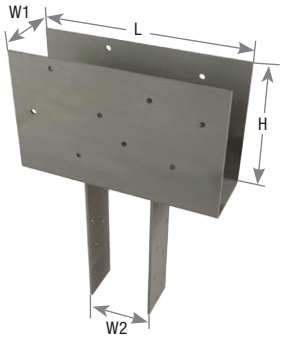
- Use all specified fasteners. See Product Notes, page 15.
- WS3 Wood Screws, 1/4" dia. x 3" long, are supplied with Column Caps.
- Beams shall be designed to support the required loads. Beam shear may limit loads to less than listed loads for device. A design professional shall determine the adequacy of the stud to resist published loads.

Typical KECCQ44 end cap installation

Typical KCCQ44 center cap installation



KECCQ44



KCCQ44

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W1	W2	H	L	Fastener Schedule[4] Beam Qty	Beam Type	Column or Post Qty	Column or Post Type	DF Factored Resistance[3] Bearing 100%[2] Lbs	Bearing 100%[2] kN	Uplift 115%[1,8] Lbs	Uplift 115%[1,8] kN	S-P-F Factored Resistance[3] Bearing 100%[2] Lbs	Bearing 100%[2] kN	Uplift 115%[1,8] Lbs	Uplift 115%[1,8] kN	Corrosion Finish
Centre Column Caps																			
KCCQ325-4	CCQ3-4SDS2.5	7	3-1/4	3-5/8	6-1/2	11	16	WS3	14	WS3	30940	137.63	12920	57.47	21040	93.59	9170	40.79	
KCCQ325-6	CCQ3-6SDS2.5	7	3-1/4	5-1/2	6-1/2	11	16	WS3	14	WS3	30940	137.63	12920	57.47	21040	93.59	9170	40.79	
KCCQ44	CCQ44SDS2.5	7	3-5/8	3-5/8	6-1/2	11	16	WS3	14	WS3	34655	154.16	12575	55.94	23565	104.83	8930	40.79	
KCCQ45	-- --	7	3-5/8	5-3/8	6-1/2	11	16	WS3	14	WS3	34655	154.16	12575	55.94	23565	104.83	8930	40.79	
KCCQ46	CCQ46SDS2.5	7	3-5/8	5-1/2	6-1/2	11	16	WS3	14	WS3	34655	154.16	12920	57.47	23565	104.83	9170	40.79	
KCCQ47	-- --	7	3-5/8	7-1/8	6-1/2	11	16	WS3	14	WS3	34655	154.16	12575	55.94	23565	104.83	8930	40.79	
KCCQ47X	-- --	7	3-5/8	7-1/8	6-1/2	13	16	WS3	14	WS3	40955	182.18	12575	55.94	27850	123.89	8930	40.79	
KCCQ48	CCQ48SDS2.5	7	3-5/8	7-1/2	6-1/2	11	16	WS3	14	WS3	34655	154.16	12920	57.47	23565	104.83	9170	40.79	
KCCQ525-4	CCQ5-4SDS2.5	3	5-1/4	3-5/8	8	13	16	WS3	14	WS3	59960	266.73	12920	57.47	40775	181.38	9170	40.79	
KCCQ525-6	CCQ5-6SDS2.5	3	5-1/4	5-1/2	8	13	16	WS3	14	WS3	59960	266.73	12920	57.47	40775	181.38	9170	40.79	
KCCQ525-8	CCQ5-8SDS2.5	3	5-1/4	7-1/2	8	13	16	WS3	14	WS3	59960	266.73	12920	57.47	40775	181.38	9170	40.79	
KCCQ57	-- --	7	5-3/8	7-1/8	6-1/2	11	16	WS3	14	WS3	51975	231.21	12920	57.47	35345	157.23	9170	40.79	
KCCQ64	CCQ64SDS2.5	7	5-1/2	3-5/8	6-1/2	11	16	WS3	14	WS3	54455	242.24	12920	57.47	37030	164.72	9170	40.79	
KCCQ66	CCQ66SDS2.5	7	5-1/2	5-1/2	6-1/2	11	16	WS3	14	WS3	**49125**	**218.52**	12920	57.47	**37205**	**165.50**	**10850**	**48.26**	
KCCQ67X	CCQ6-7.13SDS2.5	7	5-1/2	7-1/8	6-1/2	11	16	WS3	14	WS3	54455	242.24	12920	57.47	37030	164.72	9170	40.79	
KCCQ68	CCQ68SDS2.5	7	5-1/2	7-1/2	6-1/2	11	16	WS3	14	WS3	54455	242.24	12920	57.47	37030	164.72	9170	40.79	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Bearing loads are based on compression perpendicular to grain values published in the 2001 NDS and soft converted to Limit States Design.
3) Factored resistances are based on lumber with a specific gravity of DF = 0.49 and S-P-F = 0.42 and a moisture content of 19% or less.
4) WS3 Wood Screws are 1/4" x 3" long and are included with KCCQ and KECCQ column caps.
5) Beams shall be designed to support the required loads. Beam shear may limit loads to less than listed loads for device.
6) The designer shall check post for required loads.
7) Spliced conditions must be detailed by the specifier to transfer tension loads between spliced members by means other than the column cap.
8) Uplift loads do not apply to splice conditions.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

Continued on next page

KCCQ / KECCQ Column Caps

USP STRUCTURAL CONNECTORS MiTek

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W1	W2	H	L	Fastener Schedule[4] Beam Qty	Beam Type	Column or Post Qty	Column or Post Type	DF Factored Resistance[3] Bearing 100%[2] Lbs	Bearing 100%[2] kN	Uplift 115%[1,8] Lbs	Uplift 115%[1,8] kN	S-P-F Factored Resistance[3] Bearing 100%[2] Lbs	Bearing 100%[2] kN	Uplift 115%[1,8] Lbs	Uplift 115%[1,8] kN	Corrosion Finish
Centre Column Caps																			
KCCQ74	CCQ74SDS2.5	3	6-7/8	3-5/8	6-1/2	11	16	WS3	14	WS3	66825	297.26	12920	57.47	45440	202.14	9170	40.79	
KCCQ76	CCQ76SDS2.5	3	6-7/8	5-1/2	6-1/2	11	16	WS3	14	WS3	66825	297.26	12920	57.47	45440	202.14	9170	40.79	
KCCQ77	CCQ77SDS2.5	3	6-7/8	6-7/8	6-1/2	11	16	WS3	14	WS3	66825	297.26	12920	57.47	45440	202.14	9170	40.79	
KCCQ78	CCQ78SDS2.5	3	6-7/8	7-1/2	6-1/2	11	16	WS3	14	WS3	66825	297.26	12920	57.47	45440	202.14	9170	40.79	
KCCQ71-4	CCQ7.1-4SDS2.5	3	7-1/8	3-5/8	6-1/2	11	16	WS3	14	WS3	69300	308.27	12920	57.47	47125	209.63	9170	40.79	
KCCQ71-6	CCQ7.1-6SDS2.5	3	7-1/8	5-1/2	6-1/2	11	16	WS3	14	WS3	69300	308.27	12920	57.47	47125	209.63	9170	40.79	
KCCQ71-71	CCQ7.1-7.1SDS2.5	3	7-1/8	7-1/8	6-1/2	11	16	WS3	14	WS3	69300	308.27	12920	57.47	47125	209.63	9170	40.79	
KCCQ71-8	CCQ7.1-8SDS2.5	3	7-1/8	7-1/2	6-1/2	11	16	WS3	14	WS3	69300	308.27	12920	57.47	47125	209.63	9170	40.79	
KCCQ84	-- --	7	7-1/2	3-5/8	6-1/2	11	16	WS3	14	WS3	74255	330.32	12920	57.47	50495	224.62	9170	40.79	
KCCQ86	CCQ86SDS2.5	7	7-1/2	5-1/2	6-1/2	11	16	WS3	14	WS3	**66990**	**297.98**	12920	57.47	**50735**	**225.68**	**10850**	**48.26**	
KCCQ88	CCQ88SDS2.5	7	7-1/2	7-1/2	6-1/2	11	16	WS3	14	WS3	74255	330.32	12920	57.47	50495	224.62	9170	40.79	
KCCQ94	-- --	7	8-7/8	3-5/8	6-1/2	11	16	WS3	14	WS3	86625	385.34	12920	57.47	58905	262.03	9170	40.79	
KCCQ96	CCQ96SDS2.5	7	8-7/8	5-1/2	6-1/2	11	16	WS3	14	WS3	86625	385.34	12920	57.47	58905	262.03	9170	40.79	
KCCQ98	CCQ98SDS2.5	7	8-7/8	7-1/2	6-1/2	11	16	WS3	14	WS3	86625	385.34	12920	57.47	58905	262.03	9170	40.79	
KCCQ106	CCQ106SDS2.5	7	9-1/2	5-1/2	6-1/2	11	16	WS3	14	WS3	94055	418.39	12920	57.47	63960	284.52	9170	40.79	
End Column Caps																			
KECCQ325-4	ECCQ3-4SDS2.5	7	3-1/4	3-5/8	6-1/2	7-1/2	16	WS3	14	WS3	21095	93.84	11785	52.42	14340	63.79	8370	40.79	
KECCQ325-6	ECCQ3-6SDS2.5	7	3-1/4	5-1/2	6-1/2	7-1/2	16	WS3	14	WS3	21095	93.84	11785	52.42	14340	63.79	8370	40.79	
KECCQ44	ECCQ44SDS2.5	7	3-5/8	3-5/8	6-1/2	8-1/2	16	WS3	14	WS3	24430	108.67	13385	59.54	18210	81.01	9505	40.79	
KECCQ45	-- --	7	3-5/8	5-3/8	6-1/2	7-1/2	16	WS3	14	WS3	23625	105.09	13385	59.54	16065	71.46	9505	40.79	
KECCQ46	ECCQ46SDS2.5	7	3-5/8	5-1/2	6-1/2	8-1/2	16	WS3	14	WS3	26775	119.11	11785	52.42	18210	81.01	8370	40.79	
KECCQ47	-- --	7	3-5/8	7-1/8	6-1/2	9-1/2	16	WS3	14	WS3	29925	133.12	13385	59.54	20345	90.50	9505	40.79	
KECCQ47X	-- --	7	3-5/8	7-1/8	6-1/2	9-1/2	16	WS3	14	WS3	29925	133.12	13385	59.54	20345	90.50	9505	40.79	
KECCQ48	ECCQ48SDS2.5	7	3-5/8	7-1/2	6-1/2	8-1/2	16	WS3	14	WS3	26775	119.11	11785	52.42	18210	81.01	8370	40.79	
KECCQ525-4	ECCQ5-4SDS2.5	3	5-1/4	3-5/8	8	9-1/2	16	WS3	14	WS3	32155	143.04	11785	52.42	24350	108.32	8370	40.79	
KECCQ525-6	ECCQ5-6SDS2.5	3	5-1/4	5-1/2	8	9-1/2	16	WS3	14	WS3	39310	174.87	11785	52.42	28985	128.94	8370	40.79	
KECCQ525-8	ECCQ5-8SDS2.5	3	5-1/4	7-1/2	8	9-1/2	16	WS3	14	WS3	43820	194.93	11785	52.42	29795	132.54	8370	40.79	
KECCQ57	-- --	7	5-3/8	7-1/8	6-1/2	9-1/2	16	WS3	14	WS3	40160	178.65	11785	52.42	27310	121.49	8370	40.79	
KECCQ64	ECCQ64SDS2.5	7	5-1/2	3-5/8	6-1/2	8-1/2	16	WS3	14	WS3	33890	150.76	11785	52.42	25605	113.90	8370	40.79	
KECCQ66	ECCQ66SDS2.5	7	5-1/2	5-1/2	6-1/2	8-1/2	16	WS3	14	WS3	41630	185.19	11785	52.42	28615	127.29	8370	40.79	
KECCQ67X	ECCQ6-7.13SDS2.5	7	5-1/2	7-1/8	6-1/2	8-1/2	16	WS3	14	WS3	42075	187.17	11785	52.42	28615	127.29	8370	40.79	
KECCQ68	ECCQ68SDS2.5	7	5-1/2	7-1/2	6-1/2	8-1/2	16	WS3	14	WS3	42075	187.17	11785	52.42	28615	127.29	8370	40.79	
KECCQ74	ECCQ74SDS2.5	3	6-7/8	3-5/8	6-1/2	8-1/2	16	WS3	14	WS3	39550	175.93	11785	52.42	29665	131.96	8370	40.79	
KECCQ76	ECCQ76SDS2.5	3	6-7/8	5-1/2	6-1/2	8-1/2	16	WS3	14	WS3	51640	229.72	11785	52.42	35115	156.21	8370	40.79	
KECCQ77	ECCQ77SDS2.5	3	6-7/8	6-7/8	6-1/2	8-1/2	16	WS3	14	WS3	51640	229.72	11785	52.42	35115	156.21	8370	40.79	
KECCQ78	ECCQ78SDS2.5	3	6-7/8	7-1/2	6-1/2	8-1/2	16	WS3	14	WS3	51640	229.72	11785	52.42	35115	156.21	8370	40.79	
KECCQ71-4	ECCQ7.1-4SDS2.5	3	7-1/8	3-5/8	6-1/2	8-1/2	16	WS3	14	WS3	40665	180.89	11785	52.42	30455	135.48	8370	40.79	
KECCQ71-6	ECCQ7.1-6SDS2.5	3	7-1/8	5-1/2	6-1/2	8-1/2	16	WS3	14	WS3	50810	226.02	11785	52.42	36420	162.01	8370	40.79	
KECCQ71-71	ECCQ7.1-7.1SDS2.5	3	7-1/8	7-1/8	6-1/2	8-1/2	16	WS3	14	WS3	53555	238.23	11785	52.42	36420	162.01	8370	40.79	
KECCQ71-8	ECCQ7.1-8SDS2.5	3	7-1/8	7-1/2	6-1/2	8-1/2	16	WS3	14	WS3	53555	238.23	11785	52.42	36420	162.01	8370	40.79	
KECCQ84	-- --	7	7-1/2	3-5/8	6-1/2	8-1/2	16	WS3	14	WS3	42890	190.79	11785	52.42	39015	173.55	8370	40.79	
KECCQ86	ECCQ86SDS2.5	7	7-1/2	5-1/2	6-1/2	8-1/2	16	WS3	14	WS3	53840	239.50	11785	52.42	39015	173.55	8370	40.79	
KECCQ88	ECCQ88SDS2.5	7	7-1/2	7-1/2	6-1/2	8-1/2	16	WS3	14	WS3	57375	255.23	11785	52.42	39015	173.55	8370	40.79	
KECCQ94	-- --	7	8-7/8	3-5/8	6-1/2	8-1/2	16	WS3	14	WS3	48375	215.19	11785	52.42	35940	159.88	8370	40.79	
KECCQ96	ECCQ96SDS2.5	7	8-7/8	5-1/2	6-1/2	8-1/2	16	WS3	14	WS3	61385	273.06	11785	52.42	44395	197.49	8370	40.79	
KECCQ98	ECCQ98SDS2.5	7	8-7/8	7-1/2	6-1/2	8-1/2	16	WS3	14	WS3	66940	297.78	11785	52.42	45520	202.49	8370	40.79	
KECCQ106	ECCQ106SDS2.5	7	9-1/2	5-1/2	6-1/2	8-1/2	16	WS3	14	WS3	65895	293.13	11785	52.42	47520	211.39	8370	40.79	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Bearing loads are based on compression perpendicular to grain values published in the 2001 NDS and soft converted to Limit States Design.
3) Factored resistances are based on lumber with a specific gravity of DF= 0.49 and S-P-F = 0.42 and a moisture content of 19% or less.
4) WS3 Wood Screws are 1/4" x 3" long and are included with KCCQ and KECCQ column caps.
5) Beams shall be designed to support the required loads. Beam shear may limit loads to less than listed loads for device.
6) The designer shall check post for required loads.
7) Spliced conditions must be detailed by the specifier to transfer tension loads between spliced members by means other than the column cap.
8) Uplift loads do not apply to splice conditions.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

Continued on next page

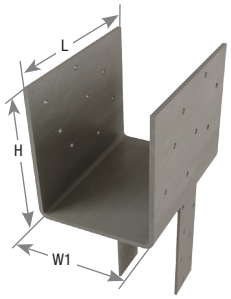
KCCQ / KECCQ Column Caps

Specialty Options:

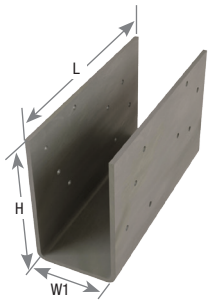
- **KECCQ** – Straps may be rotated 90° on special order where the W2 dimension is less than or equal to the W1 dimension.
- **KCCQO/KECCQO** – Cap only, no strap design for field welding to pipe or other columns.
- **KCCQOB** – For cross beam connections. Any two buckets can be welded together for a wide variety of applications. Factored resistance shall be the lesser of the two components.
- **KCCQT** – For T beam intersections, consult USP. Specify beam/column conditions, dimensions, and loading requirements.
- **KCCQC** – For X beam intersections, consult USP. Specify beam/column conditions, dimensions, and loading requirements.
- **KECCQLL/R** – For L beam intersections, consult USP. Specify left (L) or right (R) beam/column conditions, dimensions, and loading requirements.

Dimension call-outs not shown in the table must be specified at time of ordering for specialty options, non-catalog, or rough/full size lumber sizes.

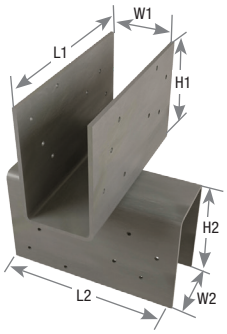
Refer to Options for Multiple-Beam Bolted Column Caps Special Order Worksheet for ordering instructions at www.uspconnectors.com/resources/technical-bulletins.



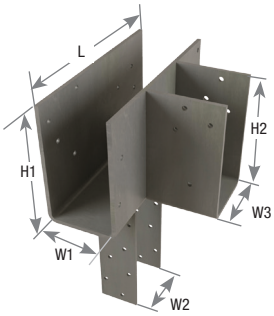
Optional KECCQ rotated straps 90°



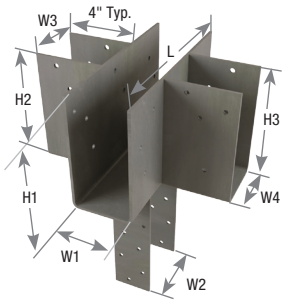
KCCQO



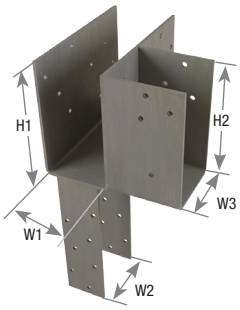
KCCQOB



KCCQT



KCCQC

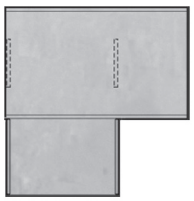


KECCQLL left shown

Top View of Specialty Options Column Cap Configurations

KECCQLL rotated 90° left

KECCQLR rotated 90° right



KECCQ left

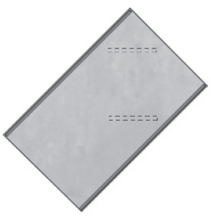
KECCQ right

KECCQ offset left

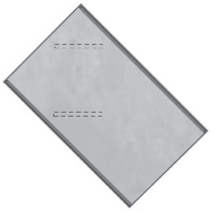
KECCQ offset right

KCCQ offset left

KCCQ offset right



KECCQ rotated 45° left



KECCQ rotated 45° right

A / AC / JA / MP Framing Angles

USP STRUCTURAL CONNECTORS
MiTek

MP – 18 gauge. Field adjustable from 0° to 135°.

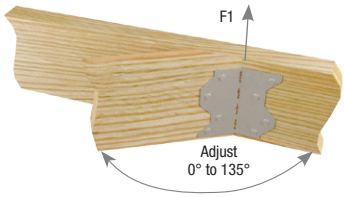
A3 – 18 gauge. Eliminates toenailing and increases strength.

AC – 16 gauge. Features staggered nail patterns which reduces wood splitting and allows installation on both sides of the supported member.

JA – 14 or 16 gauge. Heavier capacity framing angle for joist support.

Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

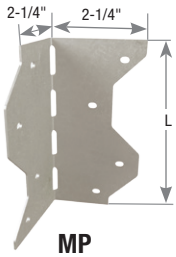
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- MP Framing Angles are fabricated at 100° and may be field adjusted by hand from 0° to 135°. Bend angle only once.



Typical MP installation

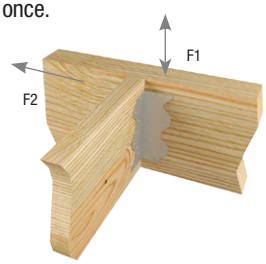

Typical MP rafter support installation

AVAILABLE IN GOLD COAT

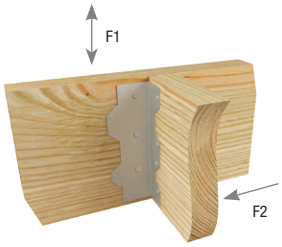


MP


Typical JA1 installation

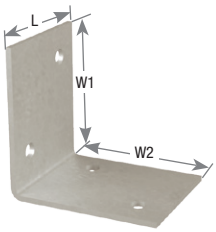


Typical JA7 installation

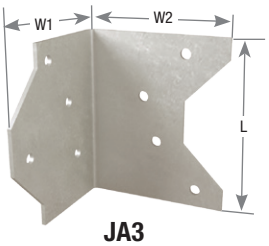


Typical AC installation


Typical A3 installation



JA1



JA3

AC

A3

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)			Fastener Schedule[2,3]				Direction of Load	DF Factored Resistance[1]				S-P-F Factored Resistance[1]				Corrosion Finish
						Header		Joist			Lbs		kN		Lbs		kN		
			W1	W2	L	Qty	Type	Qty	Type		100%	115%	100%	115%	100%	115%	100%	115%	
A3	A23, GA1, GA2, L30	18	1-7/16	1-7/16	2-3/4	4	10d x 1-1/2	4	10d x 1-1/2	F1	970	1115	4.31	4.96	690	792	3.07	3.52	
										F2	985	1130	4.38	5.03	700	802	3.11	3.57	
MP3	LS30	18	2-1/4	2-1/4	3-3/8	3	10d	3	10d	F1	**715**	**715**	**3.18**	**3.18**	**610**	**610**	**2.71**	**2.71**	
MP5	LS50	18	2-1/4	2-1/4	4-5/8	4	10d	4	10d	F1	**1010**	**1010**	**4.49**	**4.49**	**865**	**865**	**3.85**	**3.85**	
MP7	LS70	18	2-1/4	2-1/4	5-7/8	5	10d	5	10d	F1	**1315**	**1315**	**5.85**	**5.85**	**1125**	**1125**	**5.00**	**5.00**	
MP9	LS90	18	2-1/4	2-1/4	6-7/8	6	10d	6	10d	F1	**1410**	**1410**	**6.27**	**6.27**	**1210**	**1210**	**5.38**	**5.38**	
AC5	L50	16	1-5/16	2-3/8	4-7/8	3	10d	3	10d	F1	995	1145	4.43	5.09	705	815	3.14	3.63	
										F2	930	1070	4.14	4.76	660	760	2.94	3.38	
AC7	L70	16	1-5/16	2-3/8	6-15/16	4	10d	4	10d	F1	1120	1285	4.98	5.72	795	910	3.54	4.05	
										F2	1335	1535	5.94	6.83	950	1090	4.23	4.85	
AC9	L90	16	1-5/16	2-3/8	8-7/8	5	10d	5	10d	F1	1860	2135	8.27	9.50	1320	1515	5.87	6.74	
										F2	1335	1535	5.94	6.83	950	1090	4.23	4.85	
JA1	A21	16	1-1/2	1-1/2	1-1/4	2	10d x 1-1/2	2	10d x 1-1/2	F1	421	484	1.87	2.15	299	344	1.33	1.53	
										F2	562	647	2.50	2.88	399	459	1.78	2.04	
JA3	-- --	14	2-1/2	2-1/2	3	4	16d	4	10d x 1-1/2	F1	963	1108	4.28	4.93	684	786	3.04	3.50	
										F2	874	1005	3.89	4.47	620	713	2.76	3.17	
JA5	-- --	14	2-1/2	2-1/2	5	6	16d	6	10d x 1-1/2	F1	1556	1790	6.92	7.96	1105	1271	4.91	5.65	
										F2	1665	1915	7.41	8.52	1182	1360	5.26	6.05	
JA7	-- --	14	2-1/2	2-1/2	7	8	16d	8	10d x 1-1/2	F1	3058	3517	13.60	15.64	2171	2497	9.66	11.11	
										F2	2664	3064	11.85	13.63	1892	2176	8.42	9.68	
JA9	-- --	14	2-1/2	2-1/2	9	10	16d	10	10d x 1-1/2	F1	3767	4333	16.76	19.27	2675	3076	11.90	13.68	
										F2	2697	3102	12.00	13.80	1915	2202	8.52	9.80	

1) Factored resistances are shown per angle, and may be doubled if installed in pairs. When using a single angle, joist must be constrained from rotation.
2) For 1-1/2" lumber where 10d nails are specified, use 10d x 1-1/2" nails and apply 0.90 adjustment factor to the table value.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

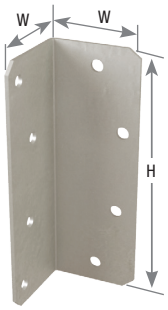
ML Angles

ML angles are multi-purpose angles that install easily with USP's WS15 wood screws. The staggered fastener pattern allows for back-to-back installations.

Materials: 12 gauge
Finish: G-185 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- USP WS15 (1/4" x 1-1/2") are not supplied with ML angles.

Typical ML26-TZ installation
(ML24-TZ similar)



ML26-TZ
(ML24-TZ similar)

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Fastener Schedule[2,3] Header Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance[1] 100%	DF 115%	S-P-F Factored Resistance[1] 100%	S-P-F 115%	Corrosion Finish
ML24-TZ	ML24Z	12	2	4	3	WS15	3	WS15	Lbs	1100	1265	780	900	
									kN	4.89	5.63	3.47	4.00	
ML26-TZ	ML26Z	12	2	6	4	WS15	4	WS15	Lbs	1890	2175	1340	1545	
									kN	8.41	9.68	5.96	6.87	

1) Factored resistances have been increased 15% for short-term, duration loading; no further increase allowed.
2) USP's WS15 Wood Screws are 1/4" diameter x 1-1/2" long and are not included with angles.
3) For exterior applications use WS15-HDG screws with the hot-dip galvanized finish.

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

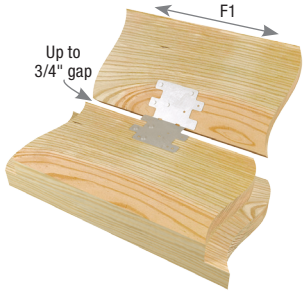
RBC Roof Boundary Clip

Framing plate designed to connect roof blocking to a wall top plate.

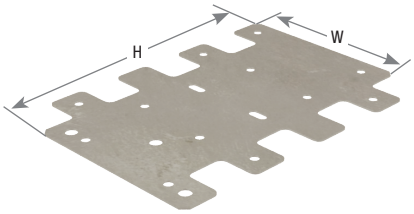
Materials: 20 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Field adjustable from 0º to 90º.
- **Bend angle only once.**

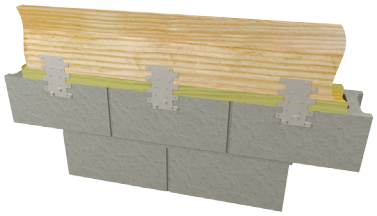
Typical RBC top-plate to outside of blocking installation



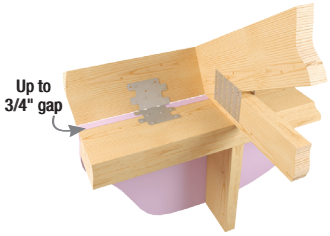
Typical RBC top-plate to inside of blocking installation



RBC



Typical RBC concrete block wall to blocking installation



Typical RBC 1" foamboard installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Installation Type	Fastener Schedule[2,3] Top Plate Qty	Top Plate Type[2]	Blocking Qty	Blocking Type[2]	DF Factored Resistance[1] F1 115% Lbs	DF F1 115% kN	S-P-F Factored Resistance[1] F1 115% Lbs	S-P-F F1 115% kN
RBC	RBC	20	4-1/4	6	Wood to Wood	6	10d x 1-1/2	6	10d x 1-1/2	990	4.40	615	2.74
					Wood to CMU	3	1/4" Tapcon	6	10d x 1-1/2	735	3.27	525	2.34

1) Loads shown are for a single roof boundary clip.
2) Use ITW Buildex 1/4" x 1-1/2" Tapcon fasteners; or equal, installed in accordance with manufacturer's specification.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" diameter by 1-1/2" long.

MP / MPA / MPF Multi-Purpose Framing Angles

MP34 – Framing angle without tabs.

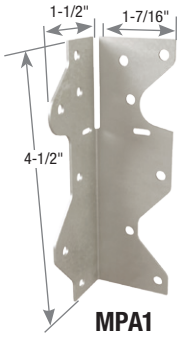
MPA1 – Tabs enable two and three-way connections.

MP4F – Connects 2x framing with floor sheathing up to 5/8".

MP6F – Connects 3x framing with floor sheathing up to 3/4". Better choice for connections where floor sheathing is between sole plate and rim board.

Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options on page 77.
Codes: Load values are derived from data submitted to various North American building code evaluators.

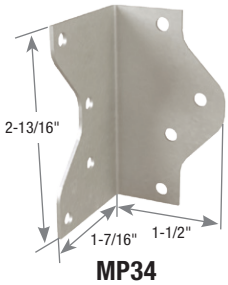
AVAILABLE IN GOLD COAT



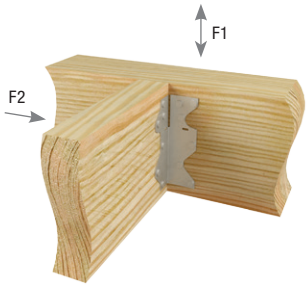
MPA1


Typical MP34 installation

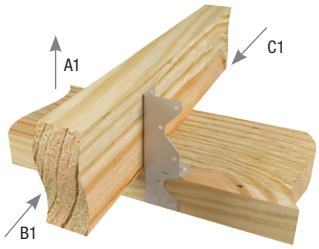

MPA1-GC



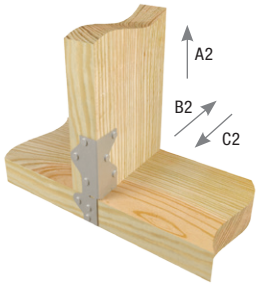
MP34



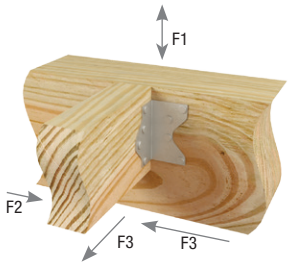
Typical MPA1
joist / header installation
Figure 1



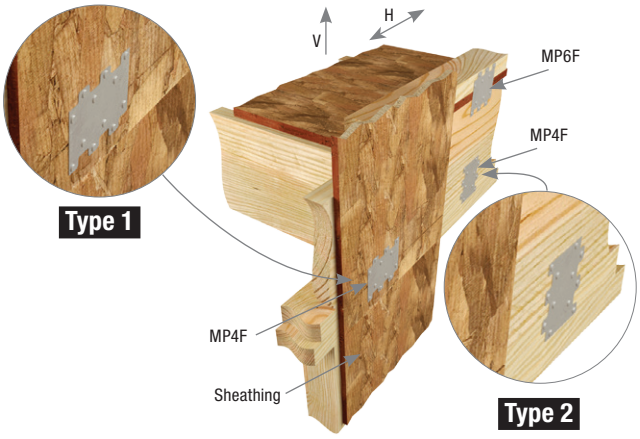
Typical MPA1
rafter / plate installation
Figure 2



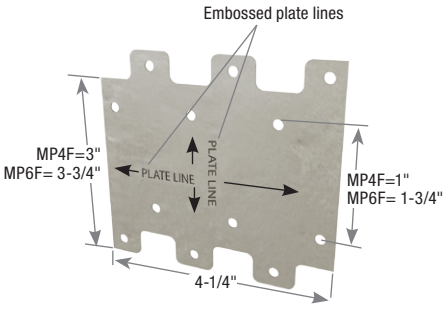
Typical MPA1
stud / plate installation
Figure 3



Typical MP34
joist / header installation
Figure 4



Typical MPF installation



MPF

Continued on next page

MP / MPA / MPF Multi-Purpose Framing Angles

USP STRUCTURAL CONNECTORS MiTek

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- **Bend tabs only once.**
- MP4F connects 2x framing with floor sheathing up to 5/8".
- MP6F connects 3x framing with floor sheathing up to 3/4". Better choice for connections where floor sheathing is between sole plate and rim board.

USP Stock No.	Ref. No.	Steel Gauge	Installation Type[2]	Fastener Schedule[3,5] Header or Stud Qty	Header or Stud Type	Joist or Plate Qty	Joist or Plate Type	Direction of Load[2]	DF Factored Resistance[3,4] Lbs 100%	DF Lbs 115%[1]	DF kN 100%	DF kN 115%[1]	S-P-F Factored Resistance[3,4] Lbs 100%	S-P-F Lbs 115%[1]	S-P-F kN 100%	S-P-F kN 115%[1]	Corrosion Finish
MPA1	A35	18	Figure 1	6	8d x 1-1/2	6	8d x 1-1/2	F1	1115	1280	4.96	5.69	790	910	3.51	4.05	
				6	8d x 1-1/2	6	8d x 1-1/2	F2	1300	1300	5.78	5.78	925	925	4.11	4.11	
			Figure 2	6	8d x 1-1/2	3	8d x 1-1/2	A1	685	785	3.05	3.49	485	555	2.16	2.47	
				6	8d x 1-1/2	3	8d x 1-1/2	B1	510	585	2.27	2.60	360	415	1.60	1.85	
				6	8d x 1-1/2	3	8d x 1-1/2	C1	525	600	2.34	2.67	370	425	1.65	1.89	
			Figure 3	6	8d x 1-1/2	6	8d x 1-1/2	A2	830	955	3.69	4.25	590	675	2.62	3.00	
				6	8d x 1-1/2	6	8d x 1-1/2	B2	460	525	2.05	2.34	325	375	1.45	1.67	
				6	8d x 1-1/2	6	8d x 1-1/2	C2	610	705	2.71	3.14	435	500	1.94	2.22	
MP34	A34	18	Figure 4	4	8d x 1-1/2	4	8d x 1-1/2	F1	855	985	3.80	4.38	**675**	**775**	**3.00**	**3.45**	
				4	8d x 1-1/2	4	8d x 1-1/2	F2	1025	**1175**	4.56	**5.23**	**805**	**925**	**3.58**	**4.11**	
				4	8d x 1-1/2	4	8d x 1-1/2	F3	555	**555**	2.47	**2.47**	**435**	**435**	**1.93**	**1.93**	
MP4F	LTP4	20	Type 1	6	8d x 1-1/2	6	8d x 1-1/2	V	1380	1585	6.14	7.05	980	1125	4.36	5.00	
				6	8d x 1-1/2	6	8d x 1-1/2	H	1380	1585	6.14	7.05	980	1125	4.36	5.00	
			Type 2	6	8d x 1-1/2	6	8d x 1-1/2	V	1380	1585	6.14	7.05	980	1125	4.36	5.00	
				6	8d x 1-1/2	6	8d x 1-1/2	H	1380	1585	6.14	7.05	980	1125	4.36	5.00	
			Type 1	6	8d	6	8d	V	1380	1585	6.14	7.05	980	1125	4.36	5.00	
				6	8d	6	8d	H	1380	1585	6.14	7.05	980	1125	4.36	5.00	
			Type 2	6	8d	6	8d	V	1380	1585	6.14	7.05	980	1125	4.36	5.00	
				6	8d	6	8d	H	1380	1585	6.14	7.05	980	1125	4.36	5.00	
MP6F	LTP5	20	Type 1	6	8d x 1-1/2	6	8d x 1-1/2	V	995	1145	4.43	5.09	705	815	3.14	3.63	
				6	8d x 1-1/2	6	8d x 1-1/2	H	995	1145	4.43	5.09	705	815	3.14	3.63	
			Type 2	6	8d x 1-1/2	6	8d x 1-1/2	V	995	1145	4.43	5.09	705	815	3.14	3.63	
				6	8d x 1-1/2	6	8d x 1-1/2	H	995	1145	4.43	5.09	705	815	3.14	3.63	
			Type 1	6	8d	6	8d	V	995	1145	4.43	5.09	705	815	3.14	3.63	
				6	8d	6	8d	H	995	1145	4.43	5.09	705	815	3.14	3.63	
			Type 2	6	8d	6	8d	V	995	1145	4.43	5.09	705	815	3.14	3.63	
				6	8d	6	8d	H	995	1145	4.43	5.09	705	815	3.14	3.63	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Refer to previous page for installation type and definition of the various load directions.
3) If installing MP4F or MP6F over plywood, use 8d common nails for 100% of table load.
4) Factored resistances shown are per angle. When using a single anchor, joist must be constrained from rotation.
5) **NAILS:** 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long, 8d nails are 0.131" x 2-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

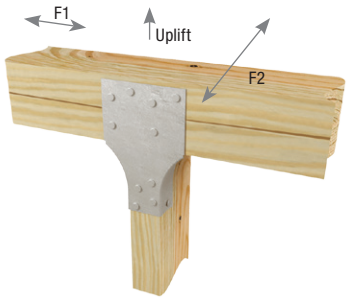
RSPT / SPT Stud Plate Ties

RSPT – 18 or 20 gauge. Connects stud to single or double plates.

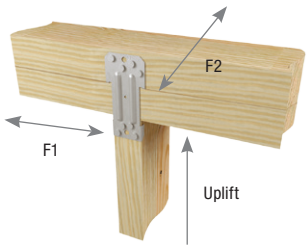
SPT – 20 gauge. Ties single and double plates to studs.

Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

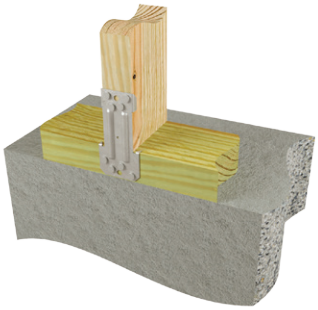
Installation:
- Use all specified fasteners. See Product Notes, page 15.



Typical SPT24 installation

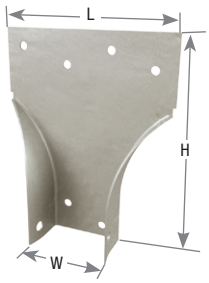


Typical RSPT4 double plate installation

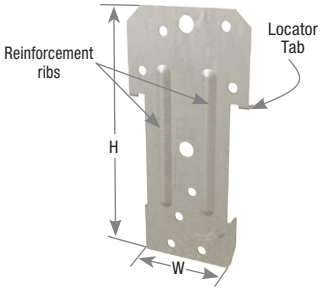


Typical RSPT4 single plate installation

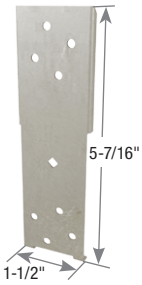
RSPT6-2 installation



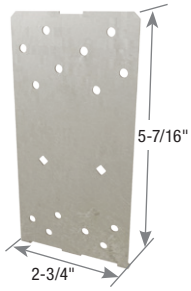
SPT22



RSPT4



RSPT6



RSPT6-2

Stud Size	USP Stock No.[2]	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Dimensions (in) L	Fastener Schedule[3] Stud Qty	Stud Type	Plate Qty	Plate Type	Unit	DF Factored Resistance[1] Uplift 115%	DF F1 115%	DF F2 115%	S-P-F Factored Resistance[1] Uplift 115%	S-P-F F1 115%	S-P-F F2 115%	Corrosion Finish
2x	RSPT4	RSP4	20	1-1/2	4-1/8	-- --	4	8d x 1-1/2	4	8d x 1-1/2	Lbs	585	285	315	505	245	270	
											kN	2.60	1.27	1.40	2.25	1.09	1.20	
	RSPT6	SSP	18	1-1/2	5-7/16	-- --	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	740	-- --	-- --	635	-- --	-- --	Triple Zinc
											kN	3.29	-- --	-- --	2.82	-- --	-- --	
	SPT22	SP1	20	1-9/16	4-3/8	3-1/2	4	10d	4	10d	Lbs	755	695	325	650	600	280	Triple Zinc
											kN	3.36	3.09	1.45	2.89	2.67	1.25	
	SPT24	SP2	20	1-9/16	5-5/8	3-1/2	6	10d	6	10d	Lbs	1125	695	325	970	600	280	Triple Zinc
											kN	5.00	3.09	1.45	4.31	2.67	1.25	
(2) 2x	RSPT6-2	DSP	18	2-3/4	5-7/16	-- --	8	10d x 1-1/2	6	10d x 1-1/2	Lbs	1115	-- --	-- --	960	-- --	-- --	Triple Zinc
											kN	4.96	-- --	-- --	4.27	-- --	-- --	
4x	SPT44	-- --	20	3-9/16	6-3/4	6-1/2	6	16d	6	16d	Lbs	1355	845	310	1165	725	265	
											kN	6.03	3.76	1.38	5.18	3.23	1.18	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) SPT22, SPT24, and SPT44: the two nails fastened to the wide face of the stud must be driven 30° from the perpendicular on the horizontal plane.
3) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

SPT / SPTH / SPTHW Stud Plate Ties

USP STRUCTURAL CONNECTORS MiTek

SPT – 20 gauge. Ties single and double plates to studs.

SPTH – Heavier 18 gauge version of SPT.

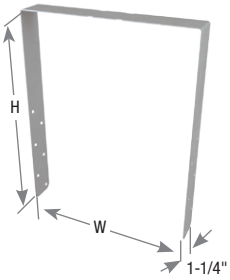
SPTHW – 18 gauge. Attaches plate to studs over 1/2" sheathing.

Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

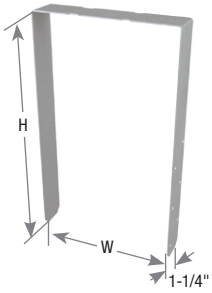
Installation:

- Use all specified fasteners. See Product Notes, page 15.

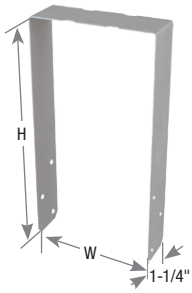
Typical SPT4 installation



SPTHW



SPTH



SPT

Stud Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Fastener Schedule[2] Qty	Fastener Schedule[2] Type	DF Factored Resistance Uplift 115%[1] Lbs	DF Factored Resistance Uplift 115%[1] kN	S-P-F Factored Resistance Uplift 115%[1] Lbs	S-P-F Factored Resistance Uplift 115%[1] kN	Corrosion Finish
4x	SPT4	SP4	20	3-9/16	6-7/8	6	10d x 1-1/2	960	4.27	825	3.67	
	SPTH4	SPH4	18	3-9/16	8-5/8	12	10d x 1-1/2	1275	5.67	1095	4.87	
	SPTHW4	SPH4R	18	4-1/16	8-3/8	12	10d x 1-1/2	1275	5.67	1095	4.87	
6x	SPT6	SP6	20	5-9/16	7-5/8	6	10d x 1-1/2	960	4.27	825	3.67	
	SPTH6	SPH6	18	5-9/16	9-3/8	12	10d x 1-1/2	1275	5.67	1095	4.87	
	SPTHW6	SPH6R	18	6-1/16	9-1/8	12	10d x 1-1/2	1275	5.67	1095	4.87	
8x	SPT8	SP8	20	7-5/16	8-1/2	6	10d x 1-1/2	960	4.27	825	3.67	
	SPTH8	SPH8	18	7-5/16	8-1/2	12	10d x 1-1/2	1275	5.67	1095	4.87	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long.

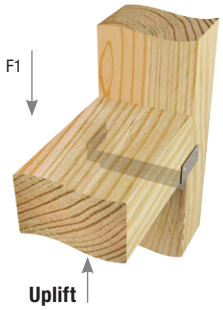
Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

SFC Framing Clips

Framing clips replace end cripples under window sills.

Materials: 16 gauge
Finish: G90 galvanizing

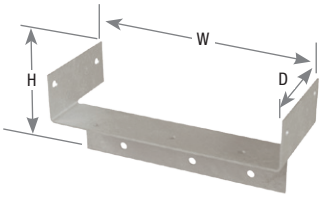
Installation:
• Use all specified fasteners. See Product Notes, page 15.



Typical SFC6 installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance[1] Uplift 115%	F1 100%	F1 115%	S-P-F Factored Resistance[1] Uplift 115%	F1 100%	F1 115%
SFC6	FC6	16	5-1/2	2-1/2	2-1/2	5	16d	5	16d	775	995	1145	650	835	960

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.



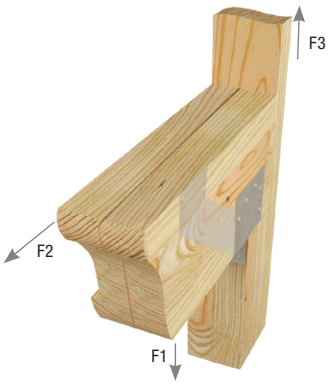
SFC6

HH Header Hangers

Header Hangers support headers in door and window framing. Helps to eliminate cracks in drywall, plaster, or stucco over windows and doors. These products also provide anchorage and support for heavy fence rails, struts, or gate post cross brackets.

Materials: 16 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

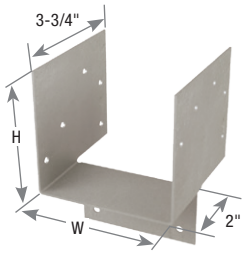
Installation:
• Use all specified fasteners. See Product Notes, page 15.



Typical HH44 installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	Fastener Schedule[2] Header Qty	Header Type	Stud Qty	Stud Type	Unit	DF Factored Resistance[1] F1 100%	F2 115%	F3 115%	S-P-F Factored Resistance[1] F1 100%	F2 115%	F3 115%
HH44	HH4	16	3-9/16	3-1/4	4	16d	9	16d	Lbs	1785	915	850	1500	590	715
									kN	7.94	4.07	3.78	6.67	2.62	3.18
HH66	HH6	16	5-1/2	5-1/4	6	16d	12	16d	Lbs	2385	1365	1365	2000	885	1150
									kN	10.61	6.07	6.07	8.90	3.94	5.12

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.



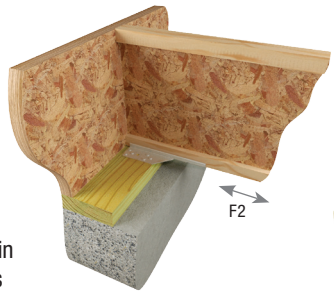
HH44

LJC / LJQ Lateral Joist Connectors

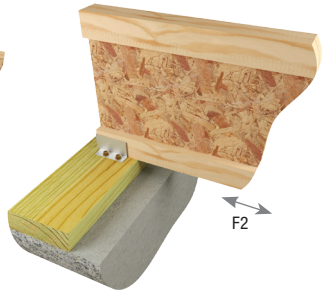
The LJC-TZ and LJQ-TZ Lateral Joist Connectors transfer lateral loads at the top foundation to the floor joists. The fastening patterns meet I-joist manufacturer recommendations.

LJC-TZ – fastens the top side of the sill plate to the underside of the floor joist preventing splitting of the bottom chord flanges, and can be installed after the floor system has been installed. The product is load rated for use with dimension lumber floor joists as well as I-joist. It can also be used with cantilevered floor joists.

LJQ-TZ – is a higher capacity connector designed for higher loads. It is similar in design to a joist hanger with a seat for the floor joist to bear against and utilizes wood screws to fasten to the sill plate. USP's WS15-HDG Wood Screws (included) provide quick installation without the need to predrill holes.



Typical LJC-TZ installation



Typical LJQ-TZ installation

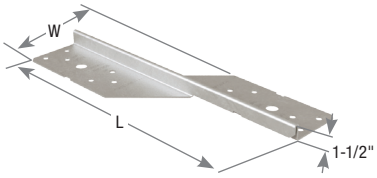
Materials: See chart

Finish: G-185 galvanizing

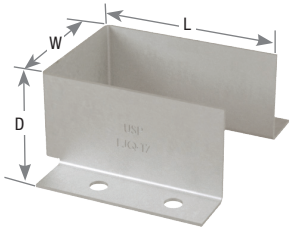
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- **LJC-TZ** – Installs after the floor joist has been placed with a minimum of (12) 8d x 1-1/2" HDG nails.
- **LJQ-TZ** – Installs with (4) USP WS15-HDG Wood Screws. WS15-HDG Wood Screws are 1/4" diameter x 1-1/2" long and are included with LJQ-TZ connectors.



LJC-TZ



LJQ-TZ

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)			Fastener Schedule[1,2]		DF Factored Resistance (100%)				S-P-F Factored Resistance (100%)				Corrosion Finish
								2x		I-Joist		2x		I-Joist		
			W	L	D	Qty	Type	Lbs	kN	Lbs	kN	Lbs	kN	Lbs	kN	
LJC-TZ	--	18	3-3/16	8	--	12	8d x 1-1/2 HDG	1310	5.83	1310	5.83	930	4.14	930	4.14	
LJQ15-TZ	--	16	1-9/16	3	1-1/2	4	WS15-HDG	1880	8.36	1880	8.36	1335	5.94	1335	5.94	
LJQ17-TZ	--	16	1-13/16	3	1-1/2	4	WS15-HDG	1880	8.36	1880	8.36	1335	5.94	1335	5.94	
LJQ20-TZ	--	16	2-1/8	3	1-1/2	4	WS15-HDG	1880	8.36	1880	8.36	1335	5.94	1335	5.94	
LJQ23-TZ	--	16	2-5/16	3	1-1/2	4	WS15-HDG	1880	8.36	1880	8.36	1335	5.94	1335	5.94	
LJQ25-TZ	--	16	2-9/16	3	1-1/2	4	WS15-HDG	1880	8.36	1880	8.36	1335	5.94	1335	5.94	
LJQ35-TZ	--	16	3-9/16	3	1-1/2	4	WS15-HDG	2205	9.81	2205	9.81	1565	6.96	1565	6.96	

1) WS15-HDG wood screws are 1/4" x 1/2" and are included with LJQ-TZ connector.
2) **NAILS:** 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long.

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

ANJ Heavy Angle

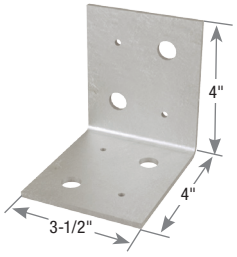
Materials: 7 gauge

Finish: Hot-dip galvanized

Installation:

- Install with (2) 1/2" x 2-1/2" HDG lag screws into each leg.

Typical ANJ44S-HDG installation



ANJ44S-HDG

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)			Fastener Schedule[1]				DF Factored Resistance		S-P-F Factored Resistance		Corrosion Finish
						Header		Joist		F2 (115%)		F2 (115%)		
			W	H	L	Qty	Lag Screw	Qty	Lag Screw	Lbs	kN	Lbs	kN	
ANJ44S-HDG	--	7	3-1/2	4	4	2	1/2" HDG	2	1/2" HDG	845	3.76	600	2.67	

1) Loads based on use of (2) 1/2" x 2-1/2" lag screws, loaded parallel to grain.

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

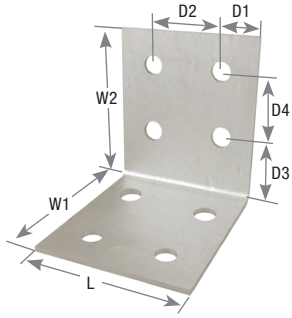
KHL Heavy Angles

Designed for heavy-duty reinforcement of 90° framing intersections.

Materials: See chart
Finish: USP primer
Options: See chart for Corrosion Finish Options

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- **Connectors are not load rated.**
- Bolts must be ordered separately.

Typical KHL35 installation



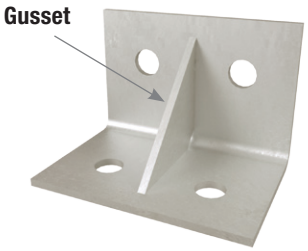
KHL55

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)							Fastener Schedule			Corrosion Finish
			W1	W2	L	D1	D2	D3	D4	Bolts[1] Qty	Bolts[1] Dia.	Gussets Qty	
KHL33	HL33	7	3-1/4	3-1/4	2-1/2	1-1/4	-- --	2	-- --	2	5/8	-- --	
KHL35	HL35	7	3-1/4	3-1/4	5	1-1/4	2-1/2	2	-- --	4	5/8	-- --	
KHL35G	HL35G	7	3-1/4	3-1/4	5	1-1/4	2-1/2	2	-- --	4	5/8	1	
KHL37	HL37	7	3-1/4	3-1/4	7-1/2	1-1/4	2-1/2	2	-- --	6	5/8	-- --	
KHL335	SPECANGLE	3	3-1/2	5-1/4	3-1/2	-- --	-- --	-- --	-- --	4	1/2	-- --	
KHL43	HL43	3	4-1/4	4-1/4	3	1-1/2	-- --	2-3/4	-- --	2	3/4	-- --	
KHL46	HL46	3	4-1/4	4-1/4	6	1-1/2	3	2-3/4	-- --	4	3/4	-- --	
KHL49	HL49	3	4-1/4	4-1/4	9	1-1/2	3	2-3/4	-- --	6	3/4	-- --	
KHL53	HL53	7	5-3/4	5-3/4	2-1/2	1-1/4	-- --	2	2-1/2	4	5/8	-- --	
KHL55	HL55	7	5-3/4	5-3/4	5	1-1/4	2-1/2	2	2-1/2	8	5/8	-- --	
KHL57	HL57	7	5-3/4	5-3/4	7-1/2	1-1/4	2-1/2	2	2-1/2	12	5/8	-- --	
KHL73	HL73	3	7-1/4	7-1/4	3	1-1/2	-- --	2-3/4	3	4	3/4	-- --	
KHL76	HL76	3	7-1/4	7-1/4	6	1-1/2	3	2-3/4	3	8	3/4	-- --	
KHL79	HL79	3	7-1/4	7-1/4	9	1-1/2	3	2-3/4	3	12	3/4	-- --	

1) All bolts shall meet or exceed the specifications of ASTM A 307.

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

KHL335



KHL35G

B / BL Corner Braces

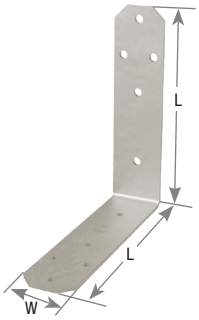
These multi-purpose braces are designed to provide reinforcement for 90° wood-to-wood connections.

Materials: 12 gauge
Finish: G90 galvanizing

Some model designs may vary from illustration shown

Installation:
- Use all specified fasteners.
- Bolts must be ordered separately.

Typical B66 installation



BL4

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Fastener Schedule			
					Nails[2]		Bolts[1]	
			W	L	Qty	Type	Qty	Dia.
B23	-- --	12	2	2-5/8	6	16d	-- --	-- --
B24	-- --	12	2	3-5/8	8	16d	-- --	-- --
BL3	A33	12	1-1/4	3-1/16	8	16d	-- --	-- --
BL4	A44	12	1-1/4	4-13/16	10	16d	-- --	-- --
BL6	-- --	12	1-1/4	6-9/16	12	16d	-- --	-- --
BL8	-- --	12	1-1/4	8-5/16	14	16d	-- --	-- --
B66	A66	12	1-1/2	6	-- --	-- --	4	3/8
B88	A88	12	2	8	-- --	-- --	6	3/8

1) Bolts shall conform to ASTM A 307 or better.
2) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

B66

B23

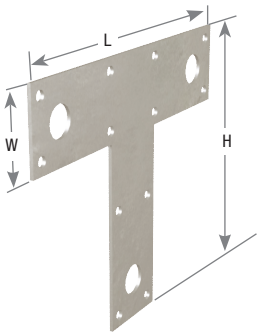
L / LH / T / TH Straps

L / T – 14 gauge medium-capacity straps fasten with either nails or bolts.

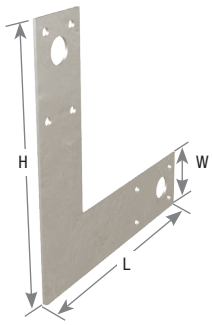
LH / TH – 7 gauge heavy-capacity bolt-on strap.

Materials: See chart
Finish: G90 galvanizing; LH / TH – USP primer; TH12-HDG – Hot-dip galvanized.
Options: See chart for Corrosion Finish Options. Available for special order in black primer coated finish.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- **Straps are not load rated.**
- Bolts must be ordered separately.



T6



L6


TH16


LH12

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	L	Fastener Schedule Bolts[1] Qty	Dia.	Nails[2] Qty	Type	Corrosion Finish
T6	66T	14	1-1/2	5	6	3	1/2	12	16d	Triple Zinc
T8	-- --	14	2	8	8-1/2	3	1/2	12	16d	
T12	128T	14	2	8	12	3	1/2	12	16d	
T1212	1212T	14	2	12	12	3	1/2	12	16d	
L6	66L	14	1-1/2	6	6	2	1/2	8	16d	Triple Zinc
L8	88L	14	2	8	8	2	1/2	8	16d	
L12	1212L	14	2	12	12	4	1/2	12	16d	
TH12-HDG	1212HT, 1212HTHDG	7	2-1/2	12	12	6	5/8	-- --	-- --	HDG
TH16	1616HT	7	2-1/2	16	16-1/4	6	5/8	-- --	-- --	
LH12	1212HL	7	3	12	12	5	5/8	-- --	-- --	HDG
LH16	1616HL	7	2-1/2	16	16	7	5/8	-- --	-- --	

1) All bolts shall meet or exceed the specifications of ASTM A 307.
2) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

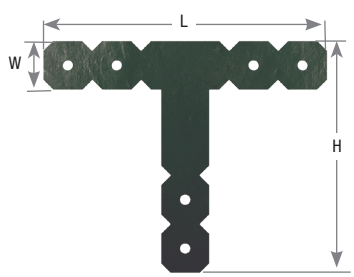
Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

Ornamental

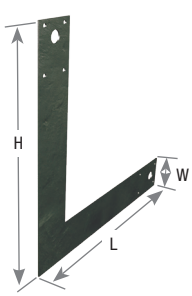
Ornamental notching provides architectural appearance for exposed applications.

Materials: See chart
Finish: USP primer
Options: Available for special order in black primer coated finish.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Connectors are not load rated.
- Bolts must be ordered separately.



T1212-0

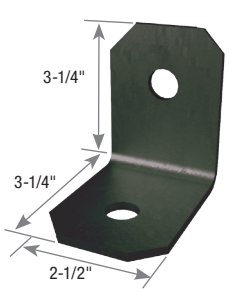


L12-0

Description	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	L	Bolt Schedule[1] Qty	Dia. (in)
Heavy Angle	KHL33-0	OHA33	7	3-1/4	-- --	2-1/2	2	5/8
	KHL36-0	OHA36	7	3-1/4	-- --	6	4	5/8
Strap Tie	KHST64-0	OHS135	7	6	-- --	13-1/2	4	3/4
	ST12-0	OS	12	2	-- --	12	4	1/2
'L' Strap	L12-0	OL	12	2-1/2	11-7/8	11-7/8	5	1/2
	LH12-0	OHL	7	2-1/2	11-7/8	11-7/8	5	5/8
'T' Strap	T1212-0	OT	12	2-1/2	11-7/8	14-1/2	6	1/2
	TH12-0	OHT	7	2-1/2	11-7/8	11-1/8	4	5/8
	TH16-0	-- --	7	2-1/2	11-7/8	16-1/8	6	5/8

1) All bolts shall meet or exceed the specifications of ASTM A 307.

Some model designs may vary from illustration shown



KHL33-0

CMST / CMSTC / RS Coiled Strapping

USP STRUCTURAL CONNECTORS MiTek

Coiled strapping enables cut-to-length convenience for a variety of immediate job site needs.

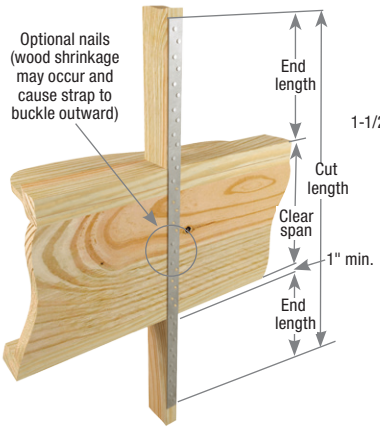
CMST – 3" wide strapping features diamond nail holes to provide nailing options and reduce wood splitting.

CMSTC – 3" wide strapping is designed for high load conditions. Engineered to reduce wood splitting.

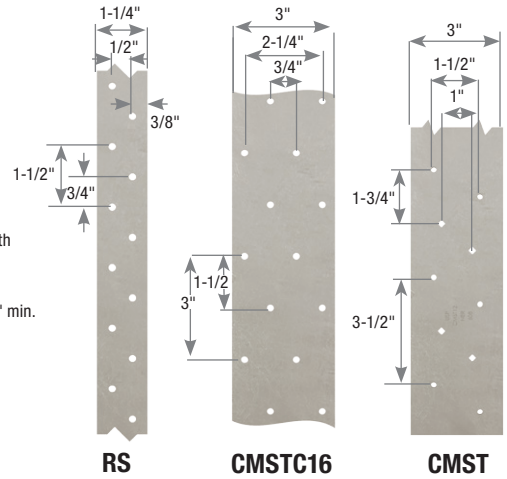
RS – 1-1/4" wide strapping packaged in cartons containing 25-foot or longer coils.

Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- For safety, always wear gloves when handling or cutting coiled strapping.
- **CMST** installations: Install to a minimum 2 ply 2x edge. Increase nail spacing if wood begins to split.
- Designer may specify alternate nailing schedules. Refer to **Nail Specification Table** on page 18 for nail shear values. Load values shall not exceed published factored resistance.



Typical RS rim joist installation CMST similar



USP Stock No.	Ref. No.	Steel Gauge	Coil Length (ft)	Rim Joist Installation: Cut Length (in)	Rim Joist Installation: End Length (in)	Fastener Schedule[2,3,4]: Qty	Fastener Schedule[2,3,4]: Type	Nail Spacing O.C. (in)	DF Factored Resistance[1] Tensile (Lbs) 100%	DF Tensile (Lbs) 115%	DF Tensile (kN) 100%	DF Tensile (kN) 115%	S-P-F Factored Resistance[1] Tensile (Lbs) 100%	S-P-F Tensile (Lbs) 115%	S-P-F Tensile (kN) 100%	S-P-F Tensile (kN) 115%	Corrosion Finish
CMSTC16	CMSTC16	16	54	Clear Span + 42	21	56	10d	1-1/2	7070	7070	31.45	31.45	6655	7070	29.60	31.45	
				Clear Span + 84	42			3									
CMST14	CMST14	14	52-1/2	Clear Span + 56	28	64	16d	1-3/4	9945	9945	44.24	44.24	8960	9945	39.86	44.24	
				Clear Span + 136	68	76	10d	3-1/2	9945	9945	44.24	44.24	9030	9945	40.17	44.24	
				Clear Span + 268	134			7									
CMST12	CMST12	12	40	Clear Span + 80	40	88	16d	1-3/4	13975	13975	62.17	62.17	12320	13975	54.80	62.17	
				Clear Span + 184	92	104	10d	3-1/2	13975	13975	62.17	62.17	12355	13975	54.96	62.17	
				Clear Span + 368	184			7									
RS300	CS22	22	300	Clear Span + 12	6	16	10d	1-1/2	1415	1415	6.29	6.29	1390	1415	6.18	6.29	
				Clear Span + 14	7	18	8d	1-1/2					1295		5.76		
RS22-R	CS22-R	22	25	Clear Span + 12	6	16	10d	1-1/2	1415	1415	6.29	6.29	1390	1415	6.18	6.29	
				Clear Span + 14	7	18	8d	1-1/2					1295		5.76		
RS250	CS20	20	250	Clear Span + 14	7	18	10d	1-1/2	1595	1595	7.10	7.10	1595	1595	7.10	7.10	
				Clear Span + 16	8	20	8d	1-1/2					1500		6.67		
RS20-R	CS20-R	20	25	Clear Span + 14	7	18	10d	1-1/2	1595	1595	7.10	7.10	1595	1595	7.10	7.10	
				Clear Span + 16	8	20	8d	1-1/2					1500		6.67		
RS200	CS18	18	200	Clear Span + 16	8	20	10d	1-1/2	2100	2100	9.34	9.34	2010	2100	8.94	9.34	
				Clear Span + 18	9	24	8d	1-1/2					2010		8.94		
RS100	CS18S	18	100	Clear Span + 16	8	20	10d	1-1/2	2100	2100	9.34	9.34	2010	2100	8.94	9.34	
				Clear Span + 18	9	24	8d	1-1/2					2010		8.94		
RS18-R	CS18-R	18	25	Clear Span + 16	8	20	10d	1-1/2	2100	2100	9.34	9.34	2010	2100	8.94	9.34	
				Clear Span + 18	9	24	8d	1-1/2					2010		8.94		
RS150	CS16	16	150	Clear Span + 18	9	24	10d	1-1/2	2645	2645	11.77	11.77	2645	2645	11.77	11.77	
				Clear Span + 22	11	28	8d	1-1/2					2610		11.61		
RS16-R	CS16-R	16	25	Clear Span + 18	9	24	10d	1-1/2	2645	2645	11.77	11.77	2645	2645	11.77	11.77	
				Clear Span + 22	11	28	8d	1-1/2					2610		11.61		
RS14-100	CS14	14	100	Clear Span + 24	12	30	10d	1-1/2	3920	3920	17.44	17.44	3565	3920	15.86	17.44	
				Clear Span + 30	15	38	8d	1-1/2					3605		16.04		
RS14-R	CS14-R	14	25	Clear Span + 24	12	30	10d	1-1/2	3920	3920	17.44	17.44	3565	3920	15.86	17.44	
				Clear Span + 30	15	38	8d	1-1/2					3605		16.04		

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Fasteners to be installed with equal fasteners at each end of the connection.
3) 16d sinker nails may be substituted for 10d nails with no load reduction.
4) **NAILS:** 8d nails are 0.131" dia. x 2-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

HRS / HTP / KST / KSTI / LSTA / LSTI / MSTA / MSTC / ST Strap Ties

USP STRUCTURAL CONNECTORS MiTek

HRS – 12 gauge, 1-3/8" or 3-1/4" wide strapping.

LSTA – 20 or 18 gauge, light-capacity 1-1/4" wide strapping.

LSTI – 3-3/4" wide strap ties provide tension load path for truss top chords. The nail pattern accommodates open web trusses with double top chord.

MSTA – 18 or 16 gauge, medium-capacity 1-1/4" wide strapping.

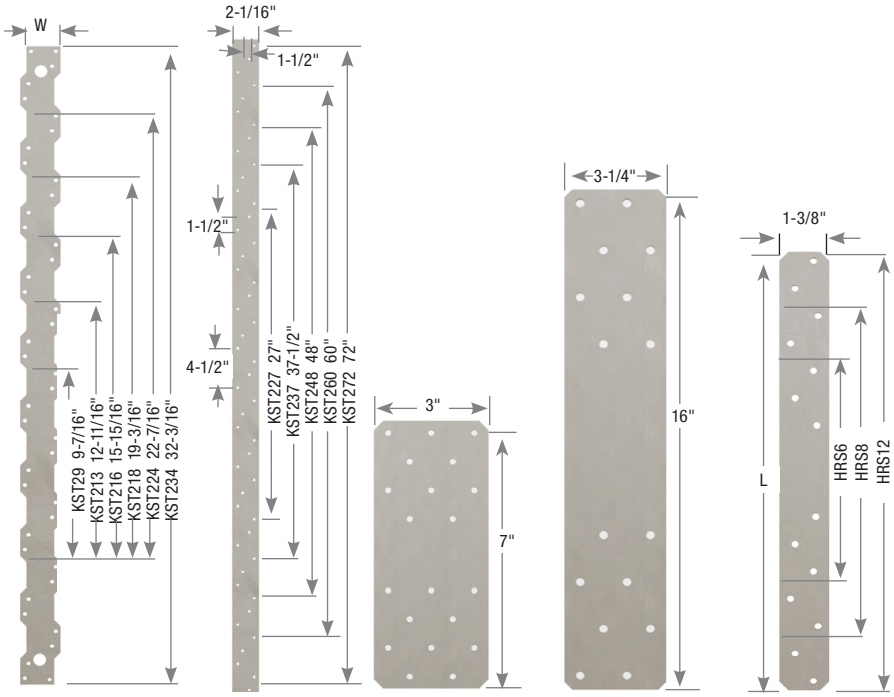
HTP – 16 gauge, medium-capacity 3" wide strapping.

ST – 16 gauge, medium-capacity 1-1/4" wide strapping.

MSTC – 3" wide strapping. Slotted hole design allows for higher load capacities and reduces splitting of lumber when attached to multiple 2x members.

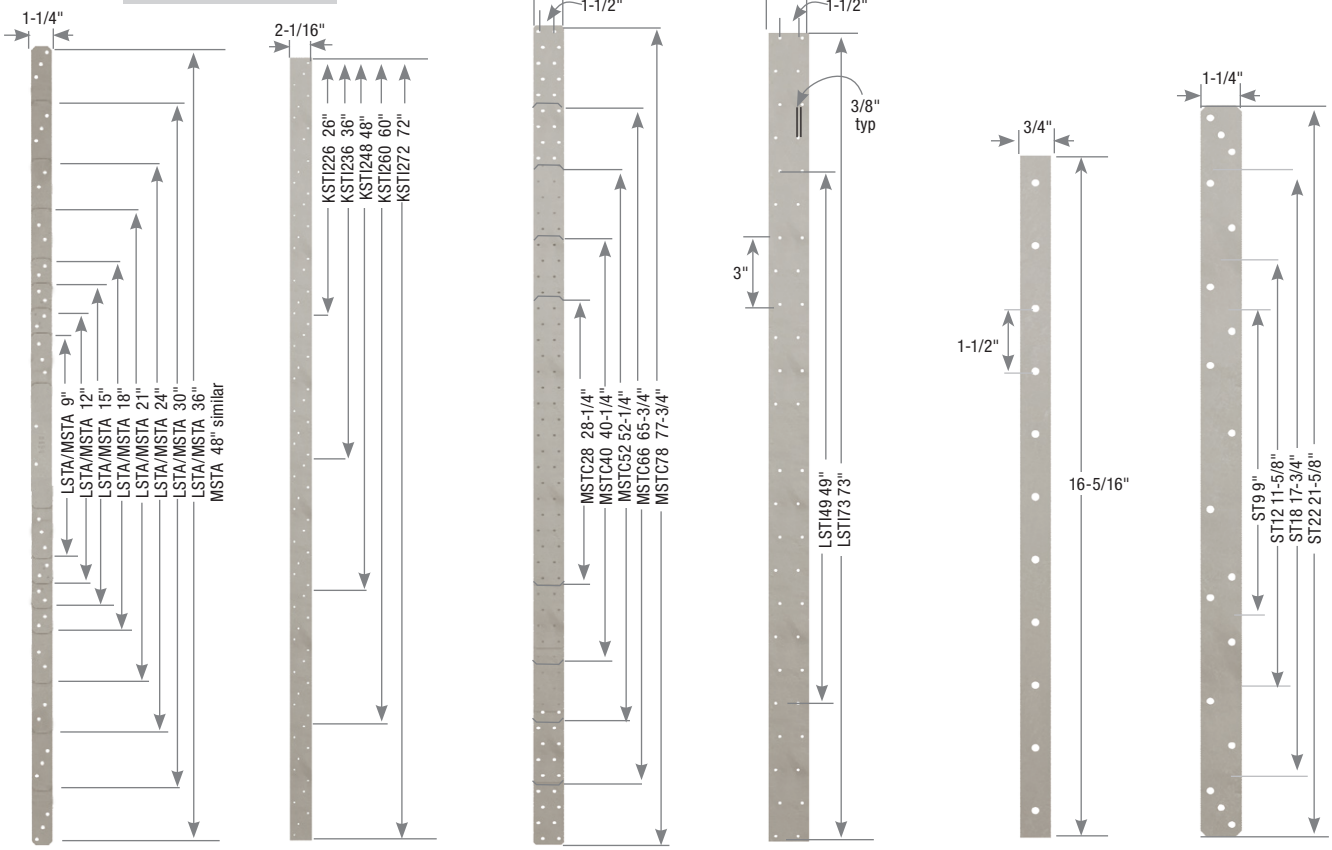
KST – 3/4", 1-3/4", or 2-1/16" wide strapping. Straps can be fastened using either nails or bolts. Some KST straps install only with nails.

KSTI – 2-1/16" wide strapping. Straps are designed for installation to wood I-Joist flanges.



KST scalloped design | KST straight edge design | HTP37-TZ | HRS416-TZ | HRS

Some model designs may vary from illustration shown



LSTA/MSTA | KSTI | MSTC | LSTI | KST116 | ST

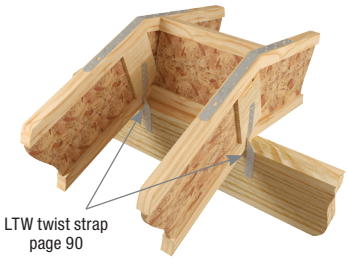
Continued on next page

HRS / HTP / KST / KSTI / LSTA / LSTI / MSTA / MSTC / ST Strap Ties

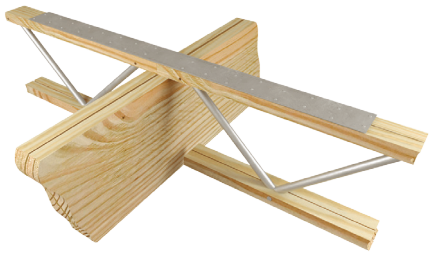
USP STRUCTURAL CONNECTORS MiTek

Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Designer may specify alternate nailing schedules. Refer to **Nail Specification Table** on page 18 for nail shear values. Load values shall not exceed published factored resistance.
- The quantity of nails installed shall be equally distributed to both ends of the strap.
- Bolts must be ordered separately.



Typical LSTA/MSTA I-Joist on ridge beam installation



Typical LSTI open web truss installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Fastener Schedule[5] Total Qty[2]	Fastener Schedule[5] Min Qty[3]	Fastener Schedule[5] Type	DF Factored Resistance Tensile 115%[1,4] Lbs	DF Factored Resistance Tensile 115%[1,4] kN	S-P-F Factored Resistance Tensile 115%[1,4] Lbs	S-P-F Factored Resistance Tensile 115%[1,4] kN	Corrosion Finish
KST116	ST2115	20	3/4	16-5/16	10	8	16d	995	4.43	940	4.18	
LSTA9	LSTA9	20	1-1/4	9	8	8	10d	1085	4.83	775	3.45	
LSTA12	LSTA12	20	1-1/4	12	10	10	10d	1355	6.03	970	4.31	
LSTA15	LSTA15	20	1-1/4	15	12	12	10d	1630	7.25	1165	5.18	
LSTA18	LSTA18	20	1-1/4	18	14	14	10d	1855	8.25	1360	6.05	
LSTA21	LSTA21	20	1-1/4	21	16	16	10d	1855	8.25	1555	6.92	
LSTA24	LSTA24	20	1-1/4	24	18	16	10d	1855	8.25	1555	6.92	
KST29	ST292	20	1-3/4	9-7/16	14	14	16d	1320	5.87	940	4.18	
KST213	ST2122	20	1-3/4	12-11/16	18	18	16d	2680	11.92	2110	9.39	
KST216	ST2215	20	1-3/4	15-15/16	22	18	16d	2680	11.92	2110	9.39	
LSTA30	LSTA30	18	1-1/4	30	22	22	10d	2460	10.94	2140	9.52	
LSTA36	LSTA36	18	1-1/4	36	26	22	10d	2460	10.94	1945	8.65	Stainless Steel
MSTA9	MSTA9	18	1-1/4	9	8	8	10d	1085	4.83	775	3.45	Triple Zinc
MSTA12	MSTA12	18	1-1/4	12	10	10	10d	1355	6.03	970	4.31	Triple Zinc, Stainless Steel
MSTA15	MSTA15	18	1-1/4	15	12	12	10d	1630	7.25	1165	5.18	Triple Zinc
MSTA18	MSTA18	18	1-1/4	18	14	14	10d	1900	8.45	1360	6.05	Triple Zinc, Stainless Steel
MSTA21	MSTA21	18	1-1/4	21	16	16	10d	2170	9.65	1555	6.92	Triple Zinc
MSTA24	MSTA24	18	1-1/4	24	18	18	10d	2445	10.88	1750	7.78	Triple Zinc, Stainless Steel
LSTI49	LSTI49	18	3-3/4	49	32	32	10d x 1-1/2	4340	19.31	3090	13.75	
LSTI73	LSTI73	18	3-3/4	73	48	48	10d x 1-1/2	6515	28.98	4635	20.62	
ST9	ST9	16	1-1/4	9	8	8	16d	1325	5.89	1100	4.89	
ST12	ST12	16	1-1/4	11-5/8	10	10	16d	1655	7.36	1375	6.12	
ST18	ST18	16	1-1/4	17-3/4	14	14	16d	2095	9.32	1925	8.56	
ST22	ST22	16	1-1/4	21-5/8	18	18	16d	2095	9.32	2095	9.32	
MSTA30	MSTA30	16	1-1/4	30	22	22	10d	2985	13.28	2140	9.52	Triple Zinc
MSTA36	MSTA36	16	1-1/4	36	26	26	10d	3100	13.79	2525	11.23	Triple Zinc, Stainless Steel
MSTA48	MSTA49	16	1-1/4	48	32	26	10d	3070	13.66	2525	11.23	
KST218	ST6215	16	1-3/4	19-3/16	26	26	16d	2640	11.74	1875	8.34	
KST224	ST6224	16	1-3/4	22-7/16	30	30	16d	4440	19.75	3520	15.66	
HTP37-TZ	HTP37Z	16	3	7	20	20	10d x 1-1/2	2330	10.36	2110	9.39	Triple Zinc
MSTC28	MSTC28	16	3	28-1/4	36	36	10d	4380	19.48	3110	13.83	
					36	34	16d	6295	28.00	4435	19.73	
MSTC40	MSTC40	16	3	40-1/4	52	52	10d	6570	29.23	4665	20.75	
					52	46	16d	7795	34.68	6305	28.05	
MSTC52	MSTC52	16	3	52-1/4	70	60	10d	7795	34.68	6220	27.67	
					70	52	16d	7795	34.68	7795	34.68	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Total number of nail and/or bolt holes provided in the strap.
3) Minimum quantity of fasteners to be installed with equal fasteners at each end of the connection. Strap may have additional nail holes not needed to meet published factored resistance of strap.
4) Factored resistances are based on parallel-to-grain loading, minimum of 2-1/2" thick.
5) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc

Continued on next page

HRS / HTP / KST / KSTI / LSTA / LSTI / MSTA / MSTC / ST Strap Ties

USP STRUCTURAL CONNECTORS MiTek

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Fastener Schedule[5,6] Total Qty[2]	Fastener Schedule[5,6] Min Qty[3]	Fastener Schedule[5,6] Type	DF Factored Resistance Tensile 115%[1,4] Lbs	DF Factored Resistance Tensile 115%[1,4] kN	S-P-F Factored Resistance Tensile 115%[1,4] Lbs	S-P-F Factored Resistance Tensile 115%[1,4] kN	Corrosion Finish
KST234	ST6236	14	1-3/4	32-3/16	42	36	16d	5665	25.20	4225	18.79	
MSTC66	MSTC66	14	3	65-3/4	88	72	10d	9945	44.24	8165	36.32	
					88	62	16d	9945	44.24	9945	44.24	
MSTC78	MSTC78	14	3	77-3/4	104	76	10d	9945	44.24	8550	38.03	
					104	66	16d	9945	44.24	9945	44.24	
HRS6	HRS6	12	1-3/8	6	6	6	10d	815	3.63	580	2.58	
HRS8	HRS8	12	1-3/8	8	10	10	10d	1355	6.03	970	4.31	
HRS12	HRS12	12	1-3/8	12	14	14	10d	1900	8.45	1355	6.03	
KST227	MST27	12	2-1/16	27	34	26	16d	4290	19.08	3050	13.57	HDG
KST237	MST37	12	2-1/16	37-1/2	48	38	16d	6270	27.89	4455	19.82	HDG
KST248	MST48	12	2-1/16	48	62	50	16d	8110	36.08	5865	26.09	HDG
KSTI226	MSTI26	12	2-1/16	26	26	**22**	10d x 1-1/2	**3415**	**15.19**	**3000**	**13.35**	
KSTI236	MSTI36	12	2-1/16	36	36	**32**	10d x 1-1/2	**4970**	**22.11**	**4360**	**19.40**	
KSTI248	MSTI48	12	2-1/16	48	48	**44**	10d x 1-1/2	**6830**	**30.38**	**5995**	**26.67**	
KSTI260	MSTI60	12	2-1/16	60	60	**56**	10d x 1-1/2	**7720**	**34.34**	**7630**	**33.94**	
KSTI272	MSTI72	12	2-1/16	72	72	**58**	10d x 1-1/2	**7720**	**34.34**	**7720**	**34.34**	
HRS416-TZ	HRS416Z	12	3-1/4	16	16	16	**WS15-HDG**	4057	18.05	3329	14.81	Triple Zinc
KST260	MST60	10	2-1/16	60	72	64	16d	10560	46.98	7505	33.39	HDG
KST272	MST72	10	2-1/16	72	72	64	16d	10605	47.18	8445	37.57	

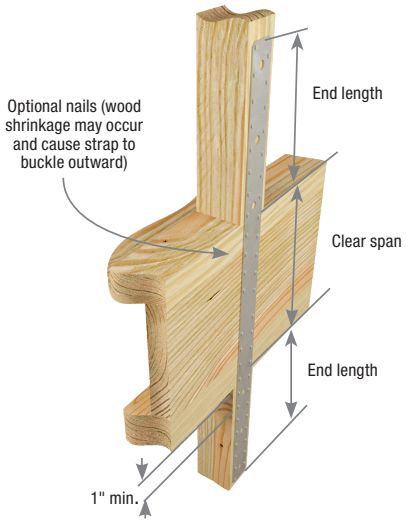
1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Total number of nail and/or bolt holes provided in the strap.
3) Minimum quantity of fasteners to be installed with equal fasteners at each end of the connection. Strap may have additional nail holes not needed to meet published factored resistance of strap.
4) Factored resistances are based on parallel-to-grain loading, minimum of 2-1/2" thick.
5) WS15-HDG Wood Screws are 1/4" dia. x 1-1/2" long.
6) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc

Clear Span Chart

USP Stock No.	Clear Span	Fasteners Total[2] Qty	Fasteners Total[2] Type	DF Factored Resistance Uplift (115%)[1] Lbs	DF Factored Resistance Uplift (115%)[1] kN	S-P-F Factored Resistance Uplift (115%)[1] Lbs	S-P-F Factored Resistance Uplift (115%)[1] kN
MSTC28	18	12	10d	1630	7.30	1155	5.10
	16	16	10d	2170	9.70	1540	6.90
MSTC40	18	28	10d	3800	16.90	2700	12.00
	16	32	10d	4345	19.30	3085	13.70
MSTC52	18	44	10d	5970	26.60	4240	18.90
	16	48	10d	6515	29.00	4625	20.60
MSTC66	18	62	10d	8415	37.40	5975	26.60
	16	64	10d	8685	38.60	6165	27.40
MSTC78	18	64	10d	8685	38.60	6165	27.40
	16	66	10d	8960	39.90	6360	28.30
KST237	18	20	16d	3295	14.70	2340	10.40
	16	22	16d	3625	16.10	2575	11.50
KST248	18	32	16d	5275	23.50	3745	16.70
	16	34	16d	5605	24.90	3980	17.70
KST260	18	46	16d	7580	33.70	5380	23.90
	16	48	16d	7910	35.20	5615	25.00
KST272	18	46	16d	7580	33.70	5380	23.90
	16	48	16d	7910	35.20	5615	25.00
KSTI236	18	14	10d x 1-1/2	**2175**	**9.68**	**1910**	**8.50**
	16	16	10d x 1-1/2	**2485**	**11.05**	**2180**	**9.70**
KSTI248	18	26	10d x 1-1/2	**4035**	**17.95**	**3545**	**15.77**
	16	28	10d x 1-1/2	**4345**	**19.33**	**3815**	**16.97**
KSTI260	18	38	10d x 1-1/2	**5900**	**26.25**	**5180**	**23.04**
	16	40	10d x 1-1/2	**6210**	**27.62**	**5450**	**24.24**
KSTI272	18	50	10d x 1-1/2	**7720**	**34.34**	**6815**	**30.32**
	16	52	10d x 1-1/2	**7720**	**34.34**	**7085**	**31.52**

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.



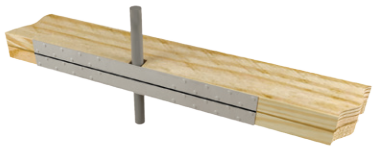
Typical KST237 floor-to-floor installation

KRPS Strap Ties

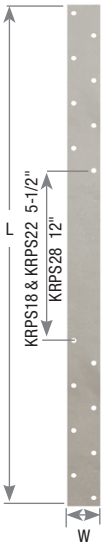
Designed for notched plates where plumbing, heating, or other pipes are placed in partitions.

Materials: 16 gauge
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Install one strap tie for each 2x plate.



Typical KRPS installation



KRPS

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Notch Width (in)	Fastener Schedule[3] Qty	Fastener Schedule[3] Type	DF Factored Resistance Tensile 115%[1,2] Lbs	DF Factored Resistance Tensile 115%[1,2] kN	S-P-F Factored Resistance Tensile 115%[1,2] Lbs	S-P-F Factored Resistance Tensile 115%[1,2] kN	Corrosion Finish
KRPS18	RPS18	16	1-1/2	18-5/16	< 5-1/2	12	16d	1375	6.12	1185	5.27	
KRPS22	RPS22	16	1-1/2	22-5/16	≤ 5-1/2	16	16d	1785	7.94	1535	6.83	
KRPS28	RPS28	16	1-1/2	28-5/16	≤ 12	16	16d	1785	7.94	1535	6.83	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Factored resistances are based on single shear, parallel to grain loading with a 3-1/2" minimum member thickness.
3) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

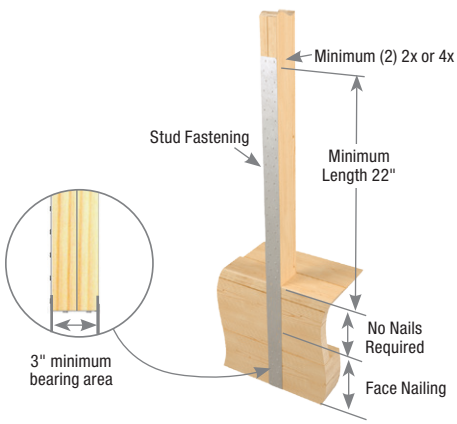
Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

MSTCB Pre-Bent Straps

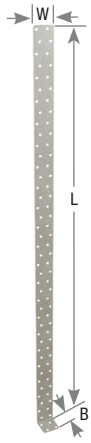
The MSTCB Pre-Bent Strap is designed to fasten vertical studs to a beam or ridge beam member below where the beam depth will not allow complete fastener attachments with a standard product.

Materials: 14 gauge
Finish: G90 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.



Sideview **Typical MSTC66B3 installation**



MSTCB

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Dimensions (in) B	Min. Beam Dimensions (in) W	Min. Beam Dimensions (in) D	Fastener Schedule[5] Beam Face Qty	Beam Face Type	Beam Bottom Qty	Beam Bottom Type	Stud/Post[2,3,4] Qty	Stud/Post[2,3,4] Type	Unit	DF Factored Resistance Tensile 115%[1]	S-P-F Factored Resistance Tensile 115%[1]
MSTC48B3	MSTC48B3	14	3	44-7/8	2-7/8	3	9-1/4	12	10d	4	10d	24	10d	Lbs	7185	5100
														kN	31.96	22.69
MSTC66B3	MSTC66B3	14	3	62-7/8	2-7/8	3	11-1/4	14	10d	4	10d	24	10d	Lbs	7185	5100
														kN	31.96	22.69

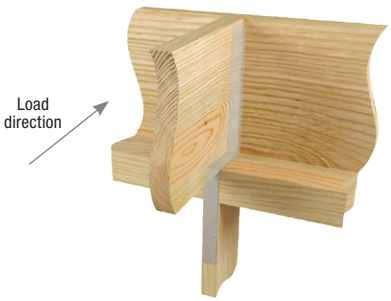
1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Minimum strap length on stud/post for quantity of nails is 19" for MSTC48B3 and 22" for MSTC66B3.
3) Fewer fasteners in the stud/post than listed will reduce the capacity of the connection.
4) Nails in the stud/post to be installed symmetrically in pairs starting a minimum of 1-1/2" from the end.
5) **NAILS:** 10d nails are 0.148" dia. x 3" long.

PWFS Permanent Wood Foundation Strap

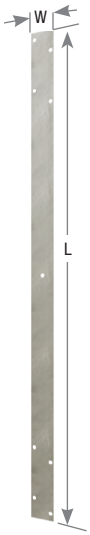
Connects permanent wood foundation studs to rim joist to resist lateral loads produced from ground pressure. The high load values and positive placement nail gun installation make the PWFS24 practical for manufactured homes as well as site built homes.

Materials: 20 gauge
Finish: G90 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Center strap on top plate over the stud.
- Attach center nail and bend inside end of strap downward.
- Install nails on inside of wall.
- Install floor system or place manufactured home on foundation.
- Form outside end of strap up the outside of rim and install nails.



Typical PWFS24 installation



PWFS24

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Fastener Schedule[2] Qty	Fastener Schedule[2] Type	DF Factored Resistance Tensile 100%[1] Lbs	DF Factored Resistance Tensile 100%[1] kN	S-P-F Factored Resistance Tensile 100%[1] Lbs	S-P-F Factored Resistance Tensile 100%[1] kN
PWFS24	PWF24	20	1-1/2	24	9	8d	1115	4.96	930	4.14

1) For installations where the strap does not fall behind joist, the designer shall be responsible to determine suitability of rim to resist the load.
2) **NAILS:** 8d nails are 0.131" dia. x 2-1/2" long.

HTW / KTS / LFTA / LTW / MTW Twist Straps

Twist straps tie framing members to resist tension forces.

LFTA6 – 16 gauge.

LTW – 18 gauge, light-capacity.

MTW – 16 gauge, medium-capacity.

KTS – 16 gauge, medium-capacity with angled twist.

HTW – 14 gauge, heavy-capacity.

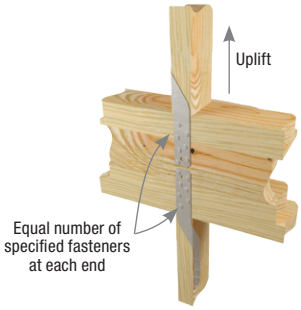
Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Typical LTW12 / MTW12 truss-to-top plate installation

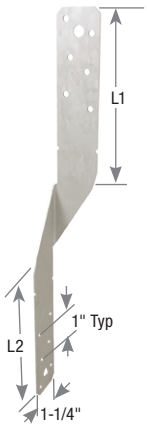
Typical LFTA6 stud-to-top plate installation

Typical LFTA6 truss-to-top plate installation

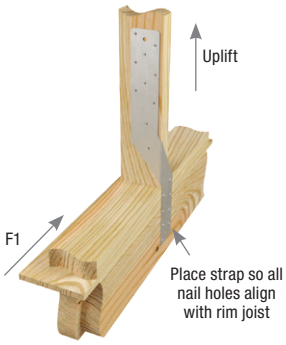
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Consult I-Joist manufacturer for web stiffener requirements, and uplift limitations on joist and application.



Typical LTW12 / MTW12 stud-to-rim joist installation



LTW12/MTW12



Typical LFTA6 stud-to-rim joist installation

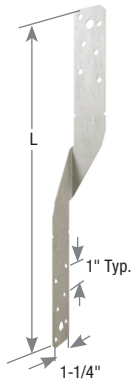
LFTA6

Continued on next page

HTW / KTS / LFTA / LTW / MTW Twist Straps

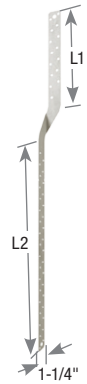
USP STRUCTURAL CONNECTORS MiTek

Typical MTW20 I-Joist rafter installation

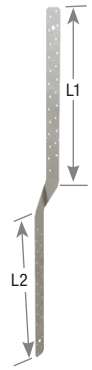


LTW18/MTW18 other models similar

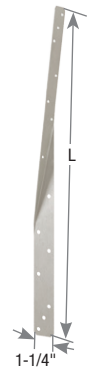
Typical MTW30 installation



MTW30/ HTW30



MTW30C



KTS

USP Stock No.[5]	Ref. No.	Steel Gauge	Dimensions (in) W	L	L1	L2	Fastener Schedule [2,3,4,7] Qty	Type	DF Factored Resistance Uplift (115%)[1] Lbs	kN	S-P-F Factored Resistance Uplift (115%)[1] Lbs	kN	Corrosion Finish
LTW12	LTS12	18	1-1/4	12	4-1/2	4-1/2	12	10d x 1-1/2	1465	6.52	1040	4.63	
							12	10d	1465	6.52	1040	4.63	
LTW16	LTS16	18	1-1/4	16	6-1/2	6-1/2	12	10d x 1-1/2	1465	6.52	1040	4.63	
							12	10d	1465	6.52	1040	4.63	
LTW18	LTS18	18	1-1/4	18	7-1/2	7-1/2	12	10d x 1-1/2	1465	6.52	1040	4.63	
							12	10d	1465	6.52	1040	4.63	
LTW20	LTS20	18	1-1/4	20	8-1/2	8-1/2	12	10d x 1-1/2	1465	6.52	1040	4.63	
							12	10d	1465	6.52	1040	4.63	
KTS9	TS9	16	1-1/4	9	-- --	-- --	8	16d	915	4.07	785	3.49	
KTS12	TS12	16	1-1/4	11-1/2	-- --	-- --	10	16d	1145	5.09	985	4.38	
MTW12	MTS12	16	1-1/4	12	4-1/2	4-1/2	14	10d x 1-1/2	2250	10.01	1595	7.10	
							14	10d	2250	10.01	1595	7.10	
MTW16	MTS16	16	1-1/4	16	6-1/2	6-1/2	14	10d x 1-1/2	2250	10.01	1595	7.10	
							14	10d	2250	10.01	1595	7.10	
KTS17	TS18	16	1-1/4	17-1/2	-- --	-- --	14	16d	1370	6.09	1175	5.23	
MTW18	MTS18	16	1-1/4	18	7-1/2	7-1/2	14	10d x 1-1/2	2250	10.01	1595	7.10	
							14	10d	2250	10.01	1595	7.10	
LFTA6 [6]	H6	16	2-1/4	19-1/8	8-3/8	6-1/2	16	8d	1265	5.63	1075	4.78	
							16	8d x1-1/2	1265	5.63	1075	4.78	
MTW20	MTS20	16	1-1/4	20	8-1/2	8-1/2	14	10d x 1-1/2	2250	10.01	1595	7.10	
							14	10d	2250	10.01	1595	7.10	
KTS24	TS22	16	1-1/4	21-3/4	-- --	-- --	18	16d	1580	7.03	1580	7.03	
MTW24C	MTS24C	16	1-1/4	24	10-7/16	10-7/16	14	10d x 1-1/2	2250	10.01	1595	7.10	
							14	10d	2250	10.01	1595	7.10	
MTW28C	-- --	16	1-1/4	28	12-7/16	12-7/16	14	10d x 1-1/2	2250	10.01	1595	7.10	
							14	10d	2250	10.01	1595	7.10	
MTW30	MTS30	16	1-1/4	30	8-5/16	18-9/16	14	10d x 1-1/2	2250	10.01	1595	7.10	
							14	10d	2250	10.01	1595	7.10	
MTW30C	MTS30C	16	1-1/4	30	13-7/16	13-7/16	14	10d x 1-1/2	2250	10.01	1595	7.10	
							14	10d	2250	10.01	1595	7.10	
HTW16	HTS16	14	1-1/4	16	5-1/8	5-1/8	16	10d x 1-1/2	2340	10.41	1660	7.38	
							16	10d	2340	10.41	1660	7.38	
HTW20	HTS20	14	1-1/4	20	7-1/8	7-1/8	24	10d x 1-1/2	2880	12.81	2045	9.10	
							20	10d	2880	12.81	2045	9.10	
HTW24	HTS24	14	1-1/4	24	9-1/8	9-1/8	24	10d x 1-1/2	2880	12.81	2045	9.10	
							20	10d	2880	12.81	2045	9.10	
HTW28	HTS28	14	1-1/4	28	11-1/8	11-1/8	24	10d x 1-1/2	2880	12.81	2045	9.10	
							20	10d	2880	12.81	2045	9.10	
HTW30	HTS30	14	1-1/4	30	7	17-1/4	24	10d x 1-1/2	2880	12.81	2045	9.10	
							20	10d	2880	12.81	2045	9.10	
HTW30C	HTS30C	14	1-1/4	30	12-1/8	12-1/8	24	10d x 1-1/2	2880	12.81	2045	9.10	
							20	10d	2880	12.81	2045	9.10	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) 16d sinker nails may be substituted for 10d common nails with no reduction in load.
3) For 1-1/2" lumber, where 16d nails are specified, use 10d x 1-1/2 nails and apply 0.78 adjustment factor to the table value.
4) Fasteners shall be distributed equally on each end of the connection.
5) C after the model number designates center twist as in MTW30C.
6) LFTA6: F1 is 870 lbs DF-L and 775 lbs S-P-F. To achieve F1 lateral loads, three nails must be installed on each side on the strap located closest to the bend line. Lateral F1 load direction does not apply to roof truss-to-top plate installations.
7) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 8d nails are 0.131" dia. x 2-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.

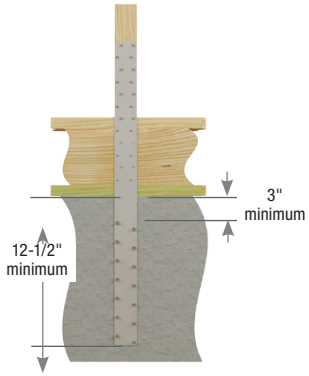
Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc

MSTAM / MSTCM Masonry Straps

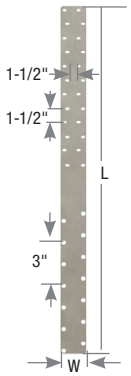
The MSTAM and MSTCM Strap Ties are designed to connect a wood structure above to a masonry wall below.

Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options

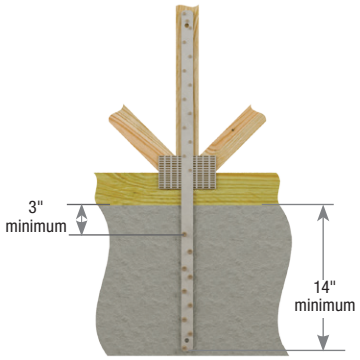
Installation:
• Use all specified fasteners. See Product Notes, page 15.



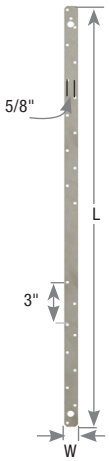
Typical MSTCM40 installation



MSTCM40



Typical MSTAM36 installation



MSTAM36

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Fastener Schedule CMU[2] Qty	CMU[2] Type	Concrete[2] Qty	Concrete[2] Type	Nails[3] Qty	Nails[3] Type	DF Factored Resistance[1] Tensile 115% Lbs	DF Factored Resistance[1] Tensile 115% kN	S-P-F Factored Resistance[1] Tensile 115% Lbs	S-P-F Factored Resistance[1] Tensile 115% kN	Corrosion Finish
MSTAM24	MSTAM24	18	1-1/4	24	5	1/4" Tapcon	5	1/4" Tapcon	9	10d	2315	10.30	2315	10.30	
MSTAM36	MSTAM36	16	1-1/4	36	8	1/4" Tapcon	8	1/4" Tapcon	10	10d	2920	12.99	2820	12.54	
MSTCM40	MSTCM40	16	3	40-1/4	14	1/4" Tapcon	14	1/4" Tapcon	24 22	10d 16d	6905	30.72	4905	21.82	
MSTCM60	MSTCM60	16	3	60	14	1/4" Tapcon	14	1/4" Tapcon	24 22	10d 16d	6905	30.72	4905	21.82	

1) Factored Resistances are derived from tests performed using hollow C90 concrete block.
2) Use ITW Buildex 1/4" x 2-1/4" Tapcon fasteners; or equal, installed in accordance with manufacturer's specification.
3) **NAILS:** 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

Clear Span Chart

USP Stock No.	Clear Span	Fastener Schedule CMU[1] Qty	CMU[1] Type	Concrete[1] Qty	Concrete[1] Type	Nails[3] Qty	Nails[3] Type	DF Factored Resistance[2] Tensile 115% Lbs	DF Factored Resistance[2] Tensile 115% kN	S-P-F Factored Resistance[2] Tensile 115% Lbs	S-P-F Factored Resistance[2] Tensile 115% kN
MSTAM36	16	5	1/4" Tapcon	5	1/4" Tapcon	8	10d	1825	8.12	1445	6.43
	18	5	1/4" Tapcon	5	1/4" Tapcon	7	10d	1825	8.12	1445	6.43
MSTCM40	16	14	1/4" Tapcon	14	1/4" Tapcon	14	16d	4700	20.91	4380	19.48
	18	14	1/4" Tapcon	14	1/4" Tapcon	14	16d	4700	20.91	4380	19.48
MSTCM60	16	14	1/4" Tapcon	14	1/4" Tapcon	22	16d	6905	30.72	4905	21.82
	18	14	1/4" Tapcon	14	1/4" Tapcon	22	16d	6905	30.72	4905	21.82

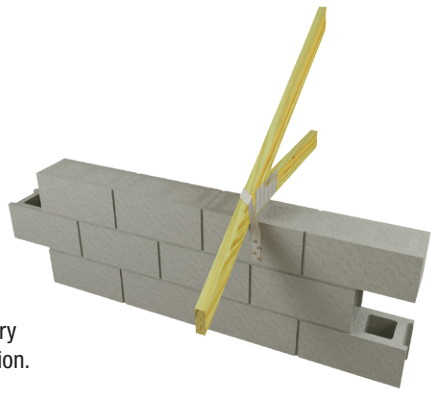
1) Use ITW Buildex 1/4" x 2-1/4" Tapcon fasteners; or equal, installed in accordance with the manufacturer's specification.
2) Factored resistances are derived from tests performed using hollow C90 concrete block.
3) **NAILS:** 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.

HTWM Masonry Twist Straps

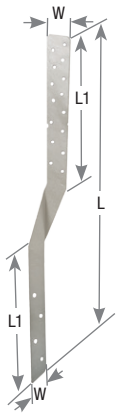
The HTWM Twist Straps are designed for truss to concrete or masonry connections. Offer uplift resistance with variable heel height and positioning applications.

Materials: 14 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, pages 15.
- Strap may be attached to either side of grouted masonry or concrete wall with a minimum of (1) 15M horizontal rebar.
- Drill hole in concrete or masonry with manufacturer's prescribed 1/4" masonry drill. Install fasteners into concrete or masonry per manufacturer's specification.
- Grout or concrete compressive strength shall be 2,500 psi at 28 days.
- Twist straps do not have to be wrapped over the truss to achieve the factored resistance.
- Moisture barrier may be required.



Typical HTWM installation



HTWM

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	L	L1	Fastener Schedule CMU[2] Qty	CMU[2] Wedge Bolts	Concrete[2] Qty	Concrete[2] Wedge Bolts	Truss/Rafter[3] Qty	Truss/Rafter[3] Nail Type	Unit	DF Factored Resistance[1] Tensile 115%	S-P-F Factored Resistance[1] Tensile 115%
HTWM16	HTSM16, MTSM16	14	1-1/4	16	5-3/4	4	1/4" x 1-3/4"	4	1/4" x 1-3/4"	8	10d x 1-1/2	Lbs	1520	1335
												kN	6.76	5.94
HTWM20	HTSM20, MTSM20	14	1-1/4	20	7-3/4	4	1/4" x 1-3/4"	4	1/4" x 1-3/4"	8	10d x 1-1/2	Lbs	1520	1335
												kN	6.76	5.94

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Use Powers Fasteners 1/4" x 1-3/4" Wedge-Bolt®; or equal, installed in accordance with manufacturer's specification.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.

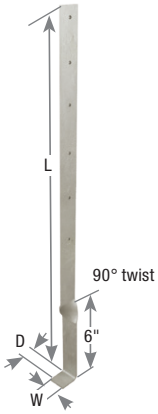
JA Joist Anchors

The JA Joist Anchor is designed to laterally connect a joist to a concrete wall. The anchor is embedded into the wall at one end and nailed to the joist at the strap end, typically used where there is a fire separation wall such as in town houses.

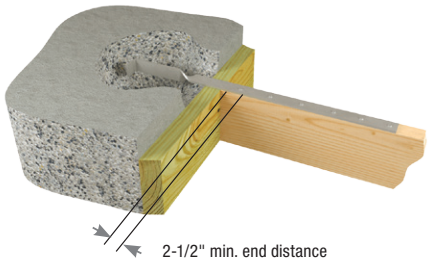
JA Joist Anchor is not designed to carry gravity load or to resist uplift force. Vertical loads (gravity and/or uplift) shall be accommodated by other means.

Materials: 7 gauge
Finish: None

Installation:
- The "L" end of the anchor is to be embedded into a poured concrete wall.
- Minimum embedment is 6" which measures from the embeded end to the end of the twist.
- Deeper embedment may be required to allow for code required 2-1/2" end distance for the first joist fastener depending on joist anchor size and header thickness.
- Fasten the strap portion of the JA Joist Anchor to the horizontal joist using all specified nails.
- **Connectors are not load rated.**



JA1224



Typical JA1224 installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	L	D	Fastener Schedule[1] Qty	Type
JA1212	-- --	7	1-1/4	12	1-1/4	2	10d
JA1218	-- --	7	1-1/4	18	1-1/4	3	10d
JA1224	-- --	7	1-1/4	24	1-1/4	5	10d
JA1236	-- --	7	1-1/4	36	1-1/4	8	10d

1) **NAILS:** 10d nails are 0.148" dia. x 3" long.

New products or updated product information are designated in **blue font**.

USP STRUCTURAL CONNECTORS MiTek

Hanger Selector Guide

Hanger Type	USP Series	Steel Gauge	Style: Face Mount	Style: Top Mount	Style: Sloped / Skewed	Style: Formed	Style: Welded	Supported / Joist Member: Dimensional Wood	Supported / Joist Member: EWP	Supported / Joist Member: Truss	Supported / Joist Member: Glulam	Supporting / Header Member: Dimensional Wood	Supporting / Header Member: EWP	Supporting / Header Member: Truss	Supporting / Header Member: Glulam	Supporting / Header Member: Masonry	100% Factored Resistance (Lbs.) Range — Header Material: SPF Masonry	SPF	DF Masonry	DF
Face Mount	ST	22	•					•				•					-- --	670 - 1,520	-- --	670 - 1,520
	DT	22	•					•				•					-- --	1,380 - 1,640	-- --	1,380 - 1,640
	JL	20	•			•		•		•		•		•			-- --	689 - 2,180	-- --	970 - 3,070
	JUS	18	•			•		•		•		•		•			-- --	1,122 - 3,671	-- --	1,580 - 5,170
	MUS	18	•			•		•		•		•		•			-- --	2,305 - 3,125	-- --	3,245 - 4,400
	JLIF	18	•					•				•					-- --	475 - 1,305	-- --	670 - 1,835
	SUH	16	•			•		•		•		•	•	•			-- --	985 - 4,070	-- --	1,390 - 5,730
	HUS	16	•			•		•	•	•		•	•	•			-- --	3,891 - 6,408	-- --	5,480 - 9,025
		14	•			•		•	•	•		•	•	•			-- --	1,512 - 4,505	-- --	2,130 - 6,345
	HD	14	•			•		•	•	•	•	•	•	•			-- --	1,090 - 5,194	-- --	1,535 - 7,315
	HDQIF	14	•			•		•									-- --	3,775 - 6,005	-- --	5,315 - 8,460
Top Mount	KLB	14		•		•		•			•	•					-- --	**2,905**	-- --	**3,325**
	FWH	14		•		•		•				•					-- --	1,910 - 2,155	-- --	2,435 - 2,750
	KB	12		•		•		•			•	•					-- --	**5,690 - 5,825**	-- --	**6,640 - 6,795**
	HDO	12		•		•		•			•	•	•		•		-- --	2,625 - 6,625	-- --	3,125 - 7,885
	SW	12		•			•	•				•	•				-- --	2,265 - 2,470	-- --	3,335 - 3,630
	SWH	7 - Top Flange 12 - Stirrup		•			•	•			•	•	•				-- --	**3,605**	-- --	4,760
	KHW	3 - Top Flange 10 - Stirrup		•			•	•			•	•					-- --	5,185 - 5,225	-- --	7,625 - 7,680
	HL	18		•		•		•				•					-- --	1,245 -1,925	-- --	1,830 - 2,290
	JH	18	•	•		•		•		•		•		•			-- --	2,745 - 3,375	-- --	3,565 - 4,750
Slope and Skew	**RR**	18		•	•	•		•				•					-- --	425 - 500	-- --	600 - 705
	LS	18	•		•	•		•				•					-- --	1,180 - 1,520	-- --	1,370 - 1,765
	LSSH	18	•		•	•		•	•	•		•	•	•	•		-- --	950 - 1,970	-- --	1,340 - 2,775
		16	•		•	•		•	•	•		•	•	•	•		-- --	2,120 - 3,715	-- --	2,985 - 5,230
	SKH	16	•		•	•		•	•	•		•	•	•	•		-- --	585 - 3,595	-- --	825 - 5,065
		14	•		•	•		•	•	•		•	•	•	•		-- --	1,830 - 5,260	-- --	2,575 - 7,405
	SKHH	14	•		•	•		•	•	•		•	•	•	•		-- --	1,880 - 4,530	-- --	**2,195 - 5,280**
Panel and Purlin	JDS	18		•		•		•				•		•			-- --	560 - 1,940	-- --	785 - 2,735
	FHD	18		•		•		•				•		•			-- --	1,120	-- --	1,575
	JPF	20		•		•		•				•		•				1,245 - 1,420		1,755 - 1,995
	DTUS	20				•		•		•		•		•			-- --	695	-- --	980
	TUS	20				•		•		•		•		•			-- --	695	-- --	980
Masonry	HWUH	1/4"- Top Flange, 7 - Stirrup		•			•	•	•			•	•			•	3,555 - 6,125	-- --	5,010 - 8,625	-- --
	MPH	12		•			•	•	•	•						•	3,220 - 5,300	-- --	3,745 - 6,165	-- --
	UMH[1]	1/4"	•				•	•	•		•					•	8,430	-- --	11,875	-- --

1) UMH factored resistance values are based upon 2,500 psi.

• Represents common applications and product configurations. Consult USP for additional applications and/or optional product configurations.
New products or updated product information are designated in **blue font**.

DT / JL / JLIF / ST / SUH Face Mount Joist Hangers

USP STRUCTURAL CONNECTORS MiTek

USP offers a wide variety of light-gauge face mount joist hangers to accommodate application and installation preferences.

ST series – 22 gauge, 2x joist hangers.

DT series – 22 gauge, (2) 2x joist hangers.

JL series – 20 gauge, 2x joist hangers.

JLIF series – 18 gauge, 2x joist hangers.

SUH series – 16 gauge steel construction for more demanding applications and light truss support.

Materials: See chart

Finish: G90 galvanizing; JLIF – G-185 galvanizing

Options: See chart for Corrosion Finish Options. See SUH Specialty Options Chart.

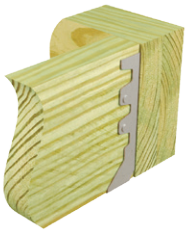
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

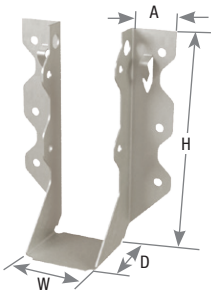
- Use all specified fasteners. See Product Notes, page 15.

Typical JL26 installation

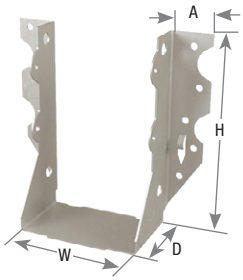
Typical SUH26-2 installation



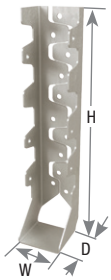
Typical JLIF installation



JL26



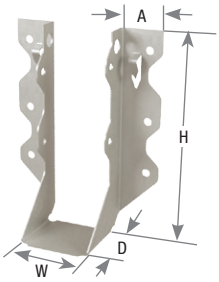
SUH26-2



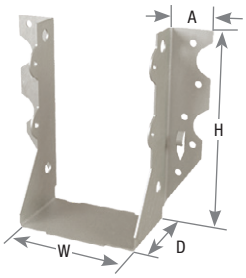
JLIF

Typical ST installation

Typical DT installation



ST



DT

SUH Specialty Options Chart

Refer to Specialty Options pages 220-221 for additional details.

Option[4]	Skewed[1,3]	Sloped Seat[2,3]	Sloped / Skewed[1,2,3]
Range	1˚ to 67-1/2˚ when width is 1-3/4" or less. 1˚ to 50˚ on all others.	1˚ to 45˚	See Sloped Seat and Skewed
Factored Resistance	100% of table load. 75% of uplift load on skews greater than 15˚.	100% of table load	80% of table load. 75% of uplift load on skews greater than 15˚.
Ordering	Add *SK* angle required, right *(R)* or left *(L)*, and **square cut (*SQ*) or bevel cut (*BV*)** to product number. Ex. SUH210_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. SUH210_SL30D	See Sloped Seat and Skewed. Ex. SUH210_SK45R_SQ_SL30D

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
4) SUH option hangers may be manufactured as welded products to achieve listed loads. Welded products will have primer finish.

New products or updated product information are designated in **blue font.**

HUS / JUS / MUS Slant Nail Face Mount Joist Hangers

The HUS, JUS & MUS hanger series offers double shear nailing. USP's dimple allows for 30° to 45° nailing through the joist into the header resulting in higher loads and less nailing. Slant nailing also eliminates the need for shorter joist nails in 2x applications.

Materials: JUS - 18 gauge; MUS - 18 gauge; HUS - 14 or 16 gauge

Finish: G90 galvanizing

Options: See Chart for Corrosion Finish Options. See HUS Specialty Options Chart.

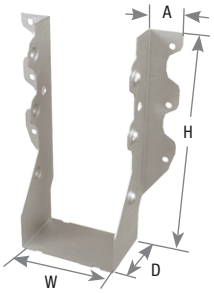
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

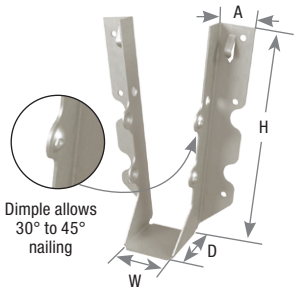
- Use all specified fasteners. See Product Notes, page 15.
- Joist nails must be driven at a 30° to 45° angle through the joist or truss into the header to achieve listed loads. **Standard length "double shear" nails must be used to achieve listed load values.**
- JUS & MUS - 16d sinkers (0.148" dia. x 3-1⁄4") may be used where 10d commons are specified with no load reduction.

Typical HUS46 installation

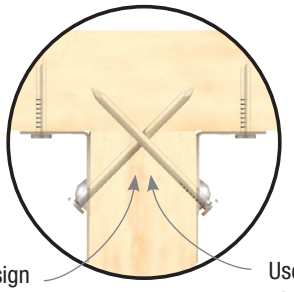
Typical JUS26 installation



HUS28-2



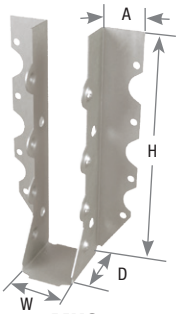
JUS28



Double shear nail design features fewer nails and faster installation

Uses standard length nails

AVAILABLE IN GOLD COAT



MUS

HUS Specialty Options Chart

Refer to Specialty Options pages 220-221 for additional details.

Option	Inverted Flange
Range	Not available in widths less than 2-1/4".
Factored Resistance	100% of table load. 65% of table load when nailing into the support members end grain.
Ordering	Add *IF* to product number. Ex. HUS410_IF

Typical HUS410IF inverted flange installation

HD Heavy-Duty Face Mount Hangers

HD hangers are heavy-duty face mount hangers that can be used to support headers, joists, and trusses.

Materials: 14 gauge

Finish: G90 galvanizing

Options: See chart for Corrosion Finish Options. All nominal lumber sizes are available rough/full size lumber. See Specialty Options Chart.

Codes: Load values are derived from data submitted to various North American building code evaluators.

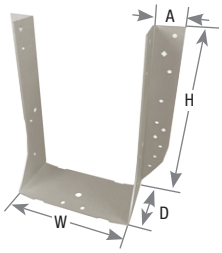
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Some HD models feature nail holes along bend line that must be filled to achieve factored resistance. Verify proper header width to accomplish this for inverted models.

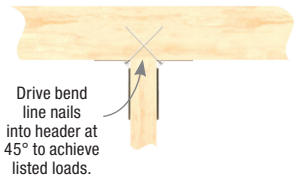
Typical HD610 installation

Typical HD210-2 installation

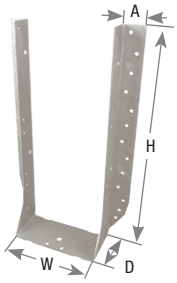
Typical HD3212 glulam installation



HD610



Typical HD bend line nail installation



HD51135

Specialty Options Chart

Refer to Specialty Options pages 220-221 for additional details.

Option	Skewed[1,3]	Sloped Seat[2,3]	Sloped / Skewed[1,2,3]	Inverted Flange
Range	1˚ to 67-1/2˚ when width is 1-3/4" or less. 1˚ to 50˚ on all others.	1˚ to 45˚	See Sloped Seat and Skewed	Not available in widths less than 2-1/4"
Factored Resistance	100% of table load. 75% of uplift load on skews greater than 15˚.	100% of table load	80% of table load. 75% of uplift load on skews greater than 15˚.	100% of table load. 65% of table load when nailing into the support members end grain.
Ordering	Add *SK,* angle required, right *(R)* or left *(L),* and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Example: HD410_SK45R_SQ	Add *SL,* slope required, and up *(U)* or down *(D),* to product number. Example: HD410_SL30D	See Sloped Seat and Skewed Example: HD410_SK45R_SQ_SL30D	Add *IF,* to product number. Example: HD410_IF

Typical HD210-2IF inverted flange installation

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
4) HD option hangers may be manufactured as welded products to achieve listed loads. Welded products will have primer finish.

New products or updated product information are designated in **blue font**.

HDQIF Inverted Flange Face Mount Hangers

HDQIF inverted flange hangers install with wood screws eliminating the need to drill bolt holes simplifying installation.

Materials: 14 gauge

Finish: G90 galvanizing

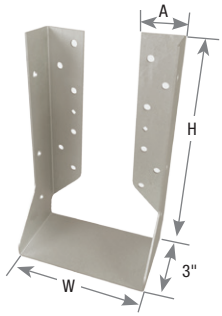
Options: See chart for Corrosion Finish Options

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- WS15 and WS3 Wood Screws are supplied with HDQIF hangers.

Typical HDQIF installation



HDQIF

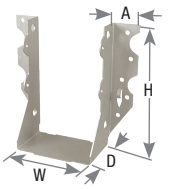
Face Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Gauge	Dimensions (in) W	H	D	A	Fastener Schedule[2,3] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
2 x 4	JL24	LU24	20	1-9/16	3	1-1/2	15/16	4	10d	2	10d x 1-1/2	940	560	4.18	2.49	740	460	3.29	2.05	
	ST24	LU24L	22	1-9/16	3-1/4	1-7/8	1-1/4	4	10d x 1-1/2	3	8d x 1-1/2	670	505	2.98	2.25	670	505	2.98	2.25	
	JL24IF-TZ	--	18	1-9/16	3-1/8	1-1/2	--	4	10d HDG	2	10d x 1-1/2 HDG	840	440	3.74	1.96	765	400	3.40	1.78	
	JUS24	LUS24	18	1-9/16	3-1/8	1-3/4	1	4	10d	2	10d	1595	960	7.09	4.27	1250	755	5.56	3.36	
	SUH24	U24	16	1-9/16	3-1/4	2	1-3/16	4	10d	2	10d x 1-1/2	1390	795	6.18	3.54	1090	625	4.85	2.78	
	HD26	HU26	14	1-9/16	3-1/2	2	1-1/8	4	16d	2	10d x 1-1/2	1975	545	8.79	2.42	1550	430	6.89	1.91	
2 x 6	JL26	LU26	20	1-9/16	4-3/4	1-1/2	15/16	6	10d	4	10d x 1-1/2	1385	1070	6.16	4.76	1085	930	4.83	4.14	
	ST26	LU26L	22	1-9/16	5	1-7/8	1-1/4	6	10d x 1-1/2	5	8d x 1-1/2	1005	845	4.47	3.76	1005	845	4.47	3.76	
	JL26IF-TZ	LUC26Z	18	1-9/16	4-1/2	1-1/2	--	6	10d HDG	4	10d x 1-1/2 HDG	1710	1385	7.61	6.16	1610	1305	7.16	5.80	
	JUS26	LUS26	18	1-9/16	4-13/16	1-3/4	1	4	10d	4	10d	2855	2100	12.70	9.34	2240	1650	9.96	7.34	
	MUS26	MUS26	18	1-9/16	5-1/16	2	1	6	10d	6	10d	2845	1425	12.66	6.34	2825	1415	12.57	6.29	
	SUH26	U26	16	1-9/16	5-1/8	2	1-3/16	6	10d	4	10d x 1-1/2	2345	1505	10.43	6.69	1840	1180	8.18	5.25	
	HUS26	HUS26	16	1-5/8	5-7/16	3	2	14	16d	6	16d	5480	3630	24.38	16.15	4305	2850	19.15	12.68	
	HD26	HU26	14	1-9/16	3-1/2	2	1-1/8	4	16d	2	10d x 1-1/2	1975	545	8.79	2.42	1550	430	6.89	1.91	
	HD28	HU28	14	1-9/16	5-1/4	2	1-1/8	8	16d	4	10d x 1-1/2	2720	1555	12.10	6.92	2135	1220	9.50	5.43	
2 x 8	JL26	LU26	20	1-9/16	4-3/4	1-1/2	15/16	6	10d	4	10d x 1-1/2	1385	1070	6.16	4.76	1085	930	4.83	4.14	
	JL28	LU28	20	1-9/16	6-3/8	1-1/2	15/16	10	10d	6	10d x 1-1/2	2050	1495	9.12	6.65	1610	1225	7.16	5.45	
	ST26	LU26L	22	1-9/16	5	1-7/8	1-1/4	6	10d x 1-1/2	5	8d x 1-1/2	1005	845	4.47	3.76	1005	845	4.47	3.76	
	ST28	--	22	1-9/16	6-3/4	1-7/8	1-1/4	8	10d x 1-1/2	7	8d x 1-1/2	1340	1185	5.96	5.27	1340	1185	5.96	5.27	
	JL26IF-TZ	LUC26Z	18	1-9/16	4-1/2	1-1/2	--	6	10d HDG	4	10d x 1-1/2 HDG	1710	1385	7.61	6.16	1610	1305	7.16	5.80	
	JL28IF-TZ	--	18	1-9/16	6-1/8	1-1/2	--	8	10d HDG	4	10d x 1-1/2 HDG	1710	1385	7.61	6.16	1610	1305	7.16	5.80	
	JUS26	LUS26	18	1-9/16	4-13/16	1-3/4	1	4	10d	4	10d	2855	2100	12.70	9.34	2240	1650	9.96	7.34	
	JUS28	LUS28	18	1-9/16	6-5/8	1-3/4	1	6	10d	4	10d	2855	2100	12.70	9.34	2240	1650	9.96	7.34	
	MUS26	MUS26	18	1-9/16	5-1/16	2	1	6	10d	6	10d	2845	1425	12.66	6.34	2825	1415	12.57	6.29	
	MUS28	MUS28	18	1-9/16	7-1/16	2	1	8	10d	8	10d	3855	2030	17.15	9.03	3830	2015	17.04	8.96	
	SUH26	U26	16	1-9/16	5-1/8	2	1-3/16	6	10d	4	10d x 1-1/2	2345	1505	10.43	6.69	1840	1180	8.18	5.25	
	SUH28	--	16	1-9/16	6-5/8	2	1-3/16	8	10d	6	10d x 1-1/2	3135	1505	13.95	6.69	2460	1180	10.94	5.25	
	HUS26	HUS26	16	1-5/8	5-7/16	3	2	14	16d	6	16d	5480	3630	24.38	16.15	4305	2850	19.15	12.68	
	HUS28	HUS28	16	1-5/8	7-3/16	3	2	22	16d	8	16d	7120	4840	31.67	21.53	5590	3800	24.87	16.90	
	HD28	HU28	14	1-9/16	5-1/4	2	1-1/8	8	16d	4	10d x 1-1/2	2720	1555	12.10	6.92	2135	1220	9.50	5.43	
	HD210	HU210	14	1-9/16	7-3/16	2	1-1/8	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
2 x 10	JL28	LU28	20	1-9/16	6-3/8	1-1/2	15/16	10	10d	6	10d x 1-1/2	2050	1495	9.12	6.65	1610	1225	7.16	5.45	
	JL210	LU210	20	1-9/16	8-1/4	1-1/2	15/16	14	10d	8	10d x 1-1/2	2975	1925	13.23	8.56	2335	1575	10.39	7.01	
	ST28	--	22	1-9/16	6-3/4	1-7/8	1-1/4	8	10d x 1-1/2	7	10d x 1-1/2	1340	1185	5.96	5.27	1340	1185	5.96	5.27	
	ST210	--	22	1-9/16	8	1-7/8	1-1/4	10	10d x 1-1/2	8	10d x 1-1/2	1520	1350	6.76	6.01	1520	1350	6.76	6.01	
	JL28IF-TZ	--	18	1-9/16	6-1/8	1-1/2	--	8	10d HDG	4	10d x 1-1/2 HDG	1710	1385	7.61	6.16	1610	1305	7.16	5.80	
	JL210IF-TZ	LUC210Z	18	1-9/16	8-7/32	1-1/2	--	11	10d HDG	6	10d x 1-1/2 HDG	3135	2175	13.95	9.67	2810	2050	12.50	9.12	
	JUS28	LUS28	18	1-9/16	6-5/8	1-3/4	1	6	10d	4	10d	2855	2100	12.70	9.34	2240	1650	9.96	7.34	
	JUS210	LUS210	18	1-9/16	7-3/4	1-3/4	1	8	10d	4	10d	2855	2100	12.70	9.34	2240	1650	9.96	7.34	
	MUS28	MUS28	18	1-9/16	7-1/16	2	1	8	10d	8	10d	3855	2030	17.15	9.03	3830	2015	17.04	8.96	
	SUH28	--	16	1-9/16	6-5/8	2	1-3/16	8	10d	6	10d x 1-1/2	3135	1505	13.95	6.69	2460	1180	10.94	5.25	
	SUH210	U210	16	1-9/16	8	2	1-3/16	10	10d	6	10d x 1-1/2	4080	2505	18.15	11.14	3205	1965	14.26	8.74	
	HUS28	HUS28	16	1-5/8	7-3/16	3	2	22	16d	8	16d	7120	4840	31.67	21.53	5590	3800	24.87	16.90	
	HUS210	HUS210	16	1-5/8	9-3/16	3	2	30	16d	10	16d	9030	6035	40.17	26.85	7085	4735	31.52	21.06	
	HD210	HU210	14	1-9/16	7-3/16	2	1-1/8	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
2 x 12	JL210	LU210	20	1-9/16	8-1/4	1-1/2	15/16	14	10d	8	10d x 1-1/2	2975	1925	13.23	8.56	2335	1575	10.39	7.01	
	ST210	--	22	1-9/16	8	1-7/8	1-1/4	10	10d x 1-1/2	8	8d x 1-1/2	1520	1350	6.76	6.01	1520	1350	6.76	6.01	
	JL210IF-TZ	LUC210Z	18	1-9/16	8-7/32	1-1/2	--	11	10d HDG	6	10d x 1-1/2 HDG	3135	2175	13.95	9.67	2810	2050	12.50	9.12	
	JUS210	LUS210	18	1-9/16	7-3/4	1-3/4	1	8	10d	4	10d	2855	2100	12.70	9.34	2240	1650	9.96	7.34	
	SUH210	U210	16	1-9/16	8	2	1-3/16	10	10d	6	10d x 1-1/2	4080	2505	18.15	11.14	3205	1965	14.26	8.74	
	HUS210	HUS210	16	1-5/8	9-3/16	3	2	30	16d	10	16d	9030	6035	40.17	26.85	7085	4735	31.52	21.06	
	HD210	HU210	14	1-9/16	7-3/16	2	1-1/8	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
	HD212	HU212	14	1-9/16	9-1/4	2	1-1/8	16	16d	6	10d x 1-1/2	4545	2005	20.22	8.92	3565	1575	15.86	7.01	
	HD212IF	HUC212	14	1-9/16	9-1/4	2	--	16	16d	6	10d x 1-1/2	4545	2005	20.22	8.92	3565	1575	15.86	7.01	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers (0.148 dia. x 3-1/4" long) may be used at 0.86 of the table load where 16d commons are specified. This does not apply to JUS, HUS, MUS slant nail hangers.
3) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



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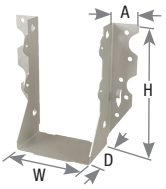
Face Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Gauge	Dimensions (in) W	H	D	A	Fastener Schedule[2,3,4] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
2 x 14	SUH214	U214	16	1-9/16	10	2	1-1/8	12	10d	8	10d x 1-1/2	4105	2505	18.26	11.14	3225	1965	14.35	8.74	
	HD212	HU212	14	1-9/16	9-1/4	2	1-1/8	16	16d	6	10d x 1-1/2	4545	2005	20.22	8.92	3565	1575	15.86	7.01	
	HD212IF	HUC212	14	1-9/16	9-1/4	2	--	16	16d	6	10d x 1-1/2	4545	2005	20.22	8.92	3565	1575	15.86	7.01	
	HD214	HU214	14	1-9/16	11-1/2	2	1-1/8	20	16d	6	10d x 1-1/2	5915	2005	26.31	8.92	4640	1575	20.64	7.01	
2 x 16	SUH214	U214	16	1-9/16	10	2	1-1/8	12	10d	8	10d x 1-1/2	4105	2505	18.26	11.14	3225	1965	14.35	8.74	
	HD212	HU212	14	1-9/16	9-1/4	2	1-1/8	16	16d	6	10d x 1-1/2	4545	2005	20.22	8.92	3565	1575	15.86	7.01	
	HD212IF	HUC212	14	1-9/16	9-1/4	2	--	16	16d	6	10d x 1-1/2	4545	2005	20.22	8.92	3565	1575	15.86	7.01	
	HD214	HU214	14	1-9/16	11-1/2	2	1-1/8	20	16d	6	10d x 1-1/2	5915	2005	26.31	8.92	4640	1575	20.64	7.01	
	HD216	HU216	14	1-9/16	13-1/2	2	1-1/8	24	16d	8	10d x 1-1/2	5915	2185	26.31	9.72	4640	1715	20.64	7.63	
(2) 2 x 4	JUS24-2	LUS24-2	18	3-1/8	3-7/16	2	1	4	16d	2	16d	1580	610	7.03	2.71	1240	480	5.52	2.14	
	SUH24-2	U24-2	16	3-1/8	3-1/8	2	1-1/8	6	10d	2	10d	1910	825	8.50	3.67	1500	650	6.67	2.89	
	HD24-2	HU24-2	14	3-1/8	3-1/2	2-1/2	1-1/8	4	16d	2	10d	1535	690	6.83	3.07	1205	545	5.36	2.42	
	HUS24-2	--	14	3-1/8	3-7/16	2	1	4	16d	2	16d	2130	935	9.47	4.16	1670	735	7.43	3.27	
	HUS24-2IF	--	14	3-1/8	3-7/16	2	1	4	16d	2	16d	2130	935	9.47	4.16	1670	735	7.43	3.27	
(2) 2 x 6	DT26	-- --	22	3-1/16	5	2	1-1/4	8	16d x 2-1/2	5	8d x 1-1/2	1385	845	6.16	3.76	1385	845	6.16	3.76	
	JUS26-2	LUS26-2	18	3-1/8	5-1/4	2	1	4	16d	4	16d	2000	2550	8.90	11.34	1570	2005	6.98	8.92	
	SUH26-2	U26-2	16	3-1/8	5-1/16	2	1-1/8	8	10d	4	10d	3135	1665	13.95	7.41	2460	1310	10.94	5.83	
	HD24-2	HU24-2	14	3-1/8	3-1/2	2-1/2	1-1/8	4	16d	2	10d	1535	690	6.83	3.07	1205	545	5.36	2.42	
	HUS26-2	HUS26-2	14	3-1/8	5-1/4	2	1	4	16d	4	16d	2130	1825	9.47	8.12	1670	1560	7.43	6.94	
	HUS26-2IF	HUSC26-2	14	3-1/8	5-1/4	2	--	4	16d	4	16d	2130	1825	9.47	8.12	1670	1560	7.43	6.94	
	HD26-2	HU26-2	14	3-1/8	5-1/8	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD26-2IF	HUC26-2	14	3-1/8	5-1/8	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
(2) 2 x 8	DT26	--	22	3-1/16	5	2	1-1/4	8	16d x 2-1/2	5	8d x 1-1/2	1385	845	6.16	3.76	1385	845	6.16	3.76	
	DT28	--	22	3-1/16	6-3/4	2	1-1/4	10	16d x 2-1/2	7	8d x 1-1/2	1510	1185	6.72	5.27	1510	1185	6.72	5.27	
	JUS26-2	LUS26-2	18	3-1/8	5-1/4	2	1	4	16d	4	16d	2000	2550	8.90	11.34	1570	2005	6.98	8.92	
	JUS28-2	LUS28-2	18	3-1/8	7-1/8	2	1	6	16d	4	16d	3240	2550	14.41	11.34	2545	2005	11.32	8.92	
	SUH26-2	U26-2	16	3-1/8	5-1/16	2	1-1/8	8	10d	4	10d	3135	1665	13.95	7.41	2460	1310	10.94	5.83	
	SUH28-2	--	16	3-1/8	6-1/4	2	1-1/8	10	10d	4	10d	3135	1665	13.95	7.41	2460	1310	10.94	5.83	
	HUS26-2	HUS26-2	14	3-1/8	5-1/4	2	1	4	16d	4	16d	2130	1825	9.47	8.12	1670	1560	7.43	6.94	
	HUS26-2IF	HUSC26-2	14	3-1/8	5-1/4	2	--	4	16d	4	16d	2130	1825	9.47	8.12	1670	1560	7.43	6.94	
	HUS28-2	HUS28-2	14	3-1/8	7-1/8	2	1	6	16d	6	16d	3795	3405	16.88	15.15	2980	2675	13.26	11.90	
	HUS28-2IF	HUSC28-2	14	3-1/8	7-1/8	2	--	6	16d	6	16d	3795	3405	16.88	15.15	2980	2675	13.26	11.90	
	HD26-2	HU26-2	14	3-1/8	5-1/8	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD26-2IF	HUC26-2	14	3-1/8	5-1/8	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD28-2	HU28-2	14	3-1/8	7-1/8	2-1/2	1-1/8	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
	HD28-2IF	HUC28-2	14	3-1/8	7-1/8	2-1/2	--	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
(2) 2 x 10	DT28	--	22	3-1/16	6-3/4	2	1-1/4	10	16d x 2-1/2	7	8d x 1-1/2	1510	1185	6.72	5.27	1510	1185	6.72	5.27	
	DT210	--	22	3-1/16	7-7/8	2	1-1/4	12	16d x 2-1/2	8	8d x 1-1/2	1640	1350	7.30	6.01	1640	1350	7.30	6.01	
	JUS28-2	LUS28-2	18	3-1/8	7-1/8	2	1	6	16d	4	16d	3240	2550	14.41	11.34	2545	2005	11.32	8.92	
	JUS210-2	LUS210-2	18	3-1/8	9-1/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	
	SUH28-2	--	16	3-1/8	6-1/4	2	1-1/8	10	10d	4	10d	3135	1665	13.95	7.41	2460	1310	10.94	5.83	
	SUH210-2	U210-2	16	3-1/8	8-9/16	2	1-1/8	14	10d	6	10d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
	HUS28-2	HUS28-2	14	3-1/8	7-1/8	2	1	6	16d	6	16d	3795	3405	16.88	15.15	2980	2675	13.26	11.90	
	HUS28-2IF	HUSC28-2	14	3-1/8	7-1/8	2	--	6	16d	6	16d	3795	3405	16.88	15.15	2980	2675	13.26	11.90	
	HD28-2	HU28-2	14	3-1/8	7-1/8	2-1/2	1-1/8	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
	HD28-2IF	HUC28-2	14	3-1/8	7-1/8	2-1/2	--	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
	HUS210-2	HUS210-2	14	3-1/8	9-1/8	2	1	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HUS210-2IF	HUSC210-2	14	3-1/8	9-1/8	2	--	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HD210-2	HU210-2	14	3-1/8	9	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD210-2IF	HUC210-2	14	3-1/8	9	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HDQ210-2IF	HUCQ210-2-SDS	14	3-1/4	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers (0.148 dia. x 3-1/4" long) may be used at 0.86 of the table load where 16d commons are specified. This does not apply to JUS, HUS, MUS slant nail hangers.
3) WS3 Wood Screws are 1/4" x 3" long and are included with HDQ hangers.
4) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



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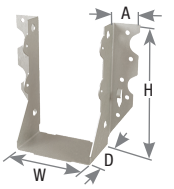
Face Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Gauge	Dimensions (in) W	H	D	A	Fastener Schedule[2,3,4] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
(2) 2 x 12	DT210	--	22	3-1/16	7-7/8	2	1-1/4	12	16d x 2-1/2	8	8d x 1-1/2	1640	1350	7.30	6.01	1640	1350	7.30	6.01	
	JUS210-2	LUS210-2	18	3-1/8	9-1/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	
	SUH210-2	U210-2	16	3-1/8	8-9/16	2	1-1/8	14	10d	6	10d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
	HUS210-2	HUS210-2	14	3-1/8	9-1/8	2	1	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HUS210-2IF	HUSC210-2	14	3-1/8	9-1/8	2	--	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HD210-2	HU210-2	14	3-1/8	9	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD210-2IF	HUC210-2	14	3-1/8	9	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HUS212-2	HUS212-2	14	3-1/8	11-1/8	2	1	10	16d	10	16d	6345	5765	28.22	25.64	4985	4525	22.17	20.13	
	HUS212-2IF	HUSC212-2	14	3-1/8	11-1/8	2	--	10	16d	10	16d	6345	5765	28.22	25.64	4985	4525	22.17	20.13	
	HD212-2	HU212-2	14	3-1/8	11	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD212-2IF	HUC212-2	14	3-1/8	11	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HDQ210-2IF	HUCQ210-2-SDS	14	3-1/4	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
(2) 2 x 14	JUS210-2	LUS210-2	18	3-1/8	9-1/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	
	JUS214-2	LUS214-2	18	3-1/8	13-1/8	2	1	12	16d	6	16d	5120	3735	22.77	16.61	4020	2930	17.88	13.03	
	SUH210-2	U210-2	16	3-1/8	8-9/16	2	1-1/8	14	10d	6	10d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
	HUS210-2	HUS210-2	14	3-1/8	9-1/8	2	1	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HUS210-2IF	HUSC210-2	14	3-1/8	9-1/8	2	--	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HD210-2	HU210-2	14	3-1/8	9	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD210-2IF	HUC210-2	14	3-1/8	9	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HUS212-2	HUS212-2	14	3-1/8	11-1/8	2	1	10	16d	10	16d	6345	5765	28.22	25.64	4985	4525	22.17	20.13	
	HUS212-2IF	HUSC212-2	14	3-1/8	11-1/8	2	--	10	16d	10	16d	6345	5765	28.22	25.64	4985	4525	22.17	20.13	
	HD212-2	HU212-2	14	3-1/8	11	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD212-2IF	HUC212-2	14	3-1/8	11	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD214-2	HU214-2	14	3-1/8	13	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HDQ210-2IF	HUCQ210-2-SDS	14	3-1/4	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
(2) 2 x 16	JUS214-2	LUS214-2	18	3-1/8	13-1/8	2	1	12	16d	6	16d	5120	3735	22.77	16.61	4020	2930	17.88	13.03	
	HD212-2	HU212-2	14	3-1/8	11	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD212-2IF	HUC212-2	14	3-1/8	11	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD214-2	HU214-2	14	3-1/8	13	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD216-2	HU216-2	14	3-1/8	15	2-1/2	1-1/8	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
3 x 4	SUH34	U34	16	2-9/16	3-3/8	2	1-1/8	6	10d	2	10d x 1-1/2	1910	795	8.50	3.54	1500	625	6.67	2.78	
	HD34	HU34	14	2-9/16	3	2	1-1/8	4	16d	2	10d x 1-1/2	1975	545	8.79	2.42	1550	430	6.89	1.91	
	HD34IF	HUC34	14	2-9/16	3	2	--	4	16d	2	10d x 1-1/2	1975	545	8.79	2.42	1550	430	6.89	1.91	
3 x 6	JUS36	LUS36	18	2-9/16	5-5/16	2	1	4	16d	4	16d	2000	2550	8.90	11.34	1570	2005	6.98	8.92	
	SUH34	U34	16	2-9/16	3-3/8	2	1-1/8	6	10d	2	10d x 1-1/2	1910	795	8.50	3.54	1500	625	6.67	2.78	
	SUH36	U36	16	2-9/16	5-5/16	2	1-1/8	8	10d	4	10d x 1-1/2	3135	1505	13.95	6.69	2460	1180	10.94	5.25	
	HD36	HU36	14	2-9/16	4-3/4	2	1-1/8	8	16d	4	10d x 1-1/2	2720	1555	12.10	6.92	2135	1220	9.50	5.43	
	HD36IF	HUC36	14	2-9/16	4-3/4	2	--	8	16d	4	10d x 1-1/2	2720	1555	12.10	6.92	2135	1220	9.50	5.43	
3 x 8	JUS36	LUS36	18	2-9/16	5-5/16	2	1	4	16d	4	16d	2000	2550	8.90	11.34	1570	2005	6.98	8.92	
	JUS38	-- --	18	2-9/16	6-3/4	2	1	6	16d	4	16d	3240	2550	14.41	11.34	2545	2005	11.32	8.92	
	SUH36	U36	16	2-9/16	5-5/16	2	1-1/8	8	10d	4	10d x 1-1/2	2345	1505	10.43	6.69	2460	1180	10.94	5.25	
	HD36	HU36	14	2-9/16	4-3/4	2	1-1/8	8	16d	4	10d x 1-1/2	2720	1555	12.10	6.92	2135	1220	9.50	5.43	
	HD36IF	HUC36	14	2-9/16	4-3/4	2	--	8	16d	4	10d x 1-1/2	2720	1555	12.10	6.92	2135	1220	9.50	5.43	
	HD38	HU38	14	2-9/16	6-3/4	2	1-1/8	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
	HD38IF	HUC38	14	2-9/16	6-3/4	2	--	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
3 x 10	JUS38	-- --	18	2-9/16	6-3/4	2	1	6	16d	4	16d	3240	2550	14.41	11.34	2545	2005	11.32	8.92	
	JUS310	LUS310	18	2-9/16	9-1/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	
	SUH310	U310	16	2-9/16	8-7/8	2	1-1/8	14	10d	6	10d x 1-1/2	6435	2505	28.62	11.14	5055	1965	22.49	8.74	
	HD38	HU38	14	2-9/16	6-3/4	2	1-1/8	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
	HD38IF	HUC38	14	2-9/16	6-3/4	2	--	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
	HD310	HU310	14	2-9/16	7-7/16	2-1/2	1-1/8	14	16d	6	10d x 1-1/2	3820	2185	16.99	9.72	3000	1715	13.34	7.63	
	HD310IF	HUC310	14	2-9/16	7-7/16	2-1/2	--	14	16d	6	10d x 1-1/2	3820	2185	16.99	9.72	3000	1715	13.34	7.63	
	HDQ310IF	HUCQ310-SDS	14	2-9/16	9	3	1-3/16	8	WS3	4	WS15	4975	1765	22.13	7.85	4460	1765	19.84	7.85	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers (0.148 dia. x 3-1/4" long) may be used at 0.86 of the table load where 16d commons are specified. This does not apply to JUS, HUS, MUS slant nail hangers.
3) WS15 are 1/4" x 1-1/2" long, WS3 Wood Screws are 1/4" x 3" long and are included with HDQ hangers.
4) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



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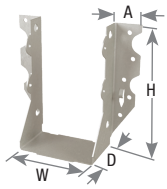
Face Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Gauge	Dimensions (in) W	H	D	A	Fastener Schedule[2,3,4] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
3 x 12	JUS310	LUS310	18	2-9/16	9-1/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	
	SUH310	U310	16	2-9/16	8-7/8	2	1-1/8	14	10d	6	10d x 1-1/2	6435	2505	28.62	11.14	5055	1965	22.49	8.74	
	HD38	HU38	14	2-9/16	6-3/4	2	1-1/8	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
	HD38IF	HUC38	14	2-9/16	6-3/4	2	--	12	16d	4	10d x 1-1/2	3820	1555	16.99	6.92	3000	1220	13.34	5.43	
	HD310	HU310	14	2-9/16	7-7/16	2-1/2	1-1/8	14	16d	6	10d x 1-1/2	3820	2185	16.99	9.72	3000	1715	13.34	7.63	
	HD310IF	HUC310	14	2-9/16	7-7/16	2-1/2	--	14	16d	6	10d x 1-1/2	3820	2185	16.99	9.72	3000	1715	13.34	7.63	
	HDQ310IF	HUCQ310-SDS	14	2-9/16	9	3	1-3/16	8	WS3	4	WS15	4975	1765	22.13	7.85	4460	1765	19.84	7.85	
	HD312	HU312	14	2-9/16	9-5/16	2-1/2	1-1/8	16	16d	10	10d x 1-1/2	4545	3190	20.22	14.19	3565	2505	15.86	11.14	
3 x 14	SUH314	U314	16	2-9/16	10-9/16	2	1-1/8	16	10d	6	10d x 1-1/2	4320	2145	19.22	9.54	3720	1845	16.55	8.21	
	HD310	HU310	14	2-9/16	7-7/16	2-1/2	1-1/8	14	16d	6	10d x 1-1/2	3820	2185	16.99	9.72	3000	1715	13.34	7.63	
	HD310IF	HUC310	14	2-9/16	7-7/16	2-1/2	--	14	16d	6	10d x 1-1/2	3820	2185	16.99	9.72	3000	1715	13.34	7.63	
	HDQ310IF	HUCQ310-SDS	14	2-9/16	9	3	1-3/16	8	WS3	4	WS15	4975	1765	22.13	7.85	4460	1765	19.84	7.85	
	HD312	HU312	14	2-9/16	9-5/16	2-1/2	1-1/8	16	16d	10	10d x 1-1/2	4545	3190	20.22	14.19	3565	2505	15.86	11.14	
	HD312IF	HUC312	14	2-9/16	9-5/16	2-1/2	--	16	16d	10	10d x 1-1/2	4545	3190	20.22	14.19	3565	2505	15.86	11.14	
	HD314	HU314	14	2-9/16	11-5/16	2-1/2	1-1/8	20	16d	10	10d x 1-1/2	5915	3190	26.31	14.19	4640	2505	20.64	11.14	
	HD314IF	HUC314	14	2-9/16	11-5/16	2-1/2	--	20	16d	10	10d x 1-1/2	5915	3190	26.31	14.19	4640	2505	20.64	11.14	
3 x 16	SUH314	U314	16	2-9/16	10-9/16	2	1-1/8	16	10d	6	10d x 1-1/2	4320	2145	19.22	9.54	3720	1845	16.55	8.21	
	HD312	HU312	14	2-9/16	9-5/16	2-1/2	1-1/8	16	16d	10	10d x 1-1/2	4545	3190	20.22	14.19	3565	2505	15.86	11.14	
	HD312IF	HUC312	14	2-9/16	9-5/16	2-1/2	--	16	16d	10	10d x 1-1/2	4545	3190	20.22	14.19	3565	2505	15.86	11.14	
	HD314	HU314	14	2-9/16	11-5/16	2-1/2	1-1/8	20	16d	10	10d x 1-1/2	5915	3190	26.31	14.19	4640	2505	20.64	11.14	
	HD314IF	HUC314	14	2-9/16	11-5/16	2-1/2	--	20	16d	10	10d x 1-1/2	5915	3190	26.31	14.19	4640	2505	20.64	11.14	
	HD316	HU316	14	2-9/16	13-5/16	2-1/2	1-1/8	24	16d	10	10d x 1-1/2	6435	4015	28.62	17.86	5055	3150	22.49	14.01	
	HD316IF	HUC316	14	2-9/16	13-5/16	2-1/2	--	24	16d	10	10d x 1-1/2	6435	4015	28.62	17.86	5055	3150	22.49	14.01	
(2) 3 x 8	HD38-2	HU38-2	14	5-1/8	6-1/8	2-1/2	1-1/8	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
(2) 3 x 10	HD38-2	HU38-2	14	5-1/8	6-1/8	2-1/2	1-1/8	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
	HD310-2	HU310-2	14	5-1/8	8	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
(2) 3 x 12	HD312-2	HU312-2	14	5-1/8	10	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
(2) 3 x 14	HD312-2	HU312-2	14	5-1/8	10	2-1/2	1-1/8		16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
(3) 2 x 6	JUS26-3	LUS26-3	18	4-5/8	4-1/2	2	1	4	16d	4	16d	2000	2550	8.90	11.34	1570	2005	6.98	8.92	
	SUH26-3	U26-3	16	4-5/8	5-1/4	2	1	8	10d	2	10d	1910	825	8.50	3.67	1500	650	6.67	2.89	
	HD26-3	HU26-3	14	4-5/8	4-3/8	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD26-3IF	HUC26-3	14	4-5/8	4-3/8	2-1/2	--	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
(3) 2 x 8	JUS26-3	LUS26-3	18	4-5/8	4-1/2	2	1	4	16d	4	16d	2000	2550	8.90	11.34	1570	2005	6.98	8.92	
	JUS28-3	LUS28-3	18	4-5/8	6-3/8	2	1	6	16d	4	16d	3240	2550	14.41	11.34	2545	2005	11.32	8.92	
	SUH26-3	U26-3	16	4-5/8	5-1/4	2	1	8	10d	2	10d	1910	825	8.50	3.67	1500	650	6.67	2.89	
	HD26-3	HU26-3	14	4-5/8	4-3/8	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD26-3IF	HUC26-3	14	4-5/8	4-3/8	2-1/2	--	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD28-3	--	14	4-5/8	6-3/8	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD28-3IF	--	14	4-5/8	6-3/8	2-1/2	--	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
(3) 2 x 10	JUS28-3	LUS28-3	18	4-5/8	6-3/8	2	1	6	16d	4	16d	3240	2550	14.41	11.34	2545	2005	11.32	8.92	
	JUS210-3	LUS210-3	18	4-5/8	8-3/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	
	SUH210-3	U210-3	16	4-5/8	8-3/8	2	1	14	10d	6	10d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
	HD28-3	--	14	4-5/8	6-3/8	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD28-3IF	--	14	4-5/8	6-3/8	2-1/2	--	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	
	HD210-3	HU210-3	14	4-5/8	8-1/4	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD210-3IF	HUC210-3	14	4-5/8	8-1/4	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HDQ210-3IF	HUCQ210-3-SDS	14	4-5/8	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
(3) 2 x 12	JUS210-3	LUS210-3	18	4-5/8	8-3/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	
	SUH210-3	U210-3	16	4-5/8	8-3/8	2	1	14	10d	6	10d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
	HD210-3	HU210-3	14	4-5/8	8-1/4	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD210-3IF	HUC210-3	14	4-5/8	8-1/4	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HDQ210-3IF	HUCQ210-3-SDS	14	4-5/8	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
	HD212-3	HU212-3	14	4-5/8	10-1/4	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD212-3IF	HUC212-3	14	4-5/8	10-1/4	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers (0.148 dia. x 3-1/4" long) may be used at 0.86 of the table load where 16d commons are specified. This does not apply to JUS, HUS, MUS slant nail hangers.
3) WS3 Wood Screws are 1/4" x 3" long and are included with HDQ hangers.
4) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



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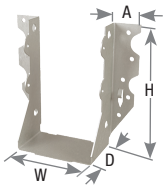
Face Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Gauge	Dimensions (in) W	H	D	A	Fastener Schedule[2,3,4] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
(3) 2 x 14	JUS210-3	LUS210-3	18	4-5/8	8-3/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	Triple Zinc / Stainless Steel
	SUH210-3	U210-3	16	4-5/8	8-3/8	2	1	14	10d	6	10d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
	HD210-3	HU210-3	14	4-5/8	8-1/4	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD210-3IF	HUC210-3	14	4-5/8	8-1/4	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	Triple Zinc
	HDQ210-3IF	HUCQ210-3-SDS	14	4-5/8	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
	HD212-3	HU212-3	14	4-5/8	10-1/4	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD212-3IF	HUC212-3	14	4-5/8	10-1/4	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD214-3	HU214-3	14	4-5/8	12-1/4	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
(3) 2 x 16	HD212-3	HU212-3	14	4-5/8	10-1/4	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD212-3IF	HUC212-3	14	4-5/8	10-1/4	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD214-3	HU214-3	14	4-5/8	12-1/4	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD216-3	HU216-3	14	4-5/8	14-1/4	2-1/2	1-1/8	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
(4) 2 x 8	HD28-4	HU28-4	14	6-1/8	7-1/8	2-1/2	1-3/4	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
(4) 2 x 10	HD210-4	HU210-4	14	6-1/8	9	3-1/4	2	24	16d	6	10d	7485	2685	33.29	11.94	5875	2105	26.13	9.36	
(4) 2 x 12	HD210-4	HU210-4	14	6-1/8	9	3-1/4	2	24	16d	6	10d	7485	2685	33.29	11.94	5875	2105	26.13	9.36	
(4) 2 x 14	HD210-4	HU210-4	14	6-1/8	9	3-1/4	2	24	16d	6	10d	7485	2685	33.29	11.94	5875	2105	26.13	9.36	
4 x 4	JUS44	LUS44	18	3-5/8	3-1/4	2	1	4	16d	2	16d	1580	610	7.03	2.71	1240	480	5.52	2.14	Triple Zinc
	SUH44	U44	16	3-9/16	2-7/8	2	1-1/8	6	10d	2	10d	1910	825	8.50	3.67	1500	650	6.67	2.89	
	HD44	HU44	14	3-9/16	3-5/16	2-1/2	1-1/8	4	16d	2	10d	1535	945	6.83	4.20	1205	740	5.36	3.29	
	HD44IF	HUC44	14	3-9/16	3-5/16	2-1/2	--	4	16d	2	10d	1535	945	6.83	4.20	1205	740	5.36	3.29	Triple Zinc
4 x 6	JUS46	LUS46	18	3-5/8	5	2	1	4	16d	4	16d	2000	2550	8.90	11.34	1570	2005	6.98	8.92	Triple Zinc
	SUH44	U44	16	3-9/16	2-7/8	2	1-1/8	6	10d	2	10d	1910	825	8.50	3.67	1500	650	6.67	2.89	
	SUH46	U46	16	3-9/16	4-13/16	2	1-1/8	8	10d	4	10d	4080	1665	18.15	7.41	3205	1310	14.26	5.83	
	HUS46	HUS46	14	3-5/8	5	2	1	4	16d	4	16d	2130	1825	9.47	8.12	1670	1560	7.43	6.94	
	HUS46IF	HUSC46	14	3-5/8	5	2	--	4	16d	4	16d	2130	1825	9.47	8.12	1670	1560	7.43	6.94	
	HD46	HU46	14	3-9/16	4-15/16	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	Triple Zinc
	HD46IF	HUC46	14	3-9/16	4-15/16	2-1/2	--	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	Triple Zinc
4 x 8	JUS46	LUS46	18	3-5/8	5	2	1	4	16d	4	16d	2000	2550	8.90	11.34	1570	2005	6.98	8.92	Triple Zinc
	JUS48	LUS48	18	3-5/8	6-7/8	2	1	6	16d	4	16d	3240	2550	14.41	11.34	2545	2005	11.32	8.92	Triple Zinc
	SUH46	U46	16	3-9/16	4-13/16	2	1-1/8	8	10d	4	10d	4080	1665	18.15	7.41	3205	1310	14.26	5.83	
	HUS46	HUS46	14	3-5/8	5	2	1	4	16d	4	16d	2130	1825	9.47	8.12	1670	1560	7.43	6.94	
	HUS46IF	HUSC46	14	3-5/8	5	2	--	4	16d	4	16d	2130	1825	9.47	8.12	1670	1560	7.43	6.94	
	HUS48	HUS48	14	3-5/8	7	2	1	6	16d	6	16d	3795	3405	16.88	15.15	2980	2675	13.26	11.90	
	HUS48IF	HUSC48	14	3-5/8	7	2	1	6	16d	6	16d	3795	3405	16.88	15.15	2980	2675	13.26	11.90	
	HD46	HU46	14	3-9/16	4-15/16	2-1/2	1-1/8	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	Triple Zinc
	HD46IF	HUC46	14	3-9/16	4-15/16	2-1/2	--	12	16d	6	10d	3430	2685	15.26	11.94	2690	2105	11.97	9.36	Triple Zinc
	HD48	HU48	14	3-9/16	6-7/8	2-1/2	1-1/8	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	Triple Zinc
	HD48IF	HUC48	14	3-9/16	6-7/8	2-1/2	--	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	Triple Zinc
4 x 10	JUS48	LUS48	18	3-5/8	6-7/8	2	1	6	16d	4	16d	3240	2550	14.41	11.34	2545	2005	11.32	8.92	Triple Zinc
	JUS410	LUS410	18	3-5/8	8-7/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	Triple Zinc
	SUH410	U410	16	3-9/16	8-3/8	2	1-1/8	14	10d	6	10d	6330	2920	28.16	12.99	4970	2290	22.11	10.19	
	HUS48	HUS48	14	3-5/8	7	2	1	6	16d	6	16d	3795	3405	16.88	15.15	2980	2675	13.26	11.90	
	HUS48IF	HUSC48	14	3-5/8	7	2	1	6	16d	6	16d	3795	3405	16.88	15.15	2980	2675	13.26	11.90	
	HD48	HU48	14	3-9/16	6-7/8	2-1/2	1-1/8	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	Triple Zinc
	HD48IF	HUC48	14	3-9/16	6-7/8	2-1/2	--	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	Triple Zinc
	HUS410	HUS410	14	3-5/8	8-7/8	2	1	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HUS410IF	HUSC410	14	3-5/8	8-7/8	2	--	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HD410	HU410	14	3-9/16	8-13/16	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	Triple Zinc
	HD410IF	HUC410	14	3-9/16	8-13/16	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	Triple Zinc
	HDQ410IF	HUCQ410-SDS	14	3-9/16	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers (0.148 dia. x 3-1/4" long) may be used at 0.86 of the table load where 16d commons are specified. This does not apply to JUS, HUS, MUS slant nail hangers.
3) WS3 Wood Screws are 1/4" x 3" long and are included with HDQ hangers.
4) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



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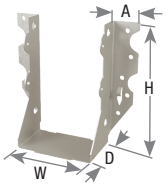
Face Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Gauge	Dimensions (in) W	H	D	A	Fastener Schedule[2,3,4] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
4 x 12	JUS410	LUS410	18	3-5/8	8-7/8	2	1	8	16d	6	16d	5170	3735	23.00	16.61	4055	2930	18.04	13.03	
	SUH410	U410	16	3-9/16	8-3/8	2	1-1/8	14	10d	6	10d	6330	2920	28.16	12.99	4970	2290	22.11	10.19	
	HUS410	HUS410	14	3-5/8	8-7/8	2	1	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HUS410IF	HUSC410	14	3-5/8	8-7/8	2	--	8	16d	8	16d	5185	4165	23.06	18.53	4070	3270	18.10	14.55	
	HD410	HU410	14	3-9/16	8-13/16	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD410IF	HUC410	14	3-9/16	8-13/16	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HDQ410IF	HUCQ410-SDS	14	3-9/16	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
	HUS412	HUS412	14	3-5/8	10-7/8	2	1	10	16d	10	16d	6345	5765	28.22	25.64	4985	4525	22.17	20.13	
	HUS412IF	HUSC412	14	3-5/8	10-7/8	2	--	10	16d	10	16d	6345	5765	28.22	25.64	4985	4525	22.17	20.13	
	HD412	HU412	14	3-9/16	10-13/16	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD412IF	HUC412	14	3-9/16	10-13/16	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HDQ412IF	HUCQ412-SDS	14	3-9/16	11	3	1-1/2	14	WS3	6	WS3	8135	5220	36.19	23.22	6545	4965	29.11	22.09	
4 x 14	JUS414	LUS414	18	3-5/8	12-7/8	2	1	12	16d	6	16d	5120	3735	22.77	16.61	4020	2930	17.88	13.03	
	SUH414	U414	16	3-9/16	10-1/16	2	1-1/8	16	10d	6	10d	6330	2920	28.16	12.99	4970	2290	22.11	10.19	
	HD410	HU410	14	3-9/16	8-13/16	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD410IF	HUC410	14	3-9/16	8-13/16	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HDQ410IF	HUCQ410-SDS	14	3-9/16	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
	HUS412	HUS412	14	3-5/8	10-7/8	2	1	10	16d	10	16d	6345	5765	28.22	25.64	4985	4525	22.17	20.13	
	HUS412IF	HUSC412	14	3-5/8	10-7/8	2	--	10	16d	10	16d	6345	5765	28.22	25.64	4985	4525	22.17	20.13	
	HD412	HU412	14	3-9/16	10-13/16	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD412IF	HUC412	14	3-9/16	10-13/16	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD414	HU414	14	3-9/16	12-13/16	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD414IF	HUC414	14	3-9/16	12-13/16	2-1/2	--	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HDQ412IF	HUCQ412-SDS	14	3-9/16	11	3	1-1/2	14	WS3	6	WS3	8135	5220	36.19	23.22	6545	4965	29.11	22.09	
4 x 16	JUS414	LUS414	18	3-5/8	12-7/8	2	1	12	16d	6	16d	5120	3735	22.77	16.61	4020	2930	17.88	13.03	
	SUH414	U414	16	3-9/16	10-1/16	2	1-1/8	16	10d	6	10d	6330	2920	28.16	12.99	4970	2290	22.11	10.19	
	HD412	HU412	14	3-9/16	10-13/16	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD412IF	HUC412	14	3-9/16	10-13/16	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HDQ412IF	HUCQ412-SDS	14	3-9/16	11	3	1-1/2	14	WS3	6	WS3	8135	5220	36.19	23.22	6545	4965	29.11	22.09	
	HD414	HU414	14	3-9/16	12-13/16	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD414IF	HUC414	14	3-9/16	12-13/16	2-1/2	--	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD416	HU416	14	3-9/16	14-13/16	2-1/2	1-1/8	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
	HD416IF	HUC416	14	3-9/16	14-13/16	2-1/2	--	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
4 x 18	HD414	HU414	14	3-9/16	12-13/16	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD414IF	HUC414	14	3-9/16	12-13/16	2-1/2	--	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD416	HU416	14	3-9/16	14-13/16	2-1/2	1-1/8	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
	HD416IF	HUC416	14	3-9/16	14-13/16	2-1/2	--	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
	HD418	--	14	3-9/16	16-1/2	2-1/2	1-1/4	28	16d	8	10d	8250	2685	36.70	11.94	6475	2105	28.80	9.36	
6 x 6	SUH66	U66	16	5-1/2	5	2	1	8	10d	4	10d	3135	1665	13.95	7.41	2460	1310	10.94	5.83	
	HD66	HU66	14	5-1/2	3-15/16	2-1/2	1-1/8	12	16d	6	10d	4920	2685	21.89	11.94	3865	2105	17.19	9.36	
	HD66IF	HUC66	14	5-1/2	3-15/16	2-1/2	--	12	16d	6	10d	4920	2685	21.89	11.94	3865	2105	17.19	9.36	
6 x 8	SUH66	U66	16	5-1/2	5	2	1	8	10d	4	10d	3135	1665	13.95	7.41	2460	1310	10.94	5.83	
	HD66	HU66	14	5-1/2	3-15/16	2-1/2	1-1/8	12	16d	6	10d	4920	2685	21.89	11.94	3865	2105	17.19	9.36	
	HD66IF	HUC66	14	5-1/2	3-15/16	2-1/2	--	12	16d	6	10d	4920	2685	21.89	11.94	3865	2105	17.19	9.36	
	HD68	HU68	14	5-1/2	5-15/16	2-1/2	1-1/8	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
	HD68IF	HUC68	14	5-1/2	5-15/16	2-1/2	--	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
6 x 10	SUH610	U610	16	5-1/2	9	2	1	14	10d	6	10d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
	HD68	HU68	14	5-1/2	5-15/16	2-1/2	1-1/8	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
	HD68IF	HUC68	14	5-1/2	5-15/16	2-1/2	--	14	16d	6	10d	4675	2685	20.80	11.94	3670	2105	16.32	9.36	
	HD610	HU610	14	5-1/2	7-13/16	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD610IF	HUC610	14	5-1/2	7-13/16	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HDQ610IF	HUCQ610-SDS	14	5-1/2	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
6 x 12	SUH610	U610	16	5-1/2	9	2	1	14	10d	6	10d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
	HD610	HU610	14	5-1/2	7-13/16	2-1/2	1-1/8	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HD610IF	HUC610	14	5-1/2	7-13/16	2-1/2	--	18	16d	10	10d	7485	4435	33.29	19.73	5875	3485	26.13	15.50	
	HDQ610IF	HUCQ610-SDS	14	5-1/2	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
	HD612	HU612	14	5-1/2	9-13/16	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HD612IF	HUC612	14	5-1/2	9-13/16	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
	HDQ612IF	HUCQ612-SDS	14	5-1/2	11	3	1-1/2	14	WS3	6	WS3	8135	5220	36.19	23.22	6545	4965	29.11	22.09	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers (0.148 dia. x 3-1/4" long) may be used at 0.86 of the table load where 16d commons are specified.
This does not apply to JUS, HUS, MUS slant nail hangers.
3) WS3 Wood Screws are 1/4" x 3" long and are included with HDQ hangers.
4) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



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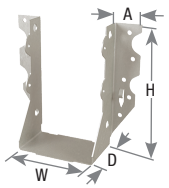
Face Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Gauge	Dimensions (in) W	H	D	A	Fastener Schedule[2,3,4] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
6 x 14	HDQ610IF	HUCQ610-SDS	14	5-1/2	9	3	1-1/2	12	WS3	6	WS3	8460	4970	37.63	22.11	7385	4335	32.85	19.28	
	HD612	HU612	14	5-1/2	9-13/16	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	Triple Zinc
	HD612IF	HUC612	14	5-1/2	9-13/16	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	Triple Zinc
	HDQ612IF	HUCQ612-SDS	14	5-1/2	11	3	1-1/2	14	WS3	6	WS3	8135	5220	36.19	23.22	6545	4965	29.11	22.09	Stainless Steel
	HD614	HU614	14	5-1/2	11-13/16	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD614IF	HUC614	14	5-1/2	11-13/16	2-1/2	--	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
6 x 16	HD612	HU612	14	5-1/2	9-13/16	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	Triple Zinc
	HD612IF	HUC612	14	5-1/2	9-13/16	2-1/2	--	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	Triple Zinc
	HDQ612IF	HUCQ612-SDS	14	5-1/2	11	3	1-1/2	14	WS3	6	WS3	8135	5220	36.19	23.22	6545	4965	29.11	22.09	Stainless Steel
	HD614	HU614	14	5-1/2	11-13/16	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD614IF	HUC614	14	5-1/2	11-13/16	2-1/2	--	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD616	HU616	14	5-1/2	13-13/16	2-1/2	1-1/8	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
	HD616IF	HUC616	14	5-1/2	13-13/16	2-1/2	--	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
6 x 18	HD614	HU614	14	5-1/2	11-13/16	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD614IF	HUC614	14	5-1/2	11-13/16	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
	HD616	HU616	14	5-1/2	13-13/16	2-1/2	1-1/8	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
	HD616IF	HUC616	14	5-1/2	13-13/16	2-1/2	--	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	
8 x 6	HD86	--	14	7-1/2	5-1/8	2-1/2	1-1/2	10	16d	4	16d	3410	1505	15.17	6.69	2680	1180	11.92	5.25	
	HD86IF	--	14	7-1/2	5-1/8	2-1/2	1-1/2	10	16d	4	16d	3410	1505	15.17	6.69	2680	1180	11.92	5.25	
8 x 8	HD88	HU88	14	7-1/2	6-5/8	2-1/2	1-1/2	14	16d	6	16d	5100	2685	22.69	11.94	4005	2105	17.82	9.36	
	HD88IF	HUC88	14	7-1/2	6-5/8	2-1/2	1-1/2	14	16d	6	16d	5100	2685	22.69	11.94	4005	2105	17.82	9.36	
8 x 10	HD810	HU810	14	7-1/2	8-3/8	2-1/2	1-1/2	18	16d	8	16d	4930	2685	21.93	11.94	3870	2105	17.21	9.36	
	HD810IF	HUC810	14	7-1/2	8-3/8	2-1/2	--	18	16d	8	16d	4930	2685	21.93	11.94	3870	2105	17.21	9.36	
8 x 12	HD812	HU812	14	7-1/2	10-1/8	2-1/2	1-1/2	22	16d	8	16d	4930	2685	21.93	11.94	3870	2105	17.21	9.36	
	HD812IF	HUC812	14	7-1/2	10-1/8	2-1/2	--	22	16d	8	16d	4930	2685	21.93	11.94	3870	2105	17.21	9.36	
8 x 14	HD814	HU814	14	7-1/2	11-7/8	2-1/2	1-1/2	24	16d	12	16d	4930	5260	21.93	23.40	3870	4130	17.21	18.37	
	HD814IF	HUC814	14	7-1/2	11-7/8	2-1/2	--	24	16d	12	16d	4930	5260	21.93	23.40	3870	4130	17.21	18.37	
8 x 16	HD816	HU816	14	7-1/2	13-5/8	2-1/2	1-1/2	26	16d	12	16d	4930	5260	21.93	23.40	3870	4130	17.21	18.37	
	HD816IF	HUC816	14	7-1/2	13-5/8	2-1/2	--	26	16d	12	16d	4930	5260	21.93	23.40	3870	4130	17.21	18.37	
Rough Lumber Sizes																				
2 x 4	SUH24R	LU24R-18, U24R	16	2	3-1/16	2	1-1/8	4	10d	2	10d x 1-1/2	1390	795	6.18	3.54	1090	625	4.85	2.78	
2 x 6 - 8	SUH26R	LU26R-18, U26R	16	2	4-15/16	2	1-3/16	6	10d	4	10d x 1-1/2	2345	1505	10.43	6.69	1840	1180	8.18	5.25	
2 x 8 - 10	SUH28R	LU28R-18	16	2	6-7/16	2	1-1/8	8	10d	6	10d x 1-1/2	3135	1505	13.95	6.69	2460	1180	10.94	5.25	
2 x 10 - 14	SUH210R	LU210R-18, U210R	16	2	7-13/16	2	1-1/8	10	10d	6	10d x 1-1/2	4080	2505	18.15	11.14	3205	1965	14.26	8.74	
2 x 14 - 16	SUH214R	--	16	2	9-13/16	2	1-1/8	12	10d	6	10d x 1-1/2	4105	2505	18.26	11.14	3225	1965	14.35	8.74	
4 x 6	SUH44R	U44R	16	4	2-11/16	2	1-1/8	6	10d	2	16d	1910	825	8.50	3.67	1500	650	6.67	2.89	
4 x 8	SUH46R	U46R	16	4	4-11/16	2	1-1/8	8	10d	4	16d	4080	1665	18.15	7.41	3205	1310	14.26	5.83	
4 x 10	SUH410R	U410R	16	4	8-3/16	2	2	14	10d	6	16d	6330	2920	28.16	12.99	4970	2290	22.11	10.19	
6 x 8	SUH66R	U66R	16	6	5	2	1	8	10d	4	16d	3135	1665	13.95	7.41	2460	1310	10.94	5.83	
6 x 10	SUH610R	U610R	16	6	9	2	1	14	10d	6	16d	6435	2920	28.62	12.99	5055	2290	22.49	10.19	
Glulam Sizes																				
3-1/8 x 10-1/2 - 19-1/2	HD32105	HU3.25/10.5	14	3-1/4	9-15/16	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
3-1/8 x 12 - 21	HD3212	HU3.25/12	14	3-1/4	11-7/8	2-1/2	1-1/8	24	16d	10	10d	8250	4290	36.70	19.08	6475	3365	28.80	14.97	
5-1/8 x 10-1/2 - 19-1/2	HD5112	HU5.125/12	14	5-1/4	9-15/16	2-1/2	1-1/8	22	16d	10	10d	8250	4435	36.70	19.73	6475	3485	28.80	15.50	
5-1/8 x 14-1/2 - 21	HD51135	HU5.125/13.5	14	5-1/4	12-15/16	2-1/2	1-1/8	26	16d	12	10d	8190	4290	36.43	19.08	6430	3365	28.60	14.97	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) 16d sinkers (0.148 dia. x 3-1/4" long) may be used at 0.86 of the table load where 16d commons are specified. This does not apply to JUS, HUS, MUS slant nail hangers.
3) WS3 Wood Screws are 1/4" x 3" long and are included with HDQ hangers.
4) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



KB / KLB Beam & Purlin Hangers

With a top mount design and heavy steel fabrication the KB and KLB hangers can cover medium-to-heavy beam and purlin applications. The top mount design offers high loads with less nailing than comparable face mount hangers.

KLB – 14 gauge

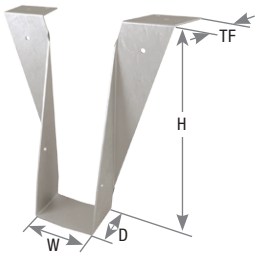
KB – 12 gauge

Materials: See chart
Finish: G90 galvanizing

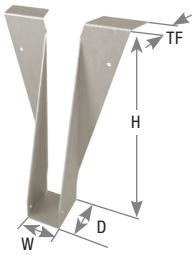
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- NA20D nails are included with hangers where applicable.
- For welded installations, see page 224.
- **KB models are not recommended for use with LVL, PSL, or LSL members.**

Typical KB installation

Typical KLB installation



KB



KLB

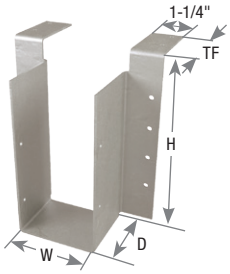
HDO Heavy-Duty Top Mount Hangers

Primarily used to hang joists or headers in medium load conditions. These hangers provide higher load values with less nailing.

Materials: 12 gauge
Finish: G90 galvanizing
Options: All nominal lumber sizes are available for rough/full size lumber. See Specialty Options Chart.
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Check top flange dimensions to ensure compatibility with header widths.
- **Do not use for welded or nailer applications. Reference Specialty Options chart below for hanger options.**

HDO standard installation



HDO28-2

Typical HDO410IF inverted flange installation

Specialty Options Chart
Refer to Specialty Options pages 220 and 222 for additional details.

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Inverted Flange
Range	1˚ to 67-1/2˚ when width is 1-3/4" or less. 1˚ to 50˚ on all others.	1˚ to 45˚	See Sloped Seat and Skewed	Not available in widths less than 3-1/8"
Factored Resistance	100% of table load. 75% of uplift load on skews greater than 15˚.	100% of table load	80% of table load. 75% of uplift load on skews greater than 15˚.	100% of table load. 65% of table load when nailing into the support members end grain.
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut (*SQ*) or bevel cut (*BV*)** to product number. Ex. HDO210_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. HDO210_SL30D	See Sloped Seat and Skewed. Ex. HDO210_SK45R_SQ_SL30D	Add *IF* to product number. Ex. HDO610_IF

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
New products or updated product information are designated in **blue font.**

Typical HDO skewed option installation

KHW / SW / SWH Welded Top Flange Hangers

USP STRUCTURAL CONNECTORS MiTek

SW – Light-duty hanger.

SWH – Medium-duty hanger.

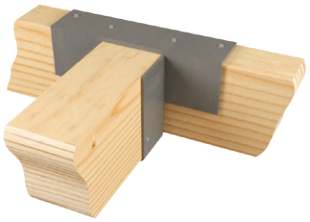
KHW – Heavy-duty hanger installs with NA20D nails for higher load capacities.

Materials: SW top flange - 12 gauge; stirrup - 12 gauge;
SWH top flange - 7 gauge; stirrup - 12 gauge;
KHW top flange - 3 gauge; stirrup - 10 gauge

Finish: USP primer

Options: All nominal lumber sizes are available for rough/full size lumber. See Specialty Options below.

Codes: Load values are derived from data submitted to various North American building code evaluators.

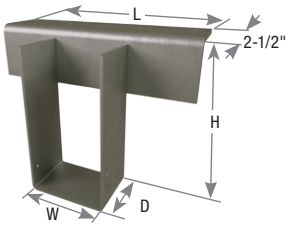


Typical KHW46 installation

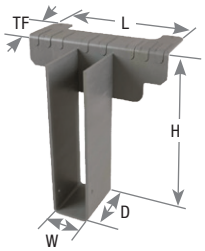
Typical SW210 installation

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- NA20D nails are supplied with KHW hangers.
- For welded installations see page 224.
- **KHW models are not recommended for use with LVL, PSL, or LSL members.**



KHW46



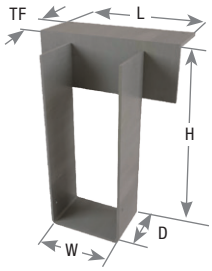
SW210

Nailer Installation Chart

Chart represents maximum factored resistance for hangers used on wood nailers. Reference page 127.

USP Stock No.	Nailer Size	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Vertical (100%)[1] Lbs	DF kN	S-P-F Factored Resistance Vertical (100%)[1] Lbs	S-P-F kN
SW	2X	2	10d x 1-1/2	2	10d x 1-1/2	1635	7.27	**1240**	**5.52**
SWH	2X	2	10d x 1-1/2	2	10d	2600	11.57	**1970**	**8.76**
	3X	2	16d x 2-1/2	2	10d	3350	14.90	**2535**	**11.28**
KHW	3X	4	16d x 2-1/2	2	10d	5180	23.04	**3925**	**17.46**

1) Listed loads shall not be increased.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d x 2-1/2 nails are 0.162" dia. x 2-1/2" long.
New products or updated product information are designated in **blue font.**



SWH410

Specialty Options Chart – Refer to Specialty Options pages 220, 222-223 for additional details.

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Sloped Top Flange[4]	Top Flange Offset		Saddle	Ridge
Range	1° to 84°	1° to 45°	See Sloped Seat and Skewed	0° to 35°	-- --		-- --	0° to 45°
Factored Resistance	100% of table load	100% of table load	100% of table load	Reduce allowable table loads using straight-line interpolation	**Hanger Width** 3-1/2" or less 3-9/16" to 5-1/2" 5-9/16" to 7-1/2"	**% of table load:** 60% 75% 85%	100% of table load per side	100% of table load
Ordering	Add SK, angle required, right (*R*) or left (*L*), and **square cut (*SQ*) or bevel cut (*BV*)** to product number. Ex. SW212_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. SW212_SL30D	See Sloped Seat and Skewed. Ex. SW212_SK45R_SQ_SL30D	Add *SF*, angle required, and right *(R)* or left *(L)*, to product number. Ex. SW212_SF30L	Add *OS*, and right *(R)* or left *(L)*, to product number. Ex. SW212_OSL		Add SA,and saddle width required to product number. Ex. SW212_SA=5-1/2"	Add *DA*, angle required to product number. Ex. SW212_DA30

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
4) Sloped top flanges with greater than 15° may have additional header nails.
New products or updated product information are designated in **blue font**.

HL Light Gauge Purlin Hangers

These top mount hangers are designed for supporting floor joists or 2x purlins. The top mount style allows builders to drop in joists or purlins quickly.

Materials: 18 gauge

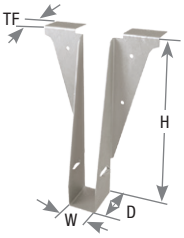
Finish: G90 galvanizing

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.

Typical HL210 installation



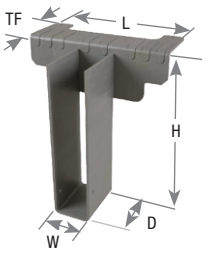
HL210

Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Beam/ Joist Size	USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[4] Header Qty Top	Face	Type	Joist Qty	Type	DF Factored Resistance (Lbs.)[3] Lbs Floor 100%	Lbs Uplift[1,2] 115%	kN Floor 100%	kN Uplift[1,2] 115%	S-P-F Factored Resistance (Lbs.)[3] Lbs Floor 100%	Lbs Uplift[1,2] 115%	kN Floor 100%	kN Uplift[1,2] 115%
2 x 4	HD024	HU24TF	12	1-9/16	3-7/16	2-1/4	--	2-1/2	4	2	16d	2	10d x 1-1/2	3150	595	14.01	2.65	2475	465	11.01	2.07
2 x 6	HL26	JB26	18	1-9/16	5-3/8	1-1/2	--	1-5/16	2	4	16d	2	prongs	2085	--	9.27	--	1635	--	7.27	--
	KLB26	LB26	14	1-9/16	5-3/8	1-1/2	--	1-3/8	2	4	16d	2	10d x 1-1/2	3895	665	17.33	2.96	3120	610	13.88	2.71
	SW26	W26	12	1-9/16	5-3/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3590	270	15.97	1.20	2980	225	13.26	1.00
	HD026	HU26TF	12	1-9/16	5-3/8	2-1/4	--	2-1/2	4	6	16d	4	10d x 1-1/2	4195	1580	18.66	7.03	3295	1240	14.66	5.52
2 x 8	HL28	JB28	18	1-9/16	7-5/16	1-3/4	--	1-5/16	2	4	16d	2	prongs	2395	--	10.65	--	1880	--	8.36	--
	KLB28	LB28	14	1-9/16	7-1/4	1-3/4	--	1-3/8	2	4	16d	2	10d x 1-1/2	3895	665	17.33	2.96	3120	610	13.88	2.71
	SW28	W28	12	1-9/16	7-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3590	270	15.97	1.20	2980	225	13.26	1.00
	HD028	HU28TF	12	1-9/16	7-1/8	2-1/4	--	2-1/2	4	6	16d	4	10d x 1-1/2	4590	1420	20.42	6.32	3600	1115	16.01	4.96
2 x 10	HL210	JB210A	18	1-9/16	9-5/16	2	--	1-5/16	2	4	16d	2	prongs	2395	--	10.65	--	1880	--	8.36	--
	KLB210	LB210A	14	1-9/16	9-1/4	2	--	1-3/8	2	4	16d	2	10d x 1-1/2	3895	665	17.33	2.96	3120	610	13.88	2.71
	SW210	W210	12	1-9/16	9-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3590	270	15.97	1.20	2980	225	13.26	1.00
	HD0210	HU210TF	12	1-9/16	9-1/8	2-1/4	--	2-1/2	4	8	16d	4	10d x 1-1/2	4790	1365	21.31	6.07	3760	1070	16.73	4.76
2 x 12	HL212	JB212A	18	1-9/16	11-1/4	2-1/8	--	1-5/16	2	4	16d	2	prongs	2600	--	11.57	--	2040	--	9.07	--
	KLB212	LB212A	14	1-9/16	11-1/8	2	--	1-3/8	2	4	16d	2	10d x 1-1/2	3300	665	14.68	2.96	3030	610	13.48	2.71
	SW212	W212	12	1-9/16	11-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3590	270	15.97	1.20	2980	225	13.26	1.00
	HD0212	HU212TF	12	1-9/16	11	2-1/4	--	2-1/2	4	10	16d	6	10d x 1-1/2	3855	2495	17.15	11.10	3025	1955	13.46	8.70
2 x 14	HL214	JB214A, LB214A	18	1-9/16	13-1/8	2	--	2-1/2	2	6	16d	2	10d x 1-1/2	2600	585	11.57	2.60	2040	460	9.07	2.05
	SW214	W214	12	1-9/16	13-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3590	270	15.97	1.20	2980	225	13.26	1.00
	HD0214	HU214TF	12	1-9/16	13	2-1/4	--	2-1/2	4	12	16d	6	10d x 1-1/2	6345	1980	28.22	8.81	4980	1555	22.15	6.92
2 x 16	SW216	W216	12	1-9/16	15-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3590	270	15.97	1.20	2980	225	13.26	1.00
	HD0216	HU216TF, LB216	12	1-9/16	15	2-1/4	--	2-1/2	4	14	16d	8	10d x 1-1/2	6555	3160	29.16	14.06	5145	2480	22.89	11.03
3 x 4	HD034	HU34TF	12	2-9/16	3-7/16	2-1/2	--	2-1/2	4	4	16d	2	10d x 1-1/2	3870	595	17.21	2.65	3040	465	13.52	2.07
3 x 6	SW36	W36	12	2-9/16	5-3/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3900	270	17.35	1.20	3240	225	14.41	1.00
	HD036	HU36TF	12	2-9/16	5-3/8	2-1/2	--	2-1/2	4	6	16d	4	10d x 1-1/2	4850	1580	21.57	7.03	3805	1240	16.93	5.52
3 x 8	SW38	W38	12	2-9/16	7-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3900	270	17.35	1.20	3240	225	14.41	1.00
	HD038	B38, HU38TF	12	2-9/16	7-1/8	2-1/2	--	2-1/2	4	8	16d	4	10d x 1-1/2	5235	1420	23.29	6.32	4110	1115	18.28	4.96
3 x 10	SW310	W310	12	2-9/16	9-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d x 1-1/2	3900	270	17.35	1.20	3240	225	14.41	1.00
	HD0310	B310, HU310TF	12	2-9/16	9-1/8	2-1/2	--	2-1/2	4	10	16d	6	10d x 1-1/2	6820	2340	30.34	10.41	5355	1840	23.82	8.18
3 x 12	SWH312	WNP312	7/12	2-9/16	11-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d x 1-1/2	5120	270	22.77	1.20	4250	225	18.90	1.00
	HD0312	B312, HU312TF	12	2-9/16	11	2-1/2	--	2-1/2	4	12	16d	6	10d x 1-1/2	7165	2480	31.87	11.03	5625	1945	25.02	8.65
3 x 14	SWH314	WNP314	7/12	2-9/16	13-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d x 1-1/2	5120	270	22.77	1.20	4250	225	18.90	1.00
	HD0314	B314, HU314TF	12	2-9/16	13	2-1/2	--	2-1/2	4	14	16d	8	10d x 1-1/2	7165	2480	31.87	11.03	5625	1945	25.02	8.65
3 x 16	SWH316	WNP316	7/12	2-9/16	15-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d x 1-1/2	5120	270	22.77	1.20	4250	225	18.90	1.00
	HD0316	B316, HU316TF	12	2-9/16	15	2-1/2	--	2-1/2	4	16	16d	8	10d x 1-1/2	9430	3160	41.95	14.06	7405	2480	32.94	11.03
(2) 2 x 4	HD024-2	HU24-2TF	12	3-1/8	3-7/16	2-1/4	--	2-1/2	4	4	16d	2	10d	4005	880	17.82	3.91	3145	690	13.99	3.07
(2) 2 x 6	SWH26-2	WNP26-2	7/12	3-1/8	5-3/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	HD026-2	HU26-2TF, HUS26-2TF	12	3-1/8	5-3/8	2-1/4	--	2-1/2	4	6	16d	4	10d	4995	1975	22.22	8.79	3920	1550	17.44	6.89

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) HL and SW products do not provide uplift resistance, except for the HL214.
3) Refer to the respective Nailer Options chart on page 105 for hangers installed on wood nailers.
4) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**



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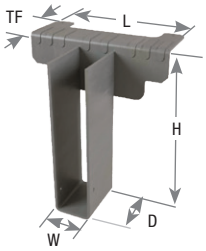
Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Beam/ Joist Size	USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3,5] Header Qty Top	Face	Type	Joist Qty	Type	DF Factored Resistance (Lbs.)[3] Lbs Floor 100%	Lbs Uplift[1,2] 115%	kN Floor 100%	kN Uplift[1,2] 115%	S-P-F Factored Resistance (Lbs.)[3] Lbs Floor 100%	Lbs Uplift[1,2] 115%	kN Floor 100%	kN Uplift[1,2] 115%
(2) 2 x 8	SWH28-2	WNP28-2	7/12	3-1/8	7-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	HDO28-2	HU28-2TF, HUS28-2TF	12	3-1/8	7-1/8	2-1/4	--	2-1/2	4	8	16d	4	10d	5555	1860	24.71	8.27	4360	1460	19.39	6.49
(2) 2 x 10	SWH210-2	WNP210-2	7/12	3-1/8	9-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	HDO210-2	HU210-2TF, HUS210-2TF	12	3-1/8	9-1/8	2-1/2	--	2-1/2	4	10	16d	6	10d	7480	3180	33.27	14.15	5870	2495	26.11	11.10
	HDO210-2IF	HUC210-2TF, HUSC210-2TF	12	3-1/8	9-1/8	2-1/2	--	2-1/2	4	10	16d	6	10d	7480	3180	33.27	14.15	5870	2495	26.11	11.10
(2) 2 x 12	SWH212-2	WNP212-2	7/12	3-1/8	11-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	HDO212-2	HU212-2TF, HUS212-2TF	12	3-1/8	11	2-1/2	--	2-1/2	4	12	16d	6	10d	9010	2950	40.08	13.12	7070	2315	31.45	10.30
(2) 2 x 14	SWH214-2	WNP214-2	7/12	3-1/8	13-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	HDO214-2	HU214-2TF, HUS214-2TF	12	3-1/8	13	2-1/2	--	2-1/2	4	14	16d	8	10d	8865	3220	39.43	14.32	6960	2530	30.96	11.25
(2) 2 x 16	SWH216-2	WNP216-2	7/12	3-1/8	15-1/8	2-1/2	7	2-1/2	--	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	HDO216-2	HU216-2TF	12	3-1/8	15	2-1/2	--	2-1/2	4	16	16d	8	10d	10220	3685	45.46	16.39	8025	2890	35.70	12.86
4 x 4	HDO44	HU44TF	12	3-9/16	3-7/16	2-1/4	--	2-1/2	4	4	16d	2	10d	4005	880	17.82	3.91	3145	690	13.99	3.07
4 x 6	SW46	W46	12	3-9/16	5-3/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d	3900	270	17.35	1.20	3240	225	14.41	1.00
	HDO46	HU46TF, HUS46TF	12	3-9/16	5-3/8	2-1/4	--	2-1/2	4	6	16d	4	10d	4995	1975	22.22	8.79	3920	1550	17.44	6.89
	KHW46	HW46	3/10	3-9/16	5-3/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
4 x 8	SW48	W48	12	3-9/16	7-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d	3900	270	17.35	1.20	3240	225	14.41	1.00
	HDO48	B48, BA48, HU48TF, HUS48TF	12	3-9/16	7-1/8	2-1/4	--	2-1/2	4	8	16d	4	10d	5555	1860	24.71	8.27	4360	1460	19.39	6.49
	KHW48	HW48	3/10	3-9/16	7-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
4 x 10	SW410	W410	12	3-9/16	9-1/8	2-1/2	6-1/2	2-1/2	2	--	10d	2	10d	3900	270	17.35	1.20	3240	225	14.41	1.00
	HDO410	B410, HU410TF, HUI49.5TF, HUS410TF	12	3-9/16	9-1/8	2-1/4	--	2-1/2	4	10	16d	6	10d	7480	3180	33.27	14.15	5870	2495	26.11	11.10
	SWH410	--	7/12	3-9/16	9-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	KHW410	HW410	3/10	3-9/16	9-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
4 x 12	KB412	B412	12	3-9/16	11-1/8	2-3/8	--	2-1/2	2	4	NA20D	2	NA20D	6535	1225	29.07	5.45	5180	1085	23.04	4.83
	HDO412	HU412TF, HUS412TF	12	3-9/16	11	2-1/4	--	2-1/2	4	12	16d	6	10d	9010	2950	40.08	13.12	7070	2315	31.45	10.30
	SWH412	WNP412	7/12	3-9/16	11-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	KHW412	HW412	3/10	3-9/16	11-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
4 x 14	HDO414	B414, HHB414, HU414TF, HUI414TF, HUS414TF	12	3-9/16	13	2-1/2	--	2-1/2	4	14	16d	8	10d	8865	3220	39.43	14.32	6960	2530	30.96	11.25
	SWH414	WNP414	7/12	3-9/16	13-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	KHW414	HW414	3/10	3-9/16	13-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) KHW products do not provide uplift resistance.
3) Refer to the respective Nailer Options chart on page 105 for hangers installed on wood nailers.
4) KHW Glulam load values are based on 560 psi perpendicular to grain loading.
5) **NAILS:** 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long, NA20D nails are 0.192" dia. x 2-1/2" long and are included with KHW hangers.
New products or updated product information are designated in **blue font.**



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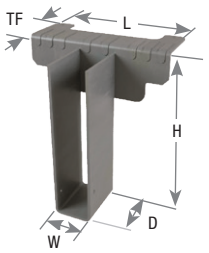
Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Beam/ Joist Size	USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3,5] Header Qty Top	Header Qty Face	Header Type	Joist Qty	Joist Type	DF Factored Resistance (Lbs.)[3] Lbs Floor 100%	Lbs Uplift[1,2] 115%	kN Floor 100%	kN Uplift[1,2] 115%	S-P-F Factored Resistance (Lbs.)[3] Lbs Floor 100%	Lbs Uplift[1,2] 115%	kN Floor 100%	kN Uplift[1,2] 115%
4 x 16	HDO416	B416, HHB416, HU416TF	12	3-9/16	15	2-1/2	--	2-1/2	4	16	16d	8	10d	10220	3685	45.46	16.39	8025	2890	35.70	12.86
	SWH416	WNP416	7/12	3-9/16	15-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	KHW416	HW416	3/10	3-9/16	15-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
(3) 2 x 10	HDO210-3	HU210-3TF	12	4-11/16	9-1/8	2-1/2	--	2-1/2	4	10	16d	6	16d	7480	3180	33.27	14.15	5870	2495	26.11	11.10
(3) 2 x 12	HDO212-3	HU212-3TF	12	4-11/16	11	2-1/2	--	2-1/2	4	12	16d	6	16d	9010	2950	40.08	13.12	7070	2315	31.45	10.30
(3) 2 x 14	HDO214-3	HU214-3TF	12	4-11/16	13	2-1/2	--	2-1/2	4	14	16d	8	16d	8865	3220	39.43	14.32	6960	2530	30.96	11.25
(3) 2 x 16	HDO216-3	HU216-3TF	12	4-11/16	15	2-1/2	--	2-1/2	4	16	16d	8	16d	10220	3685	45.46	16.39	8025	2890	35.70	12.86
6 x 6	HDO66	HU66TF	12	5-1/2	5-3/8	2-1/2	--	2-1/2	4	6	16d	4	16d	4995	1975	22.22	8.79	3920	1550	17.44	6.89
	SWH66	WNP66	7/12	5-1/2	5-3/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	KHW66	HW66	3/10	5-1/2	5-3/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
6 x 8	HDO68	HHB68, HU68TF	12	5-1/2	7-1/8	2-1/2	--	2-1/2	4	8	16d	4	16d	5555	1860	24.71	8.27	4360	1460	19.39	6.49
	SWH68	WNP68	7/12	5-1/2	7-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	KHW68	HW68	3/10	5-1/2	7-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
6 x 10	KB610	B610	12	5-1/2	9-1/4	2-3/8	--	2-1/2	2	6	NA20D	2	NA20D	6510	1225	28.96	5.45	5110	1085	22.73	4.83
	HDO610	HHB610, HU610TF	12	5-1/2	9-1/8	2-1/2	--	2-1/2	4	10	16d	6	16d	7480	3180	33.27	14.15	5870	2495	26.11	11.10
	SWH610	WNP610	7/12	5-1/2	9-1/8	2-1/2	7	2-1/2	2	--	16d	2	10d	5120	270	22.77	1.20	4250	225	18.90	1.00
	KHW610	HW610	3/10	5-1/2	9-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
6 x 12	KB612	B612	12	5-1/2	11-1/8	2-3/8	--	2-1/2	2	6	NA20D	2	NA20D	6510	1225	28.96	5.45	5110	1085	22.73	4.83
	HDO612	HHB612, HU612TF	12	5-1/2	11	2-1/2	--	2-1/2	4	12	16d	6	16d	9010	2950	40.08	13.12	7070	2315	31.45	10.30
	KHW612	HW612	3/10	5-1/2	11-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
6 x 14	HDO614	B614, HHB614, HU614TF	12	5-1/2	13	2-1/2	--	2-1/2	4	14	16d	8	16d	8865	3220	39.43	14.32	6960	2530	30.96	11.25
	KHW614	HW614	3/10	5-1/2	13-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
6 x 16	HDO616	B616, HHB616, HU616TF	12	5-1/2	15	2-1/2	--	2-1/2	4	16	16d	8	16d	10220	3685	45.46	16.39	8025	2890	35.70	12.86
	KHW616	HW616	3/10	5-1/2	15-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
8 x 6	KHW86	HW86	3/10	7-1/2	5-3/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
8 x 8	KHW88	HW88	3/10	7-1/2	7-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
8 x 10	KHW810	HW810	3/10	7-1/2	9-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
8 x 12	KHW812	HHB812, HW812	3/10	7-1/2	11-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
8 x 14	KHW814	HHB814, HW814	3/10	7-1/2	13-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
8 x 16	KHW816	HHB816, HW816	3/10	7-1/2	15-1/8	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
Glulam Sizes[5]																					
2-1/2 glulam	KHW26	--	3/10	2-11/16	specify	4	10	2-1/2	4	--	NA20D	2	10d x 1-1/2	8200	270	36.48	1.20	6810	225	30.29	1.00
3-1/8 glulam	KHW3	HW3.25	3/10	3-1/4	specify	3	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00
5-1/8 glulam	KHW5	HW5.25	3/10	5-1/4	specify	2-1/2	10	2-1/2	4	--	NA20D	2	10d	8575	270	38.14	1.20	6785	225	30.18	1.00

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) KHW products do not provide uplift resistance.
3) Refer to the respective Nailer Options chart on page 105 for hangers installed on wood nailers.
4) KHW Glulam load values are based on 560 psi perpendicular to grain loading.
5) Consult USP for additional Glulam sizes.
6) **NAILS:** 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long, NA20D nails are 0.192" dia. x 2-1/2" long and are included with KHW hangers.
New products or updated product information are designated in **blue font.**



FWH Fire Wall Hangers

USP STRUCTURAL CONNECTORS MiTek

The Fire Wall Hanger is designed for attaching truss, I-joist, solid sawn lumber, or engineered wood floor framing members to double wall top plates or minimum 2-ply 2x solid sawn header fire rated wood frame walls. The advanced design allows the installation of the FWH ***before*** the 5/8" gypsum wallboard (drywall) is attached and permits the building project to be completely framed-up, and weather-tight before the gypsum wallboard sheathing work starts.

Materials: 14 gauge
Finish: G90 galvanizing
Codes: Factored resistances are derived from data submitted to various North American building code evaluators
Options: See Specialty Options chart on page 110.

Installation:
- Install the face of hanger flanges tight to stud wall framing.
- For wall framing, hangers do NOT need to be installed at stud locations for full design values.
- The end of the truss/joist should measure 1-5/8" from the face of the supporting wall. See Figure 1.
- The truss/joist should bear fully on the FWH seat with a gap no greater than 1/8" between the end of the supported member and the hanger. See Figure 1.
- **Gypsum Wallboard Installation** - Use the FWH-T template to slot cut the gypsum wallboard. See FWH-T Template Installation Sequence on page 110. Slide the gypsum wallboard into position and fasten to the framing members meeting minimum requirements specified by code.

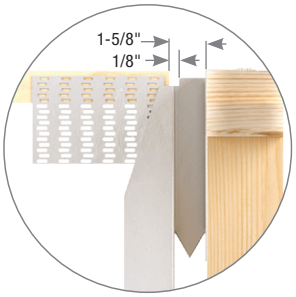
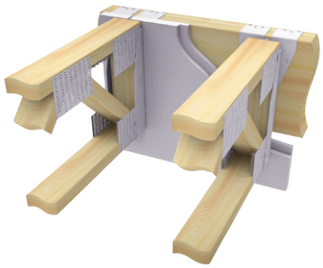
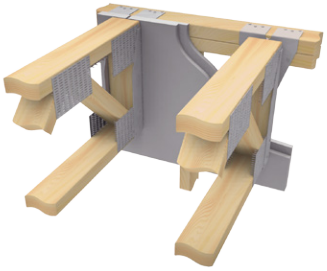


Figure 1
Typical FWH Side View



Typical FWH solid sawn header installation

Typical FWH stud wall installation



Typical FWH stud wall with (2) layers of 5/8-in gypsum wallboard installation

Installation Type	Fastener Schedule[2] Header Top Qty	Header Face Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance Solid Sawn Header Download 100%	DF Solid Sawn Header Uplift 115%[1]	DF 2-Ply, 2x Wall Top Plate Download 100%	DF 2-Ply Uplift 115%[1]	SPF Factored Resistance Solid Sawn Header Download 100%	SPF Solid Sawn Header Uplift 115%[1]	SPF 2-Ply, 2x Wall Top Plate Download 100%	SPF 2-Ply Uplift 115%[1]
Without 5/8-in gypsum wallboard or structural sheathing	6	--	10d	6	10d x 1-1/2	Lbs	3250	330	2890	280	2555	270	2550	260
						kN	14.46	1.47	12.86	1.25	11.37	1.20	11.34	1.16
	6	2	10d	6	10d x 1-1/2	Lbs	3810	685	2890	590	2990	560	2550	545
						kN	16.95	3.05	12.86	2.62	13.30	2.49	11.34	2.42
After (1) layer of 5/8-in gypsum wallboard is installed	6	--	10d	6	10d x 1-1/2	Lbs	3250	330	2890	280	2555	270	2550	260
						kN	14.46	1.47	12.86	1.25	11.37	1.20	11.34	1.16
	6	2	10d	6	10d x 1-1/2	Lbs	3810	685	2890	590	2990	560	2550	545
						kN	16.95	3.05	12.86	2.62	13.30	2.49	11.34	2.42
After (2) layers of 5/8-in gypsum wallboard are installed	6	--	10d	6	10d x 1-1/2	Lbs	3250	330	2890	280	2555	270	2550	260
						kN	14.46	1.47	12.86	1.25	11.37	1.20	11.34	1.16
	6	2	10d	6	10d x 1-1/2	Lbs	3810	685	2890	590	2990	560	2550	545
						kN	16.95	3.05	12.86	2.62	13.30	2.49	11.34	2.42
Two-sided after (2) layers of 5/8-in gypsum wallboard are installed (min. 2x6 wall)	6	--	10d	6	10d x 1-1/2	Lbs	3250	330	2890	280	2555	270	2550	260
						kN	14.46	1.47	12.86	1.25	11.37	1.20	11.34	1.16
	6	2	10d	6	10d x 1-1/2	Lbs	3810	685	2890	590	2990	560	2550	545
						kN	16.95	3.05	12.86	2.62	13.30	2.49	11.34	2.42
After (1) layer of structural sheathing & (1) layer of 5/8-in gypsum wallboard is installed	6	--	10d	6	10d x 1-1/2	Lbs	3250	330	2890	280	2555	270	2550	260
						kN	14.46	1.47	12.86	1.25	11.37	1.20	11.34	1.16
	6	2	10d	6	10d x 1-1/2	Lbs	3810	685	2890	590	2990	560	2550	545
						kN	16.95	3.05	12.86	2.62	13.30	2.49	11.34	2.42

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
New products are designated in **blue font**.

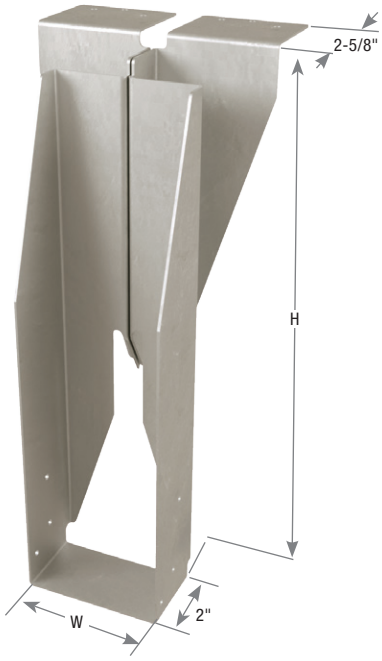
Continued on next page

FWH Fire Wall Hangers

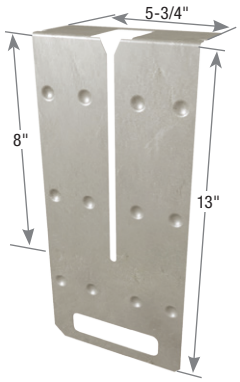
USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Dimensions (in)	
			W	H
2 x 8	**FWH28**	-- --	1-9/16	7-1/8
2 x 10	**FWH210**	DHU210TF	1-9/16	9-1/8
2 x 12	**FWH212**	DHU212TF	1-9/16	11-1/8
1-3/4 x 9-1/2	**FWH1795**	DHU1.81/9.5TF	1-13/16	9-7/16
1-3/4 x 11-7/8	**FWH17118**	DHU1.81/11.88TF	1-13/16	11-13/16
1-3/4 x 14	**FWH1714**	DHU1.81/14TF	1-13/16	13-15/16
1-3/4 x 16	**FWH1716**	DHU1.81/16TF	1-13/16	15-15/16
2 - 2-1/8 x 9-1/2	**FWH2095**	DHU2.1/9.5TF	2-1/8	9-7/16
2 - 2-1/8 x 11-7/8	**FWH20118**	DHU2.1/11.88TF	2-1/8	11-13/16
2 - 2-1/8 x 14	**FWH2014**	DHU2.1/14TF	2-1/8	13-15/16
2 - 2-1/8 x 16	**FWH2016**	DHU2.1/16TF	2-1/8	15-15/16
2-5/16 x 9-1/2	**FWH2395**	DHU2.37/9.5TF	2-3/8	9-7/16
2-5/16 x 11-7/8	**FWH23118**	DHU2.37/11.88TF	2-3/8	11-13/16
2-5/16 x 14	**FWH2314**	DHU2.37/14TF	2-3/8	13-15/16
2-5/16 x 16	**FWH2316**	DHU2.37/16TF	2-3/8	15-15/16
2-5/16 x 18	**FWH2318**	DHU2.37/18TF	2-3/8	17-15/16
2-5/16 x 20	**FWH2320**	DHU2.37/20TF	2-3/8	19-15/16
2-1/2 x 9-1/2	**FWH2595**	DHU2.56/9.5TF	2-9/16	9-7/16
2-1/2 x 11-7/8	**FWH25118**	DHU2.56/11.88TF	2-9/16	11-13/16
2-1/2 x 14	**FWH2514**	DHU2.56/14TF	2-9/16	13-15/16
2-1/2 x 16	**FWH2516**	DHU2.56/16TF	2-9/16	15-15/16
2-1/2 x 18	**FWH2518**	DHU2.56/18TF	2-9/16	17-15/16
2-1/2 x 20	**FWH2520**	DHU2.56/20TF	2-9/16	19-15/16
3-1/2 x 9-1/2	**FWH3595**	DHU3.56/9.5TF	3-9/16	9-7/16
3-1/2 x 11-7/8	**FWH35118**	DHU3.56/11.88TF	3-9/16	11-13/16
3-1/2 x 14	**FWH3514**	DHU3.56/14TF	3-9/16	13-15/16
3-1/2 x 16	**FWH3516**	DHU3.56/16TF	3-9/16	15-15/16
3-1/2 x 18	**FWH3518**	DHU3.56/18TF	3-9/16	17-15/16
3-1/2 x 20	**FWH3520**	DHU3.56/20TF	3-9/16	19-15/16
3-1/2 x 22	**FWH3522**	DHU3.56/22TF	3-9/16	21-15/16
3-1/2 x 24	**FWH3524**	DHU3.56/24TF	3-9/16	23-15/16
-- --	**FWH-T**	-- --	5-3/4	13

New products are designated in **blue font**.



FWH



FWH-T Template

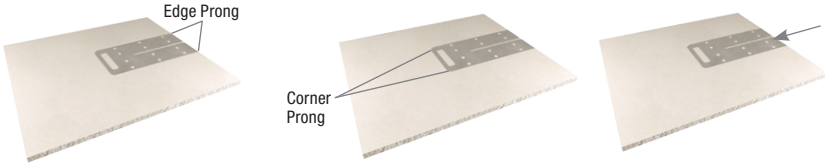
2 Hour Fire-Rating

FWH hangers are tested per ASTM E814 standards. When installed on one side of a maximum 2 hour fire-rated wall assembly, the penetration of the USP FWH Fire Wall Hanger through the gypsum wallboard will not reduce the fire resistive rating of the 2 hour fire resistive assembly.

Specialty Options Chart – Refer to Specialty Options pages 220 and 222 for additional details.

Option	Skewed[1]
Range	1˚ to 45˚
Factored Resistance	80% of table load
Ordering	Add *SK,* angle required, right *(R)* or left *(L),* and square cut *(SQ)* to product number. Ex. FWH3514_SK45R_SQ

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.



1) Align the FWH-Template slot with the mark in the gypsum wallboard and engage the prongs into edge of gypsum wallboard

2) Rotate the template and press down on the end to engage the corner prongs

3) Run the gypsum wallboard cutter down the template to cut the slot

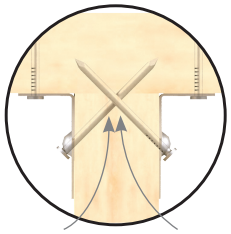
FWH-T template installation sequence

JH Multi-Purpose Joist Hanger

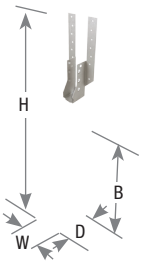
These strap-style hangers are designed to support trusses, joists, or purlins. JH models may be bent along the flange allowing builders to use the hangers in top mount, face mount, or combination applications.

Materials: 18 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Joist nails must be driven at a 30° to 45° angle through the joist or truss into the header to achieve listed loads. **Standard length "double shear" nails must be used to achieve listed load values.**
- If installing in top mount configuration, field bend top flange over header.
- 16d sinkers (0.148" dia x 3-1/4") may be used where 10d common are specified with no load reduction.




Typical JH20 installation



JH20

USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	H	D	B	TF	Header Size	Fastener Schedule[2,3] Header Top Qty	Header Face Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance Floor 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Floor 100%	S-P-F Uplift[1] 115%
JH20	--	18	1-9/16	10-1/16	2-1/4	5-1/8	1-3/16	2 x 6	2	4	10d	6	10d	Lbs	4750	2415	3730	1900
														kN	21.13	10.74	16.59	8.45
							1-7/16	2 x 8	2	8	10d	6	10d	Lbs	4750	2415	3730	1900
														kN	21.13	10.74	16.59	8.45
							7/16	2 x 10	2	12	10d	6	10d	Lbs	4750	2415	3730	1900
														kN	21.13	10.74	16.59	8.45
							--	2 x 12	--	14	10d	6	10d	Lbs	4750	2415	3730	1900
														kN	21.13	10.74	16.59	8.45

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Nails must be driven at a 30° to 45° angle through the joist or truss into header to achieve the table loads.
3) **NAILS:** 10d nails are 0.148" dia. x 3" long. 16d sinkers (0.148" dia. x 3-1/4" long) may be used where 10d commons are specified with no reduction in load.
New products or updated product information are designated in **blue font.**

LS Light Slope Rafter Hangers

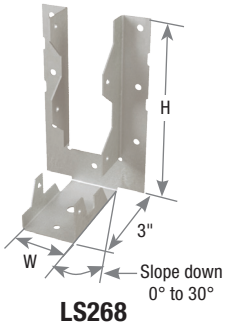
A field-adjustable seat gives the LS hanger application flexibility.

The LS hanger slopes from 0° to 30° down (0 to 7:12 pitch down).

Materials: 18 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- The LS can be field adjusted to slopes from 0° to 30° down.


Typical LS268 installation



LS268

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	DF Lbs Uplift[1] 115%	DF kN Vertical 100%	DF kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	S-P-F Lbs Uplift[1] 115%	S-P-F kN Vertical 100%	S-P-F kN Uplift[1] 115%
LS268	-- --	18	1-9/16	5-1/2	7	16d	7	10d x 1-1/2	1860	1270	8.27	5.65	1460	1000	6.49	4.45
LS210	-- --	18	1-9/16	7-7/8	9	16d	9	10d x 1-1/2	2245	1950	9.99	8.67	1760	1530	7.83	6.81

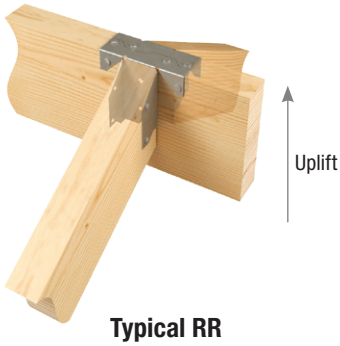
1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

RR Ridge Rafter Hanger

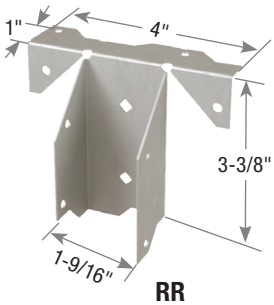
The RR Ridge Rafter supports rafter pitches up to 7:12 (30°). Nesting top flange for installation on 2x support beams.

Materials: 18 gauge
Finish: G90 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- The rafter end at the ridge must be plumb cut to achieve published loads.
- Optional diamond nail holes can be used to fasten RR to end of rafter before setting rafter into place.



Typical RR installation



RR

USP Stock No.	Ref. No.	Steel Gauge	Min Rafter Size	Fastener Schedule[2] Header Qty	Header Type	Rafter Qty	Rafter Type	Unit	DF Factored Resistance[1] Download 100%	DF Uplift 115%	S-P-F Factored Resistance[1] Download 100%	S-P-F Uplift 115%
RR	RR	18	2 x 6	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	**590**	**380**	**465**	**300**
								kN	**2.67**	**1.80**	**1.89**	**1.29**
				4	LL915	4	LL915	Lbs	705	345	500	245
								kN	3.14	1.53	2.22	1.09

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **Nails:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, LL915 denotes a USP LumberLok Screw, #9 x 1-3/8" long.
New products or updated product information are designated in **blue font**.

LSSH Slope/Skew Hangers

The LSSH series connects rafters to ridge beams in vaulted roof structures. This series is field adjustable to meet a variety of skew and/or slope applications. Slopes and skews 0° to 45°.

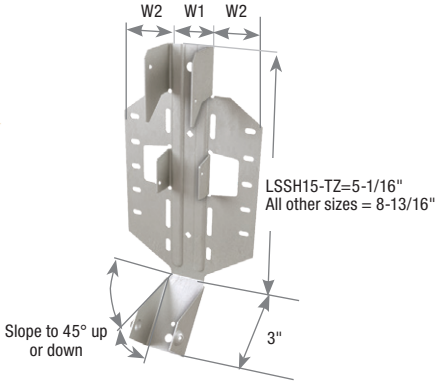
Materials: See chart
Finish: G90 galvanizing; LSSH15-TZ – G-185 Galvanizing
Options: See Chart for Corrosion Finish Options
Codes: Factored resistances are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.

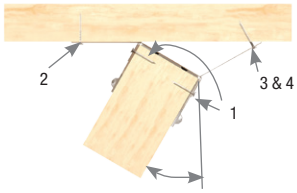
Steps:
1. Position LSSH connector against plumb-cut end of joist. Fasten joist side flanges on both sides with 10d (0.148") x 1-1/2" nails. Bend seat up to fit against joist bottom and drive (1) 10d (0.148") x 1-1/2" nail through bottom seat into rafter bottom. Drive (2) 10d (0.148") x 1-1/2" nails at downward angle through dimpled nailing guides.
2. Lean connector and rafter end against ridge beam at desired position. Install specified 10d (0.148" x 3") or 16d (0.162" x 3-1/2") nails through nail holes into ridge beam at right 90° angle. If skewing the rafter, only drive nails into ridge beam on inside flange.
3. Bend flange to desired angle.
4. Hammer outside flange until edge touches header. Fasten outside flange to ridge by driving specified 10d (0.148" x 3") or 16d (0.162" x 3-1/2") nails through nail holes.

- Web stiffeners are required for all wood I-Joist installations.
- Designer may consider adding a tension restraint for the supported member for roof slopes exceeding 6/12. Refer to pages 86-87.

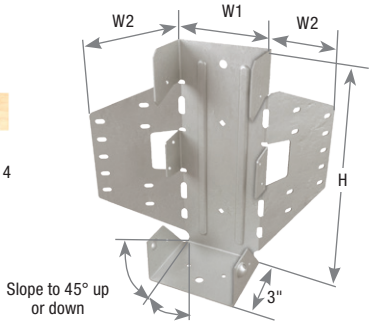
Typical LSSH179 installation



LSSH210



Skew to 45° maximum



LSSH35

Continued on next page

LSSH Slope/Skew Hangers

USP STRUCTURAL CONNECTORS MiTek

Rafter Width (in)	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W1	W2	H	Fastener Schedule[2] Header Qty	Header Type	Rafter Qty	Rafter Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
SLOPED ONLY HANGERS																			
1-1/2	LSSH15-TZ	LSU26, LSU26Z, LSSU28, LSSU28Z	18	1-9/16	1-3/4	5-1/16	6	10d HDG	7	10d x 1-1/2 HDG	1590	1175	7.07	5.23	1250	925	5.56	4.11	
1-1/2	LSSH210	LSSU210	18	1-9/16	1-3/4	8-13/16	10	10d	7	10d x 1-1/2	2685	1695	11.94	7.54	2110	1330	9.39	5.92	
1-3/4	LSSH179	LSSUI25	18	1-13/16	1-5/8	8-13/16	10	10d	7	10d x 1-1/2	2685	1695	11.94	7.54	2110	1330	9.39	5.92	
2 - 2-1/8	LSSH20	LSSUI2.06, LSSU2.1	18	2-1/8	2-1/2	8-13/16	10	10d	7	10d x 1-1/2	2535	1555	11.28	6.92	1990	1220	8.85	5.43	
2-1/4 - 2-5/16	LSSH23	LSSUI35	18	2-5/16	2-3/8	8-13/16	10	10d	7	10d x 1-1/2	2535	1555	11.28	6.92	1990	1220	8.85	5.43	
2-1/2	LSSH25	LSSUH310	16	2-9/16	2-3/4	8-13/16	18	16d	12	10d x 1-1/2	4125	1895	18.35	8.43	3240	1490	14.41	6.63	
2-5/8	LSSH26	-- --	16	2-11/16	2-5/8	8-13/16	18	16d	12	10d x 1-1/2	4125	1895	18.35	8.43	3240	1490	14.41	6.63	
3	LSSH31	LSSU210-2	16	3-1/8	3-3/4	8-13/16	18	16d	12	10d x 1-1/2	5065	2515	22.53	11.19	3980	1975	17.70	8.79	
3-1/2	LSSH35	LSSU410	16	3-9/16	3-1/2	8-13/16	18	16d	12	10d x 1-1/2	5065	2515	22.53	11.19	3980	1975	17.70	8.79	
SKEWED HANGERS or SLOPED & SKEWED HANGERS																			
1-1/2	LSSH15-TZ	LSU26, LSU26Z, LSSU28, LSSU28Z	18	1-9/16	1-3/4	5-1/16	6	10d HDG	7	10d x 1-1/2 HDG	1295	1175	5.76	5.23	1015	925	4.51	4.11	
1-1/2	LSSH210	LSSU210	18	1-9/16	1-3/4	8-13/16	10	10d	7	10d x 1-1/2	2685	1695	11.94	7.54	2110	1330	9.39	5.92	
1-3/4	LSSH179	LSSUI25	18	1-13/16	1-5/8	8-13/16	10	10d	7	10d x 1-1/2	2685	1695	11.94	7.54	2110	1330	9.39	5.92	
2 - 2-1/8	LSSH20	LSSUI2.06, LSSU2.1	18	2-1/8	2-1/2	8-13/16	10	10d	7	10d x 1-1/2	2535	1555	11.28	6.92	1990	1220	8.85	5.43	
2-1/4 - 2-5/16	LSSH23	LSSUI35	18	2-5/16	2-3/8	8-13/16	10	10d	7	10d x 1-1/2	2535	1555	11.28	6.92	1990	1220	8.85	5.43	
2-1/2	LSSH25	LSSUH310	16	2-9/16	2-3/4	8-13/16	14	16d	12	10d x 1-1/2	2895	1895	12.88	8.43	2270	1490	10.10	6.63	
2-5/8	LSSH26	-- --	16	2-11/16	2-5/8	8-13/16	14	16d	12	10d x 1-1/2	2895	1895	12.88	8.43	2270	1490	10.10	6.63	
3	LSSH31	LSSU210-2	16	3-1/8	3-3/4	8-13/16	14	16d	12	10d x 1-1/2	3045	2515	13.55	11.19	2390	1975	10.63	8.79	
3-1/2	LSSH35	LSSU410	16	3-9/16	3-1/2	8-13/16	14	16d	12	10d x 1-1/2	3045	2515	13.55	11.19	2390	1975	10.63	8.79	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

SKH / SKHH Skewed 45° Hangers

SKH – Standard 45° skew hanger allows for a 40° to 50° skew range, without hanger modification.

SKHH – For heavier applications.

Materials: 14 or 16 gauge
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- The hangers listed are for standard sizes and will accommodate a 40° to 50° skew range.
- Most sizes do not require a bevel cut for installation. Refer to chart footnote identified with an asterisk.
- Illustrations show left and right skews. (SKH_L = skewed left; SKH_R = skewed right)
- For I-Joist installations, web stiffeners are required.
- Refer to illustration for staggered I-Joist application for double 2", 2-5/16", and 2-1/2" models.
- For double I-Joist installations, web stiffeners between I-Joists are required.

SKH26R right skew

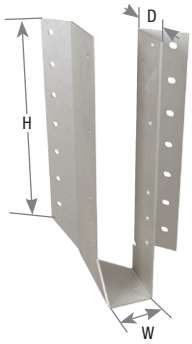
SKH26L left skew

Continued on next page

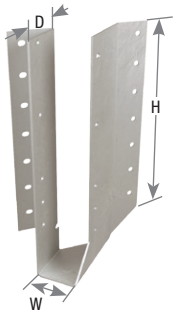
SKH / SKHH Skewed 45° Hangers

USP STRUCTURAL CONNECTORS
MiTek

Typical SKH26L installation left skew

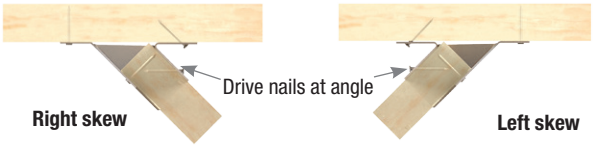


SKH210R



SKH210L

AVAILABLE IN GOLD COAT



Beam / Joist Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
2 x 4	SKH24L/R	SUR/L24	16	1-9/16	3-1/4	1-7/8	4	16d	4	10d x 1-1/2	805	1030	3.58	4.58	635	810	2.82	3.60	
2 x 6-8	SKH26L/R	SUR/L26	16	1-9/16	5-1/4	1-7/8	6	16d	6	10d x 1-1/2	1415	2480	6.29	11.03	1110	1945	4.94	8.65	
	SKHH26L/R	--	14	1-5/8	5-1/8	3-1/4	18	16d	12	10d x 1-1/2	3040	1615	13.52	7.18	2495	1285	11.10	5.72	
2 x 8-12	SKH28L/R	--	16	1-9/16	7-1/4	1-7/8	10	16d	8	10d x 1-1/2	2325	2480	10.34	11.03	1825	1945	8.12	8.65	
	SKHH28L/R	--	14	1-5/8	7	3-1/4	26	16d	16	10d x 1-1/2	4280	2225	19.04	9.90	3365	1745	14.97	7.76	
2 x 10-14	SKH210L/R	SUR/L210, SUR/L214	16	1-9/16	9-1/4	1-7/8	14	16d	10	10d x 1-1/2	2845	2855	12.66	12.70	2230	2240	9.92	9.96	
	SKHH210L/R	--	14	1-5/8	9	4-1/4	34	16d	20	10d x 1-1/2	4505	2780	20.04	12.37	3655	2180	16.26	9.70	
1-3/4 x 9-1/4 - 14	SKH1720L/R	SUR/L1.81/9	16	1-13/16	9-1/8	1-7/8	14	10d	10	10d x 1-1/2	3440	2855	15.30	12.70	2700	2240	12.01	9.96	
1-3/4 x 11-1/4 - 18	SKH1724L/R	SUR/L1.81/11, SUR/L1.81/14	16	1-13/16	11-1/8	1-7/8	16	10d	10	10d x 1-1/2	4640	2855	20.64	12.70	3645	2240	16.21	9.96	
2 - 2-1/8 x 9-1/4 - 14	SKH2020L/R	SUR/L2.06/9, SUR/L2.1/9	16	2-1/8	9	1-7/8	14	10d	10	10d x 1-1/2	3440	2855	15.30	12.70	2700	2240	12.01	9.96	
2 - 2-1/8 x 11-1/4 - 18	SKH2024L/R	SUR/L2.06/11, SUR/L2.1/11	16	2-1/8	11	1-7/8	16	10d	10	10d x 1-1/2	4640	2855	20.64	12.70	3645	2240	16.21	9.96	
2-1/4 - 2-5/16 x 9-1/4 - 14	SKH2320L/R	SUR/L2.37/9	16	2-3/8	8-7/8	1-7/8	14	10d	10	10d x 1-1/2	3440	2855	15.30	12.70	2700	2240	12.01	9.96	
2-1/4 - 2-5/16 x 11-1/4 - 18	SKH2324L/R	SUR/L2.37/11, SUR/L2.37/14	16	2-3/8	10-7/8	1-7/8	16	10d	10	10d x 1-1/2	4640	2855	20.64	12.70	3645	2240	16.21	9.96	
3 x 6-8	SKH36L/R	-- --	16	2-9/16	4-3/4	1-3/8	6	16d	6	10d x 1-1/2	1590	2855	7.07	12.70	1250	2240	5.56	9.96	
3 x 8-12	SKH38L/R	-- --	16	2-9/16	6-3/4	1-3/8	10	16d	8	10d x 1-1/2	2515	2855	11.19	12.70	1970	2240	8.76	9.96	
3 x 10-14	SKH310L/R	-- --	16	2-9/16	8-3/4	1-3/8	14	16d	10	10d x 1-1/2	3465	2855	15.41	12.70	2720	2240	12.10	9.96	
3 x 12 - 14 - 16	SKH312L/R	-- --	16	2-9/16	10-3/4	1-3/8	16	16d	10	10d x 1-1/2	3890	2855	17.30	12.70	3055	2240	13.59	9.96	
2-1/2 x 9-1/4 - 14	SKH2520L/R	SUR/L2.56/9	16	2-9/16	8-5/8	1-7/8	14	10d	10	10d x 1-1/2	3440	2855	15.30	12.70	2700	2240	12.01	9.96	
2-1/2 x 11-1/4 - 16	SKH2524L/R	SUR/L2.56/11, SUR/L2.56/14	16	2-9/16	10-3/4	1-7/8	16	10d	10	10d x 1-1/2	4640	2855	20.64	12.70	3645	2240	16.21	9.96	
2-5/8 x 9-1/4 - 14	SKH2620L/R	-- --	16	2-11/16	8-11/16	1-7/8	14	10d	10	10d x 1-1/2	3440	2855	15.30	12.70	2700	2240	12.01	9.96	
2-5/8 x 11-1/4 - 16	SKH2624L/R	-- --	16	2-11/16	10-11/16	1-7/8	16	10d	10	10d x 1-1/2	4640	2855	20.64	12.70	3645	2240	16.21	9.96	
(2) 2 x 6-8	SKH26L/R-2 *	SUR/L26-2	16	3-1/16	4-1/2	1-3/8	6	16d	6	10d	1760	2480	7.83	11.03	1380	1945	6.14	8.65	
	SKHH26L/R-2	HSUR/L26-2	14	3-1/16	5-1/4	2	12	16d	4	16d x 2-1/2	2895	1615	12.88	7.18	2270	1285	10.10	5.72	
	SKHH26L/R-2IF	HSUR/LC26-2	14	3-1/16	5-1/4	2	12	16d	4	16d x 2-1/2	2895	1615	12.88	7.18	2270	1285	10.10	5.72	
(2) 2 x 8-12	SKH28L/R-2 *	-- --	16	3-1/16	6-1/2	1-3/8	10	16d	8	10d	3900	2480	17.35	11.03	3060	1945	13.61	8.65	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
* Bevel cut required on end of joist to achieve design loads.
New products or updated product information are designated in **blue font**.

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

Continued on next page

SKH / SKHH Skewed 45° Hangers

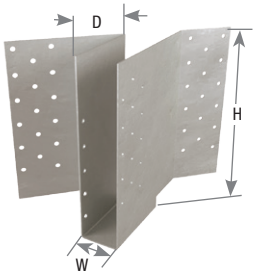
USP STRUCTURAL CONNECTORS MiTek

Beam / Joist Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
(2) 2 x 10-14	SKH210L/R-2 *	SUR/L210-2	16	3-1/16	8-1/2	1-3/8	14	16d	10	10d	4960	2855	22.06	12.70	3895	2240	17.33	9.96	
	SKHH210L/R-2	HSUR/L210-2, HSUR/L214-2	14	3-1/16	8-1/2	2	20	16d	6	16d x 2-1/2	5350	3800	23.80	16.90	4200	2985	18.68	13.28	
	SKHH210L/R-2IF	HSUR/LC210-2	14	3-1/16	8-1/2	2	20	16d	6	16d x 2-1/2	5350	3800	23.80	16.90	4200	2985	18.68	13.28	
(2) 2 x 12-16	SKH212L/R-2 *	SUR/L214-2	16	3-1/16	10-1/2	1-3/8	16	16d	10	10d	4825	2855	21.46	12.70	3790	2240	16.86	9.96	
3-1/2 x 8-14	SKH410L/R *	SUR/L410	14	3-9/16	8-1/2	2-1/2	16	16d	10	16d	4130	2855	18.37	12.70	3240	2240	14.41	9.96	
3-1/2 x 12-18	SKH414L/R *	SUR/L414	14	3-9/16	12-1/2	2-1/2	22	16d	10	16d	8720	2855	38.79	12.70	6845	2240	30.45	9.96	
4 x 6-8	SKH46L/R *	SUR/L46	14	3-9/16	4-3/4	2-1/2	10	16d	6	16d	2520	2480	11.21	11.03	1980	1945	8.81	8.65	
	SKHH46L/R	HSUR/L46	14	3-9/16	5-1/4	2-1/2	12	16d	6	16d	2895	1615	12.88	7.18	2270	1285	10.10	5.72	
	SKHH46L/RIF	HSUR/LC46	14	3-9/16	5-1/4	2-1/2	12	16d	6	16d	2895	1615	12.88	7.18	2270	1285	10.10	5.72	
4 x 10-14	SKH410L/R *	SUR/L410	14	3-9/16	8-1/2	2-1/2	16	16d	10	16d	4130	2855	18.37	12.70	3240	2240	14.41	9.96	
	SKHH410L/R	HSUR/L410	14	3-9/16	8-1/2	2-1/2	20	16d	10	16d	5350	3800	23.80	16.90	4200	2985	18.68	13.28	
	SKHH410L/RIF	HSUR/LC410	14	3-9/16	8-1/2	2-1/2	20	16d	10	16d	5350	3800	23.80	16.90	4200	2985	18.68	13.28	
4 x 14-18	SKH414L/R *	SUR/L414	14	3-9/16	12-1/2	2-1/2	22	16d	10	16d	8720	2855	38.79	12.70	6845	2240	30.45	9.96	
	SKHH414L/R	HSUR/L414	14	3-9/16	12-1/2	2-1/2	26	16d	10	16d	7380	3800	32.83	16.90	5790	2985	25.76	13.28	
	SKHH414L/RIF	HSUR/LC414	14	3-9/16	12-1/2	2-1/2	26	16d	10	16d	7380	3800	32.83	16.90	5790	2985	25.76	13.28	
(2) 2 - 2-1/8 x 9-1/4 - 14	SKH2020L/R-2 *	HSUR/L4.12/9, HSUR/L4.28/9	14	4-3/16	9-1/4	3-1/2	14	10d	10	10d	5320	3490	23.66	15.52	4175	2740	18.57	12.19	
(2) 2 - 2-1/8 x 11-1/4 - 18	SKH2024L/R-2 *	HSUR/L4.12/11, HSUR/L4.12/14, HSUR/L4.12/16, HSUR/L4.28/11	14	4-3/16	11-1/4	3-1/2	16	10d	10	10d	4950	3485	22.02	15.50	3885	2735	17.28	12.17	
(2) 2-5/16 x 9-1/4 - 14	SKH2320L/R-2 *	HSUR/L4.75/9	14	4-7/8	9-1/4	3-1/2	14	10d	10	10d	5320	3490	23.66	15.52	4175	2740	18.57	12.19	
(2) 2-5/16 x 11-1/4 - 18	SKH2324L/R-2 *	HSUR/L4.75/11, HSUR/L4.75/14, HSUR/L4.75/16	14	4-7/8	11-1/4	3-1/2	16	10d	10	10d	4950	3485	22.02	15.50	3885	2735	17.28	12.17	
(2) 2-1/2 x 9-1/4 - 14	SKH2520L/R-2 *	HSUR/L5.12/9	14	5-1/8	9-1/4	3-1/2	14	10d	10	10d	5320	3490	23.66	15.52	4175	2740	18.57	12.19	
(2) 2-1/2 x 11-1/4 - 16	SKH2524L/R-2 *	HSUR/L5.12/11, HSUR/L5.12/14, HSUR/L5.12/16	14	5-1/8	11-1/4	3-1/2	16	10d	10	10d	4950	3485	22.02	15.50	3885	2735	17.28	12.17	

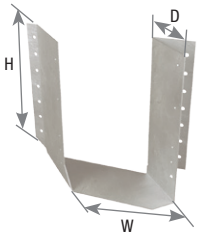
1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long, 16d x 2-1/2 nails 0.162" dia. x 2-1/2" long.
* Bevel cut required on end of joist to achieve design loads.
New products or updated product information are designated in **blue font**.

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

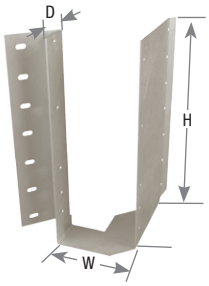
Typical SKH2520R-2 staggered I-Joist installation right skew



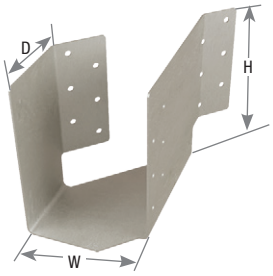
SKHH210L



SKH2520R-2



SKHH210L-2

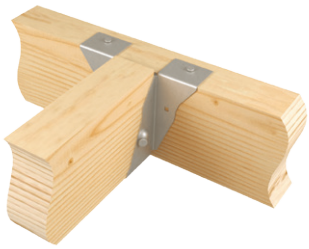


SKHH46LIF

JPF Purlin Hangers

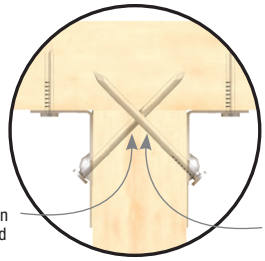
Materials: 20 gauge
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

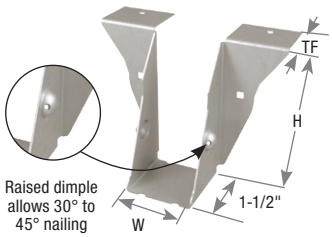
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Diamond holes allow optional header nailing.
- Joist nails must be driven at a 30° to 45° angle through the purlin into the header to achieve listed loads. **Standard length "double shear" nails must be used to achieve listed load values.**
- 16d sinkers (0.148" dia. x 3-1/4") may be used where 10d commons are specified with no load reduction.



Typical JPF24 installation

Typical JPF24 back-to-back installation





JPF24

Purlin Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Dimensions (in) TF	Fastener Schedule[3] Min/Max	Header[2] Top Qty	Header[2] Face Qty	Header[2] Type	Joist Qty	Joist Type	Unit	DF Factored Resistance Vertical 100%	DF Factored Resistance Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Factored Resistance Uplift[1] 115%	Corrosion Finish
2 x 4	JPF24	PF24	20	1-9/16	3-3/8	1-1/16	Min	2	--	10d	2	10d	Lbs	1755	675	**1380**	**530**	
													kN	7.81	3.00	**6.14**	**2.36**	
							Max	2	2	10d	2	10d	Lbs	1995	890	**1565**	**695**	
													kN	8.87	3.96	**6.96**	**3.09**	
2 x 6	JPF26	PF26	20	1-9/16	5-3/8	1-1/16	Min	2	--	10d	2	10d	Lbs	1755	675	**1380**	**530**	
													kN	7.81	3.00	**6.14**	**2.36**	
							Max	2	2	10d	2	10d	Lbs	1995	890	**1565**	**695**	
													kN	8.87	3.96	**6.96**	**3.09**	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) JPF cannot be used back to back on a single ply header when optional nailing is used.
3) **NAILS:** 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

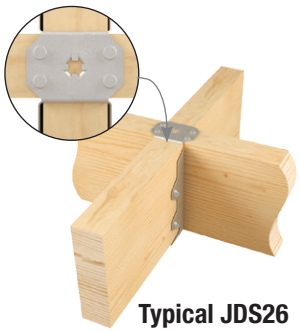
JDS Purlin Hangers

USP STRUCTURAL CONNECTORS MiTek

Materials: 18 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

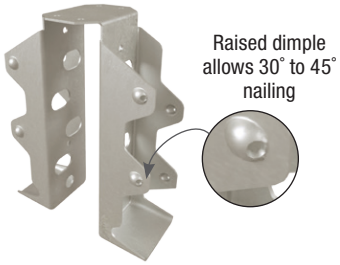
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Joist nails must be driven at a 30° to 45° angle through the purlin into the header to achieve listed loads. **Standard length "double shear" nails must be used to achieve listed load values.**

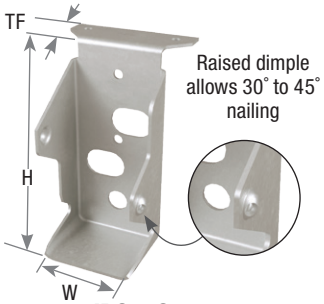


Typical JDS26 installation

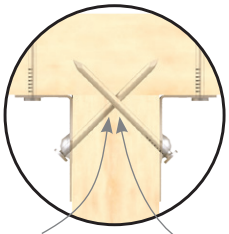
Typical JDS24S installation

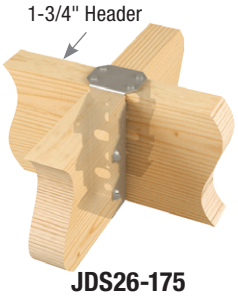


JDS26
(JDS24 similar)

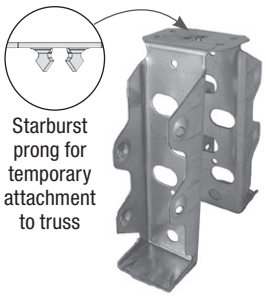


JDS24S





JDS26-175 installation



JDS26-175

Purlin Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Dimensions (in) TF	Fastener Schedule[2] Min/Max	Header Top Qty	Header Face Qty	Header Type	Each Purlin Qty	Each Purlin Type	Unit	DF Factored Resistance Vertical 100%	DF Factored Resistance Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Factored Resistance Uplift[1] 115%
2 x 4 single	JDS24S	PF24A	18	1-9/16	3-1/2	3/4	Min	1	2	10d x 1-1/2	2	10d x 1-1/2	Lbs	655	285	655	285
													kN	2.91	1.27	2.91	1.27
							Max	2	--	10d x 1-1/2	2	10d	Lbs	960	655	760	535
													kN	4.27	2.91	3.38	2.38
2 x 4 saddle	JDS24	PFD24	18	1-9/16	3-1/2	1-9/16	Min	2	4	10d x 1-1/2	2	10d x 1-1/2	Lbs	1310	570	1310	570
													kN	5.83	2.54	5.83	2.54
							Max	4	--	10d x 1-1/2	2	10d	Lbs	1925	1305	1520	1070
													kN	8.56	5.80	6.76	4.76
2 x 6 single	JDS26S	PF26A	18	1-9/16	5-1/2	3/4	Min	1	2	10d x 1-1/2	4	10d x 1-1/2	Lbs	785	580	785	580
													kN	3.49	2.58	3.49	2.58
							Max	2	--	10d x 1-1/2	4	10d	Lbs	1455	780	1325	710
													kN	6.47	3.47	5.89	3.16
2 x 6 saddle	JDS26-175	--	18	1-9/16	5-7/16	1-3/4	Min	2	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	1805	1330	1750	1290
													kN	8.03	5.92	7.78	5.74
							Max	4	--	10d x 1-1/2	4	10d	Lbs	3335	1785	2645	1415
													kN	14.83	7.94	11.77	6.29
	JDS26	PFD26	18	1-9/16	5-1/2	1-9/16	Min	2	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	1570	1160	1570	1160
													kN	6.98	5.16	6.98	5.16
							Max	4	--	10d x 1-1/2	4	10d	Lbs	2910	1555	2645	1415
													kN	12.94	6.92	11.77	6.29

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font**.

TUS / DTUS Undersaddle Hangers

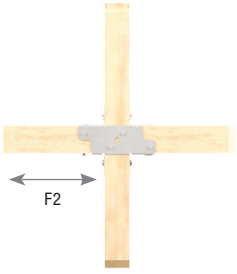
USP STRUCTURAL CONNECTORS MiTek

TUS – For a single ply purlin.

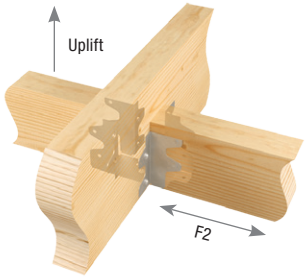
DTUS – For a single ply purlin with a 2-ply saddle dimension.

Materials: 20 gauge
Finish: G90 galvanizing

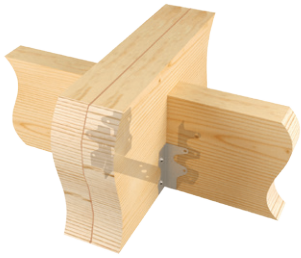
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Attaches with standard 1-1/2" joist hanger nails that can be installed with a positive placement nail gun or be hand driven.
- Other 1-1/2" fasteners with a shear value equal or greater than a 10d nail may be used.



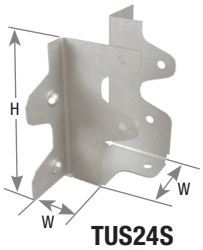
Bottom View



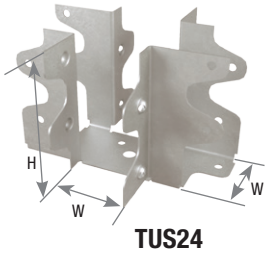
Typical TUS24 installation



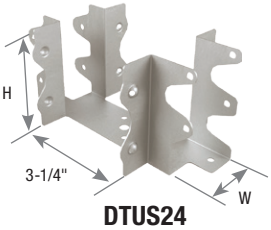
Typical DTUS24 installation



TUS24S



TUS24



DTUS24

Joist Size	USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	Dimensions (in) H	Fastener Schedule[2] Header Qty Face	Header Qty Bottom	Header Type	Joist Qty Face	Joist Qty Bottom	Joist Type	Unit	DF Factored Resistance Download 100%	DF Uplift[1] 115%	DF F2[1] 115%	S-P-F Factored Resistance Download 100%	S-P-F Uplift[1] 115%	S-P-F F2[1] 115%
2 x 4 - 6 single	TUS24S	--	20	1-9/16	3	4	1	8d x 1-1/2	4	1	8d x 1-1/2	Lbs	980	955	385	**770**	**750**	275
												kN	4.36	4.25	1.71	**3.43**	**3.34**	1.22
								10d x 1-1/2			10d x 1-1/2	Lbs	980	955	385	**770**	**750**	275
												kN	4.36	4.25	1.71	**3.43**	**3.34**	1.22
								LL915			LL915	Lbs	980	955	385	**770**	**750**	275
												kN	4.36	4.25	1.71	**3.43**	**3.34**	1.22
2 x 4 - 6 saddle	TUS24	--	20	1-9/16	3	4	1	8d x 1-1/2	4	1	8d x 1-1/2	Lbs	980	955	1120	**770**	**750**	795
												kN	4.36	4.25	4.98	**3.43**	**3.34**	3.54
								10d x 1-1/2			10d x 1-1/2	Lbs	980	955	1120	**770**	**750**	795
												kN	4.36	4.25	4.98	**3.43**	**3.34**	3.54
								LL915			LL915	Lbs	980	955	1120	**770**	**750**	795
												kN	4.36	4.25	4.98	**3.43**	**3.34**	3.54
2 x 4 - 6 saddle	DTUS24	--	20	1-9/16	3	4	1	8d x 1-1/2	4	1	8d x 1-1/2	Lbs	980	955	1120	**770**	**750**	795
												kN	4.36	4.25	4.98	**3.43**	**3.34**	3.54
								10d x 1-1/2			10d x 1-1/2	Lbs	980	955	1120	**770**	**750**	795
												kN	4.36	4.25	4.98	**3.43**	**3.34**	3.54
								LL915			LL915	Lbs	980	955	1120	**770**	**750**	795
												kN	4.36	4.25	4.98	**3.43**	**3.34**	3.54

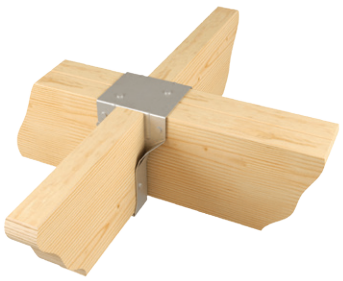
1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 8d x 1-1/2" nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, LL915 screws are #9 (0.131" dia.) x 1-1/2" long.
New products or updated product information are designated in **blue font**.

FHD Panel Hangers

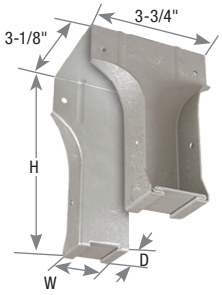
The FHD26 hanger straddles the header and receives a joist from both sides.

Materials: 18 gauge
Finish: G90 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- In panelized construction, installers are allowed to nail through both the sheathing and the hanger top flange with (1) 10d nail. The nail should be centered in the top flange and be no closer than 1/4" from the back or front edge of the top flange.



Typical FHD26 installation



FHD26

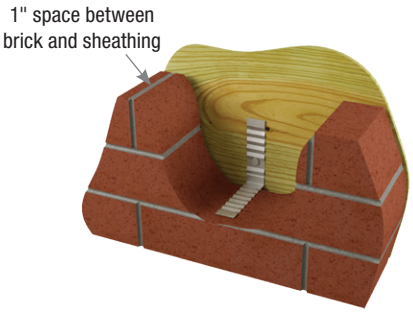
Joist Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[3] Header Top Qty	Header Face Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance[1] Vertical 100%	DF Uplift 115%[2]	S-P-F Factored Resistance[1] Vertical 100%	S-P-F Uplift 115%[2]
2 x 6	FHD26	PFDS24	18	1-9/16	5-3/8	1-1/2	2	2	16d	2	10d x 1-1/2	Lbs	1575	335	**1235**	**260**
												kN	7.01	1.49	**5.49**	**1.16**

1) Loads listed are per side.
2) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 16d nails are 0.162" dia. x 3-1/2" long.
10d x 1-1/2 nails may be substituted for 16d header nails with a maximum load of 960 lbs.
New products or updated product information are designated in **blue font.**

WT Wall Ties

Materials: 22 gauge
Finish: G90 galvanizing; WT22B-HDG – Hot-dip galvanized
Options: See chart for Corrosion Finish options

Installation:
- Use nails appropriate for intended use. See Product Notes, page 15.
- The opposite end must be bonded in the mortar joint of brick facade.
- Check local codes for spacing requirements.
- Meets prescriptive requirements of CSA A370 for corrugated strip ties.



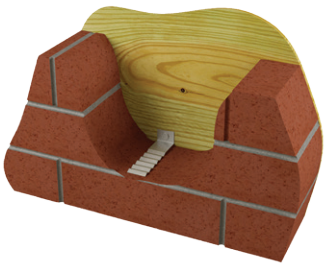
Typical WT17HD/WT22 installation

WT17HD/WT22

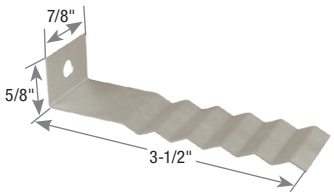
USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2] Qty	Type	Corrosion Finish
WT17HD	-- --	22	2	10d	
WT22[1]	BTB	22	2	10d	Stainless Steel
WT22B-HDG	-- --	22	1	#10 HDG wood screw	HDG

1) WT22 is bulk packed in 500 pieces.
2) **NAILS**: 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



Typical WT22B-HDG installation



WT22B-HDG

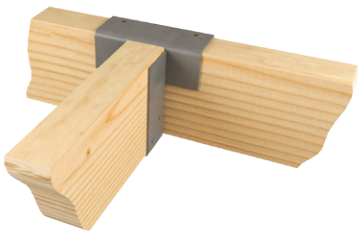
HWUH Heavy-Duty Welded Universal Hangers

USP STRUCTURAL CONNECTORS MiTek

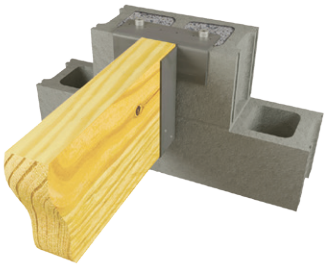
Versatile heavy-duty top flange hanger attaches to both wood and masonry. Unique design allows builders to use one style hanger on the job when the structure has a variety of support materials.

Materials: Top Flange – 1/4" steel; Stirrup – 7 gauge
Finish: USP primer

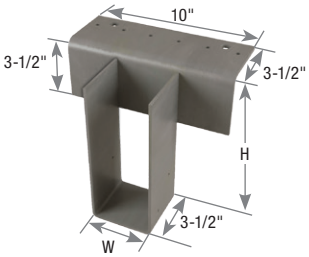
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- NA21 nails are included with hangers where specified.
- **NA21 nails are not recommended for use with LVL, PSL, or LSL headers.**
- Masonry design load values apply to both solid concrete tie beams and grout-filled CMU walls.
- Alternate installation – Use (2) 1/2" x 4" Powers Fasteners Wedge-Bolts® or equal for loads up to 3455 lbs. when attaching to CMU. Loads shall not exceed table loads.



Typical HWUH410 wood-to-wood installation



Typical HWUH410 wood-to-masonry installation



HWUH

Beam/ Joist Size	USP Stock No.	Ref. No.	Dimensions (in) W	Dimensions (in) H	Install Type	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	DF Lbs Uplift[1] 115%	DF kN Vertical 100%	DF kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	S-P-F Lbs Uplift[1] 115%	S-P-F kN Vertical 100%	S-P-F kN Uplift[1] 115%
2 x 4 - 6	HWUH26	--	1-5/8	5-3/8	Wood	6	10d	4	10d x 1-1/2	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d x 1-1/2	5010	2035	22.29	9.05	3930	1595	17.48	7.09
2 x 8	HWUH28	--	1-5/8	7-1/8	Wood	6	10d	4	10d x 1-1/2	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d x 1-1/2	5010	2035	22.29	9.05	3930	1595	17.48	7.09
2 x 10	HWUH210	--	1-5/8	9-1/8	Wood	6	10d	4	10d x 1-1/2	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d x 1-1/2	5010	2035	22.29	9.05	3930	1595	17.48	7.09
2 x 12	HWUH212	--	1-5/8	11	Wood	6	10d	4	10d x 1-1/2	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d x 1-1/2	5010	2035	22.29	9.05	3930	1595	17.48	7.09
2 x 14	HWUH214	--	1-5/8	13	Wood	6	10d	4	10d x 1-1/2	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d x 1-1/2	5010	2035	22.29	9.05	3930	1595	17.48	7.09
2 x 16	HWUH216	--	1-5/8	16	Wood	6	10d	4	10d x 1-1/2	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d x 1-1/2	5010	2035	22.29	9.05	3930	1595	17.48	7.09
3 x 6	HWUH36	--	2-5/8	5-3/8	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
3 x 8	HWUH38	--	2-5/8	7-1/8	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
3 x 10	HWUH310	--	2-5/8	9-1/8	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
3 x 12	HWUH312	--	2-5/8	11	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
3 x 14	HWUH314	--	2-5/8	13	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
3 x 16	HWUH316	--	2-5/8	16	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
(2) 2 x 6	HWUH26-2	--	3-1/8	5-3/8	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
(2) 2 x 8	HWUH28-2	--	3-1/8	7-1/8	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
(2) 2 x 10	HWUH210-2	--	3-1/8	9-1/8	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
(2) 2 x 12	HWUH212-2	--	3-1/8	11	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font.**

Continued on next page

HWUH Heavy-Duty Welded Universal Hangers

USP STRUCTURAL CONNECTORS MiTek

Beam/ Joist Size	USP Stock No.	Ref. No.	Dimensions (in) W	Dimensions (in) H	Install Type	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	DF Lbs Uplift[1] 115%	DF kN Vertical 100%	DF kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	S-P-F Lbs Uplift[1] 115%	S-P-F kN Vertical 100%	S-P-F kN Uplift[1] 115%
(2) 2 x 14	HWUH214-2	--	3-1/8	13	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
(2) 2 x 16	HWUH216-2	--	3-1/8	16	Wood	6	10d	4	10d	6700	995	29.80	4.43	5260	780	23.40	3.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
4 x 6	HWUH46	--	3-9/16	5-3/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
4 x 8	HWUH48	--	3-9/16	7-1/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
4 x 10	HWUH410	--	3-9/16	9-1/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
4 x 12	HWUH412	--	3-9/16	11	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
4 x 14	HWUH414	--	3-9/16	13	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
4 x 16	HWUH416	--	3-9/16	16	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
6 x 6	HWUH66	--	5-1/2	5-3/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
6 x 8	HWUH68	--	5-1/2	7-1/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
6 x 10	HWUH610	--	5-1/2	9-1/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
6 x 12	HWUH612	--	5-1/2	11	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
6 x 14	HWUH614	--	5-1/2	13	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
6 x 16	HWUH616	--	5-1/2	16	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
8 x 6	HWUH86	--	7-1/2	5-3/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
8 x 8	HWUH88	--	7-1/2	7-1/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
8 x 10	HWUH810	--	7-1/2	9-1/8	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
8 x 12	HWUH812	--	7-1/2	11	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
8 x 14	HWUH814	--	7-1/2	13	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09
8 x 16	HWUH816	--	7-1/2	16	Wood	6	NA21	4	10d	8625	705	38.37	3.14	6775	555	30.14	2.47
					Masonry	2	1/2"x6" J-Bolt	4	10d	5010	2035	22.29	9.05	3930	1595	17.48	7.09

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 10d nails are 0.148" dia. x 3" long, NA21 nails are 0.192" dia. x 1-3/4" long and are included with 4x, 6x, and 8x HWUH hangers.
New products or updated product information are designated in **blue font**.

Specialty Options Chart

Refer to Specialty Options pages 220, 222-223 for additional details.

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Top Flange Offset		Saddle
Range	1° to 45°	1° to 45°	See Sloped Seat and Skewed	-- --		-- --
Factored Resistance	100% of table load	100% of table load	100% of table load	**Hanger Width** 3-1/2" or less 3-9/16" to 5-1/2" 5-9/16" to 7-1/2"	**% of table load:** 60% 75% 85%	100% of table load per side
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut (*SQ*) or bevel cut (*BV*)** to product number. Ex. HWUH410_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. HWUH410_SL30D	See Sloped Seat and Skewed. Ex. HWUH410_SK45R_SQ_SL30D	Add *OS*, and right *(R)* or left *(L)*, to product number. Ex. HWUH410_OSL		Add *SA*, and saddle width required to product number. Ex. HWUH410_SA=5-1/2"

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
New products or updated product information are designated in **blue font**.

MPH Masonry Hangers

These hangers are designed to support standard lumber joists, I-Joists, or beams. Easy installation into concrete block walls makes the MPH an attractive alternative to fabricating seats in masonry (or attaching ledgers) to support joists or beams.

Materials: 12 gauge

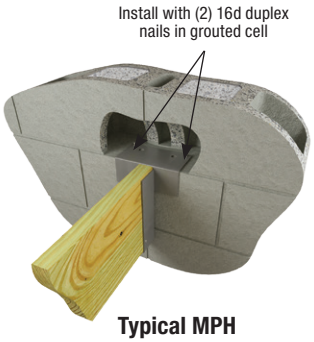
Finish: USP primer

Options: All nominal lumber sizes are available for rough full size lumber. See Specialty Options Chart on page 123.

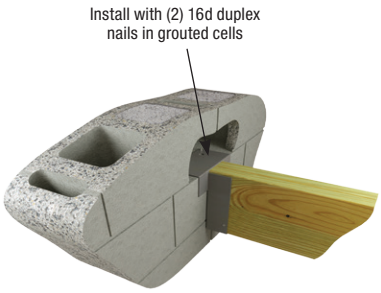
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

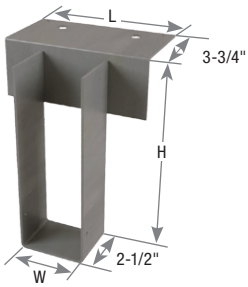
- Use all specified fasteners. See Product Notes, page 15.
- 16d duplex nails are not supplied with MPH hangers.
- Place hanger into position on top of concrete block. Install (2) 16d duplex nails (0.162" dia. x 3-1/2" double head) through the top flange nail holes. Then continue laying the next course of block.
- A minimum of one course shall be laid over hanger top flange and one course below hanger top flange. Courses adjacent to the top flange shall be subsequently grouted.
- **These products do not provide uplift resistance.**



Typical MPH single ply installation



Typical MPH double ply installation



MPH

Beam/ Joist Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H[2]	L	Fastener Schedule[3] Block Qty	Block Type	Joist Qty	Joist Type	DF Factored Resistance[1] Vertical 100% Lbs	kN	S-P-F Factored Resistance[1] Vertical 100% Lbs	kN
Standard Lumber Sizes														
2 x 10	MPH210	WM210	12	1-9/16	9-1/4	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
2 x 12	MPH212	WM212	12	1-9/16	11-1/4	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
2 x 14	MPH214	WM214	12	1-9/16	13-1/8	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
2 x 16	MPH216	WM216	12	1-9/16	15-1/8	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
(2) 2 x 10	MPH210-2	WM210-2	12	3-1/8	9-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
(2) 2 x 12	MPH212-2	WM212-2	12	3-1/8	11-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
(2) 2 x 14	MPH214-2	WM214-2	12	3-1/8	13-1/8	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
(2) 2 x 16	MPH216-2	WM216-2	12	3-1/8	15-1/8	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3 x 10	MPH310	WM310	12	2-9/16	9-1/4	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
3 x 12	MPH312	WM312	12	2-9/16	11-1/4	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
3 x 14	MPH314	WM314	12	2-9/16	13-1/8	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
3 x 16	MPH316	WM316	12	2-9/16	15-1/8	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
4 x 10	MPH410	WM410	12	3-9/16	9-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
4 x 12	MPH412	WM412	12	3-9/16	11-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
4 x 14	MPH414	WM414	12	3-9/16	13-1/8	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
4 x 16	MPH416	WM416	12	3-9/16	15-1/8	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
6 x 10	MPH610	WM610	12	5-9/16	9-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
Engineered Lumber Sizes														
1-1/2 x 9-1/4	MPH210	WM29.25	12	1-9/16	9-1/4	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
1-1/2 x 9-1/2	MPH1595	WM29.5	12	1-9/16	9-1/2	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
1-1/2 x 11-1/4	MPH212	WM211.25	12	1-9/16	11-1/4	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
1-1/2 x 11-7/8	MPH15118	WM211.88	12	1-9/16	11-7/8	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
1-1/2 x 14	MPH1514	-- --	12	1-9/16	14	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
1-3/4 x 9-1/2	MPH1795	WM9	12	1-13/16	9-1/2	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
1-3/4 x 11-7/8	MPH17118	WM11	12	1-13/16	11-7/8	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
1-3/4 x 14	MPH1714	WM14	12	1-13/16	14	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44
1-3/4 x 16	MPH1716	WM16	12	1-13/16	16	7	2	16d duplex	2	10d x 1-1/2	4705	20.93	3695	16.44

1) Masonry compressive strength shall be minimum 1500 psi.
2) "Specify" denotes the required supported beam height that must be specified at the time of ordering.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d duplex nails are 0.162" dia. x 3-1/2" long, double headed nails and shall be installed in grouted cells in accordance to manufacturer's installation specifications.
New products or updated product information are designated in **blue font.**

Continued on next page

MPH Masonry Hangers

USP STRUCTURAL CONNECTORS MiTek

Beam/ Joist Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H[2]	L	Fastener Schedule[3] Block Qty	Block Type	Joist Qty	Joist Type	DF Factored Resistance[1] Vertical 100% Lbs	kN	S-P-F Factored Resistance[1] Vertical 100% Lbs	kN
Engineered Lumber Sizes														
2-5/16 x 9-1/2	MPH2395	-- --	12	2-3/8	9-1/2	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-5/16 x 11-7/8	MPH23118	WM3511.88	12	2-3/8	11-7/8	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-5/16 x 14	MPH2314	WM3514	12	2-3/8	14	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-5/16 x 16	MPH2316	WM3516	12	2-3/8	16	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-5/16 x 18	MPH2318	WM3518	12	2-3/8	18	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-5/16 x 20	MPH2320	WM3520	12	2-3/8	20	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 9-1/4	MPH25925	-- --	12	2-1/2	9-1/4	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 9-1/2	MPH2595	-- --	12	2-1/2	9-1/2	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 11-1/4	MPH25112	-- --	12	2-1/2	11-1/4	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 11-7/8	MPH25118	-- --	12	2-1/2	11-7/8	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 14	MPH2514	WMI314	12	2-1/2	14	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 16	MPH2516	WMI316	12	2-1/2	16	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 18	MPH2518	WMI318	12	2-1/2	18	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 20	MPH2520	WMI320	12	2-1/2	20	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 22	MPH2522	-- --	12	2-1/2	22	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 24	MPH2524	-- --	12	2-1/2	24	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
2-1/2 x 26	MPH2526	-- --	12	2-1/2	26	7	2	16d duplex	2	10d x 1-1/2	6215	27.65	4880	21.71
3 x 9-1/4	MPH210-2	WM29.25-2	12	3-1/8	9-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3 x 9-1/2	MPH1595-2	WM29.5-2	12	3-1/8	9-1/2	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3 x 11-1/4	MPH15112-2	WM211.25-2	12	3-1/8	11-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3 x 11-7/8	MPH15118-2	WM211.88-2	12	3-1/8	11-7/8	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 9-1/4	MPH410	WM410	12	3-9/16	9-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 9-1/2	MPH1795-2	WM3.56/9.5	12	3-5/8	9-1/2	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 11-1/4	MPH412	WM412	12	3-9/16	11-1/4	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 11-7/8	MPH17118-2	WM3.56/11.88	12	3-5/8	11-7/8	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 12	MPH3512	WMI412	12	3-1/2	12	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 14	MPH3514	WMI414	12	3-1/2	14	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 16	MPH3516	WMI416	12	3-1/2	16	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 18	MPH3518	WMI418	12	3-1/2	18	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
3-1/2 x 20	MPH3520	WMI420	12	3-1/2	20	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
4-5/8 x 11-7/8	MPH23118-2	WM3511.88-2	12	4-5/8	11-7/8	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
4-5/8 x 14	MPH2314-2	WM3514-2	12	4-5/8	14	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
4-5/8 x 16	MPH2316-2	WM3516-2	12	4-5/8	16	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
4-5/8 x 18	MPH2318-2	WM3518-2	12	4-5/8	18	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
4-5/8 x 20	MPH2320-2	WM3520-2	12	4-5/8	20	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
5-1/4 x 9-1/2	MPH5595	WM5.50/9.5	12	5-5/8	9-1/2	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
5-1/4 x 11-7/8	MPH55118	WM5.50/11.88	12	5-5/8	11-7/8	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
7 x 9-1/2	MPH3595-2	WMI49.5-2	12	7-1/8	9-1/2	8	2	16d duplex	2	10d	6215	27.65	4880	21.71
7 x 11-1/4	MPH35112-2	WMI411.25-2	12	7-1/8	11-1/4	8	2	16d duplex	2	10d	6215	27.65	4880	21.71
7 x 11-7/8	MPH35118-2	WMI411.88-2	12	7-1/8	11-7/8	8	2	16d duplex	2	10d	6215	27.65	4880	21.71
7 x 14	MPH3514-2	WMI414-2	12	7-1/8	14	8	2	16d duplex	2	10d	6215	27.65	4880	21.71
7 x 16	MPH3516-2	WMI416-2	12	7-1/8	16	8	2	16d duplex	2	10d	6215	27.65	4880	21.71
7 x 18	MPH3518-2	WMI418-2	12	7-1/8	18	8	2	16d duplex	2	10d	6215	27.65	4880	21.71
Glulam Sizes														
3-1/8 x glulam	MPH325	-- --	12	3-1/4	specify	7	2	16d duplex	2	10d	6215	27.65	4880	21.71
5-1/8 x glulam	MPH525	-- --	12	5-1/4	specify	7	2	16d duplex	2	10d	6215	27.65	4880	21.71

1) Masonry compressive strength shall be minimum 1500 psi.
2) "Specify" denotes the required supported beam height that must be specified at the time of ordering.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d duplex nails are 0.162" dia. x 3-1/2" long, double headed nails and shall be installed in grouted cells in accordance to manufacturer's installation specifications.

New products or updated product information are designated in **blue font**.

Specialty Options Chart

Refer to Specialty Options pages 220, 222-223 for additional details.

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Top Flange Offset	
Range	1° to 60°	1° to 45°	See Sloped Seat and Skewed	-- --	
Factored Resistance	100% of table load	100% of table load	100% of table load	**Hanger Width**	**% of table load:**
				3-1/2" or less	60%
				3-9/16" to 5-1/2"	75%
				5-9/16" to 7-1/2"	85%
Ordering	Add SK, angle required, right (*R*) or left (*L*), and **square cut (*SQ*) or bevel cut (*BV*)** to product number. Ex. MPH210_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. MPH210_SL30D	See Sloped Seat and Skewed. Ex. MPH210_SK45R_SQ_SL30D	Add *OS*, and right *(R)* or left *(L)*, to product number. Ex. MPH210_OSL	

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.

New products or updated product information are designated in **blue font**.

UMH Universal Masonry Hangers

USP STRUCTURAL CONNECTORS MiTek

A versatile solution for hanging beams from masonry walls. Face mount design allows hanger to be used with beam heights from 16" to 24". Available in a variety of widths for solid sawn, glulam, or engineered lumber beams.

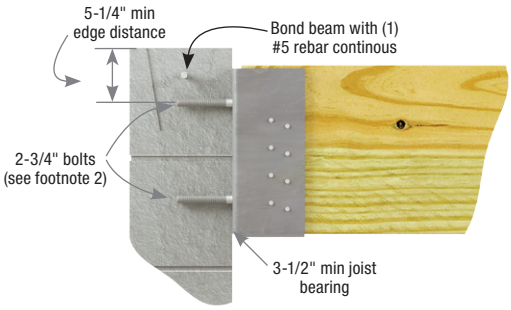
Materials: 1/4" steel

Finish: USP primer

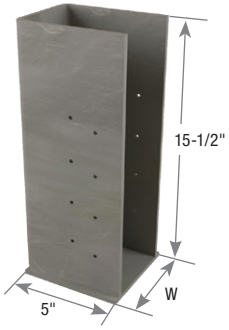
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Fully grouted and reinforced concrete block or cast-in-place concrete with a minimum of (1) #5 rebar continuous to footing with standard hook at bolt locations.
- Minimum joist bearing length is 3-1/2".



Typical UMH installation



UMH

USP Stock No.	Ref. No.	Steel Gauge	W (in)	Fastener Schedule: Header[2,3] Qty	Header Bolt Dia. (in)	Joist[4] Qty	Joist Type	Unit	DF Factored Resistance: Masonry 2,500 psi Vertical 100%	Masonry Uplift[1] 115%	Cast-in-Place Concrete 3,000 psi Vertical 100%	Cast-in-Place Uplift[1] 115%	S-P-F Factored Resistance: Masonry 2,500 psi Vertical 100%	Masonry Uplift[1] 115%	Cast-in-Place Concrete 3,000 psi Vertical 100%	Cast-in-Place Uplift[1] 115%
UMH358	MBHU3.56/16KT, MBHU3.56/18KT	3	3-5/8	2	3/4	16	16d	Lbs	11875	8205	11875	8205	10655	7360	10655	7360
								kN	52.82	36.50	52.82	36.50	47.40	32.74	47.40	32.74
UMH458	-- --	3	4-5/8	2	3/4	16	16d	Lbs	11875	8205	11875	8205	10655	7360	10655	7360
								kN	52.82	36.50	52.82	36.50	47.40	32.74	47.40	32.74
UMH538	-- --	3	5-3/8	2	3/4	16	16d	Lbs	11875	8205	11875	8205	10655	7360	10655	7360
								kN	52.82	36.50	52.82	36.50	47.40	32.74	47.40	32.74
UMH558	MBHU5.50/16KT, MBHU5.50/18KT	3	5-5/8	2	3/4	16	16d	Lbs	11875	8205	11875	8205	10655	7360	10655	7360
								kN	52.82	36.50	52.82	36.50	47.40	32.74	47.40	32.74
UMH718	-- --	3	7-1/8	2	3/4	16	16d	Lbs	11875	8205	11875	8205	10655	7360	10655	7360
								kN	52.82	36.50	52.82	36.50	47.40	32.74	47.40	32.74

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Fasten UMH hanger to concrete structure with two 3/4" dia. Powers Fasteners Wedge-Bolts® or equal with 5" minimum embedment. Bolts shall be installed in masonry with grouted cells in accordance with manufacturer's installation specifications.
3) Bolts must conform to ASTM A 307 or better.
4) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

EWP Hangers

USP STRUCTURAL CONNECTORS MiTek

EWP Hanger Selector Guide

Hanger Type	USP Series	Steel Gauge	Style						Supported Member				Supporting Member						100% Factored Resistance (Lbs.) Range		
																			Header Material		
			Face Mount	Top Mount	Skewed	Sloped	Formed	Welded	I-Joist	LVL, LSL, PSL	Truss	Glulam	Dimensional Wood	I-Joist	LVL, LSL, PSL	Truss	Glulam	Masonry	LVL	SPF	DF
Face Mount	THF	18	•						•	•			•	•	•				3,050 - 5,240	2,166 - 3,720	3,050 - 5,240
		16	•						•	•			•	•	•				3,310 - 6,855	2,350 - 4,867	3,310 - 6,855
		12	•						•	•			•	•	•				5,420 - 6,735	3,848 - 4,782	5,420 - 6,735
	THFI	18	•						•				•	•	•				1,860 - 2,045	1,715 - 1,885	1,860 - 2,045
	HUS	16	•							•	•		•		•	•			9,025	6,408	9,025
	HD	14	•						•	•	•		•		•				4,545 - 7,215	3,225 - 5,123	4,545 - 7,215
	HDQIF	14	•						•	•	•		•		•				5,315 - 8,460	3,775 - 6,005	5,315 - 8,460
	THD	14	•							•	•		•		•	•			11,540	8,193	11,540
		12	•							•	•		•		•	•			12,455 - 13,785	8,843 - 9,787	12,455 - 13,785
	THDH	12	•							•	•		•		•	•			**13,050 - 16,365**	**9,200 - 14,020**	**13,050 - 16,365**
Top Mount	TFL	18		•					•	•			•	•					2,370	1,771	2,495
	THO	18		•					•	•			•	•	•				1,935 - 3,910	1,170 - 3,160	1,645 - 4,450
		16		•					•	•			•	•	•				1,485 - 3,355	1,200 - 3,425	1,690 - 4,820
		12		•					•	•			•	•	•				3,355 - 5,090	4,265 - 6,745	6,005 - 9,500
	TFI	16		•					•	•			•		•				3,685 - 4,675	2,975 - 3,775	4,190 - 5,315
	BPH	12		•					•	•	•		•		•				4,415 - 5,300	2,865 - 4,725	3,780 - 5,055
	HBPH	12		•					•	•	•		•		•				9,555	7,890	9,380
	PHM	7 - Top Flange, 10 - Stirrup		•						•			•		•				5,090 - 5,395	**3,935 - 4,685**	4,125 - **4,685**
	PHXU	7		•						•			•		•				6,370 - 9,575	4,420 - 5,170	6,370 - 7,610
	HLBH	7		•						•			•		•				14,725 - 15,295	12,840	13,825
Glulam	HGU	7	•		•		•			•	•	•	•		•	•	•		**24,285**	**17,245**	**24,825**
	KLEG [1]	7		•				•		•		•	•				•		15,060	12,950	15,060
	KMEG [1]	7		•				•		•		•	•				•		17,555	15,095	17,555
	KEG [1]	1/4" - Top Flange, 7 - Stirrup		•				•		•		•	•				•		23,125 - 27,785	19,890 - 23,895	23,125 - 27,785
	KHHB	7		•			•					•	•				•		7,035	5,910	7,035
	KGB	7		•			•					•	•				•		9,300	7,810	9,300
	KHGB	7		•			•					•	•				•		10,845	9,110	10,845
	KGLT[2]	3 - Top Flange, 7 - Stirrup		•				•				•	•				•		10,865	9,125	10,865
	KHGLT[2]	3 - Top Flange, 7 - Stirrup		•				•				•	•				•		14,615 - 18,420	12,275 - 15,475	14,615 - 18,420
	KGLS	3 - Top Flange, 7 - Stirrup		•				•				•	•				•		14,795 - 29,410	12,430 - 24,705	14,795 - 29,410
	KHGLS	3 - Top Flange, 7 - Stirrup		•				•				•	•				•		29,785 - 30,220	25,020 - 25,385	29,785 - 30,220
	KGLST	3 - Top Flange, 7 - Stirrup		•				•				•	•				•		18,575 - 37,575	15,605 - 31,565	18,575 - 37,575
	KHGLST	3 - Top Flange, 7 - Stirrup		•				•				•	•				•		27,720 - 38,280	23,285 - 32,155	27,720 - 38,280
	LGU	10	•		•		•			•	•	•	•		•	•	•		10,760	7,640	10,760
	MGU	10	•		•		•			•	•	•	•		•	•	•		17,465	12,400	17,465
Slope/Skew	LSSH	18	•		•	•			•	•			•	•	•				1,340 - 2,775	950 - 1,970	1,340 - 2,775
		16	•		•	•			•	•			•	•	•				2,985 - 5,230	2,120 - 3,715	2,985 - 5,230

1) KEG, KEGQ, KLEG, KMEG hangers assume factored resistences with top flange.
2) KGLT, KHGLT hangers assume factored resistences based on 460 psi.
• Represents common applications and product configurations. Consult USP for additional applications and/or optional product configurations.
New products or updated product information are designated in **blue font**.

Wood I-Joist Installation to Wood

Sloped I-Joists
Use sloped seat hangers and beveled web stiffeners whenever the slope exceeds the following: 1/2:12 for seat bearing lengths of 2-1/2" or less; 3/8:12 for bearing lengths between 2-1/2" and 3-1/2"; and 1/4:12 for bearing lengths in excess of 3-1/2".

Multiple I-Joist Plies
Fasten together multiple plies of wood joists, in accordance with the manufacturer's installation guidelines, such that the joists act as a single unit.

I-Joist Rotation
It may be necessary to install straps, blocking, or sheathing to restrain torsional rotation of a supporting wood I-Joist when using top mount I-Joist hangers.

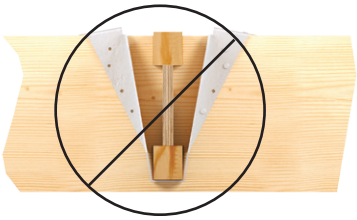
Fasteners
Install only the specified nails. The flanges of wood I-Joists may split if larger diameter nails or longer nails are installed. Do not install nails larger than 16d common wire nails (0.162" diameter) into the web stiffeners in the wood I-Joist.

Backer Blocks
Pattern the nails used to install backer blocks or web stiffeners in wood I-Joists to avoid splitting the block. The nail pattern should be sufficiently spaced to avoid the same grain line, particularly with solid sawn backer blocks. Backer blocks must be installed on wood I-Joist acting as the header, or supporting member. Install in accordance with the I-Joist manufacturer's installation guidelines. The nails used to install hangers mounted to an I-Joist header must penetrate through the web and into the backer block on the opposite side.

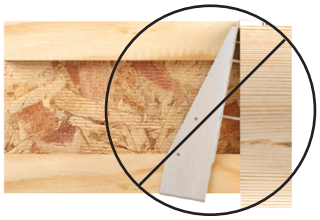
Top Flange Hangers

The thickness of the hanger metal and nail heads on top mount hangers must be evaluated for the effect on subsequent sheathing. Ensure that the top mount hanger is installed so the flanges of the hanger are not over-spread which tends to elevate the supported I-Joist causing uneven floor surfaces and squeaking. Similarly, ensure that the hanger is installed plumb such that the face flanges of the hanger are mounted firmly against the wide-face surface of the header.

Flush framing



Hanger over-spread



Hanger not plumb

Correct Slant Nail Installation

Always secure wood I-Joist using 10d x 1-1/2" nail driven at a 30° to 45° angle and firmly seated

Common Nailing Errors

Wrong Angle

When a nail is driven into the bottom flange of the wood I-Joist parallel to the glue lines, separation of veneers can occur which substantially reduces the design loads of the connection.

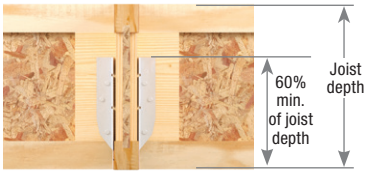
Nail Too Long

When using nails longer than USP's recommended nails, bottom flange splitting may occur. Also, this can raise the wood I-Joist off the seat, resulting in uneven surfaces and squeaky floors along with reduced factored resistance.

Support Height & Lateral Stability

Hangers for joists **without web stiffeners** must support the I-Joist's top flange and provide lateral resistance with no less than 1/8" contact.

Hangers for joists **with web stiffeners** must support a minimum of 60% of joist depth or potential joist rotation must be addressed.



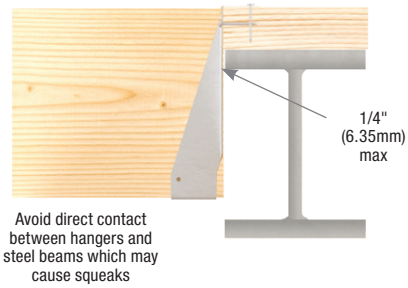
(Top flange support requirements can be verified in this sections charts under Web Stiffener Reqd. Column.)

Nailer Installations

Correct Hanger Attachment to Nailer
A nailer or sill plate is considered to be any wood member attached to a steel beam, concrete block wall, concrete stem wall, or other structure unsuitable for nailing, which is used as a nailing surface for top mount hangers to hold beams or joists.

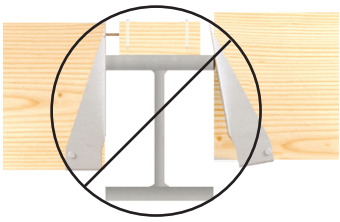
Nailer Sized Correctly
Top flange of hanger is fully supported and recommended nails have full penetration into nailer, resulting in a carried member hanging safely at the proper height.

The nailer must be sized to fit the support width as shown and be of sufficient thickness to satisfy recommended top flange nailing requirements. A design professional must specify nailer attachment to steel beams.



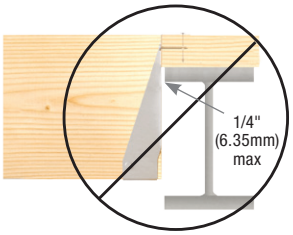
Correct Attachment

Wrong Nailer Size Causes Component Failure



Too Narrow

Top flange not fully supported can cause nail breakout. Or, by fully supporting top flange, hanger is tilted back, causing lifting of carried member which results in uneven surfaces and squeaky floors.



Too Wide

Loading can cause cross grain breaking of nailer. The recommended nailer overhang is 1/4" maximum per side.

Too Thin

Top flange nailing cannot fully penetrate nailer, causing reduced factored resistance. Never use hangers which require multiple face nails since the factored resistance are dependent on all nail holes being used.

THFI Face Mount I-Joist Hangers

The THFI is a face mount hanger designed to attach EWP I-joist members to wood headers. The unique design of the THFI combines the installation ease of a top mount hanger with the installation flexibility of a face mount hanger. Because the side flanges extend to the top chord of the I-joist, web stiffeners are not required. The THFI hangers also feature strategically placed Seat Cleats® which lock the bottom flange of the I-joist to the hanger eliminating the need for joist nails to be installed.

The innovative top flange alignment tabs with the holding cleats assist the placing and alignment of the hanger prior to nailing by hanging onto the header with holding cleats biting into the wood. If the alignment tabs are not desired or a deeper height member is to be carried, the tabs can be easily bent out of the way. Alignment tabs do not contribute to the allowable design values of the THFI hangers.

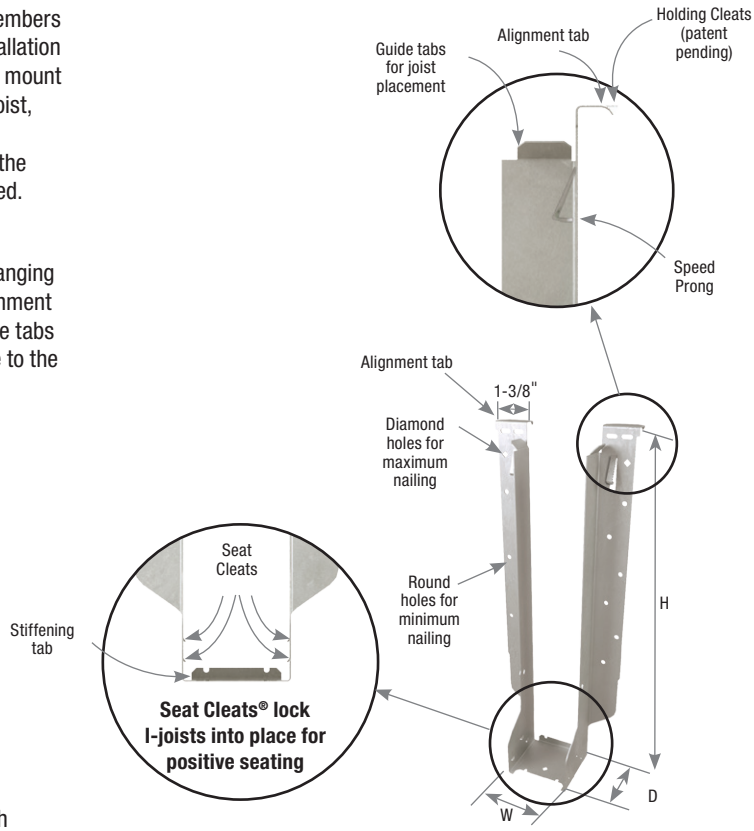
Materials: 18 gauge

Finish: G90 galvanizing

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners.
- Alignment tabs are not structural and can be bent back or removed to assist hanger placement.
- Web stiffeners are not required for THFI hangers unless specified by the I-joist manufacturer. Web stiffeners are not required for lateral stability.
- For additional uplift capacity, install (2) 10d x 1-1/2" nails through diamond holes and into the joist member. (web stiffeners required)
- THFI2514 model has diamond holes in the header flange for MIN/MAX nailing option. For the MAX nailing option, install nails in both the round and diamond shaped header holes.



THFI2514

Typical THFI installation

THF Face Mount I-Joist Hangers

Designed to provide lateral support for the top chords of I-Joists in depths up to 16". Eliminates the need for web stiffeners in most applications (see Web Stiffener Reqd. column in EWP Face Mount Hanger Chart for specific applications).

Materials: See EWP Face Mount Hangers charts, pages 132-134.

Finish: G90 galvanizing

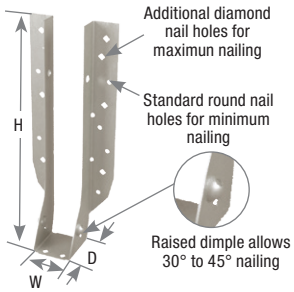
Options: See Specialty Options chart.

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

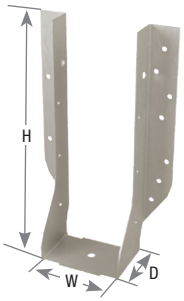
- Use all specified fasteners. See Product Notes, page 15.
- Install 10d x 1-1/2" nails into joist through raised dimple at 30° to 45° angle.
- **THF Min** – Fill all round nail holes.
- **THF Max** – Fill all round and diamond holes.

Typical THF I-Joist to joist installation

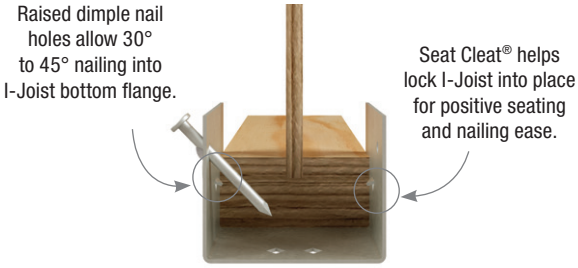


THF single

Typical THF double I-Joist to LVL installation



THF double



THF Specialty Options Chart

– refer to Specialty Options pages 220-221 for additional details.

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Inverted Flange
Range	1° to 67-1/2° when width is 1-3/4" or less. 1° to 50° on all others.	1° to 45°	See Sloped Seat and Skewed	Not available in widths less than 2-1/4"
Factored Resistance	100% of table load. 75% of uplift load on skews greater than 15°.	100% of table load	80% of table load. 75% of uplift load on skews greater than 15°.	100% of table load. 65% of table load when nailing into the support members end grain.
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Example: THF23925_SK45R_BV	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Example: THF23925_SL30D	See Sloped Seat and Skewed Example: THF23925_SK45R_BV_SL30D	Add *IF*, to product number. Example: THF23925_IF

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
4) Modifications to THF hangers do not feature seat cleats.
New products or updated product information are designated in **blue font**.

HD / HDQIF Face Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

HD – Designed to support LVL, LSL, and PSL beams and headers in medium load conditions.

HDQIF – inverted flange face mount hangers fasten to LVL, LSL and PSL beams and headers with WS Wood Screws.

Materials: See EWP Face Mount Hangers charts, pages 134-136.

Finish: G90 galvanizing

Options: See Specialty Options chart.

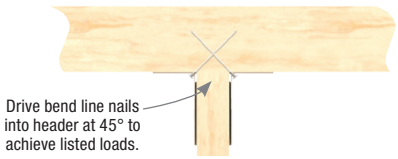
Codes: Load values are derived from data submitted to various North American building code evaluators.

Typical HD installation

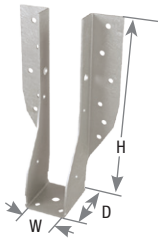
Typical HDQIF installation

Installation:

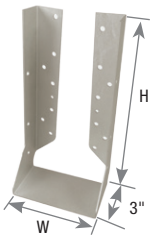
- Use all specified fasteners. See Product Notes, page 15.
- **HD** – Drive bend line nails into header at 45° to achieve listed loads.
- WS15 and WS3 Wood Screws are supplied with HDQIF hangers.



Typical HD bend line nail installation



HD



HDQIF

HD Specialty Options Chart
– refer to Specialty Options pages 220-221 for additional details.

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Inverted Flange
Range	1˚ to 67-1/2˚ when width is 1-3/4" or less. 1˚ to 50˚ on all others.	1˚ to 45˚	See Sloped Seat and Skewed	Not available in widths less than 2-1/4"
Factored Resistance	100% of table load. 75% of uplift load on skews greater than 15˚.	100% of table load	80% of table load. 75% of uplift load on skews greater than 15˚.	100% of table load. 65% of table load when nailing into the support members end grain.
Ordering	Add *SK,* angle required, right *(R)* or left *(L), and* **square cut *(SQ) or* bevel cut *(BV)*** to product number. Example: HD410_SK45R_SQ	Add *SL,* slope required, and up *(U)* or down *(D),* to product number. Example: HD410_SL30D	See Sloped Seat and Skewed Example: HD410_SK45R_SQ_SL30D	Add *IF,* to product number. Example: HD410_IF

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
4) HD option hangers may be manufactured as welded products to achieve listed loads. Welded products have a primer finish.
New products or updated product information are designated in **blue font**.

HUS Face Mount Hangers

Designed for medium load conditions. Extended 3" deep seat provides extra truss bearing.

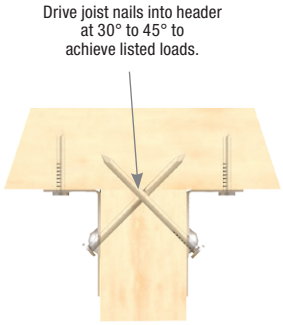
Materials: 16 gauge

Finish: G90 galvanizing

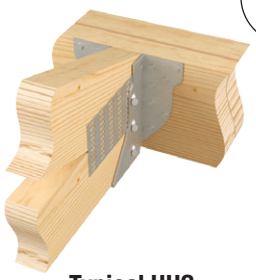
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

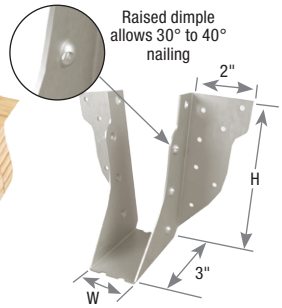
- Use all specified fasteners. See Product Notes, page 15.
- Joist nails must be driven at a 30° to 45° angle through the joist into the header to achieve listed loads. **Standard length "double shear" nails must be used to achieve listed load values.**



Typical HUS double shear installation



Typical HUS installation



HUS

THD / THDH Face Mount I-Joist Hangers

THD – Medium capacity hanger for LVL, LSL, and PSL beams.

THDH – Heavy capacity hanger for LVL, LSL, and PSL beams.

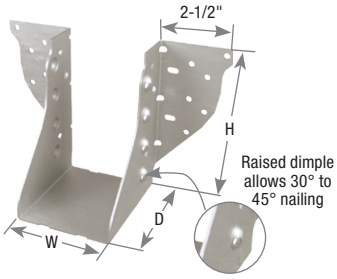
Materials: See EWP Face Mount Hangers charts, pages 135-136.
Finish: G90 galvanizing
Options: Rough/ Full sizes available for THD series. See Specialty Options chart.
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- **THD** – Drive bend line nails into header at 45° to achieve listed loads.
- **THDH** – Drive joist nails into header at 30° to 45° to achieve listed loads.

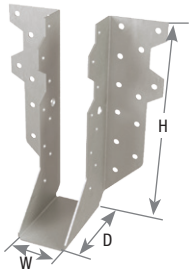
Typical THDH installation

Typical THD installation

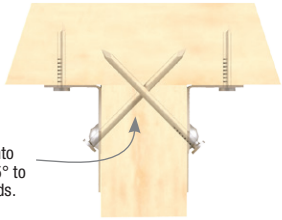
Some model designs may vary from illustration shown



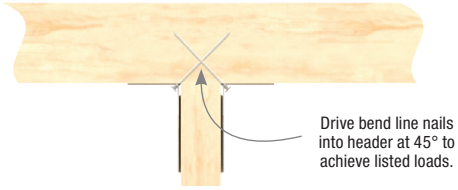
THDH26-2



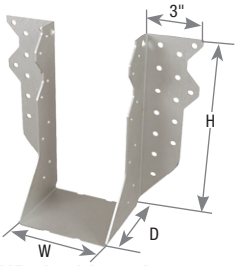
THD single



Typical THDH double shear installation



Typical THD bend line nail installation



THD double or larger

Specialty Options Chart
– refer to Specialty Options pages 220 and 222 for additional details.

Option	USP Series	Skewed[1,3,4]	Sloped Seat[2]	Sloped / Skewed[1,2,3,4]	Inverted Flange
Range	THD	1° to 45°	1° to 45°	See Sloped Seat and Skewed	Not available in widths less than 3". Widths greater can have one flange inverted.
	THDH				N/A
Factored Resistance	THD	85% of table load	65% of table load	65% of table load	100% of table load. 65% of table load when nailing into the support members end grain.
	THDH	85% of table load. 50% of table uplift load.	52% of table load	52% of table load. 50% of table uplift load.	N/A
Ordering	THD	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex. THDH410_SK45R_BV	Add SL, slope required, and up *(U)* or down *(D)*, to product number. Ex: THDH410_SL30D	See Sloped Seat and Skewed Ex. THDH410_SK45R_BV_SL30D	Add *1IF*, one flange, right *(R)* and left *(L)*, Ex. THD410_1IFR
	THDH				N/A

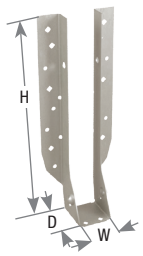
1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange. All skewed THDH hangers have nails on one side only.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) THDH models - Skewed hangers typically require a bevel cut. A square cut option may be available as a custom.
4) THD models - For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
New products or updated product information are designated in **blue font**.

I-Joist Charts Face Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP StockNo.	Ref. No.	Web Stiff Reqd.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	Min/ Max	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
1-1/2 x 9 -1/4 - 9-1/2	THF15925	LF159, MIU1.56/9	--	18	1-1/2	9-1/16	2	8	10d	2	10d x 1-1/2	Min	Lbs	2920	500	2395	410
													kN	12.99	2.22	10.65	1.82
								12	10d	2	10d x 1-1/2	Max	Lbs	3090	500	2530	410
													kN	13.75	2.22	11.25	1.82
1-1/2 x 11-1/4 - 11-7/8	THF15112	LF1511, MIU1.56/11	--	18	1-1/2	11-1/16	2	8	10d	2	10d x 1-1/2	Min	Lbs	2920	500	2395	410
													kN	12.99	2.22	10.65	1.82
								16	10d	2	10d x 1-1/2	Max	Lbs	3965	500	3245	410
													kN	17.64	2.22	14.43	1.82
1-1/2 x 14	THF15140	LF1514	--	18	1-1/2	13-1/2	2	12	10d	2	10d x 1-1/2	Min	Lbs	3655	500	2995	410
													kN	16.26	2.22	13.32	1.82
								20	10d	2	10d x 1-1/2	Max	Lbs	3875	500	3175	410
													kN	17.24	2.22	14.12	1.82
1-5/8 x 9-1/4 - 9-1/2	THF16925	--	--	18	1-5/8	9	2	8	10d	2	10d x 1-1/2	Min	Lbs	2920	500	2395	410
													kN	12.99	2.22	10.65	1.82
								12	10d	2	10d x 1-1/2	Max	Lbs	3090	500	2530	410
													kN	13.75	2.22	11.25	1.82
1-5/8 x 11-1/4 - 12	THF16112	--	--	18	1-5/8	11	2	8	10d	2	10d x 1-1/2	Min	Lbs	2920	500	2395	410
													kN	12.99	2.22	10.65	1.82
								16	10d	2	10d x 1-1/2	Max	Lbs	3965	500	3245	410
													kN	17.64	2.22	14.43	1.82
1-5/8 x 14	THF16140	--	--	18	1-5/8	13-7/16	2	12	10d	2	10d x 1-1/2	Min	Lbs	3655	500	2995	410
													kN	16.26	2.22	13.32	1.82
								20	10d	2	10d x 1-1/2	Max	Lbs	3875	500	3175	410
													kN	17.24	2.22	14.12	1.82
1-3/4 x 9-1/4 - 9-1/2	THF17925	IUS1.81/9.5, LF179	--	18	1-3/4	8-15/16	2	8	10d	2	10d x 1-1/2	Min	Lbs	2920	500	2395	410
													kN	12.99	2.22	10.65	1.82
								12	10d	2	10d x 1-1/2	Max	Lbs	3090	500	2530	410
													kN	13.75	2.22	11.25	1.82
1-3/4 x 11-7/8	THF17112	IUS1.81/11.88, LF1711	--	18	1-3/4	10-15/16	2	8	10d	2	10d x 1-1/2	Min	Lbs	2920	500	2395	410
													kN	12.99	2.22	10.65	1.82
								16	10d	2	10d x 1-1/2	Max	Lbs	3965	500	3245	410
													kN	17.64	2.22	14.43	1.82
1-3/4 x 14	THF17140	IUS1.81/14, LF1714	--	18	1-3/4	13-3/8	2	12	10d	2	10d x 1-1/2	Min	Lbs	3655	500	2995	410
													kN	16.26	2.22	13.32	1.82
								20	10d	2	10d x 1-1/2	Max	Lbs	3875	500	3175	410
													kN	17.24	2.22	14.12	1.82
1-3/4 x 16	THF17157	IUS1.81/16	--	18	1-13/16	15-3/4	3-1/2	24	10d	2	10d x 1-1/2	--	Lbs	5195	500	4255	410
													kN	23.11	2.22	18.93	1.82
2 - 2-1/8 x 9-1/2	THF20925	IUS2.06/9.5, LF209, LF219	--	18	2-1/8	8-7/8	2	8	10d	2	10d x 1-1/2	Min	Lbs	2920	500	2395	410
													kN	12.99	2.22	10.65	1.82
								12	10d	2	10d x 1-1/2	Max	Lbs	3090	500	2530	410
													kN	13.75	2.22	11.25	1.82
2 - 2-1/8 x 11-7/8	THF20112	IUS2.06/11.88, LF2011, LF2111	--	18	2-1/8	11-1/5	2	8	10d	2	10d x 1-1/2	Min	Lbs	2920	500	2395	410
													kN	12.99	2.22	10.65	1.82
								16	10d	2	10d x 1-1/2	Max	Lbs	3965	500	3245	410
													kN	17.64	2.22	14.43	1.82
2 - 2-1/8 x 14	THF20140	IUS2.06/14, LF2014, LF2114	--	18	2-1/8	13-1/4	2	12	10d	2	10d x 1-1/2	Min	Lbs	3655	500	2995	410
													kN	16.26	2.22	13.32	1.82
								20	10d	2	10d x 1-1/2	Max	Lbs	3875	500	3175	410
													kN	17.24	2.22	14.12	1.82
2 - 2-1/8 x 16	THF20157	IUS2.06/16	--	18	2-1/8	15-3/4	3-3/8	24	10d	2	10d x 1-1/2	--	Lbs	5195	500	4255	410
													kN	23.11	2.22	18.93	1.82

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font**.



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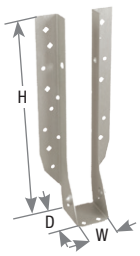
I-Joist Charts Face Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP StockNo.	Ref. No.	Web Stiff Reqd.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	Min/ Max	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
2-5/16 x 9-1/2	THF23925	LF239, IUS2.37/9.5, MIU2.37/9, U3510/14	--	18	2-5/16	9-3/16	2-1/2	12	10d	2	10d x 1-1/2	--	Lbs	3310	320	2600	260
													kN	14.72	1.42	11.57	1.16
2-5/16 x 11-7/8	THF23118	LF2311, IUS2.37/11.88, MIU2.37/11	--	18	2-5/16	11-3/16	2-1/2	14	10d	2	10d x 1-1/2	--	Lbs	3310	690	2600	565
													kN	14.72	3.07	11.57	2.51
2-5/16 x 14	THF23140	LF2314, IUS2.37/14, MIU2.37/14	--	16	2-5/16	13-1/2	2-1/2	18	10d	2	10d x 1-1/2	--	Lbs	4405	690	3460	565
													kN	19.59	3.07	15.39	2.51
2-5/16 x 16	THF23160	IUS2.37/16, MIU2.37/16	--	16	2-5/16	15-9/16	2-1/2	22	10d	2	10d x 1-1/2	--	Lbs	4405	690	3460	565
													kN	19.59	3.07	15.39	2.51
2-5/16 x 18 - 28	THF23180	MIU2.37/18, MIU2.37/20	x	16	2-5/16	17-1/8	2-1/2	24	10d	8	10d x 1-1/2	--	Lbs	5970	2335	4895	1915
													kN	26.56	10.39	21.77	8.52
2-1/2 x 9-1/4 - 9-1/2	THF25925	LF259, MIU2.56/9	--	18	2-1/2	9-1/8	2-1/2	12	10d	2	10d x 1-1/2	--	Lbs	3310	320	2600	260
													kN	14.72	1.42	11.57	1.16
2-1/2 x 9-1/2	THFI2595	IUS2.56/9.25, IUS2.56/9.5	--	18	2-5/8	9-1/2	2	8	10d	--	--	--	Lbs	2345	235	1845	185
													kN	10.43	1.05	8.21	0.82
2-1/2 x 11-1/4 - 11-7/8	THF25112	LF2511, MIU2.56/11	--	18	2-1/2	11-1/8	2-1/2	14	10d	2	10d x 1-1/2	--	Lbs	3310	690	2600	565
													kN	14.72	3.07	11.57	2.51
2-1/2 x 11-7/8	THFI25118	IUS2.56/11.88	--	18	2-5/8	11-7/8	2	10	10d	--	--	--	Lbs	2345	235	1845	185
													kN	10.43	1.05	8.21	0.82
2-1/2 x 13	THF25130	-- --	--	16	2-1/2	12-1/4	2-1/2	18	10d	2	10d x 1-1/2	--	Lbs	3310	690	2600	565
													kN	14.72	3.07	11.57	2.51
2-1/2 x 14	THFI2514	IUS2.56/14	--	18	2-5/8	14	2	12	10d	--	--	Min	Lbs	4605	235	3615	185
													kN	20.48	1.05	16.08	0.82
								14	10d	--	--	Max	Lbs	4605	235	3615	185
													kN	20.48	1.05	16.08	0.82
	THF25140	LF2514, MIU2.56/14	--	16	2-1/2	13-7/16	2-1/2	18	10d	2	10d x 1-1/2	--	Lbs	4405	690	3460	565
													kN	19.59	3.07	15.39	2.51
2-1/2 x 16	THF25160	IUS2.56/16, MIU2.56/16	--	16	2-1/2	15-1/2	2-1/2	22	10d	2	10d x 1-1/2	--	Lbs	4405	690	3460	565
													kN	19.59	3.07	15.39	2.51
2-1/2 x 18 - 24	THF25160	MIU2.56/18, MIU2.56/20	x	16	2-1/2	15-1/2	2-1/2	22	10d	2	10d x 1-1/2	--	Lbs	4405	690	3460	565
													kN	19.59	3.07	15.39	2.51
2-5/8 x 9-1/4 - 9-1/2	THF26925	--	--	18	2-5/8	9-1/16	2-1/2	12	10d	2	10d x 1-1/2	--	Lbs	3310	320	2600	260
													kN	14.72	3.07	15.39	2.51
2-5/8 x 11-1/4 - 11-7/8	THF26112	--	--	18	2-5/8	11-1/16	2-1/2	14	10d	2	10d x 1-1/2	--	Lbs	3310	690	2600	565
													kN	14.72	3.07	11.57	2.51
2-5/8 x 14	THF26140	--	--	16	2-5/8	13-3/8	2-1/2	18	10d	2	10d x 1-1/2	--	Lbs	4405	690	3460	565
													kN	19.59	3.07	15.39	2.51
2-5/8 x 16	THF26160	--	--	16	2-5/8	15-7/16	2-1/2	22	10d	2	10d x 1-1/2	--	Lbs	4405	690	3460	565
													kN	19.59	3.07	15.39	2.51
3 x 9-1/4 - 14	THF15925-2	MIU3.12/9	x	16	3-1/8	9-3/16	2-1/2	12	10d	6	10d	--	Lbs	4965	3185	4070	2610
													kN	22.09	14.17	18.10	11.61
3 x 11-1/4 - 14	THF15112-2	MIU3.12/11	x	16	3-1/8	10-13/16	2-1/2	14	10d	6	10d	--	Lbs	5195	3185	4255	2610
													kN	23.11	14.17	18.93	11.61
3 x 14 - 20	THF15140-2	--	x	12	3-1/8	12-3/4	2-1/2	18	10d	6	10d	--	Lbs	5195	3185	4255	2610
													kN	23.11	14.17	18.93	11.61

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font**.



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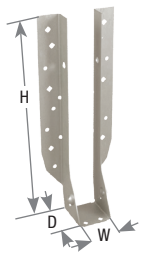
I-Joist Charts Face Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP StockNo.	Ref. No.	Web Stiff Reqd.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	Min/ Max	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
3-1/4 x 9-1/4 - 14	THF16925-2	--	x	16	3-3/8	9-1/16	2-1/2	12	10d	6	10d	--	Lbs	4965	3185	4070	2610
													kN	22.09	14.17	18.10	11.61
3-1/4 x 11-1/4 - 14	THF16112-2	--	x	16	3-3/8	10-3/4	2-1/2	14	10d	6	10d	--	Lbs	5195	3185	4255	2610
													kN	23.11	14.17	18.93	11.61
3-1/4 x 14	THF16140-2	--	x	12	3-3/8	12-5/8	2-1/2	18	10d	6	10d	--	Lbs	5195	3185	4255	2610
													kN	23.11	14.17	18.93	11.61
3-1/2 x 9-1/4 - 9-1/2	THF35925	LF359, IUS3.56/9.5	--	18	3-1/2	8-5/8	2-1/2	12	10d	2	10d x 1-1/2	--	Lbs	5075	445	4115	365
													kN	22.57	1.98	18.30	1.62
3-1/2 x 11-7/8 - 16	THF35112	LF3511, IUS3.56/11.88	--	18	3-1/2	11-1/8	2-1/2	16	10d	2	10d x 1-1/2	--	Lbs	5075	445	4115	365
													kN	22.57	1.98	18.30	1.62
3-1/2 x 14 - 20	THF35140	LF3514, IUS3.56/14	--	16	3-1/2	12-15/16	2-1/2	20	10d	2	10d x 1-1/2	--	Lbs	6680	445	5245	365
													kN	29.71	1.98	23.33	1.62
3-1/2 x 16 - 22	THF17157-2	--	x	12	3-5/8	15-3/4	2-1/2	22	10d	6	10d	--	Lbs	6735	3185	5290	2610
													kN	29.96	14.17	23.53	11.61
3-1/2 x 16 - 22	THF35157	IUS3.56/16	--	16	3-1/2	15	2-1/2	22	10d	2	10d x 1-1/2	--	Lbs	6680	445	5245	365
													kN	29.71	1.98	23.33	1.62
3-1/2 x 18 - 26	THF35165	--	x	16	3-1/2	16-9/16	2-1/2	24	10d	8	10d x 1-1/2	--	Lbs	6680	2335	5245	1915
													kN	29.71	10.39	23.33	8.52
4 - 4-3/16 x 9-1/2	THF20925-2	MIU4.12/9, MIU4.28/9	--	16	4-3/16	8-11/16	2-1/2	12	10d	6	10d	--	Lbs	5035	3185	4125	2610
													kN	22.40	14.17	18.35	11.61
4 - 4-3/16 x 11-1/4 - 11-7/8	THF20112-2	MIU4.12/11, MIU4.28/11	--	16	4-3/16	11	2-1/2	16	10d	6	10d	--	Lbs	5350	3185	4385	2610
													kN	23.80	14.17	19.51	11.61
4 - 4-3/16 x 14	THF20140-2	MIU4.12/14, MIU4.12/16, MIU4.28/14, MIU4.28/16	--	16	4-3/16	13-5/8	2-1/2	20	10d	6	10d	--	Lbs	6735	3185	5290	2610
													kN	29.96	14.17	23.53	11.61
4-1/2 - 4-5/8 x 9-1/4 - 14	THF23925-2	--	x	16	4-3/4	8-3/8	2-1/2	12	10d	6	10d	--	Lbs	5075	3185	4115	2610
													kN	22.57	14.17	18.30	11.61
4-1/2 - 4-5/8 x 11-1/4 - 16	THF23118-2	--	x	16	4-3/4	10-11/16	2-1/2	16	10d	6	10d	--	Lbs	6855	3185	5380	2610
													kN	30.49	14.17	23.93	11.61
4-5/8 x 14 - 22	THF23140-2	MIU4.75/14	x	12	4-3/4	13-5/16	2-1/2	20	10d	6	10d	--	Lbs	6680	3185	5245	2610
													kN	29.71	14.17	23.33	11.61
4-5/8 x 16 - 26	THF23160-2	MIU4.75/16, MIU4.75/18, MIU4.75/20	x	12	4-3/4	15-15/16	2-1/2	24	10d	6	10d	--	Lbs	6680	3185	5245	2610
													kN	29.71	14.17	23.33	11.61
5 x 9-1/4 - 11-7/8	THF25925-2	LF2-159, MIU5.12/9	x	16	5-1/8	8-3/16	2-1/2	12	10d	6	10d	--	Lbs	5075	3185	4115	2610
													kN	22.57	14.17	18.30	11.61
5 x 11-1/4 - 16	THF25112-2	LF2-1511, MIU5.12/11	x	16	5-1/8	10-7/16	2-1/2	16	10d	6	10d	--	Lbs	5075	3185	4115	2610
													kN	22.57	14.17	18.30	11.61
5 x 14 - 20	THF25140-2	MIU5.12/14	x	12	5-1/8	13-1/8	2-1/2	20	10d	6	10d	--	Lbs	6680	3185	5245	2610
													kN	29.71	14.17	23.33	11.61
5 x 16 - 26	THF25160-2	MIU5.12/16, MIU5.12/18, MIU5.12/20	x	12	5-1/8	15-3/4	2-1/2	24	10d	6	10d	--	Lbs	6680	3185	5245	2610
													kN	29.71	14.17	23.33	11.61
7 x 9-1/4 - 14	HD7100	HU410-2	x	14	7-1/8	9	2-1/2	12	16d	6	10d	--	Lbs	4920	2685	3865	2105
													kN	21.89	11.94	17.19	9.36
7 x 11-1/4 - 16	HD7120	HU412-2	x	14	7-1/8	10-5/8	2-1/2	16	16d	6	10d	--	Lbs	4675	2685	3670	2105
													kN	20.80	11.94	16.32	9.36
7 x 14 - 20	HD7140	HU414-2	x	14	7-1/8	13-1/8	2-1/2	20	16d	8	10d	--	Lbs	7485	2685	5875	2105
													kN	33.29	11.94	26.13	9.36

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font**.



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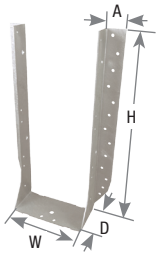
SCL Charts Face Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP StockNo.	Ref. No.	Web Stiff Reqd.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2,3] Header Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
1-3/4 x 7-1/4	HD1770	HU7	x	14	1-13/16	7-1/8	2	14	16d	4	10d x 1-1/2	Lbs	3820	1555	3000	1220
												kN	16.99	6.92	13.34	5.43
1-3/4 x 9-1/2	HD17925	HU9, MIU1.81/9	x	14	1-13/16	9-1/8	2	18	16d	6	10d x 1-1/2	Lbs	5710	2005	4485	1575
												kN	25.40	8.92	19.95	7.01
	HD17925IF	--	x	14	1-13/16	9-1/8	2	18	16d	6	10d x 1-1/2	Lbs	5710	2005	4485	1575
												kN	25.40	8.92	19.95	7.01
	HDQ179IF	HUCQ1.81/9-SDS	x	14	1-13/16	9	3	8	WS3	4	WS15	Lbs	4975	1765	4460	1765
												kN	22.13	7.85	19.84	7.85
	HUS179	HUS1.81/10	x	16	1-13/16	9-1/8	3	30	16d	10	16d	Lbs	9030	6035	7085	4735
												kN	40.17	26.85	31.52	21.06
1-3/4 x 11-1/4 - 11-7/8	HD17112	HU11, MIU1.81/11	x	14	1-13/16	11-3/8	2	22	16d	6	10d x 1-1/2	Lbs	5915	2185	4640	1715
												kN	26.31	9.72	20.64	7.63
	HD17112IF	--	x	14	1-13/16	11-3/8	2	22	16d	6	10d x 1-1/2	Lbs	5915	2185	4640	1715
												kN	26.31	9.72	20.64	7.63
	HDQ17112IF	HUCQ1.81/11-SDS	x	14	1-13/16	11	3	10	WS3	6	WS15	Lbs	5470	2975	4775	2595
												kN	24.33	13.23	21.24	11.54
	HUS179	HUS1.81/10	x	16	1-13/16	9-1/8	3	30	16d	10	16d	Lbs	9030	6035	7085	4735
												kN	40.17	26.85	31.52	21.06
1-3/4 x 14	HD1714	HU14, MIU1.81/14, MIU1.81/16, MIU1.81/18, U14	x	14	1-13/16	13-5/16	2	26	16d	8	10d x 1-1/2	Lbs	5925	3190	4655	2505
												kN	26.36	14.19	20.71	11.14
	HD1714IF	--	x	14	1-13/16	13-5/16	2	26	16d	8	10d x 1-1/2	Lbs	5925	3190	4655	2505
												kN	26.36	14.19	20.71	11.14
	HDQ1714IF	--	x	14	1-13/16	13-3/8	3	12	WS3	6	WS15	Lbs	6730	3175	6525	3080
												kN	29.94	14.12	29.02	13.70
	HUS179	HUS1.81/10	x	16	1-13/16	9-1/8	3	30	16d	10	16d	Lbs	9030	6035	7085	4735
												kN	40.17	26.85	31.52	21.06
1-3/4 x 16	HD1714	HU14, MIU1.81/14, MIU1.81/16, MIU1.81/18, U14	x	14	1-13/16	13-5/16	2	26	16d	8	10d x 1-1/2	Lbs	5925	3190	4655	2505
												kN	26.36	14.19	20.71	11.14
	HD1714IF	--	x	14	1-13/16	13-5/16	2	26	16d	8	10d x 1-1/2	Lbs	5925	3190	4655	2505
												kN	26.36	14.19	20.71	11.14
	HDQ1714IF	--	x	14	1-13/16	13-3/8	3	12	WS3	6	WS15	Lbs	6730	3175	6525	3080
												kN	29.94	14.12	29.02	13.70
	HUS179	HUS1.81/10	x	16	1-13/16	9-1/8	3	30	16d	10	16d	Lbs	9030	6035	7085	4735
												kN	40.17	26.85	31.52	21.06
2-11/16 x 9-1/4 - 14	HD27925	HU2.75/10	x	14	2-3/4	8-5/8	2	18	16d	6	10d x 1-1/2	Lbs	5710	2185	4485	1715
												kN	25.40	9.72	19.95	7.63
	THDH27925	--	x	12	2-3/4	9-1/8	4	46	16d	12	16d	Lbs	14760	8210	11585	7385
												kN	65.66	36.52	51.53	32.85
2-11/16 x 11-1/4 - 16	HD27112	HU2.75/12	x	14	2-3/4	10-7/8	2	22	16d	6	10d x 1-1/2	Lbs	5915	2185	4640	1715
												kN	26.31	9.72	20.64	7.63
	THDH27112	--	x	12	2-3/4	10-7/8	4	56	16d	14	16d	Lbs	16130	8210	12660	7385
												kN	71.75	36.52	56.31	32.85
2-11/16 x 14 - 16	HD2714	HU2.75/14	x	14	2-3/4	12-7/8	2	26	16d	8	10d x 1-1/2	Lbs	5925	3190	4655	2505
												kN	26.36	14.19	20.71	11.14
	THDH2714	--	x	12	2-3/4	12-1/4	4	66	16d	16	16d	Lbs	17570	10140	15585	9125
												kN	78.16	45.10	69.33	40.59
3-1/2 x 9-1/4 - 14	HD410	MIU3.56/9	x	14	3-9/16	8-13/16	2-1/2	18	16d	10	10d	Lbs	7485	4435	5875	3485
												kN	33.29	19.73	26.13	15.50
	HDQ410IF	HUCQ410-SDS	x	14	3-9/16	9	3	12	WS3	6	WS3	Lbs	8460	4970	7385	4335
												kN	37.63	22.11	32.85	19.28
	THD410	HHUS410	x	14	3-5/8	9-1/16	3	38	16d	20	10d	Lbs	11540	8375	9060	7260
												kN	51.33	37.25	40.30	32.29
	THDH410	HGUS410	x	12	3-9/16	9-1/8	4	46	16d	12	16d	Lbs	14760	8210	11585	7385
												kN	65.66	36.52	51.53	32.85

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) WS15 Wood Screws are 1/4" x 1-1/2", WS3 Wood Screws are 1/4" x 3" and are included with HDQ hangers.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font**.



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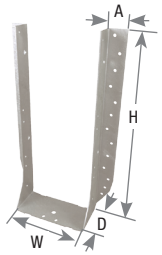
SCL Charts Face Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP StockNo.	Ref. No.	Web Stiff Reqd.	Ga.	Dimensions (in) W	H	D	Fastener Schedule[2,3] Header Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
3-1/2 x 11-1/4 - 16	HD412	MIU3.56/11	x	14	3-9/16	10-13/16	2-1/2	22	16d	10	10d	Lbs	8250	4435	6475	3485
												kN	36.70	19.73	28.80	15.50
	HDQ412IF	HUCQ412-SDS	x	14	3-9/16	11	3	14	WS3	6	WS3	Lbs	8135	5220	6545	4965
												kN	36.19	23.22	29.11	22.09
	THD412	--	x	14	3-5/8	11	3	48	16d	20	10d	Lbs	11540	8375	9060	7260
												kN	51.33	37.25	40.30	32.29
	THDH412	HGUS412	x	12	3-9/16	10-1/2	4	56	16d	14	16d	Lbs	16130	9845	12660	7730
												kN	71.75	43.79	56.31	34.38
3-1/2 x 14 - 20	HD414	MIU3.56/14	x	14	3-9/16	12-13/16	2-1/2	24	16d	10	10d	Lbs	8250	4290	6475	3365
												kN	36.70	19.08	28.80	14.97
	THD414	--	x	14	3-5/8	12-7/8	3	58	16d	20	10d	Lbs	11540	8375	9060	7260
												kN	51.33	37.25	40.30	32.29
	THDH414	HGUS414	x	12	3-9/16	12-1/4	4	66	16d	16	16d	Lbs	17570	11335	15585	8895
												kN	78.16	50.42	69.33	39.57
3-1/2 x 16 - 22	HD416	MIU3.56/16	x	14	3-9/16	14-13/16	2-1/2	26	16d	12	10d	Lbs	8190	4290	6430	3365
												kN	36.43	19.08	28.60	14.97
3-1/2 x 18 - 26	HD418	MIU3.56/18, MIU3.56/20	x	14	3-9/16	16-1/2	2-1/2	28	16d	8	10d	Lbs	8250	2685	6475	2105
												kN	36.70	11.94	28.80	9.36
5-1/4 x 9-1/4 - 11-7/8	HD5210	--	x	14	5-3/8	7-7/8	2-1/2	18	16d	10	10d	Lbs	7485	4435	5875	3485
												kN	33.29	19.73	26.13	15.50
	HDQ5210IF	HUCQ5.25/9-SDS	x	14	5-1/4	9	3	12	WS3	6	WS3	Lbs	8460	4970	7385	4335
												kN	37.63	22.11	32.85	19.28
	THD610	HHUS5.50/10	x	12	5-1/2	9	3	38	16d	20	10d	Lbs	12455	6425	9780	5045
												kN	55.40	28.58	43.50	22.44
	THDH610	HGUS5.25/10, HGUS5.50/10	x	12	5-1/2	9	4	46	16d	16	16d	Lbs	12645	10140	9925	9125
												kN	56.25	45.10	44.15	40.59
5-1/4 x 11-1/4 - 16	HD5212	--	x	14	5-3/8	9-7/8	2-1/2	22	16d	10	10d	Lbs	8250	4435	6475	3485
												kN	36.70	19.73	28.80	15.50
	HDQ5212IF	HUCQ5.25/11-SDS	x	14	5-1/4	11	3	14	WS3	6	WS3	Lbs	8135	5220	6545	4965
												kN	36.19	23.22	29.11	22.09
	THD612	--	x	12	5-1/2	11	3	48	16d	20	10d	Lbs	13785	9850	10825	7730
												kN	61.32	43.81	48.15	34.38
	THDH612	HGUS5.25/12, HGUS5.50/12	x	12	5-1/2	11	4	56	16d	20	16d	Lbs	15465	10140	15465	9125
												kN	68.79	45.10	68.79	40.59
5-1/4 x 14 - 20	HD5214	--	x	14	5-3/8	11-7/8	2-1/2	24	16d	10	10d	Lbs	8250	4290	6475	3365
												kN	36.70	19.08	28.80	14.97
	THD614	--	x	12	5-1/2	12-7/8	3	58	16d	20	10d	Lbs	13785	9850	10825	7730
												kN	61.32	43.81	48.15	34.38
	THDH614	HGUS5.50/14	x	12	5-1/2	13	4	66	16d	22	16d	Lbs	17570	11335	15585	8895
												kN	78.16	50.42	69.33	39.57
5-1/4 x 16 - 22	HD5216	--	x	14	5-3/8	13-7/8	2-1/2	30	16d	12	10d	Lbs	8190	4290	6430	3365
												kN	36.43	19.08	28.60	14.97
6-3/4 x 9-1/4 - 14	THDH6710	HGUS210-4, HGUS6.88/10	x	12	6-7/8	8-13/16	4	46	16d	12	16d	Lbs	12645	8210	9925	7385
												kN	56.25	36.52	44.15	32.85
6-3/4 x 11-1/4 - 18	THDH6712	HGUS212-4, HGUS6.88/12	x	12	6-7/8	10-13/16	4	56	16d	14	16d	Lbs	12645	9845	9925	7730
												kN	56.25	43.79	44.15	34.38
6-3/4 x 14 - 20	THDH6714	HGUS214-4, HGUS6.88/14	x	12	6-7/8	12-13/16	4	66	16d	16	16d	Lbs	17570	11335	15585	8895
												kN	78.16	50.42	69.33	39.57
7 x 9-1/4 - 14	HD7100	HU410-2	x	14	7-1/8	9	2-1/2	12	16d	6	10d	Lbs	4920	2685	3865	2105
												kN	21.89	11.94	17.19	9.36
	THD7210	HHUS7.25/10	x	12	7-1/4	9	3	38	16d	20	10d	Lbs	12455	6425	9780	5045
												kN	55.40	28.58	43.50	22.44
	THDH7210	HGUS7.25/10	x	12	7-1/4	9	4	46	16d	12	16d	Lbs	12645	8210	9925	7385
												kN	56.25	36.52	44.15	32.85
7 x 11-1/4 - 16	HD7120	HU412-2	x	14	7-1/8	10-5/8	2-1/2	16	16d	6	10d	Lbs	4675	2685	3670	2105
												kN	20.80	11.94	16.32	9.36
	THDH7212	HGUS7.25/12	x	12	7-1/4	10-1/2	4	56	16d	14	16d	Lbs	12645	9845	9925	7730
												kN	56.25	43.79	44.15	34.38
7 x 14 - 20	HD7140	HU414-2	x	14	7-1/8	13-1/8	2-1/2	20	16d	8	10d	Lbs	7485	2685	5875	2105
												kN	33.29	11.94	26.13	9.36
	THDH7214	HGUS7.25/14	x	12	7-1/4	12-1/4	4	66	16d	16	16d	Lbs	17570	11335	15585	8895
												kN	78.16	50.42	69.33	39.57
7 x 16 - 22	HD7160	--	x	14	7-1/8	15-5/8	2-1/2	24	16d	8	10d	Lbs	8250	2685	6475	2105
												kN	36.70	11.94	28.80	9.36
7 x 18 - 26	HD7180	--	x	14	7-1/8	17-3/4	2-1/2	28	16d	8	10d	Lbs	8250	2685	6475	2105
												kN	36.70	11.94	28.80	9.36

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) WS15 Wood Screws are 1/4" x 1-1/2", WS3 Wood Screws are 1/4" x 3" and are included with HDQ hangers.
3) **NAILS:** 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font**.



TFI / TFL / THO Top Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

TFI / THO – Engineered for I-Joist to header applications. Offers full lateral support of the I-Joist top chord, eliminating the need for web stiffeners in most applications. Raised dimple nailing guides help assure correct 45° nailing into the I-Joist bottom flange. The THO's feature the Seat Cleat® that allows for quick, positive seating. The Seat Cleat® will hold the I-Joist in place, eliminating spring back during nailing in the bottom flange.

TFL – Features 1-1/2" top flange depth that accommodates all header types as well as back-to-back installations. Also features USP's Seat Cleat® for quick, positive seating.

Materials: See EWP Top Mount Hangers charts, pages 141-150.

Finish: G90 galvanizing

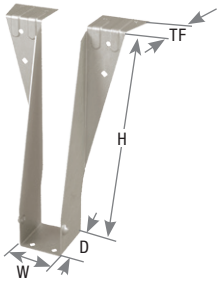
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

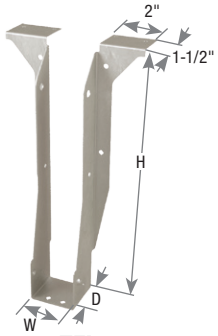
- Use all specified fasteners. See Product Notes, page 15.
- Refer to the top mount chart for applications requiring web stiffeners.
- Requirements for web stiffener from the I-Joist manufacturer should be followed, even if web stiffeners are not required in USP literature.

Typical THO installation

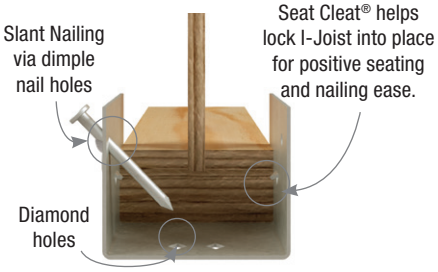
Typical TFL installation

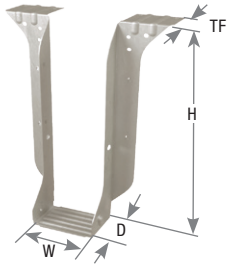


THO



TFL





TFI

Nailer Options
– chart represents maximum factored resistance for hangers used on wood nailers. Reference page 127.

USP Series	Nailer Size	Fastener Schedule				DF Factored Resistance[2]				S-P-F Factored Resistance[2]			
		Header		Joist		Lbs		kN		Lbs		kN	
		Qty	Type	Qty	Type	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%
TFL	2X	6	10d x 1-1/2	2	10d x 1-1/2	1830	265	8.14	1.18	1575	230	7.01	1.02
	3X	6	16d x 2-1/2	2	10d x 1-1/2	2305	265	10.25	1.18	1980	230	8.81	1.02
	(2) 2X	6	10d	2	10d x 1-1/2	1845	265	8.21	1.18	1585	230	7.05	1.02
	4X	6	16d	2	10d x 1-1/2	2535	265	11.28	1.18	2180	230	9.70	1.02
THO (single joist)	2X	6	10d x 1-1/2	2	10d x 1-1/2	1960	375	8.72	1.67	1685	325	7.50	1.45
	3X	6	16d x 2-1/2	2	10d x 1-1/2	2115	375	9.41	1.67	1820	325	8.10	1.45
	(2) 2X	6	10d	2	10d x 1-1/2	1965	375	8.74	1.67	1690	325	7.52	1.45
	4X	6	16d	2	10d x 1-1/2	2210	375	9.83	1.67	1900	325	8.45	1.45
THO (double joist)	2X	6	10d x 1-1/2	6	10d	2095	375	9.32	1.67	1800	325	8.01	1.45
	3X	6	16d x 2-1/2	6	10d	3360	520	14.95	2.31	2890	445	12.86	1.98
	(2) 2X	10	10d	6	10d	3415	520	15.19	2.31	2935	445	13.06	1.98
	4X	10	16d	6	10d	3840	520	17.08	2.31	3300	445	14.68	1.98
TFI	4X	6	16d	2	10d x 1-1/2	3685	375	16.39	1.67	3170	325	14.10	1.45
	4X	10	16d	2	10d x 1-1/2	4675	375	20.80	1.67	4020	325	17.88	1.45

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Listed loads shall not be increased.
3) The nailer must be sized to fit the supported width and be of sufficient thickness to satisfy specified top flange nailing requirements. A design professional must specify nailer attachment to steel beams.
4) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.

BPH / HBPH Top Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

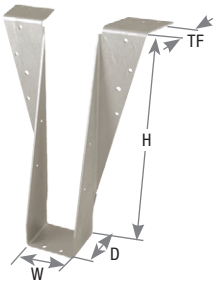
These hangers are used to support LVL, LSL, and PSL beams and headers in medium-to-heavy load conditions.

Materials: BPH – 12 gauge; HBPH – 10 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

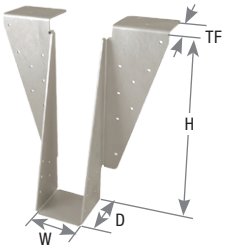
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Refer to the top mount chart for applications requiring web stiffeners.
- Requirements for web stiffener from the I-Joist manufacturer should be followed, even if web stiffeners are not required in USP literature.
- For welded installations, see page 224.

Typical BPH installation

Typical HBPH installation



BPH



HBPH

Nailer Options
– chart represents maximum factored resistance for hangers used on wood nailers. Reference page 127.

USP Series	Nailer Size[3]	Fastener Schedule[4] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance[2] Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance[2] Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%
BPH	2X	6	10d x 1-1/2	4	10d x 1-1/2	2995	240	13.32	1.07	2575	205	11.45	0.91
	3X	8	16d x 2-1/2	4	10d x 1-1/2	3400	555	15.12	2.47	2925	475	13.01	2.11
	(2) 2X	8	10d	4	10d x 1-1/2	3325	555	14.79	2.47	2860	475	12.72	2.11
	4X	8	16d	4	10d x 1-1/2	3235	555	14.39	2.47	2780	475	12.37	2.11
HBPH	2X	6	10d x 1-1/2	4	10d x 1-1/2	2995	240	13.32	1.07	2575	205	11.45	0.91
	3X	8	16d x 2-1/2	4	10d x 1-1/2	3400	555	15.12	2.47	2925	475	13.01	2.11
	(2) 2X	8	10d	4	10d x 1-1/2	3325	555	14.79	2.47	2860	475	12.72	2.11
	4X	8	16d	4	10d x 1-1/2	3235	555	14.39	2.47	2780	475	12.37	2.11

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Listed loads shall not be increased.
3) The nailer must be sized to fit the supported width and be of sufficient thickness to satisfy specified top flange nailing requirements. A design professional must specify nailer attachment to steel beams.
4) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long, 16d x 2-1/2 nails are 0.162" dia. x 2-1/2" long.
New products or updated product information are designated in **blue font**.

Specialty Options Chart – refer to Specialty Options pages 220 and 222 for additional details

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Sloped Top Flange[4]
Range	1˚ to 50˚	1˚ to 45˚	See Sloped Seat and Skewed	0˚ to 45˚
Factored Resistance	100% of table load	100% of table load	100% of table load	Reduce allowable table loads using straight-line interpolation
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Example: BPH3595_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Example: BPH3595_SL30D	See Sloped Seat and Skewed. Example: BPH3595_SK45R_SQ_SL30D	Add *SF*, angle required and right *(R)* or left *(L)*, to product number. Example: BPH3595_SF30L

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
4) Sloped top flanges with slopes greater than 15° may have additional header nails.
New products or updated product information are designated in **blue font**.

HLBH Beam Hangers

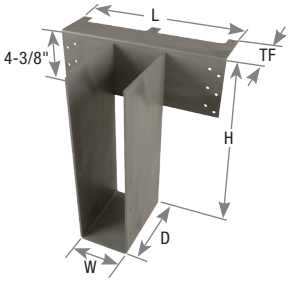
USP STRUCTURAL CONNECTORS MiTek

Heavy-duty hanger for LVL, LSL, and PSL beams.

Materials: 7 gauge
Finish: USP primer
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- For welded installations, see page 224.
- NA16D-RS ring shank nails are supplied with HLBH hangers.

Typical HLBH installation



HLBH

Nailer Options

– chart represents maximum factored resistance for hangers used on wood nailers. Reference page 127.

USP Series	Nailer Size	Fastener Schedule[3]				DF Factored Resistance[2]				S-P-F Factored Resistance[2]			
		Header		Joist		Lbs		kN		Lbs		kN	
		Qty	Type	Qty	Type	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%
HLBH	4X	**11**	NA16D-RS	6	10d x 1-1/2	13825	**1430**	61.50	**6.36**	**12840**	1235	**57.12**	5.49
		11	NA16D-RS	6	16d	13825	**1770**	61.50	**7.87**	**12840**	1430	**57.12**	6.36

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Listed loads shall not be increased.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, NA16D-RS nails are 0.148 dia, x 3-1/2" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Specialty Options Chart

– refer to Specialty Options pages 220, 222-223 for additional details

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Sloped Top Flange[4]	Top Flange Offset	Saddle[5]	Ridge
Range	1° to 50°	1° to 45°	See Sloped Seat and Skewed	0° to 45°	-- --	-- --	0° to 45°
Factored Resistance	11620 lbs. Max. 50% of uplift load on skew greater than 15°.	10080 lbs. Max.	9575 lbs. Max. 50% of uplift load on skew greater than 15°.	Reduce table loads using straight-line interpolation	45% of table load	100% of table load per side. **See footnote 5.**	100% of table load
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex. HLBH3595_SK45R_BV	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. HLBH3595_SL30D	See Sloped Seat and Skewed. Ex. HLBH3595_SK45R_BV_SL30D	Add *SF*, angle required, and right *(R)* or left *(L)*, to product number. Ex. HLBH3595_SF30L	Add O*S*, and right *(R)* or left *(L)*, to product number. Ex. HLBH3595_OSL	Add SA,and saddle width required to product number. Ex. HLBH3595_SA=5-1/2"	Add *DA*, and angle required to product number. Ex. HLBH3595_DA30

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) Skewed hangers typically require a bevel cut however, a square cut option may be available as a custom when requested.
4) Sloped top flanges with slopes greater than 15° may have additional header nails.
5) Minimum header thickness shall be double the top flange (TF) dimension for 100% table load.
New products or updated product information are designated in **blue font**.

PHM / PHXU Top Flange Hangers

Used to connect LVL, LSL, and PSL beams to headers in medium load conditions using standard nails.

Materials: See EWP Top Mount Hangers charts, pages 134-141.

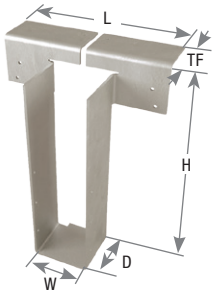
Finish: USP primer; PHXU – G90 galvanizing.

Codes: Load values are derived from data submitted to various North American building code evaluators.

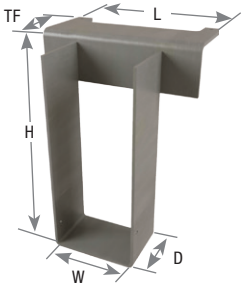
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- For welded installations, see page 224.

Typical PHXU installation



PHXU



PHM

Nailer Options

– chart represents maximum factored resistance for hangers used on wood nailers. Reference page 127.

USP Series	Nailer Size	Fastener Schedule[3] Header Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance[2] Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance[2] Vertical 100%	S-P-F Uplift[1] 115%
PHM	2X	2	10d x 1-1/2	2	10d x 1-1/2	Lbs	4335	-- --	3730	-- --
						kN	19.28	-- --	16.59	-- --
	3X	2	16d x 2-1/2	2	10d x 1-1/2	Lbs	5140	-- --	4420	-- --
						kN	22.86	-- --	19.66	-- --
	(2) 2X	2	10d	2	10d x 1-1/2	Lbs	4790	-- --	4120	-- --
						kN	21.31	-- --	18.33	-- --
	4X	2	16d	2	10d x 1-1/2	Lbs	4685	-- --	4030	-- --
						kN	20.84	-- --	17.93	-- --
PHXU 1-3/4" widths	4X	8	16d	6	10d x 1-1/2	Lbs	6370	**1210**	**4420**	920
						kN	28.34	**5.38**	**19.66**	4.09
PHXU width > 1-3/4"	4X	8	16d	6	10d x 1-1/2	Lbs	7610	1005	**5170**	865
						kN	33.85	4.47	**23.00**	3.85
	4X	8	16d	6	10d	Lbs	7610	**1290**	**5170**	1150
						kN	33.85	**5.74**	**23.00**	5.12

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Listed loads shall not be increased.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Specialty Options Chart

– refer to Specialty Options pages 220, 222-223 for additional details

Option	USP Series	Skewed[1,3,5]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Sloped Top Flange[4]	Top Flange Offset[5,7]	Saddle[5,6]	Ridge
Range	PHM	1° to 84°	1° to 45°	See Sloped Seat and Skewed	0° to 35°	--	--	0° to 45°
	PHXU	1° to 60°						N/A
Factored Resistance	PHM	100% of table load	100% of table load	100% of table load up to Max. load of 3600 lbs.	Reduce table load using straight-line interpolation	Hanger Width / % of table load: 3-1/2" or less 60%; 3-9/16" to 5-1/2" 75%; 5-9/16" to 7-1/2" 85%	100% of table load. **See footnote 6.**	100% of table load
	PHXU			100% of table load up to Max. load of 5615 lbs.				
Ordering	PHM	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex: PHXU1795_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex: PHXU1795_SL30D	See Sloped Seat and Skewed. Ex: PHXU1795_SK45R_SQ_SL30D	Add *SF*, angle required, and right *(R)* or left *(L)*, to product number. Ex: PHXU1795_SF30L	Add *OS*, and right *(R)* or left *(L)*, to product number. Ex: PHXU1795_OSL	Add SA, and saddle width required to product number. Ex: PHXU1795_SA=5-1/2"	Add *DA*, and angle required to product number. Ex. PHXU1795_DA30
	PHXU							N/A

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped/skewed hangers with slopes greater than 15° may have additional joist nails.
3) For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.
4) Sloped top flanges with slopes greater than 15° may have additional header nails.
5) Skewed, top flange offset, or saddle options will have a solid, welded top flange.
6) Minimum header thickness shall be double the top flange (TF) dimension for 100% table load.
7) PHXU offset option - hanger will be welded with a closed top angle, not formed.
New products or updated product information are designated in **blue font**.

Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
1-1/2 x 9-1/4	TH015925	LT15925	--	18	1-9/16	9-1/4	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	1935	1860	1920	1250	1445	1595	420
														kN	8.61	8.27	8.54	5.56	6.43	7.09	1.87
	BPH15925	LBV1.56/9.25	x	12	1-9/16	9-1/4	2-3/8	--	1-1/2	10	16d	4	10d x 1-1/2	Lbs	4415	4415	4415	3965	--	5050	1140
														kN	19.64	19.64	19.64	17.64	--	22.46	5.07
1-1/2 x 9-1/2	TH015950	LT159	--	18	1-1/2	9-1/2	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	1935	1860	1920	1360	1815	1730	490
														kN	8.61	8.27	8.54	6.05	8.07	7.70	2.18
	BPH1595	LBV1.56/9.5, MIT29.5	x	12	1-9/16	9-1/2	2-3/8	--	1-1/2	10	16d	4	10d x 1-1/2	Lbs	4415	4415	4415	3965	--	5050	1140
														kN	19.64	19.64	19.64	17.64	--	22.46	5.07
1-1/2 x 11-1/4	BPH15112	LBV1.56/11.25	x	12	1-9/16	11-1/4	2-3/8	--	1-1/2	10	16d	4	10d x 1-1/2	Lbs	4415	4415	4415	3965	--	5050	1140
														kN	19.64	19.64	19.64	17.64	--	22.46	5.07
1-1/2 x 11-7/8	TH015118	LT151188, MIT211.88	--	18	1-1/2	11-7/8	2	--	1-9/16	6	10d	2	10d x 1-1/2	Lbs	1935	1860	1920	1505	1880	1915	490
														kN	8.61	8.27	8.54	6.69	8.36	8.52	2.18
	BPH15118	LBV1.56/11.88	x	12	1-9/16	11-7/8	2-3/8	--	1-1/2	10	16d	4	10d x 1-1/2	Lbs	4415	4415	4415	3965	--	5050	1140
														kN	19.64	19.64	19.64	17.64	--	22.46	5.07
1-1/2 x 14	TH015140	-- --	--	16	1-9/16	14	2-3/8	--	1-1/2	10	10d	2	10d x 1-1/2	Lbs	1485	1485	1485	1285	1485	1635	420
														kN	6.61	6.61	6.61	5.72	6.61	7.27	1.87
	BPH1514	LBV1.56/14	x	12	1-9/16	14	2-3/8	--	1-1/2	10	16d	4	10d x 1-1/2	Lbs	4415	4415	4415	3965	--	5050	1140
														kN	19.64	19.64	19.64	17.64	--	22.46	5.07
1-5/8 x 9-1/2	TH016950	-- --	--	18	1-11/16	9-1/2	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	1935	1860	1920	1250	1445	1595	420
														kN	8.61	8.27	8.54	5.56	6.43	7.09	1.87
1-5/8 x 11-1/4	TH016112	-- --	--	16	1-11/16	11-1/4	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1285	1795	1635	420
														kN	10.54	10.25	10.90	5.72	7.98	7.27	1.87
1-5/8 x 11-7/8	TH016118	-- --	--	16	1-11/16	11-7/8	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1285	1795	1635	420
														kN	10.54	10.25	10.90	5.72	7.98	7.27	1.87
1-5/8 x 14	TH016140	-- --	--	16	1-11/16	14	3	--	1-3/4	10	10d	2	10d x 1-1/2	Lbs	1485	1485	1485	1285	1795	1635	420
														kN	6.61	6.61	6.61	5.72	7.98	7.27	1.87
1-3/4 x 7-1/4	PHXU17725	LBV1.81/7.25, WP1.81/7.25	x	7	1-13/16	7-1/4	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	6370	6370	6370	6075	--	7740	1890
														kN	28.34	28.34	28.34	27.02	--	34.43	8.41
1-3/4 x 9-1/4	BPH17925	LBV1.81/9.25	x	12	1-13/16	9-1/4	2-3/8	--	1-11/16	10	16d	4	10d x 1-1/2	Lbs	4890	4890	4890	4160	--	5300	1140
														kN	21.75	21.75	21.75	18.50	--	23.58	5.07
	PHM17925	WP9.25	x	7/10	1-13/16	9-1/4	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5090	4795	4435	4450	--	5670	--
														kN	22.64	21.33	19.73	19.79	--	25.22	--
	PHXU17925	WPU1.81/9.25	x	7	1-13/16	9-1/4	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	6370	6370	6370	6075	--	7740	1890
														kN	28.34	28.34	28.34	27.02	--	34.43	8.41
1-3/4 x 9-1/2	TH017950	LT179, ITS1.81/9.5	--	18	1-3/4	9-1/2	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	1935	1860	1920	1585	1570	2020	490
														kN	8.61	8.27	8.54	7.05	6.98	8.99	2.18
	BPH1795	LBV1.81/9.5, MIT9.5	x	12	1-13/16	9-1/2	2-3/8	--	1-11/16	10	16d	4	10d x 1-1/2	Lbs	4890	4890	4890	4160	--	5300	1140
														kN	21.75	21.75	21.75	18.50	--	23.58	5.07
	PHM1795	WP9	x	7/10	1-13/16	9-1/2	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5090	4795	4435	4450	--	5670	--
														kN	22.64	21.33	19.73	19.79	--	25.22	--
	PHXU1795	-- --	x	7	1-13/16	9-1/2	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	6370	6370	6370	6075	--	7740	1890
														kN	28.34	28.34	28.34	27.02	--	34.43	8.41
1-3/4 x 11-1/4	BPH17112	LBV1.81/11.25	x	12	1-13/16	11-1/4	2-3/8	--	1-11/16	10	16d	4	10d x 1-1/2	Lbs	4890	4890	4890	4160	--	5300	1140
														kN	21.75	21.75	21.75	18.50	--	23.58	5.07
	PHM17112	-- --	x	7/10	1-13/16	11-1/4	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5090	4795	4435	4450	--	5670	--
														kN	22.64	21.33	19.73	19.79	--	25.22	--
	PHXU17112	WPU1.81/11.25	x	7	1-13/16	11-1/4	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	6370	6370	6370	6075	--	7740	1890
														kN	28.34	28.34	28.34	27.02	--	34.43	8.41

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
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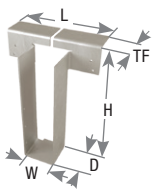

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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
1-3/4 x 11-7/8	TH017118	LT171188, ITS1.81/11.88, MIT11.88	--	18	1-3/4	11-7/8	2	--	1-9/16	6	10d	2	10d x 1-1/2	Lbs	1935	1860	1920	1665	1735	2125	490
														kN	8.61	8.27	8.54	7.41	7.72	9.45	2.18
	BPH17118	BA1.81/11.88, LBV1.81/11.88	x	12	1-13/16	11-7/8	2-3/8	--	1-11/16	10	16d	4	10d x 1-1/2	Lbs	4890	4890	4890	4160	--	5300	1140
														kN	21.75	21.75	21.75	18.50	--	23.58	5.07
	PHM17118	WP11	x	7/10	1-13/16	11-7/8	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5090	4795	4435	4450	--	5670	--
														kN	22.64	21.33	19.73	19.79	--	25.22	--
	PHXU17118	WPU1.81/11.88	x	7	1-13/16	11-7/8	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	6370	6370	6370	6075	--	7740	1890
														kN	28.34	28.34	28.34	27.02	--	34.43	8.41
1-3/4 x 14	TFL1714	LT1714, ITS1.81/14	--	18	1-3/4	14	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
	BPH1714	LBV1.81/14, MIT1.81/14	x	12	1-13/16	14	2-3/8	--	1-11/16	10	16d	4	10d x 1-1/2	Lbs	4890	4890	4890	4160	--	5300	1140
														kN	21.75	21.75	21.75	18.50	--	23.58	5.07
	PHM1714	WP14	x	7/10	1-13/16	14	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5090	4795	4435	4450	--	5670	--
														kN	22.64	21.33	19.73	19.79	--	25.22	--
	PHXU1714	WPU1.81/14	x	7	1-13/16	14	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	6370	6370	6370	6075	--	7740	1890
														kN	28.34	28.34	28.34	27.02	--	34.43	8.41
1-3/4 x 16	TFL1716	LT1716, ITS1.81/16	--	18	1-3/4	16	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
	BPH1716	B1.81/16, LBV1.81/16, MIT1.81/16	x	12	1-13/16	16	2-3/8	--	1-11/16	10	16d	4	10d x 1-1/2	Lbs	4890	4890	4890	4160	--	5300	1140
														kN	21.75	21.75	21.75	18.50	--	23.58	5.07
	PHM1716	WP16	x	7/10	1-13/16	16	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5090	4795	4435	4450	--	5670	--
														kN	22.64	21.33	19.73	19.79	--	25.22	--
2 - 2-1/8 x 9-1/2	TFL2095	LT209, ITS2.06/9.5	--	18	2-1/8	9-1/2	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
2 - 2-1/8 x 11-7/8	TFL20118	LT2011.88, ITS2.06/11.88	--	18	2-1/8	11-7/8	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
2 - 2-1/8 x 14	TFL2014	LT214, ITS2.06/14	--	18	2-1/8	14	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
2 - 2-1/8 x 16	TFL2016	LT2016	--	18	2-1/8	16	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
2-1/4 - 2-5/16 x 9-1/2	TFL2395	LT239, ITS2.37/9.5	--	18	2-5/16	9-1/2	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
2-1/4 - 2-5/16 x 11-7/8	TFL23118	LT231188, ITS2.37/11.88	--	18	2-5/16	11-7/8	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
2-1/4 - 2-5/16 x 14	TFL2314	LT2314, ITS2.37/14	--	18	2-5/16	14	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	1960	1795	2495	265
														kN	10.54	10.25	10.90	8.72	7.98	11.10	1.18
	TH023140	LBV2.37/14	--	18	2-3/8	14	2-3/8	--	2	12	10d	2	10d x 1-1/2	Lbs	3910	3910	3910	3385	2950	4310	485
														kN	17.39	17.39	17.39	15.06	13.12	19.17	2.16
	TFI3514	MIT3514	--	16	2-3/8	14	2-1/2	--	2-1/16	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	3290	--	4190	505
														kN	16.39	14.32	14.50	14.63	--	18.64	2.25
	PHM2314	WP3514	x	7/10	2-3/8	14	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5140	5140	4435	4450	--	5670	--
														kN	22.86	22.86	19.73	19.79	--	25.22	--

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
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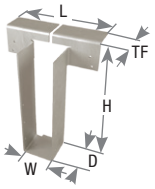

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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
2-1/4 - 2-5/16 x 16	TFL2316	-- --	--	18	2-5/16	16	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
	TFI3516	MIT3516	--	16	2-3/8	16	2-1/2	--	2-1/16	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	**3290**	--	4190	**505**
														kN	16.39	14.32	14.50	**14.63**	--	18.64	**2.25**
	PHM2316	WP3516	x	7/10	2-3/8	16	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5140	5140	4435	**4450**	--	**5670**	--
														kN	22.86	22.86	19.73	**19.79**	--	**25.22**	--
2-1/4 - 2-5/16 x 18	TFI3518	HIT3518, LBV2.37/18, MIT3518	--	16	2-3/8	18	2-1/2	--	2-1/16	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	**3290**	--	4190	**505**
														kN	16.39	14.32	14.50	**14.63**	--	18.64	**2.25**
	PHM2318	WP3518	x	7/10	2-3/8	18	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5140	5140	4435	**4450**	--	**5670**	--
														kN	22.86	22.86	19.73	**19.79**	--	**25.22**	--
2-1/4 - 2-5/16 x 20	TFI3520	HIT3520, LBV2.37/20, MIT3520	--	16	2-3/8	20	2-1/2	--	2-1/16	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	**3290**	--	4190	**505**
														kN	16.39	14.32	14.50	**14.63**	--	18.64	**2.25**
	PHM2320	WP3520	x	7/10	2-3/8	20	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5140	5140	4435	**4450**	--	**5670**	--
														kN	22.86	22.86	19.73	**19.79**	--	**25.22**	--
2-1/2 x 9-1/4	TFL25925	LT25925	--	18	2-1/2	9-1/4	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
2-1/2 x 9-3/8	TFL25938	LT259375	--	18	2-1/2	9-3/8	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
2-1/2 x 9-1/2	TFL2595	LT259, ITS2.56/9.5	--	18	2-1/2	9-1/2	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
2-1/2 x 11-1/4	TFL25112	LT251125	--	18	2-1/2	11-1/4	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
2-1/2 x 11-7/8	TFL25118	LT251188, ITS2.56/11.88	--	18	2-1/2	11-7/8	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
	THO25118	MIT311.88	--	16	2-9/16	11-7/8	2-3/8	--	1-15/16	10	10d	2	10d x 1-1/2	Lbs	2640	2640	2640	**2285**	2640	**2910**	**485**
														kN	11.74	11.74	11.74	**10.16**	11.74	**12.94**	**2.16**
2-1/2 x 13	TFL2513	LT2513	--	18	2-1/2	13	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
2-1/2 x 14	TFL2514	LT2514, ITS2.56/14	--	18	2-1/2	14	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
	THO25140	-- --	--	18	2-9/16	14	2-3/8	--	2	12	10d	2	10d x 1-1/2	Lbs	3910	3910	3910	**3385**	2950	**4310**	**485**
														kN	17.39	17.39	17.39	**15.06**	13.12	**19.17**	**2.16**
	TFI314	MIT314	--	16	2-9/16	14	2-1/2	--	2	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	**3290**	--	4190	**505**
														kN	16.39	14.32	14.50	**14.63**	--	18.64	**2.25**
	PHM2514	WPI314	--	7/10	2-9/16	14	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5140	5140	4435	**4450**	--	**5670**	--
														kN	22.86	22.86	19.73	**19.79**	--	**25.22**	--
2-1/2 x 16	TFL2516	LT2516	--	18	2-1/2	16	2	--	1-1/2	6	10d	2	10d x 1-1/2	Lbs	2370	2305	2450	**1960**	1795	**2495**	265
														kN	10.54	10.25	10.90	**8.72**	7.98	**11.10**	1.18
	TFI316	LBV2.56/16, MIT316	--	16	2-9/16	16	2-1/2	--	2	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	**3290**	--	4190	**505**
														kN	16.39	14.32	14.50	**14.63**	--	18.64	**2.25**
	PHM2516	WPI316	--	7/10	2-9/16	16	2-1/2	7	3	2	16d	2	10d x 1-1/2	Lbs	5140	5140	4435	**4450**	--	**5670**	--
														kN	22.86	22.86	19.73	**19.79**	--	**25.22**	--
2-1/2 x 18	TFI318	HIT318, LBV2.56/18, MIT318	--	16	2-9/16	18	2-1/2	--	2	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	**3290**	--	4190	**505**
														kN	16.39	14.32	14.50	**14.63**	--	18.64	**2.25**
2-1/2 x 20	TFI320	HIT320, LBV2.56/20, MIT320	--	16	2-9/16	20	2-1/2	--	2	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	**3290**	--	4190	**505**
														kN	16.39	14.32	14.50	**14.63**	--	18.64	**2.25**
2-1/2 x 22	TFI322	HIT322, LBV2.56/22, WPI322	--	16	2-9/16	22	2-1/2	--	2	10	16d	2	10d x 1-1/2	Lbs	4675	4205	4250	**4175**	--	5315	**505**
														kN	20.80	18.70	18.90	**18.57**	--	23.64	**2.25**

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
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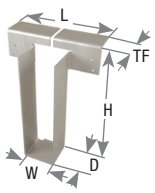

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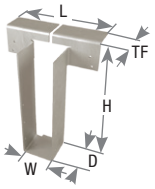
Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
2-1/2 x 24	TFI324	HIT324, LBV2.56/24, WPI324	--	16	2-9/16	24	2-1/2	--	2	10	16d	2	10d x 1-1/2	Lbs	4675	4205	4250	4175	--	5315	505
														kN	20.80	18.70	18.90	18.57	--	23.64	2.25
2-1/2 x 26	TFI326	HIT326, LBV2.56/26, WPI326	--	16	2-9/16	26	2-1/2	--	2	10	16d	2	10d x 1-1/2	Lbs	4675	4205	4250	4175	--	5315	505
														kN	20.80	18.70	18.90	18.57	--	23.64	2.25
2-5/8 x 9-1/2	THO26950	-- --	--	18	2-11/16	9-1/2	2-3/8	--	2	10	10d	2	10d x 1-1/2	Lbs	2340	2340	2340	2025	2950	2580	485
														kN	10.41	10.41	10.41	9.01	13.12	11.48	2.16
2-5/8 x 11-7/8	THO26118	-- --	--	16	2-11/16	11-7/8	2-3/8	--	2	10	10d	2	10d x 1-1/2	Lbs	2535	2535	2535	2285	2640	2910	485
														kN	11.28	11.28	11.28	10.16	11.74	12.94	2.16
2-5/8 x 14	THO26140	-- --	--	18	2-11/16	14	2-3/8	--	2	12	10d	2	10d x 1-1/2	Lbs	3910	3910	3910	3385	2950	4310	485
														kN	17.39	17.39	17.39	15.06	13.12	19.17	2.16
2-5/8 x 16	THO26160	-- --	--	18	2-11/16	16	2-3/8	--	2	12	10d	2	10d x 1-1/2	Lbs	3910	3910	3910	3385	2950	4310	485
														kN	17.39	17.39	17.39	15.06	13.12	19.17	2.16
2-11/16 x 9-1/4	PHXU27925	HWU2.75/9.25	--	7	2-3/4	9-1/4	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	7090	--	9030	1770
														kN	38.57	37.05	38.57	31.54	--	40.17	7.87
	HLBH27925	GLTV2.75/9.25	x	7	2-3/4	9-1/4	6	12	2-3/4	15	NA16D-RS	6	10d x 1-1/2	Lbs	14725	15180	13825	12215	--	15560	2530
														kN	65.50	67.52	61.50	54.34	--	69.21	11.25
2-11/16 x 9-1/2	PHXU2795	-- --	--	7	2-3/4	9-1/2	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	7090	--	9030	1770
														kN	38.57	37.05	38.57	31.54	--	40.17	7.87
	HLBH2795	GLTV2.75/9.5	x	7	2-3/4	9-1/2	6	12	2-3/4	15	NA16D-RS	6	10d x 1-1/2	Lbs	14725	15180	13825	12215	--	15560	2530
														kN	65.50	67.52	61.50	54.34	--	69.21	11.25
2-11/16 x 11-1/4	PHXU27112	-- --	--	7	2-3/4	11-1/4	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	7090	--	9030	1770
														kN	38.57	37.05	38.57	31.54	--	40.17	7.87
	HLBH27112	GLTV2.75/11.25	x	7	2-3/4	11-1/4	6	12	2-3/4	15	NA16D-RS	6	10d x 1-1/2	Lbs	14725	15180	13825	12215	--	15560	2530
														kN	65.50	67.52	61.50	54.34	--	69.21	11.25
2-11/16 x 11-7/8	PHXU27118	-- --	--	7	2-3/4	11-7/8	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	7090	--	9030	1770
														kN	38.57	37.05	38.57	31.54	--	40.17	7.87
	HLBH27118	GLTV2.75/11.88	x	7	2-3/4	11-7/8	6	12	2-3/4	15	NA16D-RS	6	10d x 1-1/2	Lbs	14725	15180	13825	12215	--	15560	2530
														kN	65.50	67.52	61.50	54.34	--	69.21	11.25
2-11/16 x 14	PHXU2714	-- --	--	7	2-3/4	14	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	7090	--	9030	1770
														kN	38.57	37.05	38.57	31.54	--	40.17	7.87
	HLBH2714	GLTV2.75/14	x	7	2-3/4	14	6	12	2-3/4	15	NA16D-RS	6	10d x 1-1/2	Lbs	14725	15180	13825	12215	--	15560	2530
														kN	65.50	67.52	61.50	54.34	--	69.21	11.25
2-11/16 x 16	PHXU2716	-- --	--	7	2-3/4	16	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	7090	--	9030	1770
														kN	38.57	37.05	38.57	31.54	--	40.17	7.87
	HLBH2716	GLTV2.75/16	x	7	2-3/4	16	6	12	2-3/4	15	NA16D-RS	6	10d x 1-1/2	Lbs	14725	15180	13825	12215	--	15560	2530
														kN	65.50	67.52	61.50	54.34	--	69.21	11.25
3 x 9-1/4	BPH31925	LBV3.12/9.25	x	12	3-1/8	9-1/4	3	--	2-1/8	10	16d	4	10d	Lbs	5265	5055	5435	4285	--	5455	1140
														kN	23.42	22.49	24.18	19.06	--	24.27	5.07
	PHXU31925	WP29.25-2	x	7	3-1/8	9-1/4	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	7090	--	9030	1770
														kN	38.57	37.05	38.57	31.54	--	40.17	7.87
3 x 9-1/2	THO15950-2	LT2-159, MIT29.5-2	x	16	3-1/16	9-1/2	2-3/8	--	1-1/2	10	16d	6	10d	Lbs	3355	3585	3585	3180	3790	4050	2140
														kN	14.92	15.95	15.95	14.15	16.86	18.02	9.52
	BPH3195	LBV3.12/9.5	x	12	3-1/8	9-1/2	3	--	2-7/16	10	16d	4	10d	Lbs	5265	5055	5435	4285	--	5455	1140
														kN	23.42	22.49	24.18	19.06	--	24.27	5.07
	PHXU3195	WP29.5-2	x	7	3-1/8	9-1/2	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	7090	--	9030	1770
														kN	38.57	37.05	38.57	31.54	--	40.17	7.87

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font.**



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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
3 x 11-1/4	BPH31112	LBV3.12/11.25	x	12	3-1/8	11-1/4	3	--	2-1/8	10	16d	4	10d	Lbs	5265	5055	5435	**4285**	--	**5455**	**1140**
														kN	23.42	22.49	24.18	**19.06**	--	**24.27**	**5.07**
	PHXU31112	WP211.25-2	x	7	3-1/8	11-1/4	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	**7090**	--	**9030**	**1770**
														kN	38.57	37.05	38.57	**31.54**	--	**40.17**	**7.87**
3 x 11-7/8	THO15118-2	LT2-151188, MIT211.88-2	x	16	3-1/16	11-7/8	2-3/8	--	1-1/2	10	16d	6	10d	Lbs	3355	3550	3550	**3155**	3790	**4020**	**2140**
														kN	14.92	15.79	15.79	**14.03**	16.86	**17.88**	**9.52**
	BPH31118	LBV3.12/11.88	x	12	3-1/8	11-7/8	3	--	2-1/8	10	16d	4	10d	Lbs	5265	5055	5435	**4285**	--	**5455**	**1140**
														kN	23.42	22.49	24.18	**19.06**	--	**24.27**	**5.07**
	PHXU31118	WP211.88-2	x	7	3-1/8	11-7/8	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	**7090**	--	**9030**	**1770**
														kN	38.57	37.05	38.57	**31.54**	--	**40.17**	**7.87**
3 x 14	BPH3114	LBV3.12/14	x	12	3-1/8	14	3	--	2-3/32	10	16d	4	10d	Lbs	5265	5055	5435	**4285**	--	**5455**	**1140**
														kN	23.42	22.49	24.18	**19.06**	--	**24.27**	**5.07**
	PHXU3114	-- --	x	7	3-1/8	14	3-1/4	10	2-1/2	8	16d	6	10d x 1-1/2	Lbs	8670	8330	8670	**7090**	--	**9030**	**1770**
														kN	38.57	37.05	38.57	**31.54**	--	**40.17**	**7.87**
3-1/2 x 7-1/4	PHXU35725	WPU3.56/7.25	x	7	3-9/16	7-1/4	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	**8280**	--	**10550**	**2355**
														kN	42.59	37.05	41.12	**36.83**	--	**46.93**	**10.48**
3-1/2 x 9-1/4	THO35925	LT35925	--	16	3-9/16	9-1/4	2-3/8	--	2-1/2	10	10d	2	10d x 1-1/2	Lbs	2950	2950	2950	**2620**	2950	**3335**	**485**
														kN	13.12	13.12	13.12	**11.65**	13.12	**14.83**	**2.16**
	BPH35925	BA410, LBV3.56/9.25	x	12	3-9/16	9-1/4	2-3/8	--	2-3/8	10	16d	4	10d	Lbs	5300	5055	5435	**4340**	--	**5530**	**2080**
														kN	23.58	22.49	24.18	**19.31**	--	**24.60**	**9.25**
	HBPH35925	HB3.56/9.25	x	##	3-4/7	9-1/4	3.5	--	3	22	16d	10	16d	Lbs	**11005**	**11005**	**11005**	**8640**	--	**11005**	**5530**
														kN	**48.95**	**48.95**	**48.95**	**38.43**	--	**48.95**	**24.60**
	PHM35925	WPI49.25	x	7/10	3-5/8	9-1/4	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	**4665**	--	**5940**	--
														kN	24.00	22.86	19.73	**20.75**	--	**26.42**	--
	PHXU35925	HWI49.25, HWU3.56/9.25	x	7	3-9/16	9-1/4	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	**8280**	--	**10550**	**2355**
														kN	42.59	37.05	41.12	**36.83**	--	**46.93**	**10.48**
	HLBH35925	-- --	x	7	3-5/8	9-1/4	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	**11730**	--	**14940**	**2530**
														kN	68.04	67.68	61.50	**52.18**	--	**66.46**	**11.25**
3-1/2 x 9-3/8	THO35938	LT359375	--	16	3-9/16	9-3/8	2-3/8	--	2-9/16	10	10d	2	10d x 1-1/2	Lbs	2950	2950	2950	**2620**	2950	**3335**	**485**
														kN	13.12	13.12	13.12	**11.65**	13.12	**14.83**	**2.16**
3-1/2 x 9-1/2	THO35950	LT359	--	16	3-9/16	9-1/2	2-3/8	--	2-7/16	10	10d	2	10d x 1-1/2	Lbs	2950	2950	2950	**2620**	2950	**3335**	**485**
														kN	13.12	13.12	13.12	**11.65**	13.12	**14.83**	**2.16**
	THO17950-2	MIT49.5	x	16	3-9/16	9-1/2	2-3/8	--	1-9/16	10	16d	6	10d	Lbs	3355	3585	3585	**3320**	3790	**4230**	**2140**
														kN	14.92	15.95	15.95	**14.77**	16.86	**18.82**	**9.52**
	BPH3595	LBV3.56/9.5	x	12	3-9/16	9-1/2	2-3/8	--	2-3/8	10	16d	4	10d	Lbs	5300	5055	5435	**4340**	--	**5530**	**2080**
														kN	23.58	22.49	24.18	**19.31**	--	**24.60**	**9.25**
	HBPH3595	HB3.56/9.5	x	10	3-9/16	9-1/2	3-1/2	--	3	22	16d	10	16d	Lbs	**11005**	**11005**	**11005**	**8640**	--	**11005**	**5530**
														kN	**48.95**	**48.95**	**48.95**	**38.43**	--	**48.95**	**24.60**
	PHM3595	WPI49.5	x	7/10	3-5/8	9-1/2	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	**4665**	--	**5940**	--
														kN	24.00	22.86	19.73	**20.75**	--	**26.42**	--
	PHXU3595	GLTV3.59, HWI49.5, HWU3.56/9.5	x	7	3-9/16	9-1/2	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	**8280**	--	**10550**	**2355**
														kN	42.59	37.05	41.12	**36.83**	--	**46.93**	**10.48**
	HLBH3595	HGLTV3.59	x	7	3-5/8	9-1/2	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	**11730**	--	**14940**	**2530**
														kN	68.04	67.68	61.50	**52.18**	--	**66.46**	**11.25**

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
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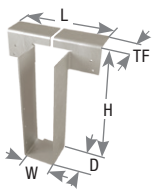

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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
3-1/2 x 11-1/4	THO35112	LT351125	--	16	3-9/16	11-1/4	2-3/8	--	2-1/2	10	10d	2	10d x 1-1/2	Lbs	2950	2950	2950	2620	2950	3335	485
														kN	13.12	13.12	13.12	11.65	13.12	14.83	2.16
	BPH35112	BA412, LBV3.56/11.25	x	12	3-9/16	11-1/4	2-3/8	--	2-3/8	10	16d	4	10d	Lbs	5300	5055	5435	4340	--	5530	2080
														kN	23.58	22.49	24.18	19.31	--	24.60	9.25
	HBPH35112	HB3.56/11.25	x	10	3-9/16	11-1/4	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHXU35112	GLTV3.56/11.25, HWI411.25, HWU3.56/11.25, WPI411.25	x	7	3-9/16	11-1/4	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
	HLBH35112	HGLTV3.56/11.25	x	7	3-5/8	11-1/4	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2530
														kN	68.04	67.68	61.50	52.18	--	66.46	11.25
3-1/2 x 11-7/8	THO35118	LT351188	--	18	3-9/16	11-7/8	2-3/8	--	2-1/2	10	10d	2	10d x 1-1/2	Lbs	2950	2950	2950	2620	2950	3335	485
														kN	13.12	13.12	13.12	11.65	13.12	14.83	2.16
	THO17118-2	MIT411.88	x	16	3-9/16	11-7/8	2-3/8	--	1-9/16	10	16d	6	10d	Lbs	3355	3550	3550	3665	3790	4670	2140
														kN	14.92	15.79	15.79	16.30	16.86	20.77	9.52
	BPH35118	BA3.56/11.88, LBV3.56/11.88	x	12	3-9/16	11-7/8	2-3/8	--	2-3/8	10	16d	4	10d	Lbs	5300	5055	5435	4340	--	5530	2080
														kN	23.58	22.49	24.18	19.31	--	24.60	9.25
	HBPH35118	HB3.56/11.88	x	10	3-9/16	11-7/8	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM35118	WPI411.88	x	7/10	3-5/8	11-7/8	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU35118	GLTV3.511, HWI411.88, HWU3.56/11.88, WPU3.56/11.88	x	7	3-9/16	11-7/8	3-1/4	10	2.5	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
	HLBH35118	HGLTV3.511	x	7	3-5/8	11-7/8	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2530
														kN	68.04	67.68	61.50	52.18	--	66.46	11.25
3-1/2 x 12	THO35120	-- --	--	18	3-9/16	12	2-3/8	--	2-1/2	10	10d	2	10d x 1-1/2	Lbs	2950	2950	2950	2620	2950	3335	485
														kN	13.12	13.12	13.12	11.65	13.12	14.83	2.16
	BPH3512	HWI412, LBV3.56/12	x	12	3-9/16	12	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3512	HB3.56/12	x	10	3-9/16	12	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHXU3512	GLTV3.512	x	7	3-9/16	12	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
	HLBH3512	HGLTV3.512	x	7	3-5/8	12	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2530
														kN	68.04	67.68	61.50	52.18	--	66.46	11.25
3-1/2 x 13	THO35130	LT3513	--	18	3-9/16	13	2-3/8	--	2-1/2	10	10d	2	10d x 1-1/2	Lbs	2950	2950	2950	2620	2950	3335	485
														kN	13.12	13.12	13.12	11.65	13.12	14.83	2.16
3-1/2 x 14	THO35140	LT3514	--	18	3-9/16	14	2-3/8	--	2-1/2	12	10d	2	10d x 1-1/2	Lbs	3910	3910	3910	3385	2950	4310	485
														kN	17.39	17.39	17.39	15.06	13.12	19.17	2.16
	TFI414	MIT414	--	16	3-9/16	14	2-1/2	--	2-1/8	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	3290	--	4190	505
														kN	16.39	14.32	14.50	14.63	--	18.64	2.25
	BPH3514	B3.56/14, BA3.56/14, LBV3.56/14	x	12	3-9/16	14	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3514	HB3.56/14	x	10	3-9/16	14	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3514	WPI414	x	7/10	3-5/8	14	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3514	GLTV3.514, HWI414, HWU3.56/14, WPU3.56/14	x	7	3-9/16	14	3-1/4	10	2.5	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
	HLBH3514	HGLTV3.514	x	7	3-5/8	14	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2530
														kN	68.04	67.68	61.50	52.18	--	66.46	11.25

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
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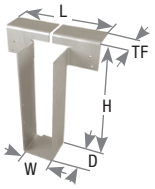

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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
3-1/2 x 16	TH035160	LT3516	--	18	3-9/16	16	2-3/8	--	2-1/2	12	10d	2	10d x 1-1/2	Lbs	3910	3910	3910	3385	2950	4310	485
														kN	17.39	17.39	17.39	15.06	13.12	19.17	2.16
	TFI416	MIT416	--	16	3-9/16	16	2-1/2	--	2-1/8	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	3290	--	4190	505
														kN	16.39	14.32	14.50	14.63	--	18.64	2.25
	BPH3516	B3.56/16, BA3.56/16, LBV3.56/16	x	12	3-9/16	16	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3516	HB3.56/16	x	10	3-9/16	16	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3516	WPI416	x	7/10	3-5/8	16	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3516	GLTV3.516, HWI416, HWU3.56/16, WPU3.56/16	x	7	3-9/16	16	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
	HLBH3516	HGLTV3.516	x	7	3-5/8	16	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2530
														kN	68.04	67.68	61.50	52.18	--	66.46	11.25
3-1/2 x 18	TFI418	HIT418, MIT418	--	16	3-9/16	18	2-1/2	--	2-1/8	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	3290	--	4190	505
														kN	16.39	14.32	14.50	14.63	--	18.64	2.25
	BPH3518	LBV3.56/18	x	12	3-9/16	18	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3518	HB3.56/18	x	10	3-9/16	18	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3518	WPI418	x	7/10	3-5/8	18	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3518	GLTV3.518, HWI418, HWU3.56/18, WPU3.56/18	x	7	3-9/16	18	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
	HLBH3518	HGLTV3.518	x	7	3-5/8	18	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2530
														kN	68.04	67.68	61.50	52.18	--	66.46	11.25
3-1/2 x 20	TFI420	MIT420	--	16	3-9/16	20	2-1/2	--	2-1/8	6	16d	2	10d x 1-1/2	Lbs	3685	3220	3260	3290	--	4190	505
														kN	16.39	14.32	14.50	14.63	--	18.64	2.25
	BPH3520	HIT420, LBV3.56/20	x	12	3-9/16	20	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3520	HB3.56/20	x	10	3-9/16	20	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3520	WPI420	x	7/10	3-5/8	20	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3520	HWI420, WPU3.56/20	x	7	3-9/16	20	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
	HLBH3520	-- --	x	7	3-5/8	20	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2530
														kN	68.04	67.68	61.50	52.18	--	66.46	11.25
3-1/2 x 22	TFI422	HIT422	--	16	3-9/16	22	2-1/2	--	2-1/8	10	16d	2	10d x 1-1/2	Lbs	4675	4205	4250	4175	--	5315	505
														kN	20.80	18.70	18.90	18.57	--	23.64	2.25
	BPH3522	HIT3522, LBV3.56/22	x	12	3-9/16	22	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3522	HB3.56/22	x	10	3-9/16	22	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3522	HWI422, WPI422	x	7/10	3-5/8	22	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3522	WPU3.56/22	x	7	3-9/16	22	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
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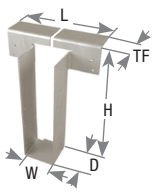

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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
3-1/2 x 24	TFI424	HIT424, LBV3.56/24	--	16	3-9/16	24	2-1/2	--	2-1/8	10	16d	2	10d x 1-1/2	Lbs	4675	4205	4250	4175	--	5315	505
														kN	20.80	18.70	18.90	18.57	--	23.64	2.25
	BPH3524	-- --	x	12	3-9/16	24	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3524	HB3.56/24	x	10	3-9/16	24	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3524	HWI424, WPI424	x	7/10	3-5/8	24	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3524	WPU3.56/24	x	7	3-9/16	24	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
3-1/2 x 26	TFI426	HIT426	--	16	3-9/16	26	2-1/2	--	2-1/8	10	16d	2	10d x 1-1/2	Lbs	4675	4205	4250	4175	--	5315	505
														kN	20.80	18.70	18.90	18.57	--	23.64	2.25
	BPH3526	LBV3.56/26	x	12	3-9/16	26	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3526	HB3.56/26	x	10	3-9/16	26	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3526	HWI426, WPI426	x	7/10	3-5/8	26	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3526	WPU3.56/26	x	7	3-9/16	26	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
3-1/2 x 28	BPH3528	LBV3.56/28	x	12	3-9/16	28	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3528	HB3.56/28	x	10	3-9/16	28	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3528	HWI428, WPI428	x	7/10	3-5/8	28	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3528	WPU3.56/28	x	7	3-9/16	28	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
3-1/2 x 30	BPH3530	LBV3.56/30	x	12	3-9/16	30	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	HBPH3530	HB3.56/30	x	10	3-9/16	30	3-1/2	--	3	22	16d	10	16d	Lbs	11005	11005	11005	8640	--	11005	5530
														kN	48.95	48.95	48.95	38.43	--	48.95	24.60
	PHM3530	HWI430, WPI430	x	7/10	3-5/8	30	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3530	--	x	7	3-9/16	30	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
3-1/2 x 32	BPH3532	--	x	12	3-9/16	32	2-3/4	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2080
														kN	23.58	22.49	24.18	18.88	--	24.04	9.25
	PHM3532	HWI432, WPI432	x	7/10	3-5/8	32	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU3532	--	x	7	3-9/16	32	3-1/4	10	2-1/2	8	16d	6	10d	Lbs	9575	8330	9245	8280	--	10550	2355
														kN	42.59	37.05	41.12	36.83	--	46.93	10.48
4 - 4-3/16 x 9-1/2	TH020950-2	LBV4.12/9.5, LBV4.28/9.5, MIT4.28/9.5	x	16	4-3/16	9-1/2	3	--	2	10	16d	6	10d	Lbs	3355	3840	3840	3320	3790	4230	2140
														kN	14.92	17.08	17.08	14.77	16.86	18.82	9.52
	PHM4295	--	x	7/10	4-3/16	9-1/2	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
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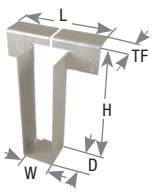

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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
4 - 4-3/16 x 11-7/8	TH020118-2	LBV4.12/11.88, LBV4.28/11.88, MIT4.28/11.88	x	16	4-3/16	11-7/8	3	--	2	10	16d	6	10d	Lbs	3355	3890	3890	3665	3790	4670	2140
														kN	14.92	17.30	17.30	16.30	16.86	20.77	9.52
	PHM42118	--	x	7/10	4-3/16	11-7/8	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
4 - 4-3/16 x 14	TH020140-2	LBV4.12/14, LBV4.28/14, MIT4.28/14	x	12	4-3/16	14	3	--	1-15/16	10	16d	6	10d	Lbs	3355	5330	5330	4610	3785	5870	2140
														kN	14.92	23.71	23.71	20.51	16.84	26.11	9.52
	PHM4214	--	x	7/10	4-3/16	14	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
4 - 4-3/16 x 16	TH020160-2	LBV4.12/16, LBV4.28/16	x	12	4-3/16	16	3	--	1-15/16	10	16d	6	10d	Lbs	3355	5330	5330	4610	3785	5870	2140
														kN	14.92	23.71	23.71	20.51	16.84	26.11	9.52
	PHM4216	--	x	7/10	4-3/16	16	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
4-1/2 - 4-5/8 x 9-1/2	TH023950-2	LBV4.75/9.5, MIT359.5-2	x	12	4-3/4	9-1/2	3	--	2	10	16d	6	10d	Lbs	5090	5235	5235	4570	3785	5820	2140
														kN	22.64	23.29	23.29	20.33	16.84	25.89	9.52
	PHM2395-2	WP359.5-2	x	7/10	4-3/4	9-1/2	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
4-1/2 - 4-5/8 x 11-7/8	TH023118-2	LBV4.75/11.88, MIT3511.88-2	x	12	4-3/4	11-7/8	3	--	2-1/8	10	16d	6	10d	Lbs	5090	5280	5280	4570	3785	5820	2140
														kN	22.64	23.49	23.49	20.33	16.84	25.89	9.52
	PHM23118-2	WP3511.88-2	x	7/10	4-3/4	11-7/8	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
4-1/2 - 4-5/8 x 14	TH023140-2	LBV4.75/14, MIT3514-2	x	12	4-3/4	14	3	--	2-1/8	12	16d	6	10d	Lbs	5090	6345	6345	5545	3785	7060	2140
														kN	22.64	28.22	28.22	24.67	16.84	31.40	9.52
4-1/2 - 4-5/8 x 16	TH023160-2	LBV4.75/16	x	12	4-3/4	16	3	--	2-1/8	12	16d	6	10d	Lbs	5090	6345	6345	5545	3785	7060	2140
														kN	22.64	28.22	28.22	24.67	16.84	31.40	9.52
	PHM2316-2	WP3516-2	x	7/10	4-3/4	16	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
4-1/2 - 4-5/8 x 18	TH023180-2	LBV4.75/18	x	12	4-3/4	18	3	--	2-1/8	14	16d	6	10d	Lbs	5090	6745	6745	7225	3785	9205	2140
														kN	22.64	30.00	30.00	32.14	16.84	40.95	9.52
	PHM2318-2	WP3518-2	x	7/10	4-3/4	18	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
4-1/2 - 4-5/8 x 20	TH023200-2	LBV4.75/20	x	12	4-3/4	20	3	--	2-1/8	14	16d	6	10d	Lbs	5090	6745	6745	7225	3785	9205	2140
														kN	22.64	30.00	30.00	32.14	16.84	40.95	9.52
	PHM2320-2	WP3520-2	x	7/10	4-3/4	20	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 9-1/4	TH025925-2	LBV5.12/9.25	x	12	5-1/8	9-1/4	3	--	2-11/16	10	16d	6	10d	Lbs	5090	5280	5280	4570	3785	5820	2140
														kN	22.64	23.49	23.49	20.33	16.84	25.89	9.52
5 x 9-1/2	TH025950-2	MIT39.5-2, LBV5.12/9.5	x	12	5-1/8	9-1/2	3	--	2-1/8	10	16d	6	10d	Lbs	5090	5280	5280	4570	3785	5820	2140
														kN	22.64	23.49	23.49	20.33	16.84	25.89	9.52
	PHM2595-2	WPI39.5-2	x	7/10	5-1/8	9-1/2	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 11-1/4	TH025112-2	LBV5.12/11.25	x	12	5-1/8	11-1/4	3	--	2-1/8	10	16d	6	10d	Lbs	5090	5280	5280	4570	3785	5820	2140
														kN	22.64	23.49	23.49	20.33	16.84	25.89	9.52
5 x 11-7/8	TH025118-2	LBV5.12/11.88, MIT311.88-2	x	12	5-1/8	11-7/8	3	--	2-1/8	10	16d	6	10d	Lbs	5090	5280	5280	4570	3785	5820	2140
														kN	22.64	23.49	23.49	20.33	16.84	25.89	9.52

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
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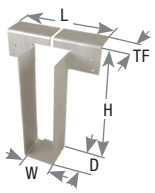

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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
5 x 14	TH025140-2	MIT314-2, LBV5.12/14	x	12	5-1/8	14	3	--	2-1/8	12	16d	6	10d	Lbs	5090	6345	6345	5545	3785	7060	2140
														kN	22.64	28.22	28.22	24.67	16.84	31.40	9.52
	PHM2514-2	WPI314-2	x	7/10	5-1/8	14	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 16	TH025160-2	MIT5.12/16, LBV5.12/16	x	12	5-1/8	16	3	--	2-1/8	12	16d	6	10d	Lbs	5090	6345	6345	5545	3785	7060	2140
														kN	22.64	28.22	28.22	24.67	16.84	31.40	9.52
	HBPH5116	HB5.12/16	x	10	5-1/8	16	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM2516-2	WPI316-2	x	7/10	5-1/8	16	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 18	TH025180-2	B5.12/18	x	12	5-1/8	18	3	--	2-1/8	14	16d	6	10d	Lbs	5090	6745	6745	7225	3785	9205	2140
														kN	22.64	30.00	30.00	32.14	16.84	40.95	9.52
	HBPH5118	HB5.12/18	x	10	5-1/8	18	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM2518-2	WPI318-2	x	7/10	5-1/8	18	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 20	TH025200-2	B5.12/20	x	12	5-1/8	20	3	--	2-1/8	14	16d	6	10d	Lbs	5090	6745	6745	7225	3785	9205	2140
														kN	22.64	30.00	30.00	32.14	16.84	40.95	9.52
	HBPH5120	HB5.12/20	x	10	5-1/8	20	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM2520-2	WPI320-2	x	7/10	5-1/8	20	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 22	HBPH5122	HB5.12/22	x	10	5-1/8	22	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM2522-2	WPI322-2	x	7/10	5-1/8	22	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 24	HBPH5124	HB5.12/24	x	10	5-1/8	24	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM2524-2	WPI324-2	x	7/10	5-1/8	24	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 26	HBPH5126	HB5.12/26	x	10	5-1/8	26	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM2526-2	WPI326-2	x	7/10	5-1/8	26	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
5 x 28	HBPH5128	HB5.12/28	x	10	5-1/8	28	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
5 x 30	HBPH5130	HB5.12/30	x	10	5-1/8	30	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
5-1/4 x 7-1/4	BPH55725	-- --	x	10	5-9/16	7-1/4	2-1/4	--	2-1/2	10	16d	6	10d	Lbs	5300	5055	5435	4295	--	5470	2935
														kN	23.58	22.49	24.18	19.11	--	24.33	13.06
	HBPH55725	HB5.50/7.25	x	10	5-1/2	7-1/4	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
5-1/4 x 9-1/4	HBPH55925	HB5.50/9.25	x	10	5-1/2	9-1/4	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHXU55925	GLTV5.50/9.25, HWU5.50/9.25	x	7	5-1/2	9-1/4	3-1/4	11-1/2	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH55925	--	x	7	5-9/16	9-1/4	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72

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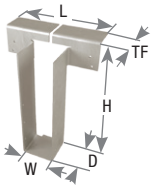

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Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
5-1/4 x 9-1/2	BPH5595	--	x	12	5-9/16	9-1/2	3	--	2-1/6	10	16d	4	10d	Lbs	5300	5055	5435	4295	--	5470	2935
														kN	23.58	22.49	24.18	19.11	--	24.33	13.06
	HBPH5595	HB5.50/9.5	x	10	5-1/2	9-1/2	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM5595	WP5.50/9.5	x	7/10	5-5/8	9-1/2	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU5595	GLTV5.59, HWU5.50/9.5	x	7	5-1/2	9-1/2	3-1/4	11.5	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH5595	HGLTV5.59	x	7	5-9/16	9-1/2	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72
5-1/4 x 11-1/4	HBPH55112	HB5.50/11.25	x	10	5-1/2	11-1/4	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHXU55112	GLTV5.50/11.25, HWU5.50/11.25	x	7	5-1/2	11-1/4	3-1/4	11-1/2	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH55112	--	x	7	5-9/16	11-1/4	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72
5-1/4 x 11-1/2	HLBH55115	GLTV5.511	x	7	5-9/16	11-1/2	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72
5-1/4 x 11-7/8	BPH55118	--	x	12	5-9/16	11-7/8	2-1/2	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2935
														kN	23.58	22.49	24.18	18.88	--	24.04	13.06
	HBPH55118	HB5.50/11.88	x	10	5-1/2	11-7/8	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM55118	--	x	7/10	5-5/8	11-7/8	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU55118	GLTV5.511, HWU5.50/11.88	x	7	5-1/2	11-7/8	3-1/4	11-1/2	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH55118	HGLTV5.511	x	7	5-9/16	11-7/8	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72
5-1/4 x 12	HBPH5512	HB5.50/12	x	10	5-1/2	12	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHXU5512	--	x	7	5-1/2	12	3-1/4	11-1/2	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH5512	--	x	7	5-9/16	12	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72
5-1/4 x 14	BPH5514	--	x	12	5-9/16	14	2-1/2	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2935
														kN	23.58	22.49	24.18	18.88	--	24.04	13.06
	HBPH5514	HB5.50/14	x	10	5-1/2	14	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM5514	--	x	7/10	5-5/8	14	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU5514	GLTV5.514, HWU5.50/14	x	7	5-1/2	14	3-1/4	11-1/2	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH5514	HGLTV5.514	x	7	5-9/16	14	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72

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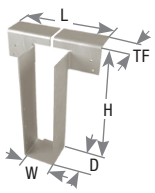

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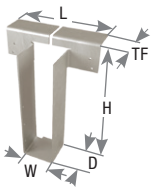
Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
5-1/4 x 16	BPH5516	--	x	12	5-9/16	16	2-1/2	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2935
														kN	23.58	22.49	24.18	18.88	--	24.04	13.06
	HBPH5516	HB5.50/16	x	10	5-1/2	16	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM5516	--	x	7/10	5-5/8	16	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU5516	GLTV5.516, HWU5.50/16	x	7	5-1/2	16	3-1/4	11-1/2	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.06	42.59	36.83	--	46.93	10.48
	HLBH5516	HGLTV5.516	x	7	5-9/16	16	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72
5-1/4 x 18	BPH5518	--	x	12	5-9/16	18	2-1/2	--	2-1/32	10	16d	6	10d	Lbs	5300	5055	5435	4245	--	5405	2935
														kN	23.58	22.49	24.18	18.88	--	24.04	13.06
	HBPH5518	HB5.50/18	x	10	5-1/2	18	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM5518	--	x	7/10	5-5/8	18	2-1/2	7	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU5518	GLTV5.518	x	7	5-1/2	18	3-1/4	11-1/2	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.06	42.59	36.83	--	46.93	10.48
	HLBH5518	HGLTV5.518	x	7	5-9/16	18	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72
5-1/4 x 20	HBPH5520	HB5.50/20	x	10	5-1/2	20	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHXU5520	--	x	7	5-1/2	20	3-1/4	11.5	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.06	42.59	36.83	--	46.93	10.48
	HLBH5520	--	x	7	5-9/16	20	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	15215	13825	11730	--	14940	2860
														kN	68.04	67.68	61.50	52.18	--	66.46	12.72
7 x 7-1/4	PHXU71725	--	x	7	7-1/8	7-1/4	3-1/4	13-1/8	2-1/2	8	3.5	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.06	42.59	36.83	--	46.93	10.48
7 x 9-1/4	BPH71925	--	x	12	7-1/8	9-1/4	3	--	2-3/8	10	16d	6	10d	Lbs	5300	5055	5435	4340	--	5530	2935
														kN	23.58	22.49	24.18	19.31	--	24.60	13.06
	HBPH71925	HB7.12/9.25	x	10	7-1/8	9-1/4	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM35925-2	--	x	7/10	7-1/8	9-1/4	2-1/2	10	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU71925	WPI49.25-2	x	7	7-1/8	9-1/4	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.06	42.59	36.83	--	46.93	10.48
	HLBH71925	--	x	7	7-1/8	9-1/4	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.44	61.50	52.18	--	66.46	12.72
7 x 9-1/2	BPH7195	B7.12/9.5	x	12	7-1/8	9-1/2	3	--	2-3/8	10	16d	6	10d	Lbs	5300	5060	5435	4340	--	5530	2935
														kN	23.58	22.51	24.18	19.31	--	24.60	13.06
	HBPH7195	HB7.12/9.5	x	10	7-1/8	9-1/2	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM3595-2	--	x	7/10	7-1/8	9-1/2	2-1/2	10	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU7195	GLTV49.5-2, WPI49.5-2	x	7	7-1/8	9-1/2	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.06	42.59	36.83	--	46.93	10.48
	HLBH7195	--	x	7	7-1/8	9-1/2	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.44	61.50	52.18	--	66.46	12.72

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font**.



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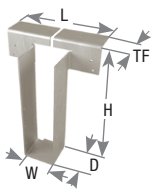
Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS
MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
7 x 11-1/4	BPH71112	--	x	12	7-1/8	11-1/4	3	--	2-3/16	10	16d	6	10d	Lbs	5300	5060	5435	**4305**	--	**5485**	**2935**
														kN	23.58	22.51	24.18	**19.15**	--	**24.40**	**13.06**
	HBPH71112	HB7.12/11.25	x	10	7-1/8	11-1/4	3-1/2	--	3	22	16d	10	16d	Lbs	**10405**	**10405**	**10405**	**8635**	--	**10405**	**5620**
														kN	**46.28**	**46.28**	**46.28**	**38.41**	--	**46.28**	**25.00**
	PHXU71112	GLTV411.25-2	x	7	7-1/8	11-1/4	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	**8280**	--	**10550**	**2355**
														kN	42.59	37.05	42.59	**36.83**	--	**46.93**	**10.48**
	HLBH71112	HGLTV411.25-2	x	7	7-1/8	11-1/4	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	**11730**	--	**14940**	**2860**
														kN	68.04	66.43	61.50	**52.18**	--	**66.46**	**12.72**
7 x 11-7/8	BPH71118	B7.12/11.88	x	12	7-1/8	11-7/8	3	--	2-3/16	10	16d	6	10d	Lbs	5300	5060	5435	**4305**	--	**5485**	**2935**
														kN	23.58	22.51	24.18	**19.15**	--	**24.40**	**13.06**
	HBPH71118	HB7.12/11.88	x	10	7-1/8	11-7/8	3-1/2	--	3	22	16d	10	16d	Lbs	**10405**	**10405**	**10405**	**8635**	--	**10405**	**5620**
														kN	**46.28**	**46.28**	**46.28**	**38.41**	--	**46.28**	**25.00**
	PHM35118-2	--	x	7/10	7-1/8	11-7/8	2-1/2	10	3	2	16d	2	10d	Lbs	5395	5140	4435	**4665**	--	**5940**	--
														kN	24.00	22.86	19.73	**20.75**	--	**26.42**	--
	PHXU71118	GLTV411.88-2, HWU7.12/11.88, WPI411.88-2	x	7	7-1/8	11-7/8	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	**8280**	--	**10550**	**2355**
														kN	42.59	37.05	42.59	**36.83**	--	**46.93**	**10.48**
	HLBH71118	HGLTV411.88-2	x	7	7-1/8	11-7/8	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	**11730**	--	**14940**	**2860**
														kN	68.04	66.43	61.50	**52.18**	--	**66.46**	**12.72**
7 x 14	BPH7114	B7.12/14	x	12	7-1/8	14	3	--	2-3/16	10	16d	6	10d	Lbs	5300	5060	5435	**4305**	--	**5485**	**2935**
														kN	23.58	22.51	24.18	**19.15**	--	**24.40**	**13.06**
	HBPH7114	HB7.12/14	x	10	7-1/8	14	3.5	--	3	22	16d	10	16d	Lbs	**10405**	**10405**	**10405**	**8635**	--	**10405**	**5620**
														kN	**46.28**	**46.28**	**46.28**	**38.41**	--	**46.28**	**25.00**
	PHM3514-2	--	x	7/10	7-1/8	14	2-1/2	10	3	2	16d	2	10d	Lbs	5395	5140	4435	**4665**	--	**5940**	--
														kN	24.00	22.86	19.73	**20.75**	--	**26.42**	--
	PHXU7114	GLTV414-2, WPI414-2	x	7	7-1/8	14	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	**8280**	--	**10550**	**2355**
														kN	42.59	37.05	42.59	**36.83**	--	**46.93**	**10.48**
	HLBH7114	HGLTV414-2	x	7	7-1/8	14	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	**11730**	--	**14940**	**2860**
														kN	68.04	66.43	61.50	**52.18**	--	**66.46**	**12.72**
7 x 16	BPH7116	B7.12/16	x	12	7-1/8	16	3	--	2-3/16	10	16d	6	10d	Lbs	5300	5060	5435	**4305**	--	**5485**	**2935**
														kN	23.58	22.51	24.18	**19.15**	--	**24.40**	**13.06**
	HBPH7116	HB7.12/16	x	10	7-1/8	16	3-1/2	--	3	22	16d	10	16d	Lbs	**10405**	**10405**	**10405**	**8635**	--	**10405**	**5620**
														kN	**46.28**	**46.28**	**46.28**	**38.41**	--	**46.28**	**25.00**
	PHM3516-2	--	x	7/10	7-1/8	16	2-1/2	10	3	2	16d	2	10d	Lbs	5395	5140	4435	**4665**	--	**5940**	--
														kN	24.00	22.86	19.73	**20.75**	--	**26.42**	--
	PHXU7116	GLTV416-2, WPI416-2	x	7	7-1/8	16	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	**8280**	--	**10550**	**2355**
														kN	42.59	37.05	42.59	**36.83**	--	**46.93**	**10.48**
	HLBH7116	HGLTV416-2	x	7	7-1/8	16	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	**11730**	--	**14940**	**2860**
														kN	68.04	66.43	61.50	**52.18**	--	**66.46**	**12.72**
7 x 18	BPH7118	B7.12/18	x	12	7-1/8	18	3	--	2-3/16	10	16d	6	10d	Lbs	5300	5060	5435	**4305**	--	**5485**	**2935**
														kN	23.58	22.51	24.18	**19.15**	--	**24.40**	**13.06**
	HBPH7118	HB7.12/18	x	10	7-1/8	18	3-1/2	--	3	22	16d	10	16d	Lbs	**10405**	**10405**	**10405**	**8635**	--	**10405**	**5620**
														kN	**46.28**	**46.28**	**46.28**	**38.41**	--	**46.28**	**25.00**
	PHM3518-2	--	x	7/10	7-1/8	18	2-1/2	10	3	2	16d	2	10d	Lbs	5395	5140	4435	**4665**	--	**5940**	--
														kN	24.00	22.86	19.73	**20.75**	--	**26.42**	--
	PHXU7118	GLTV418-2, HWI418-2	x	7	7-1/8	18	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	**8280**	--	**10550**	**2355**
														kN	42.59	37.05	42.59	**36.83**	--	**46.93**	**10.48**
	HLBH7118	HGLTV418-2	x	7	7-1/8	18	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	**11730**	--	**14940**	**2860**
														kN	68.04	66.43	61.50	**52.18**	--	**66.46**	**12.72**

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font**.



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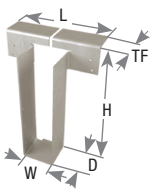
Top Mount Hanger Charts

USP STRUCTURAL CONNECTORS MiTek

Joist Size	USP Stock No.	Ref. No.	Web Stiff Reqd	Ga.	Dimensions (in) W	H	D	L	TF	Fastener Schedule[3] Header Qty	Header Type[2]	Joist Qty	Joist Type	Unit	Factored Resistance Header Material (100%) LVL	PSL	LSL	SPF	DF I-Joist[2]	DF	Uplift[1] DF 115%
7 x 20	BPH7120	B7.12/20	x	12	7-1/8	20	3	--	2-3/16	10	16d	6	10d	Lbs	5300	5055	5435	4305	--	5485	2935
														kN	23.58	22.49	24.18	19.15	--	24.40	13.06
	HBPH7120	HB7.12/20	x	10	7-1/8	20	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHM3520-2	-- --	x	7/10	7-1/8	20	2-1/2	10	3	2	16d	2	10d	Lbs	5395	5140	4435	4665	--	5940	--
														kN	24.00	22.86	19.73	20.75	--	26.42	--
	PHXU7120	GLTV420-2	x	7	7-1/8	20	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH7120	-- --	x	7	7-1/8	20	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.43	61.50	52.18	--	66.46	12.72
7 x 22	BPH7122	B7.12/22	x	12	7-1/8	22	3	--	2-3/16	10	16d	6	10d	Lbs	5300	5055	5435	4305	--	5485	2935
														kN	23.58	22.49	24.18	19.15	--	24.40	13.06
	HBPH7122	HB7.12/22	x	10	7-1/8	22	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHXU7122	HWI422-2	x	7	7-1/8	22	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH7122	GLTV422-2, HGLTV7.12/22	x	7	7-1/8	22	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.43	61.50	52.18	--	66.46	12.72
7 x 24	BPH7124	B7.12/24	x	12	7-1/8	24	3	--	2-3/16	10	16d	6	10d	Lbs	5300	5055	5435	4305	--	5485	2935
														kN	23.58	22.49	24.18	19.15	--	24.40	13.06
	HBPH7124	HB7.12/24	x	10	7-1/8	24	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHXU7124	HWI424-2	x	7	7-1/8	24	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH7124	GLTV424-2, HGLTV7.12/24	x	7	7-1/8	24	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.43	61.50	52.18	--	66.46	12.72
7 x 26	HBPH7126	HB7.12/26	x	10	7-1/8	26	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHXU7126	B7.12/26, HWI426-2	x	7	7-1/8	26	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH7126	GLTV426-2	x	7	7-1/8	26	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.43	61.50	52.18	--	66.46	12.72
7 x 28	HBPH7128	HB7.12/28	x	10	7-1/8	28	3-1/2	--	3	22	16d	10	16d	Lbs	10405	10405	10405	8635	--	10405	5620
														kN	46.28	46.28	46.28	38.41	--	46.28	25.00
	PHXU7128	B7.12/28, HWI428-2	x	7	7-1/8	28	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH7128	GLTV428-2	x	7	7-1/8	28	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.43	61.50	52.18	--	66.46	12.72
7 x 30	PHXU7130	HWI430-2	x	7	7-1/8	30	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH7130	GLTV430-2, HGLTV430-2	x	7	7-1/8	30	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.43	61.50	52.18	--	66.46	12.72
7 x 32	PHXU7132	HWI432-2	x	7	7-1/8	32	3-1/4	13-1/8	2-1/2	8	16d	6	10d	Lbs	9575	8330	9575	8280	--	10550	2355
														kN	42.59	37.05	42.59	36.83	--	46.93	10.48
	HLBH7132	GLTV432-2, HGLTV432-2	x	7	7-1/8	32	6	12	3-1/8	15	NA16D-RS	6	16d	Lbs	15295	14935	13825	11730	--	14940	2860
														kN	68.04	66.43	61.50	52.18	--	66.46	12.72

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When I-joist is used as a header, all nails must be 10d x 1-1/2.
3) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
Load tables address hanger/header/fastener limitations only. Joist limitations must be determined for each installation.
New products or updated product information are designated in **blue font**.



TMP / TMPH Adjustable Rafter-To-Plate Connectors

USP STRUCTURAL CONNECTORS MiTek

The TMP and TMPH are designed to make rafter-to-plate connections and eliminate time-consuming bird's-mouth notching or bevel plate installation. Both series are available in I-Joists sizes, as well as standard 2x sizes.

TMP – Adjusts to pitches from 1/12 to 6/12.

TMPH – Adjusts to pitches from 6/12 to 14/12.

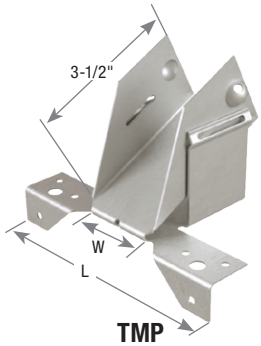
Materials: TMP – 18 gauge;
TMPH – 16 gauge, Fulcrum – 12 gauge

Finish: G90 galvanizing

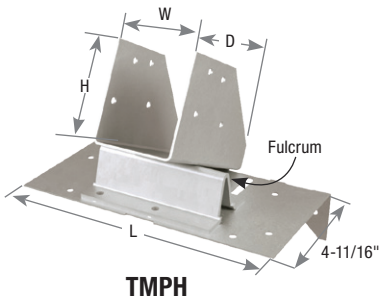
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

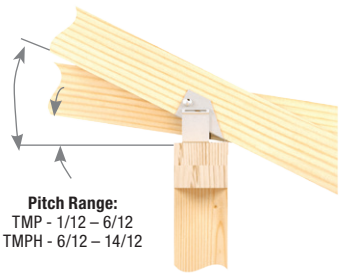
- Use all specified fasteners. See Product Notes, page 15.
- Position connector on top plate. Fasten connector to outside of top plate with specified nails. Insert rafter into rafter pocket. Adjust rafter and pocket to correct pitch. Fasten rafter to connector with specified nails. Installing the TMP requires driving specified nails through the opposing slots in the pocket. TMPH installation involves sliding the fulcrum until it supports the pocket at the desired pitch and nailing down through the fulcrum base into the top plate to lock the fulcrum into position.



TMP



TMPH



Typical TMP installation

Typical TMPH installation

Rafter Width (in)	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) L	Fastener Schedule[2] Plate Qty	Plate Type	Rafter Qty	Rafter Type	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
1-1/2	TMP2	VPA2	18	1-9/16	5-9/16	6	10d	4	10d x 1-1/2	1390	400	1090	315
										6.18	1.78	4.85	1.40
1-3/4	TMP175	VPA25	18	1-13/16	5-9/16	6	10d	4	10d x 1-1/2	1620	400	1270	315
										7.20	1.78	5.65	1.40
2 or 2-1/8	TMP21	VPA2.06, VPA2.1	18	2-1/8	6-3/8	6	10d	4	10d x 1-1/2	1815	400	1425	315
										8.07	1.78	6.34	1.40
2-5/16	TMP23	VPA35	18	2-3/8	6-3/8	6	10d	4	10d x 1-1/2	2770	400	2175	315
										12.32	1.78	9.67	1.40
2-1/2 or 2-5/8	TMP25	VPA3	18	2-11/16	6-3/8	6	10d	4	10d x 1-1/2	2770	400	2175	315
										12.32	1.78	9.67	1.40
3	TMP31	-- --	18	3-1/8	7-5/16	6	10d	4	10d x 1-1/2	2770	400	2175	315
										12.32	1.78	9.67	1.40
3-1/2	TMP4	VPA4	18	3-9/16	7-5/16	6	10d	4	10d x 1-1/2	2770	400	2175	315
										12.32	1.78	9.67	1.40

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font**.

Rafter Width (in)	USP Stock No.	Ref. No.	Dimensions (in) W	Dimensions (in) H	Dimensions (in) L	Fastener Schedule[3] Plate Qty	Plate Type	Rafter[2] Qty	Rafter[2] Type	Unit	DF According to Pitch 6/12	DF 7/12	DF 8/12	DF 10/12	DF 12/12	DF Uplift[1] 115%	S-P-F According to Pitch 6/12	S-P-F 7/12	S-P-F 8/12	S-P-F 10/12	S-P-F 12/12	S-P-F Uplift[1] 115%
1-1/2	TMPH2	VPA2	1-9/16	2-1/2	6-9/16	10	10d	8	10d x 1-1/2	Lbs	5220	5385	5540	4470	4120	375	4100	4225	4350	3510	3235	295
										kN	23.22	23.95	24.64	19.88	18.33	1.67	18.24	18.79	19.35	15.61	14.39	1.31
1-3/4	TMPH175	VPA25	1-13/16	2-3/8	6-9/16	10	10d	8	10d x 1-1/2	Lbs	5220	5385	5540	4470	4120	375	4100	4225	4350	3510	3235	295
										kN	23.22	23.95	24.64	19.88	18.33	1.67	18.24	18.79	19.35	15.61	14.39	1.31
2 or 2-1/8	TMPH21	VPA2.06, VPA2.1	2-1/8	2-5/8	7-3/8	10	10d	8	10d x 1-1/2	Lbs	5220	5385	5540	4470	4120	375	4100	4225	4350	3510	3235	295
										kN	23.22	23.95	24.64	19.88	18.33	1.67	18.24	18.79	19.35	15.61	14.39	1.31
2-5/16	TMPH23	VPA35	2-3/8	2-1/2	7-3/8	10	10d	8	10d x 1-1/2	Lbs	5220	5385	5540	4470	4120	375	4100	4225	4350	3510	3235	295
										kN	23.22	23.95	24.64	19.88	18.33	1.67	18.24	18.79	19.35	15.61	14.39	1.31
2-1/2 or 2-5/8	TMPH25	VPA3	2-11/16	2-5/16	7-3/8	10	10d	8	10d x 1-1/2	Lbs	5220	5385	5540	4470	4120	375	4100	4225	4350	3510	3235	295
										kN	23.22	23.95	24.64	19.88	18.33	1.67	18.24	18.79	19.35	15.61	14.39	1.31
3	TMPH31	-- --	3-1/8	2-11/16	8-9/16	10	10d	8	10d x 1-1/2	Lbs	5220	5385	5540	4470	4120	375	4100	4225	4350	3510	3235	295
										kN	23.22	23.95	24.64	19.88	18.33	1.67	18.24	18.79	19.35	15.61	14.39	1.31
3-1/2	TMPH4	VPA4	3-9/16	2-1/2	8-9/16	10	10d	8	10d x 1-1/2	Lbs	5220	5385	5540	4470	4120	375	4100	4225	4350	3510	3235	295
										kN	23.22	23.95	24.64	19.88	18.33	1.67	18.24	18.79	19.35	15.61	14.39	1.31

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
2) Web stiffeners are required for all Wood I-Joist installations.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font**.

LSSH Slope/Skew Hangers

USP STRUCTURAL CONNECTORS MiTek

The LSSH series connects rafters to ridge beams in vaulted roof structures. This series is field adjustable to meet a variety of skew and/or slope applications. Slopes and skew 0° to 45°.

Materials: See chart
Finish: G90 galvanizing; LSSH15-TZ – G-185 Galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

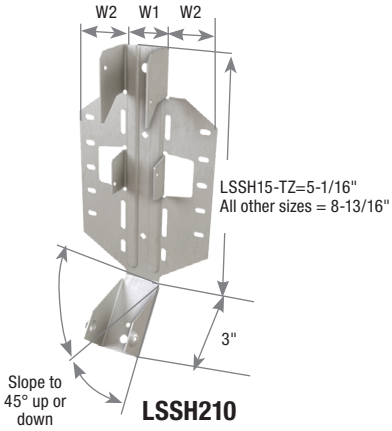
- Use all specified fasteners. See Product Notes, page 15.

Steps:

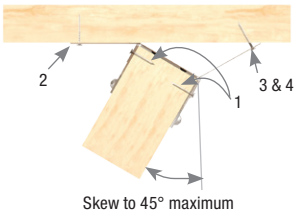
1. Position LSSH connector against plumb-cut end of joist. Fasten joist side flanges on both sides with 10d (0.148") x 1-1/2" nails. Bend seat up to fit against joist bottom and drive (1) 10d (0.148") x 1-1/2" nail through bottom seat into rafter bottom. Drive (2) 10d (0.148") x 1-1/2" nails at downward angle through dimpled nailing guides.
2. Lean connector and rafter end against ridge beam at desired position. Install specified 10d (0.148" x 3") or 16d (0.162" x 3-1/2") nails through nail holes into ridge beam at right 90° angle. If skewing the rafter, only drive nails into ridge beam on inside flange.
3. Bend flange to desired angle.
4. Hammer outside flange until edge touches header. Fasten outside flange to ridge by driving specified 10d (0.148" x 3) or 16d (0.162" x 3-1/2") nails through nail holes.

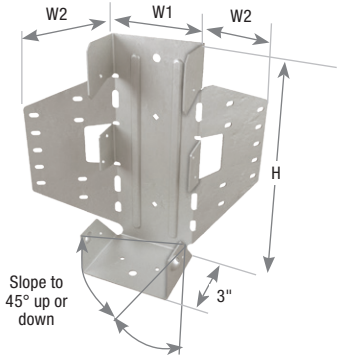
- Web stiffeners are required for all wood I-Joist installations.
- Designer may consider adding a tension restraint for the supported member for roof slopes exceeding 6/12. Refer to pages 86-87.

Typical LSSH179 installation



LSSH210





LSSH35

Rafter Width (in)	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W1	W2	H	Fastener Schedule[2] Header Qty	Header Type	Rafter Qty	Rafter Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
SLOPED ONLY HANGERS																			
1-1/2	LSSH15-TZ	LSU26, LSU26Z, LSSU28, LSSU28Z	18	1-9/16	1-3/4	5-1/16	6	10d HDG	7	10d x 1-1/2 HDG	1590	1175	7.07	5.23	1250	925	5.56	4.11	
1-1/2	LSSH210	LSSU210	18	1-9/16	1-3/4	8-13/16	10	10d	7	10d x 1-1/2	2685	1695	11.94	7.54	2110	1330	9.39	5.92	
1-3/4	LSSH179	LSSUI25	18	1-13/16	1-5/8	8-13/16	10	10d	7	10d x 1-1/2	2685	1695	11.94	7.54	2110	1330	9.39	5.92	
2 - 2-1/8	LSSH20	LSSUI2.06, LSSU2.1	18	2-1/8	2-1/2	8-13/16	10	10d	7	10d x 1-1/2	2535	1555	11.28	6.92	1990	1220	8.85	5.43	
2-1/4 - 2-5/16	LSSH23	LSSUI35	18	2-5/16	2-3/8	8-13/16	10	10d	7	10d x 1-1/2	2535	1555	11.28	6.92	1990	1220	8.85	5.43	
2-1/2	LSSH25	LSSUH310	16	2-9/16	2-3/4	8-13/16	18	16d	12	10d x 1-1/2	4125	1895	18.35	8.43	3240	1490	14.41	6.63	
2-5/8	LSSH26	-- --	16	2-11/16	2-5/8	8-13/16	18	16d	12	10d x 1-1/2	4125	1895	18.35	8.43	3240	1490	14.41	6.63	
3	LSSH31	LSSU210-2	16	3-1/8	3-3/4	8-13/16	18	16d	12	10d x 1-1/2	5065	2515	22.53	11.19	3980	1975	17.70	8.79	
3-1/2	LSSH35	LSSU410	16	3-9/16	3-1/2	8-13/16	18	16d	12	10d x 1-1/2	5065	2515	22.53	11.19	3980	1975	17.70	8.79	
SKEWED HANGERS or SLOPED & SKEWED HANGERS																			
1-1/2	LSSH15-TZ	LSU26, LSU26Z, LSSU28, LSSU28Z	18	1-9/16	1-3/4	5-1/16	6	10d HDG	7	10d x 1-1/2 HDG	1295	1175	5.76	5.23	1015	925	4.51	4.11	
1-1/2	LSSH210	LSSU210	18	1-9/16	1-3/4	8-13/16	10	10d	7	10d x 1-1/2	2685	1695	11.94	7.54	2110	1330	9.39	5.92	
1-3/4	LSSH179	LSSUI25	18	1-13/16	1-5/8	8-13/16	10	10d	7	10d x 1-1/2	2685	1695	11.94	7.54	2110	1330	9.39	5.92	
2 - 2-1/8	LSSH20	LSSUI2.06, LSSU2.1	18	2-1/8	2-1/2	8-13/16	10	10d	7	10d x 1-1/2	2535	1555	11.28	6.92	1990	1220	8.85	5.43	
2-1/4 - 2-5/16	LSSH23	LSSUI35	18	2-5/16	2-3/8	8-13/16	10	10d	7	10d x 1-1/2	2535	1555	11.28	6.92	1990	1220	8.85	5.43	
2-1/2	LSSH25	LSSUH310	16	2-9/16	2-3/4	8-13/16	14	16d	12	10d x 1-1/2	2895	1895	12.88	8.43	2270	1490	10.10	6.63	
2-5/8	LSSH26	-- --	16	2-11/16	2-5/8	8-13/16	14	16d	12	10d x 1-1/2	2895	1895	12.88	8.43	2270	1490	10.10	6.63	
3	LSSH31	LSSU210-2	16	3-1/8	3-3/4	8-13/16	14	16d	12	10d x 1-1/2	3045	2515	13.55	11.19	2390	1975	10.63	8.79	
3-1/2	LSSH35	LSSU410	16	3-9/16	3-1/2	8-13/16	14	16d	12	10d x 1-1/2	3045	2515	13.55	11.19	2390	1975	10.63	8.79	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish
Stainless Steel, Gold Coat, HDG, Triple Zinc

LGU / MGU / HGU Girder Hangers

USP STRUCTURAL CONNECTORS MiTek

LGU, **MGU**, and **HGU**'s are high capacity girder to girder face mount connectors. Fastening is by WS structural screws for ease of installation. Fastenings are placed high on connector to permit the connection of a deep carried member to a shallower carrying member. Very useful where tops of beams must be flush.

Materials: LGU / MGU – 10 gauge; HGU – 7 gauge

Finish: G90 galvanizing

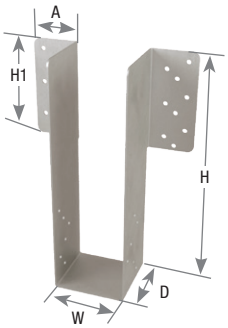
Options: See Specialty Options chart on page 158.

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- WS structural screws supplied with connector. Substituting lag screws will reduce capacity.
- Beams comprised of multiple plies must be laminated to act as a single member.
- Multi-ply carrying beams may require additional connection of laminations at connector.
- Beam height dimension (H) must be specified when ordering.

Typical LGU, MGU, HGU installation



LGU, MGU, HGU

Beam Width (in)	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H[2] (min)	H1	D	A	Fastener Schedule[3] Header Qty	Header Type	Truss Qty	Truss Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
3-1/8	LGU325	LGU3.25-SDS	10	3-1/4	8	7-3/8	4-1/2	3-1/4	18	WS3	12	WS3	Lbs	10760	6980	8655	6305
													kN	47.86	31.05	38.50	28.05
3-1/2	LGU363	LGU3.63-SDS	10	3-5/8	8	7-3/8	4-1/2	3-1/4	18	WS3	12	WS3	Lbs	10760	6980	8655	6305
													kN	47.86	31.05	38.50	28.05
	MGU363	MGU3.63-SDS	10	3-5/8	9-1/4	8-5/8	4-1/2	4	24	WS3	16	WS3	Lbs	17465	8555	14055	7730
													kN	77.69	38.05	62.52	34.38
	HGU363	HGU3.63-SDS	7	3-5/8	11	10-3/8	5-1/4	4-3/4	38	WS3	24	WS3	Lbs	20240	11355	20240	11355
													kN	90.03	50.51	90.03	50.51
5-1/8	LGU525	LGU5.25-SDS	10	5-1/4	8	7-3/8	4-1/2	3-1/4	18	WS3	12	WS3	Lbs	10760	6980	8655	6305
													kN	47.86	31.05	38.50	28.05
	MGU525	MGU5.25-SDS	10	5-1/4	9-1/4	8-5/8	4-1/2	4	24	WS3	16	WS3	Lbs	17465	8555	14055	7730
													kN	77.69	38.05	62.52	34.38
	HGU525	HGU5.25-SDS	7	5-1/4	11	10-3/8	5-1/4	4-3/4	38	WS3	24	WS3	Lbs	20240	11355	20240	11355
													kN	90.03	50.51	90.03	50.51
5-1/4	MGU550	MGU5.50-SDS	10	5-1/2	9-1/4	8-5/8	4-1/2	4	24	WS3	16	WS3	Lbs	17465	8555	14055	7730
													kN	77.69	38.05	62.52	34.38
	HGU550	HGU5.50-SDS	7	5-1/2	11	10-3/8	5-1/4	4-3/4	38	WS3	24	WS3	Lbs	20240	11355	20240	11355
													kN	90.03	50.51	90.03	50.51
5-1/2	MGU562	MGU5.62-SDS	10	5-5/8	9-1/4	8-5/8	4-1/2	4	24	WS3	16	WS3	Lbs	17465	8555	14055	7730
													kN	77.69	38.05	62.52	34.38
	HGU562	HGU5.62-SDS	7	5-5/8	11	10-3/8	5-1/4	4-3/4	38	WS3	24	WS3	Lbs	20240	11355	20240	11355
													kN	90.03	50.51	90.03	50.51
6-3/4	MGU700	MGU7.00-SDS	10	7	9-1/4	8-5/8	4-1/2	4	24	WS3	16	WS3	Lbs	17465	8555	14055	7730
													kN	77.69	38.05	62.52	34.38
	HGU700	HGU7.00-SDS	7	7	11	10-3/8	5-1/4	4-3/4	38	WS3	24	WS3	Lbs	20240	11355	20240	11355
													kN	90.03	50.51	90.03	50.51
7	HGU725	HGU7.25-SDS	7	7-1/4	11	10-3/8	5-1/4	4-3/4	38	WS3	24	WS3	Lbs	20240	11355	20240	11355
													kN	90.03	50.51	90.03	50.51
8-3/4	HGU900	HGU9.00-SDS	7	9	11	10-3/8	5-1/4	4-3/4	38	WS3	24	WS3	Lbs	20240	11355	20240	11355
													kN	90.03	50.51	90.03	50.51

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) H denotes minimum hanger height. Specify height when ordering.
3) WS3 Wood Screws are 1/4" x 3" long and are included in hangers.
New products or updated product information are designated in **blue font**.

Continued on next page

LGU / MGU / HGU Girder Hangers

USP STRUCTURAL CONNECTORS MiTek

Specialty Options Chart
– refer to Specialty Options pages 220 and 222 for additional details

Option	USP Series	Skewed[1]	Inverted Flange
Range	LGU MGU HGU	1° to 45°	One Inverted-Flange option available on some sizes. See footnotes 2 and 3.
Factored Resistance	LGU	55% of table value. 30% of uplift.	100% of table value
	MGU	65% of table value. 30% of uplift.	
	HGU	70% of table value. 30% of uplift.	
Ordering	LGU MGU HGU	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex. LGU525_H=18_SK45R_SQ	Add *1IF* and right *(R)* or left *(L)* to product number. Ex. LGU525_H=18_1IFR

1) Skewed hangers with skews greater than 15° may have all joist fasteners on outside flange.
2) One inverted-flange (1IF) is available on the following sizes:
LGU363, LGU525
MGU525, MGU550, MGU563, MGU700
HGU525, HGU550, HGU562, HGU700, HGU725, HGU900
3) The inverted flange option is not available on skewed LGU, MGU or HGU hangers.
4) Bevel cut required on skewed parts to meet table loads.
5) Skewed hangers typically require a bevel cut however, a square cut option may be available as a custom when requested.

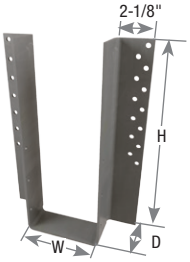
New products or updated product information are designated in **blue font.**

GHF Glulam Face Mount Hangers

Materials: See chart
Finish: USP primer
Options: See Specialty Options Chart on page 159.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- WS Wood Screws are supplied with GHF hangers.

Typical GHF51135 installation



GHF

Glulam Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance[1] Lbs Floor 100%	Lbs Uplift[3] 115%	kN Floor 100%	kN Uplift[3] 115%	S-P-F Factored Resistance[1] Lbs Floor 100%	Lbs Uplift[3] 115%	kN Floor 100%	kN Uplift[3] 115%
3-1/8 x 6	GHF31600	--	12	3-3/16	5-7/8	2-3/8	10	WS25	4	WS25	3980	2340	17.70	10.41	3125	1835	13.90	8.16
3-1/8 x 7-1/2	GHF31750	--	12	3-3/16	7-3/8	2-3/8	12	WS25	4	WS25	4770	2340	21.22	10.41	3745	1835	16.66	8.16
3-1/8 x 9	GHF31900	--	12	3-3/16	8-7/8	2-3/8	16	WS25	5	WS25	6360	2920	28.29	12.99	4995	2295	22.22	10.21
3-1/8 x 10-1/2	GHF31105	--	12	3-3/16	10-3/8	2-3/8	20	WS25	6	WS25	7950	3505	35.36	15.59	6240	2755	27.76	12.25
3-1/8 x 12	GHF31120	--	12	3-3/16	11-7/8	2-3/8	22	WS25	6	WS25	8420	3505	37.45	15.59	6610	2755	29.40	12.25
3-1/8 x 13-1/2	GHF31135	--	12	3-3/16	13-3/8	2-3/4	24	WS25	6	WS25	8420	3505	37.45	15.59	6610	2755	29.40	12.25
3-1/8 x 15	GHF31150	--	12	3-3/16	14-7/8	2-3/4	26	WS25	7	WS25	9770	4100	43.46	18.24	7670	3220	34.12	14.32
3-1/8 x 16-1/2	GHF31165	--	12	3-3/16	16-3/8	2-3/4	28	WS25	9	WS25	10565	5270	47.00	23.44	8295	4135	36.90	18.39
3-1/8 x 18	GHF31178	--	12	3-3/16	17-3/4	2-3/4	30	WS25	11	WS25	11360	6435	50.53	28.62	8920	5055	39.68	22.49
3-1/4 x 9	GHF32900	--	12	3-5/16	8-7/8	2-3/8	16	WS25	5	WS25	6360	2920	28.29	12.99	4995	2295	22.22	10.21
3-1/4 x 12	GHF32120	--	12	3-5/16	11-7/8	2-3/8	22	WS25	6	WS25	8420	3505	37.45	15.59	6610	2755	29.40	12.25

1) Factored resistances based on seat bearing calculated at 560 psi perpendicular to grain.
2) WS25 Wood Screws are 1/4" x 2-1/2" long and the WS3 Wood Screws are 1/4" x 3" long and are included with GHF hangers.
3) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
New products or updated product information are designated in **blue font.**

Continued on next page

GHF Glulam Face Mount Hangers

USP STRUCTURAL CONNECTORS MiTek

Glulam Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance[1] Lbs Floor 100%	Lbs Uplift[3] 115%	kN Floor 100%	kN Uplift[3] 115%	S-P-F Factored Resistance[1] Lbs Floor 100%	Lbs Uplift[3] 115%	kN Floor 100%	kN Uplift[3] 115%
5-1/8 x 6	GHF51600	--	12	5-3/16	5-7/8	2-3/8	10	WS3	4	WS3	3980	2340	17.70	10.41	3125	1835	13.90	8.16
5-1/8 x 7-1/2	GHF51750	--	12	5-3/16	7-3/8	2-3/8	14	WS3	4	WS3	5570	2340	24.78	10.41	4370	1835	19.44	8.16
5-1/8 x 9	GHF51900	--	12	5-3/16	8-7/8	2-3/8	18	WS3	5	WS3	7160	2920	31.85	12.99	5620	2295	25.00	10.21
5-1/8 x 10-1/2	GHF51105	--	12	5-3/16	10-3/8	2-3/8	22	WS3	6	WS3	8750	3505	38.92	15.59	6870	2755	30.56	12.25
5-1/8 x 12	GHF51120	--	12	5-3/16	11-7/8	2-3/8	24	WS3	6	WS3	9540	3505	42.44	15.59	7490	2755	33.32	12.25
5-1/8 x 13-1/2	GHF51135	--	7	5-3/16	13-3/8	2-3/8	26	WS3	6	WS3	11800	4010	52.49	17.84	9260	3145	41.19	13.99
5-1/8 x 15	GHF51150	--	7	5-3/16	14-7/8	2-3/4	28	WS3	7	WS3	12705	4675	56.51	20.80	9975	3670	44.37	16.32
5-1/8 x 16-1/2	GHF51165	--	7	5-3/16	16-3/8	2-3/4	30	WS3	7	WS3	13615	4675	60.56	20.80	10685	3670	47.53	16.32
5-1/8 x 18	GHF51178	--	7	5-3/16	17-3/4	2-3/4	32	WS3	8	WS3	14520	5345	64.59	23.78	11400	4195	50.71	18.66
5-1/8 x 19-1/2	GHF51192	--	7	5-3/16	19-1/8	2-3/4	34	WS3	8	WS3	15095	5345	67.15	23.78	11850	4195	52.71	18.66
5-1/8 x 21	GHF51205	--	7	5-3/16	20-3/8	2-3/4	36	WS3	9	WS3	15545	6010	69.15	26.73	12200	4720	54.27	21.00
5-1/8 x 24	GHF51233	--	7	5-3/16	23-1/4	2-3/4	40	WS3	11	WS3	16450	7345	73.17	32.67	12915	5770	57.45	25.67
5-1/4 x 9	GHF52900	--	12	5-5/16	8-7/8	2-3/8	18	WS3	5	WS3	7160	2920	31.85	12.99	5620	2295	25.00	10.21
5-1/4 x 12	GHF52120	--	12	5-5/16	11-7/8	2-3/8	24	WS3	6	WS3	9540	3505	42.44	15.59	7490	2755	33.32	12.25
6-3/4 x 6	GHF67600	--	12	6-7/8	5-7/8	2-3/8	12	WS3	4	WS3	4770	2340	21.22	10.41	3745	1835	16.66	8.16
6-3/4 x 7-1/2	GHF67750	--	12	6-7/8	7-3/8	2-3/8	16	WS3	5	WS3	6360	2920	28.29	12.99	4995	2295	22.22	10.21
6-3/4 x 9	GHF67900	--	12	6-7/8	8-7/8	2-3/8	20	WS3	6	WS3	7950	3505	35.36	15.59	6240	2755	27.76	12.25
6-3/4 x 10-1/2	GHF67105	--	12	6-7/8	10-3/8	2-3/8	24	WS3	8	WS3	9540	4685	42.44	20.84	7490	3675	33.32	16.35
6-3/4 x 12	GHF67120	--	7	6-7/8	11-7/8	2-3/4	28	WS3	8	WS3	12705	5345	56.51	23.78	9975	4195	44.37	18.66
6-3/4 x 13-1/2	GHF67135	--	7	6-7/8	13-3/8	2-3/4	30	WS3	8	WS3	13615	5345	60.56	23.78	10685	4195	47.53	18.66
6-3/4 x 15	GHF67150	--	7	6-7/8	14-7/8	2-3/4	32	WS3	10	WS3	14520	6680	64.59	29.71	11400	5245	50.71	23.33
6-3/4 x 16-1/2	GHF67165	--	7	6-7/8	16-3/8	2-3/4	34	WS3	10	WS3	15430	6680	68.64	29.71	12110	5245	53.87	23.33
6-3/4 x 18	GHF67180	--	7	6-7/8	17-3/4	2-3/4	36	WS3	12	WS3	16335	8015	72.66	35.65	12825	6290	57.05	27.98
6-3/4 x 19-1/2	GHF67195	--	7	6-7/8	19-1/8	3	40	WS3	14	WS3	18150	9350	80.74	41.59	14250	7340	63.39	32.65
6-3/4 x 21	GHF67210	--	7	6-7/8	20-3/8	3	44	WS3	18	WS3	18875	12025	83.96	53.49	14820	9440	65.92	41.99
6-3/4 x 22-1/2	GHF67225	--	7	6-7/8	21-7/8	3	46	WS3	20	WS3	18875	13360	83.96	59.43	14820	10485	65.92	46.64
6-3/4 x 24	GHF67240	--	7	6-7/8	23-1/4	3	48	WS3	22	WS3	18875	14695	83.96	65.37	14820	11535	65.92	51.31

1) Factored resistances based on seat bearing calculated at 560 psi perpendicular to grain.
2) WS25 Wood Screws are 1/4" x 2-1/2" long and the WS3 Wood Screws are 1/4" x 3" long and are included with GHF hangers.
3) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
New products or updated product information are designated in **blue font.**

Specialty Options Chart

– refer to Specialty Options pages 220-221 for additional details

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2]	Inverted Flange
Range	1˚ to 50˚	1˚ to 45˚	See Sloped Seat and Skewed	Not available in widths less than 4-1/2"
Factored Resistance	100% of table load. 75% of uplift load on skews greater than 15˚.	100% of table load	80% of table load on skews greater. 75% of uplift load than 15˚.	100% of table load. 65% of table load when nailing into the support members end grain.
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex. GHF31900_SK45R_BV	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. GHF31900_SL30D	See Sloped Seat and Skewed. Ex. GHF31900_SK45R_BV_SL30D	Add *IF* to product number. Ex. GHF51135_IF

Typical GHF51135IF inverted flange installation

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) Skewed hangers typically require a bevel cut however, a square cut option may be available as a custom when requested.
New products or updated product information are designated in **blue font**.

Continued on next page

KEG / KLEG / KMEG Bolted Glulam Beam Hangers

USP STRUCTURAL CONNECTORS MiTek

Bolt-only fastening, heavy steel construction, and a continuous top flange allow the KLEG, KMEG, and KEG products to have high load capacities.

KLEG – (4) bolt light-duty hanger.

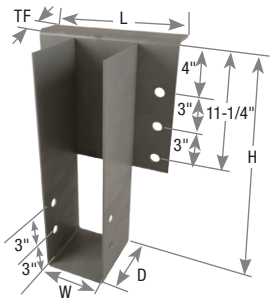
KMEG – (6) bolt medium-duty hanger.

KEG – (8) bolt heavy-duty hanger.

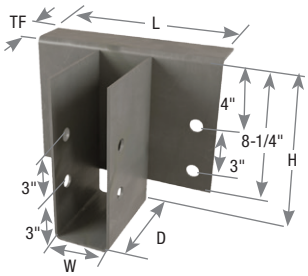
Materials: See chart
Finish: USP primer
Options: See Specialty Options Chart.
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Bolts are not supplied unless ordered separately. Bolts provided by other suppliers must meet or exceed ASTM A 307 Grade A, or ASME SAE Grade 2, or better.
- **Minimum header height is 10" for the KLEG; 13" for the KMEG; 20" for the KEG.**
- Beam height dimension (H) must be specified when ordering.

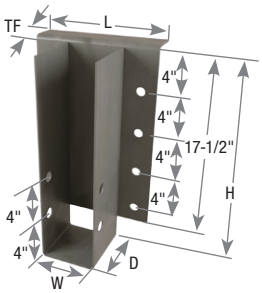
Typical KLEG5 installation



KMEG5



KLEG3



KEG5

KLEG without top flange

Beam Width (in)	USP Stock No.	Ref. No.	Steel Gauge: Top Flange	Steel Gauge: U-Strap	Dimensions (in): W	Dimensions (in): H[3]	Dimensions (in): D	Dimensions (in): TF	Dimensions (in): L	Fastener Schedule: Header Qty	Fastener Schedule: Header Bolt Dia.	Fastener Schedule: Joist Qty	Fastener Schedule: Joist Bolt Dia.	Unit	DF Factored Resistance[1]: With Top Flange Vertical 100%	DF Factored Resistance[1]: Without Top Flange Vertical 100%	DF Factored Resistance[1]: Uplift 115%[2]	S-P-F Factored Resistance[1]: With Top Flange Vertical 100%	S-P-F Factored Resistance[1]: Without Top Flange Vertical 100%	S-P-F Factored Resistance[1]: Uplift 115%[2]
3-1/8	KLEG3	LEG3	7	7	3-1/4	specify	6	2-1/2	12	4	3/4	2	3/4	Lbs	15060	5125	4040	12950	4410	3475
														kN	66.99	22.80	17.97	57.60	19.62	15.46
5-1/8	KLEG5	LEG5	7	7	5-1/4	specify	6	2-1/2	12	4	3/4	2	3/4	Lbs	15060	5125	**5125**	12950	4410	5085
														kN	66.99	22.80	**22.80**	57.60	19.62	22.62
	KMEG5	MEG5	7	7	5-1/4	specify	6	2-1/2	12	6	3/4	2	3/4	Lbs	17555	7620	5915	15095	6555	5085
														kN	78.09	33.90	26.31	67.15	29.16	22.62
	KEG5	EG5	1/4	7	5-1/4	specify	6	2-1/2	12	8	1	2	1	Lbs	23125	13190	7625	19890	11345	6560
														kN	102.87	58.67	33.92	88.48	50.47	29.18
6-3/4	KLEG7	LEG7	7	7	6-7/8	specify	6	2-1/2	12	4	3/4	2	3/4	Lbs	15060	5125	**5125**	12950	4410	5085
														kN	66.99	22.80	**22.80**	57.60	19.62	22.62
	KMEG7	MEG7	7	7	6-7/8	specify	6	2-1/2	12	6	3/4	2	3/4	Lbs	17555	7620	5910	15095	6555	5085
														kN	78.09	33.90	26.29	67.15	29.16	22.62
	KEG7	EG7	1/4	7	6-7/8	specify	6	2-1/2	13-1/2	8	1	2	1	Lbs	24410	13235	9595	20995	11380	8250
														kN	108.58	58.87	42.68	93.39	50.62	36.70
8-3/4	KEG9	EG9	1/4	7	8-7/8	specify	6	2-1/2	15-1/2	8	1	2	1	Lbs	26100	13270	9580	22445	11410	8240
														kN	116.10	59.03	42.61	99.84	50.75	36.65
10-3/4	KEG11	-- --	1/4	7	10-7/8	specify	6	2-1/2	17-1/2	8	1	2	1	Lbs	27785	13300	9570	23895	11440	8230
														kN	123.59	59.16	42.57	106.29	50.89	36.61

1) Factored resistances are for a supporting member with a width of 5-1/2", and 560 psi perpendicular to grain loading in single shear.
2) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
3) "Specify" denotes the required supported beam height that must be specified at the time of ordering.
New products or updated product information are designated in **blue font**.

Specialty Options Chart

– refer to Specialty Options pages 220, 222-223 for additional details

Option	Skewed[3,4]	Sloped Seat	Top Flange Offset[1,2]
Range	1° to 45°	1° to 45°	-- --
Factored Resistance	KLEG - 14400 lbs. Max. KMEG - 14400 lbs. Max. KEG - 20520 lbs. Max.	KLEG - 13920 lbs. Max. KMEG - 13920 lbs. Max. KEG - 13920 lbs. Max.	KLEG - 8160 lbs. Max. KLEG - 9" min. height. KMEG - 8160 lbs. Max. KMEG - 11" min. height.
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)*** to product number. Ex. KLEG3_H=112_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. KLEG3_H=112_SL30D	Add *OS*, and right *(R)* or left *(L)*, to product number. Ex. KLEG3_H=112_OSL

1) Top flange offset hangers may not be skewed.
2) Top flange offset option is not available for KEG models.
3) Carried member must have square cut end on skewed option. Refer to Typical PHXU hanger, skewed, left shown, Type B illustration on page 222.

New products or updated product information are designated in **blue font.**

KGB / KHGB / KHHB Glulam Top Mount Hangers

These hangers cover medium-to-heavy glulam beam and purlin applications.

KHHB – Medium capacity hanger.

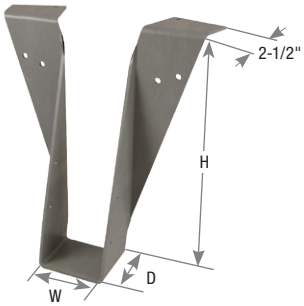
KGB – Medium-to-heavy capacity hanger.

KHGB – Heavy capacity hanger.

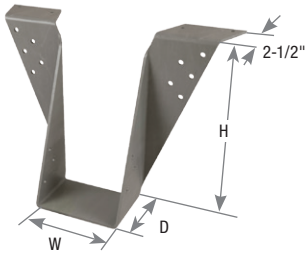
Materials: 7 gauge
Finish: USP primer
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- WS3 Wood Screws are supplied with hangers.
- Beam height dimension (H) must be specified when ordering.
- **Minimum height (H) is 7-1/2".**
- See Welded Installation chart on page 224.

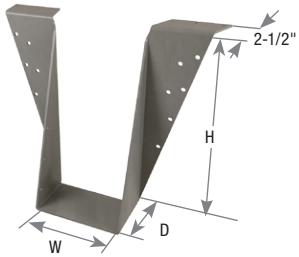
Typical KHHB installation



KHHB



KGB



KHGB

Beam Width (in)	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)[3] W	H[3]	D	Fastener Schedule[5] Header[4] Top Qty	Face Qty	Wood Screw	Joist Qty	Wood Screw	Unit	DF Factored Resistance[1] Vertical 100%	Uplift[2] 115%	S-P-F Factored Resistance[1] Vertical 100%	Uplift[2] 115%
3-1/8	KHHB3	HHB3	7	3-1/4	specify	3	4	6	WS3	6	WS3	Lbs	9545	3005	7495	2360
												kN	42.46	13.37	33.34	10.50
	KGB3	GB3	7	3-1/4	specify	3-1/2	4	10	WS3	6	WS3	Lbs	10165	3005	7980	2360
												kN	45.22	13.37	35.50	10.50
5-1/8	KHHB5	HHB5	7	5-1/4	specify	3	4	6	WS3	6	WS3	Lbs	9545	3005	7495	2360
												kN	42.46	13.37	33.34	10.50
	KGB5	GB5	7	5-1/4	specify	3-1/2	4	10	WS3	6	WS3	Lbs	10165	3005	7980	2360
												kN	45.22	13.37	35.50	10.50
	KHGB5	HGB5	7	5-1/4	specify	4	4	12	WS3	6	WS3	Lbs	10165	3005	7980	2360
												kN	45.22	13.37	35.50	10.50
6-3/4	KHHB7	HHB7	7	6-7/8	specify	3	4	6	WS3	6	WS3	Lbs	9545	3005	7495	2360
												kN	42.46	13.37	33.34	10.50
	KGB7	GB7	7	6-7/8	specify	3-1/2	4	10	WS3	6	WS3	Lbs	10165	3005	7980	2360
												kN	45.22	13.37	35.50	10.50
	KHGB7	HGB7	7	6-7/8	specify	4	4	12	WS3	6	WS3	Lbs	10165	3005	7980	2360
												kN	45.22	13.37	35.50	10.50

1) Factored resistances are based on 560 psi perpendicular to grain loading.
2) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
3) "Specify" denotes the required supported beam height must be specified at the time of ordering.
4) Supporting header shall be no less than 3" thick.
5) WS3 Wood Screws are 1/4" x 3" long and are included with hangers.
New products or updated product information are designated in **blue font**.

KGLT / KHGLT Glulam Beam Hangers

USP STRUCTURAL CONNECTORS MiTek

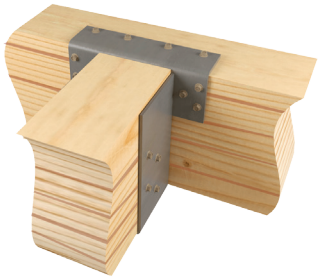
These heavy beam hangers are designed for use with glulam and timber beams. The continuous top mount flange offers high load capacity with minimal nailing.

KGLT – Medium capacity hanger.

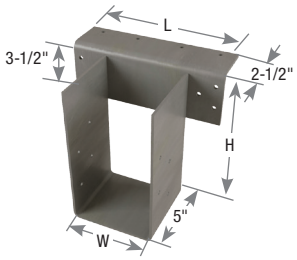
KHGLT – Heavy capacity hanger.

Materials: Top Flange – 3 gauge; U-Strap – 7 gauge
Finish: USP primer
Options: See Specialty Options Chart on page 163.
Codes: Load values are derived from data submitted to various North American building code evaluators.

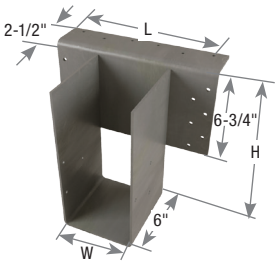
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Beam height dimension (H) must be specified when ordering.
- See Welded Installation chart on page 224.



Typical KGLT5 installation



KGLT



KHGLT

Beam Width	USP Stock No.	Ref. No.	Dimensions (in) W	H[3]	L	Fastener Schedule[4] Header Top Qty	Header Face Qty	Header Wood Screw	Joist Qty	Joist Wood Screw	Unit	DF Factored Resistance[2,5] f_{cp} = 625 psi 100%	DF Uplift[1] 115%	S-P-F Factored Resistance[2,5] f_{cp} = 625 psi 100%	S-P-F Uplift[1] 115%
3-1/8	KGLT3	GLT3	3-1/4	specify	10	4	6	WS3	8	WS3	Lbs	15325	4575	12030	3590
											kN	68.17	20.35	53.51	15.97
	KHGLT3	HGLT3	3-1/4	specify	12	6	12	WS3	6	WS3	Lbs	19455	3875	15275	3040
											kN	86.54	17.24	67.95	13.52
3-1/2	KGLT4	GLT4, GLTV4	3-5/8	specify	10	4	6	WS3	8	WS3	Lbs	15325	4575	12030	3590
											kN	68.17	20.35	53.51	15.97
	KHGLT4	HGLT4, HGLTV4	3-5/8	specify	12	6	12	WS3	6	WS3	Lbs	19455	3875	15275	3040
											kN	86.54	17.24	67.95	13.52
5-1/8	KGLT5	GLT5, GLTV5	5-1/4	specify	10	4	6	WS3	8	WS3	Lbs	15325	4575	12030	3590
											kN	68.17	20.35	53.51	15.97
	KHGLT5	HGLT5, HGLTV5	5-1/4	specify	12	6	12	WS3	6	WS3	Lbs	19455	3875	15275	3040
											kN	86.54	17.24	67.95	13.52
5-1/2	KGLT6	GLT6, GLTV6	5-5/8	specify	12	4	6	WS3	8	WS3	Lbs	15325	4575	12030	3590
											kN	68.17	20.35	53.51	15.97
	KHGLT6	HGLT6, HGLTV6	5-5/8	specify	12	6	12	WS3	6	WS3	Lbs	19455	3875	15275	3040
											kN	86.54	17.24	67.95	13.52
5-5/16	KHGLT537	HGLTV5.37	5-3/8	specify	12	6	12	WS3	6	WS3	Lbs	19455	3875	15275	3040
											kN	86.54	17.24	67.95	13.52
6-3/4	KGLT7	GLT7, GLTV7.12	6-7/8	specify	12	4	6	WS3	8	WS3	Lbs	15325	4575	12030	3590
											kN	68.17	20.35	53.51	15.97
	KHGLT7	HGLT7, HGLTV7.12	6-7/8	specify	12	6	12	WS3	6	WS3	Lbs	19455	3875	15275	3040
											kN	86.54	17.24	67.95	13.52
8-3/4	KGLT9	-- --	8-7/8	specify	14	4	6	WS3	8	WS3	Lbs	15325	4575	12030	3590
											kN	68.17	20.35	53.51	15.97
	KHGLT9	HGLT9, HGLTV9	8-7/8	specify	14	6	12	WS3	6	WS3	Lbs	19455	3875	15275	3040
											kN	86.54	17.24	67.95	13.52
10-3/4	KHGLT11	-- --	10-7/8	specify	16	6	12	WS3	6	WS3	Lbs	19455	3875	15275	3040
											kN	86.54	17.24	67.95	13.52

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) KGLT and KHGLT load values based on 625 psi perpendicular to grain loading.
3) "Specify" denotes the required supported beam height that must be specified at time of ordering, with 7-1/2" being the minimum.
4) WS3 Wood Screws are 1/4" x 3" long and are included with the hangers.
5) No further increase for duration of load allowed.
New products or updated product information are designated in **blue font**.

Continued on next page

KGLT / KHGLT Glulam Beam Hangers

USP STRUCTURAL CONNECTORS MiTek

Specialty Options Chart

– refer to Specialty Options pages 220, 220-223 for additional details

Option	Skewed[1,3]	Sloped Seat[2,3]	Sloped / Skewed[1,2,3]	Sloped Top Flange[4]	Top Flange Offset	Saddle
Range	1° to 50°	1° to 45°	See Sloped Seat and Skewed	0° to 45°	-- --	-- --
Factored Resistance	50% of uplift load on skew greater than 15°	KGLT - 5920 lbs. Max. KHGLT - 10080 lbs. Max.	50% of uplift load on skew greater than 15°	Reduce table loads using straight-line interpolation	60% of table load for KGLT. 45% of table load for KHGLT.	100% of table load per side
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex. KGLT3_H=16_SK45R_BV	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. KGLT3_H=16_SL30D	See Sloped Seat and Skewed. Ex. KGLT3_H=16_SK45R_BV_SL30D	Add *SF*, angle required and right *(R)* or left *(L)*, to product number. Ex. KGLT3_H=16_SF30L	Add *OS*, and right *(R)* or left *(L)*, to product number. Ex. KGLT3_H=16_OSL	Add SA,and saddle width required to product number. Ex. KGLT3_H=16_SA=5-1/2"

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) Skewed hangers typically require a bevel cut however, a square cut option may be available as a custom when requested.
4) Sloped top flanges with slopes greater than 15° may have additional header nails.
New products or updated product information are designated in **blue font**.

KGLS / KGLST / KHGLS / KHGLST Glulam Saddle Hangers

KGLS – Saddle hanger.

KGLST – Saddle hanger with seismic straps.

KHGLS – Heavier version of KGLS.

KHGLST – Heavier version of KGLST.

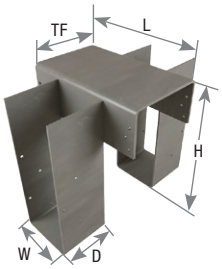
Materials: Top flange - 3 gauge; Stirrup - 7 gauge

Finish: USP primer

Options: See KGLS & KHGLS Specialty Options Chart on page 164.

Codes: Load values are derived from data submitted to various North American building code evaluators.

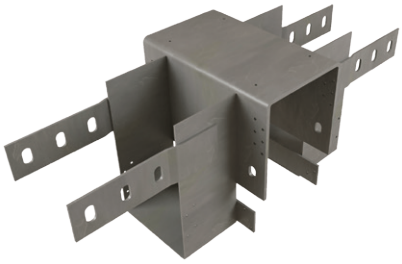
Typical KHGLST installation



KGLS

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Loads and nail schedule apply to each saddle hanger stirrup.
- **Minimum header height is 8-1/2" for the KGLS; 8-1/2" for the KGLST; 10-1/2" for the KHGLS, and 10-1/2" for the KHGLST.**
- Beam height dimension (H) must be specified when ordering.
- **KGLST** and **KHGLST** models include seismic straps which must be installed with (3) 3⁄4" thru-bolts in each supported member and (2) 3⁄4" thru-bolts into the supporting beams.
- See Welded Installation chart on page 224.



KHGLST

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KGLS / KGLST / KHGLS / KHGLST Glulam Saddle Hangers

USP STRUCTURAL CONNECTORS MiTek

Supported Glulam Beam Size (in)	USP Stock No.	Ref. No.	Dimensions (in)[3] W	H[7]	D	L	TF	Fastener Schedule: Wood Screws[2,5] Header Qty	Header Type	Joist Qty	Joist Type	Bolts Header Qty	Header Dia.	Joist Qty	Joist Dia.	Unit	DF Factored Resistance[2,6] Vertical 100%	Uplift[1] 115%	S-P-F Factored Resistance[2,6] Vertical 100%	Uplift[1] 115%
3-1/8	KGLS35	GLS3-5	3-1/4	specify	5	6	5-1/4	6	WS3	6	WS3	--	--	--	--	Lbs	15570	3755	12225	2945
																kN	69.26	16.70	54.38	13.10
	KGLST35	-- --	3-1/4	specify	6-1/2	10	5-1/4	6	WS3	6	WS3	2	3/4	3	3/4	Lbs	19265	3755	15125	2945
																kN	85.69	16.70	67.28	13.10
	KGLS37	GLS3-7	3-1/4	specify	5	6	6-7/8	6	WS3	6	WS3	--	--	--	--	Lbs	15570	3755	12225	2945
																kN	69.26	16.70	54.38	13.10
	KGLST37	-- --	3-1/4	specify	6-1/2	10	6-7/8	6	WS3	6	WS3	2	3/4	3	3/4	Lbs	19265	3755	15125	2945
																kN	85.69	16.70	67.28	13.10
	KGLS39	GLS3-9	3-1/4	specify	5	6	8-7/8	6	WS3	6	WS3	--	--	--	--	Lbs	15570	3755	12225	2945
																kN	69.26	16.70	54.38	13.10
	KGLST39	-- --	3-1/4	specify	6-1/2	10	8-7/8	6	WS3	6	WS3	2	3/4	3	3/4	Lbs	19265	3755	15125	2945
																kN	85.69	16.70	67.28	13.10
5-1/8	KGLS55	GLS5-5	5-1/4	specify	5	9	5-1/4	6	WS3	6	WS3	--	--	--	--	Lbs	22020	3755	17290	2945
																kN	97.95	16.70	76.91	13.10
	KGLST55	-- --	5-1/4	specify	6-1/2	12	5-1/4	6	WS3	6	WS3	2	3/4	3	3/4	Lbs	28075	3755	22040	2945
																kN	124.88	16.70	98.04	13.10
	KGLS57	GLS5-7	5-1/4	specify	5	9	6-7/8	6	WS3	6	WS3	--	--	--	--	Lbs	23450	3755	18410	2945
																kN	104.31	16.70	81.89	13.10
	KGLST57	-- --	5-1/4	specify	6-1/2	12	6-7/8	6	WS3	6	WS3	2	3/4	3	3/4	Lbs	29505	3755	23165	2945
																kN	131.24	16.70	103.04	13.10
	KHGLS5	HGLS5	5-1/4	specify	6-1/2	12	specify	14	WS3	8	WS3	--	--	--	--	Lbs	30595	5005	24020	3930
																kN	136.09	22.26	106.85	17.48
	KHGLST5	-- --	5-1/4	specify	6	12	specify	14	WS3	8	WS3	2	3/4	3	3/4	Lbs	28575	5005	22435	3930
																kN	127.11	22.26	99.80	17.48
6-3/4	KGLS77	GLS7-7	6-7/8	specify	5	12	6-7/8	6	WS3	6	WS3	--	--	--	--	Lbs	29850	3755	23435	2945
																kN	132.78	16.70	104.24	13.10
	KGLST77	-- --	6-7/8	specify	6-1/2	12	6-7/8	6	WS3	6	WS3	2	3/4	3	3/4	Lbs	35755	3755	28070	2945
																kN	159.05	16.70	124.86	13.10
	KGLS79	GLS7-9	6-7/8	specify	5	12	8-7/8	6	WS3	6	WS3	--	--	--	--	Lbs	29850	3755	23435	2945
																kN	132.78	16.70	104.24	13.10
	KGLST79	-- --	6-7/8	specify	6-1/2	12	8-7/8	6	WS3	6	WS3	2	3/4	3	3/4	Lbs	37825	3755	29695	2945
																kN	168.25	16.70	132.09	13.10
	KHGLS7	HGLS7	6-7/8	specify	6	12	specify	14	WS3	8	WS3	--	--	--	--	Lbs	32630	5005	25615	3930
																kN	145.15	22.26	113.94	17.48
	KHGLST7	-- --	6-7/8	specify	6-1/2	14	specify	14	WS3	8	WS3	2	3/4	3	3/4	Lbs	36565	5005	28705	3930
																kN	162.65	22.26	127.69	17.48
8-3/4	KHGLS9	HGLS9	8-7/8	specify	6	12	specify	14	WS3	8	WS3	--	--	--	--	Lbs	32630	5005	25615	3930
																kN	145.15	22.26	113.94	17.48
	KHGLST9	-- --	8-7/8	specify	6-1/2	16	specify	14	WS3	8	WS3	2	3/4	3	3/4	Lbs	40505	5005	31800	3930
																kN	180.18	22.26	141.45	17.48

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Factored resistances and fastener schedules apply to each side of the saddled hanger.
3) Minimum header height is 8-1/2" for the KGLS and KGLST; 10-1/2" for the KHGLS and KHGLST.
4) Hangers with seismic straps may require a minimum joist depth. Consult USP for additional information.
5) WS3 Wood Screws are 1/4" x 3" long and are included with hangers.
6) The bearing loads are based on 560 psi.
7) "Specify" denotes the required supported beam height that must be specified at time of ordering.
New products or updated product information are designated in **blue font**.

KGLS / KHGLS Specialty Options Chart – refer to Specialty Options pages 220, 222-223 for additional details

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2]	Sloped Top Flange[4]	Top Flange Offset	Saddle
Range	1° to 50°	1° to 45°	See Sloped Seat and Skewed	0° to 30°	May not be skewed	5" minimum saddle
Factored Resistance	KGLS - 6500 lbs. Max. KHGLS - 7980 lbs. Max. 50% of uplift load on skews greater than 15°.	KGLS - 9360 lbs. Max. KHGLS - 13200 lbs. Max.	KGLS - 7920 lbs. Max. **KHGLS - may not be sloped / skewed.**	Reduce allowable table loads using straight-line interpolation.	50% of table load for KGLS. 45% of table load for KHGLS.	100% of table load per side
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex. KGLS35H115_SK45R_BV	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Example: KGLS35H115_SL30D	See Sloped Seat and Skewed. Example: KGLS35H115_SK45R_BV_SL30D	Add SF, angle required, and right (R) or left (L), to product number. Example: KGLS35H115_SF30L	Add OS, and right (R) or left (L), to product number. Example: KGLS35H115_OSL	Add SA, and saddle width required to product number. Example: KGLS35H115_SA=5-1/2"

1) Skewed hangers with skews greater than 15° may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) Skewed hangers typically require a bevel cut however, a square cut option may be available as a custom when requested.
4) Sloped top flanges with greater than 15° may have additional header nails.
New products or updated product information are designated in **blue font**.

NOP Moisture Barrier Plates

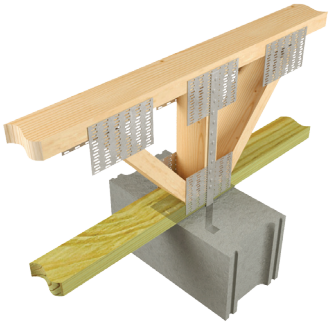
Moisture Barrier Plates protect the bottom chords of trusses from moisture damage caused by direct contact with concrete. These plates eliminate the need for more expensive treated wood plates.

Materials: See chart
Finish: G90 galvanizing

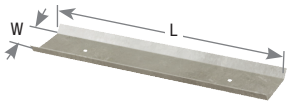
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Pre-attach to truss bottom chord or rafter using pre-punched prongs and/or 6d common nails to prevent wood-to-concrete contact.

Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Fastener Schedule[1]	
				W	L	Qty	Type
2x	NOP2X	TSS2, TBP8	26	1-7/16	8	-- --	-- --
	NOP1	-- --	22	1-1/2	8	2	6d
4x	NOP4	TSS2-2	26	3-1/2	8	2	6d

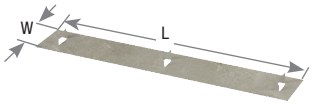
1) **NAILS:** 6d nails are 0.120" dia. x 2" long.



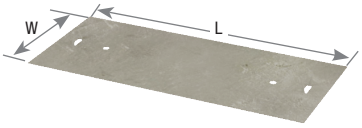
Typical NOP4 installation



NOP1



NOP2X



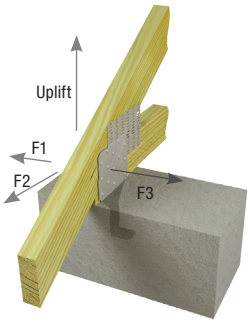
NOP4

LPTA Embedded Truss Anchors

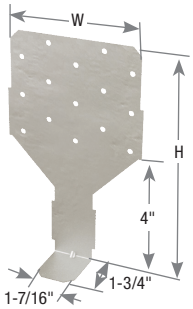
Low profile design attaches to 2 x 4 or larger bottom chords and provides uplift and lateral load resistance.

Materials: 18 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

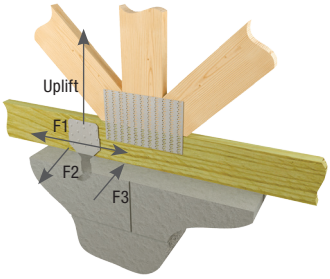
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Embed LPTA 4" into concrete tie beam or masonry bond beam.
- Anchors should be spaced no closer than 8" center-to-center.
- **Moisture barrier may be required.**



Typical LPTA perpendicular installation



LPTA



Typical LPTA parallel installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Fastener Schedule		Unit	DF Factored Resistance[1]			S-P-F Factored Resistance[1]		
			W	H	Min Qty[2]	Type[3]		Uplift 115%	F1 115%	F2 115%	Uplift 115%	F1 115%	F2 115%
LPTA	LTA2	18	5	8-1/4	10	10d x 1-1/2	Lbs	1555	1005	1865	1555	1005	1865
							kN	6.92	4.47	8.30	6.92	4.47	8.30

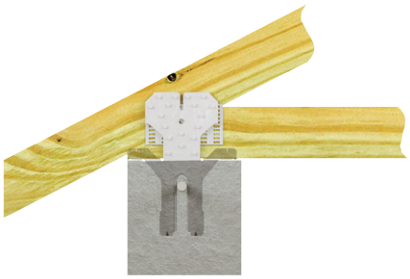
1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Minimum quantity of fasteners to be installed. Product may have additional nail holes not needed to meet published factored resistance of product.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.

HLPTA Embedded Truss Anchor

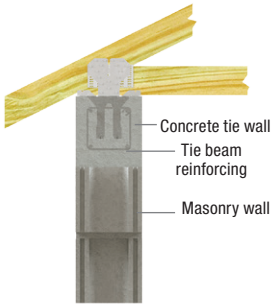
The HLPTA75 is designed and tested to provide higher lateral capacity and net uplift. Offers greater pullout resistance and is compatible with bond beam reinforcing.

Materials: 18 gauge
Finish: G90 galvanizing

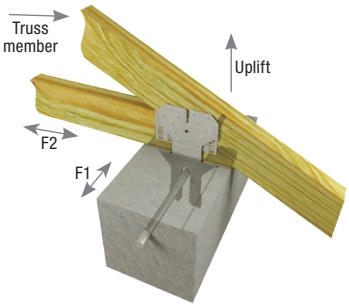
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Embed in concrete tie beam or masonry bond beam until the seat is resting on the surface.
- Minimum of one #7 rebar or two #5 rebars through the theoretical shear cone is required.
- Grout or concrete compressive strength shall be 2,500 psi at 28 days.
- Minimum spacing between anchors is 10" to achieve full design load capacities on single anchors.
- When used in a double rebar installation, concrete tie beam stirrup should be sized to accommodate connector leg placement.
- Designer shall verify connector clearance when using in conjunction with stirrups and two rebar applications.
- Verify grout is not in contact with truss member. **Moisture barrier may be required.**



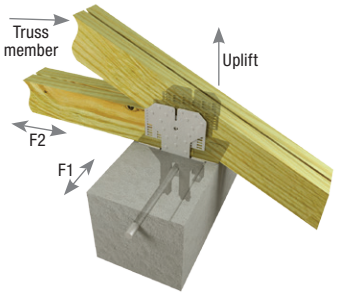
Typical HLPTA75 single rebar installation



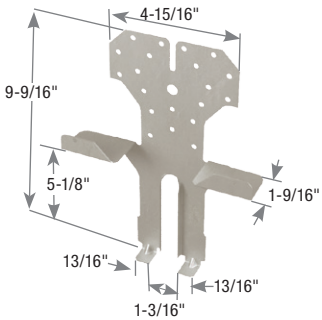
Typical HLPTA75 double rebar installation



Typical HLPTA75 single anchor installation



Typical HLPTA75 double anchor installation



HLPTA75

USP Stock No.	Ref. No.	Ga.	Installation Type	Fastener Schedule[2] Seat Plate Qty	Truss/ Rafter Qty	Type	DF Factored Resistance[1] Lbs Uplift 115%	F1 115%	F2 115%	kN Uplift 115%	F1 115%	F2 115%	S-P-F Factored Resistance[1] Lbs Uplift 115%	F1 115%	F2 115%	kN Uplift 115%	F1 115%	F2 115%
HLPTA75	-- --	18	Single Anchor	2	20	10d x 1-1/2	3105	2590	2500	13.81	11.52	11.12	2660	2220	2145	11.83	9.88	9.54
			Double Anchor	-- --	40	10d x 1-1/2	5085	2995	3045	22.62	13.32	13.54	4355	2565	2610	19.37	11.41	11.61

1) Short-term load duration has been taken into consideration; no further increase is allowed.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.
New products or updated product information are designated in **blue font**.

RFUS Uplift Girder Ties

The RFUS is a multi-purpose engineered solution for attaching trusses to concrete or masonry walls. Wedgebolt™ fastening eliminates mislocated cast-in-place anchor bolts and allows retrofit installations. Works with heel heights up to 14".

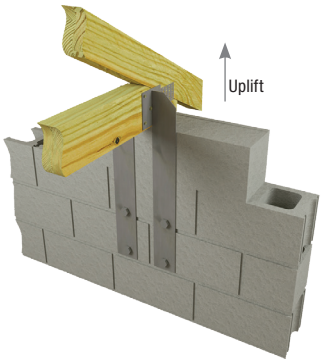
Materials: 10 gauge

Finish: USP primer

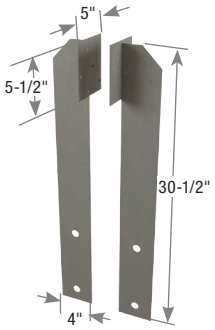
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- **Always install in pairs.**
- Use all specified fasteners. See Product Notes, page 15.
- Designer shall be responsible for design of masonry structure, including any required reinforcement.
- For 1 ply applications, add filler block. Refer to page 190 for wood filler block installation.
- **Moisture barrier may be required.**



Typical RFUS installation



RFUS

USP Stock No.	Ref. No.	Steel Gauge	No. of Plies[5]	Fastener Schedule[3,4] Rafter/Truss[6] Qty	Rafter/Truss[6] Type	Concrete/Masonry[2] Qty	Concrete/Masonry[2] Type	DF Factored Resistance Uplift 115%[1] Lbs	DF Uplift 115%[1] kN	S-P-F Factored Resistance Uplift 115%[1] Lbs	S-P-F Uplift 115%[1] kN
RFUS	FGTR	10	2 Ply >	12	WS3	4	3/4" x 6" Wedge Bolts	5690	25.31	4780	21.26

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Use Powers Fasteners 3/4" x 6" Wedge Bolts; or equal, installed in accordance with manufacturer's specifications.
3) Fasteners shall be installed to fully grouted and reinforced concrete masonry or reinforced concrete (f'c = 2,500 psi at 28 days).
4) Fastener shedule is for two straps used together. The straps shall be installed in pairs.
5) Truss plies shall be fastened together to act as a unit.
6) WS3 Wood Screws are 1/4" x 3" long and are supplied with RFUS connector.

LUGT Girder Tiedowns

The LUGT series is an extremely adaptable tiedown for girder trusses and offers several installation options to accommodate different framing conditions. It is an ideal retrofit solution to reinforce truss connections to transfer high wind loads to supporting walls and can be used on either, concrete or CMU block walls. Sizes available for 2-ply, 3-ply and 4-ply trusses.

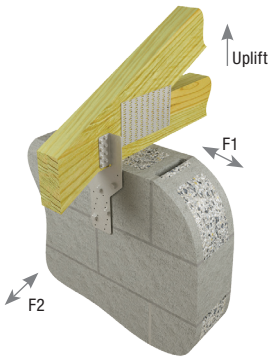
Materials: See chart

Finish: G90 galvanizing

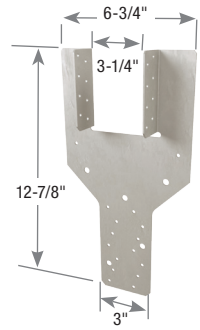
Codes: Factored resistances are derived from data submitted to various North American building code evaluators and are in accordance with CSA 086-14.

Installation:

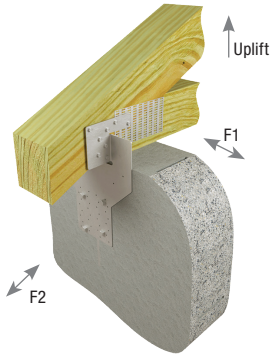
- Use all specified fasteners. See Product Notes, page 15.
- All fastener holes must be filled with specified fasteners to achieve loads listed in the chart. Smaller fasteners holes are for girder-to-stud applications (reference page 172) and do not need to be filled when used for concrete/masonry installations.
- WS Wood Screws included with LUGT3 and LUGT4.
- Powers Wedge-Bolt+ Fasteners require the Powers SDS Wedge-Bit drill bit. USP #1314. Refer to page 28. Wedge-Bits are not included and must be ordered separately.
- **For concrete and masonry applications, a moisture barrier may be required, check local building code.**



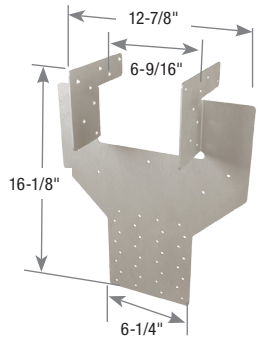
Typical LUGT2 masonry installation



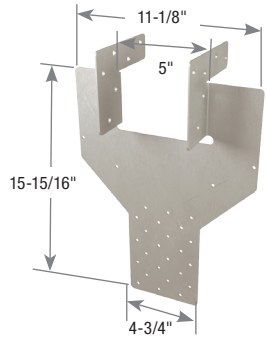
LUGT2



Typical LUGT4 masonry installation (LUGT3 similar)



LUGT4



LUGT3

No. of Plies	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[3,8] Rafter/Truss Qty	Rafter/Truss Type	CMU/Concrete Wall[4,5,6,7] Qty	CMU/Concrete Wall Type	Unit	DF Factored Resistance Uplift 115%[1,2]	DF F1 115%[1,2]	DF F2 115%[1,2]	S-P-F Factored Resistance Uplift 115%[1,2]	S-P-F F1 115%[1,2]	S-P-F F2 115%[1,2]
2	LUGT2	LGT2	14	16	10d	5	1/4WB	Lbs	3415	1795	765	2685	1410	600
								kN	15.19	7.98	3.40	11.94	6.27	2.67
3	LUGT3	LGT3-SDS2.5	12	12	WS25	4	3/8WB	Lbs	5260	--	--	4220	--	--
								kN	23.40	--	--	18.77	--	--
4	LUGT4	LGT4-SDS3	12	16	WS3	4	3/8WB	Lbs	5260	--	--	4275	--	--
								kN	23.40	--	--	19.02	--	--

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Factored resistances apply where roof pitch is between 3:12 and 8:12.
3) Additional anchorage products to be designed by others.
4) 1/4WB denotes a 1/4" x 3" Powers "Wedge Bolt" or equivalent installed in a predrilled hole. Refer to manufacturer's literature for further information.
5) 3/8WB denotes a 3/8" x 5" Powers "Wedge Bolt" or equivalent installed in a predrilled hole. Refer to manufacturer's literature for further information.
6) Fasteners must be installed in fully grouted and reinforced concrete masonry (f'm = 1500 psi) or reinforced concrete (f'c = 2,500 psi).
7) Wedge Bolts are not supplied with the LUGT2, LUGT3 or LUGT4.
8) **NAILS:** 10d nails are 0.148" dia. x 3" long, WS25 Wood Screws are 1/4" dia. x 2-1/2" long (supplied with LUGT3) and WS3 Wood Screws are 1/4" dia. x 3" long (supplied with LUGT4).

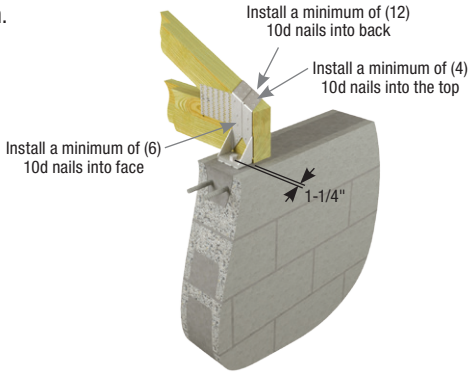
New products or updated product information are designated in **blue font.**

MUGT Girder Tiedown

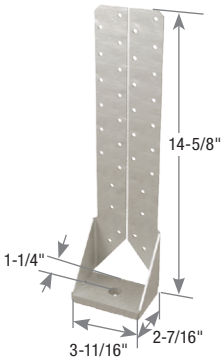
Designed for higher uplift resistance for concrete block construction. The MUGT15 can accommodate variable truss bearing depths.

Materials: 12 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- When straps are wrapped over the truss, install nails in backside of truss. See MUGT15 installation diagram for minimum nail requirements into the face and on top of the truss.
- If installed straight-up with no wrap over the top of the truss, fill all nail holes.
- **Moisture barrier may be required.**



Typical MUGT15 installation



MUGT15

USP Stock No.	Ref. No.	Steel Gauge	Mounting Condition	Fastener Schedule[2]						DF Factored Resistance		S-P-F Factored Resistance	
				Anchor Bolt[3]		Rafter/Truss[4]				Uplift 115%[1]		Uplift 115%[1]	
				Qty	Dia. (in)	Top Qty	Face Qty	Back Qty	Type	Lbs	kN	Lbs	kN
MUGT15	MGT	12	Face-Max	1	5/8	-- --	28	-- --	10d	4650	20.69	4000	17.79
			Top-Min	1	5/8	4	6	12	10d	4320	19.22	3715	16.53

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Additional anchorage products to be designed by others.
3) Designer must specify anchor bolt type, length, and embedment.
4) **NAILS:** 10d nails are 0.148" dia. x 3" long.

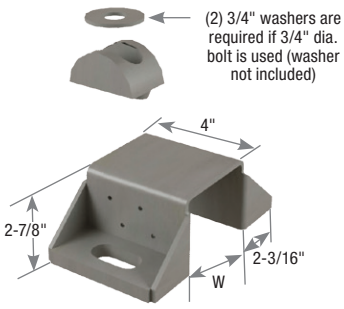
HUGT Girder Tiedowns

The HUGT series high uplift girder tiedowns can be installed on beams and top chords of trusses with slopes from 0˚ to 34˚.

Materials: 7 gauge
Finish: USP primer
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Install the HUGT over the beam or truss (see "W" dimension on chart for appropriate width).
- Attached members shall be designed to resist applied loads.
- **Moisture barrier may be required.**

Typical HUGT2 installation



HUGT

USP Stock No.	Ref. No.	Steel Gauge	W (in)	O.C. Dim Between Anchors (in)	Fastener Schedule[3,4]				DF Factored Resistance		S-P-F Factored Resistance	
					Concrete/ CMU		Girder[5]		Uplift 115%[1,2]		Uplift 115%[1,2]	
					Qty	Dia. (in)	Qty	Type	Lbs	kN	Lbs	kN
HUGT2	HGT-2	7	3-5/16	5-3/4	2	3/4	8	10d	18575	82.63	9365	41.66
HUGT3	HGT-3	7	4-15/16	7-3/8	2	3/4	8	10d	18575	82.63	9365	41.66
HUGT4	HGT-4	7	6-7/8	9	2	3/4	8	10d	18575	82.63	9365	41.66

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Factored resistances apply where roof pitch is between 3:12 and 8:12.
3) Additional anchorage products to be designed by others.
4) Designer must specify anchor bolt type, length, and embedment.
5) **NAILS:** 10d nails are 0.148" dia. x 3" long.

HGAM Hurricane Gusset Angles

For installation into grouted concrete tie beam or masonry bond beam. Provides lateral and uplift resistance.

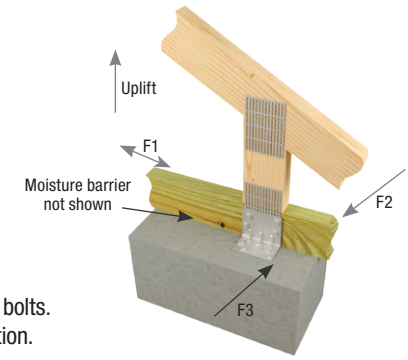
Materials: 14 gauge

Finish: G90 galvanizing

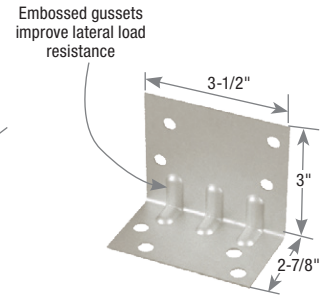
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Install USP's WS15 Wood Screws into the truss and drill holes for wedge bolts. Install wedge bolts into concrete block per manufacturer's recommendation.
- WS Wood Screws and Wedge bolts are included with HGAM10 angles.
- Powers Wedge-Bolt+ Fasteners require Powers SDS Wedge-Bit drill bit, USP #1314. Refer to page 28. Wedge-Bits are not included and must be ordered separately.
- **Moisture barrier may be required.**



Typical HGAM10 installation



HGAM10

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2] Rafter/Truss Qty	Rafter/Truss Wood Screw	Plate[3] Qty	Plate[3] Type (in)	Unit	DF Factored Resistance Uplift 115%[1]	DF F1 115%[1]	DF F2 115%[1]	DF F3 115%[1]	S-P-F Factored Resistance Uplift 115%[1]	S-P-F F1 115%[1]	S-P-F F2 115%[1]	S-P-F F3 115%[1]
HGAM10KT	HGAM10KTA	14	4	WS15	4	1/4	Lbs	945	1115	1150	765	815	955	990	660
							kN	4.20	4.96	5.12	3.40	3.63	4.25	4.40	2.94

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
2) WS15 Wood Screws are 1/4" x 1-1/2" long.
3) Use Powers Fasteners 1/4" x 1-3/4" Wedge-Bolt® (included); or equal. Drill hole in concrete or masonry with 1/4" masonry drill bit. Refer to manufacturer's literature for further information.

SHA Masonry Uplift Connectors

Connects trusses directly to masonry or concrete and features slotted base holes to ease installation.

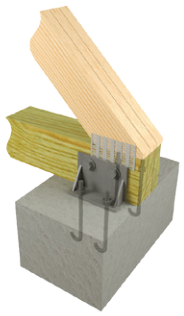
Materials: Angle – 3 gauge; Gussets – 10 gauge

Finish: USP primer

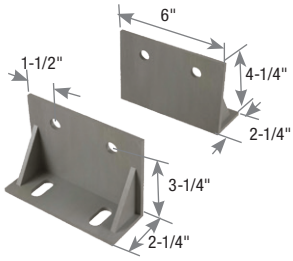
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

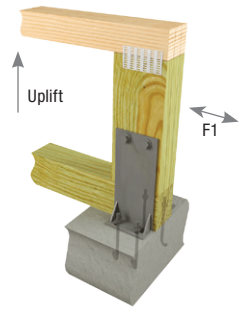
- Use all specified fasteners. See Product Notes, page 15.
- Bolts must be ordered separately.
- Install directly flush to masonry wall.
- **The SHA series connectors shall be installed in pairs.**
- **Moisture barrier may be required.**



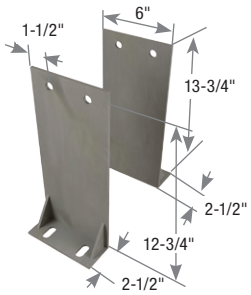
Typical SHA6 installation



SHA6



Typical SHA6T installation



SHA6T

USP Stock No.	Ref. No.	Fastener Schedule[3] Concrete Wall Anchor Bolts[4,5,8] Qty	Concrete Wall Anchor Bolts[4,5,8] Dia. (in)	Rafter/Truss[7] Qty	Rafter/Truss[7] Dia. (in)	No. of Plies[6]	Unit	DF Factored Resistance Uplift[1,2] 115%	S-P-F Factored Resistance Uplift[1,2] 115%
SHA6	-- --	4	1/2	2	3/4	2 Ply	Lbs	2500	2500
							kN	11.12	11.12
						3 Ply or >	Lbs	3750	3750
							kN	16.68	16.68
SHA6T	-- --	4	1/2	2	3/4	2 Ply	Lbs	11180	8825
							kN	49.73	39.26
						3 Ply or >	Lbs	12600	8945
							kN	56.05	39.79

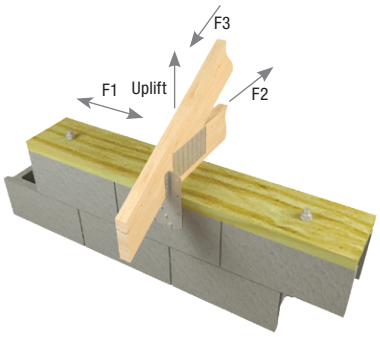
1) Factored resistances have been increased 15% for wind or seismic loads; no further increase shall be permitted.
2) Factored resistances are for a pair of SHA devices. SHA's shall be installed in pairs.
3) Fastener schedule is for a pair of SHA devices.
4) 1/2" x 8" J-Bolts or equivalent.
5) Concrete compressive strength shall be 2500 psi or greater at 28 days.
6) Multiple ply truss shall be fastened together to act as a single unit.
7) Bolts shall conform to ASTM A 307 or better.
8) The designer must specify anchor bolt type, length, and embedment.

RTM Hurricane Retrofit Connector

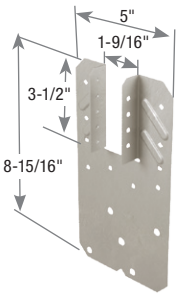
Designed as a retrofit connector for trusses installed on top plates. Can also be used as a holdown for a roof or floor system.

Materials: 18 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Tapcon® Concrete Screws are not supplied with RT16M connector.
- Install Tapcon® Concrete Screws in lower two holes for Single Top Plate or Conventional Raised Foundation or Modular Home Installations.
- **Moisture barrier may be required.**



Typical RT16M top plate installation



RT16M

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2,3,4] Truss/Rafter Qty	Truss/Rafter Type	Top Plate Qty	Top Plate Type	Masonry Block Qty	Masonry Block Type	Unit	DF Factored Resistance[1] Uplift 115%	DF F1 115%	DF F2 115%	DF F3 115%	S-P-F Factored Resistance[1] Uplift 115%	S-P-F F1 115%	S-P-F F2 115%	S-P-F F3 115%
RT16M	HM9KT	18	9	10d x 1-1/2	-- --	-- --	4	1/4" x 1-3/4" Tapcon	Lbs	1730	1045	795	190	1470	1045	795	190
									kN	7.70	4.65	3.54	0.85	6.54	4.65	3.54	0.85
			9	10d x 1-1/2	4	16d	2	1/4" x 1-3/4" Tapcon	Lbs	1690	-- --	-- --	-- --	1470	-- --	-- --	-- --
									kN	7.52	-- --	-- --	-- --	6.54	-- --	-- --	-- --

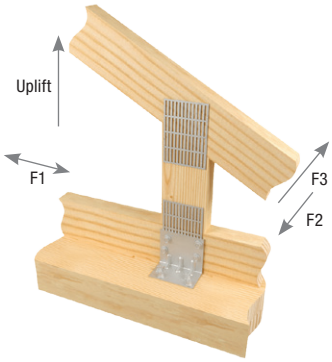
1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
2) Install with 1/4" x 1-3/4" Tapcon® Concrete Screws in accordance to manufacturer's installation specifications.
3) Fasteners to be installed to fully grouted and reinforced concrete masonry.
4) **Nails:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.

HGA Hurricane Gusset Angles

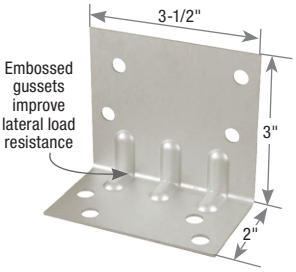
Versatile wood-to-wood connector that satisfies high wind and seismic loading requirements.

Materials: 14 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Install with USP's WS3 Wood Screws into top plate, and WS15 Wood Screws into the truss.
- WS Wood Screws are included with HGA10 angles.
- **Moisture barrier may be required.**



Typical HGA10 installation



HGA10

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2] Rafter/Truss Qty	Rafter/Truss Wood Screw	Plate Qty	Plate Wood Screw	Unit	DF Factored Resistance[1] Uplift 115%	DF F1 115%	DF F2 115%	DF F3 115%	S-P-F Factored Resistance[1] Uplift 115%	S-P-F F1 115%	S-P-F F2 115%	S-P-F F3 115%
HGA10KT	HGA10KT	14	4	WS15	4	WS3	Lbs	1330	1365	1620	865	1145	1175	1395	745
							kN	5.92	6.07	7.21	3.85	5.09	5.23	6.21	3.31

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
2) WS15 Wood Screws are 1/4" x 1-1/2" long and WS3 Wood Screws are 1/4" x 3" long.

LUGT Girder Tiedowns

USP STRUCTURAL CONNECTORS MiTek

The LUGT series is an extremely adaptable tiedown for girder trusses and offers several installation options to accommodate different framing conditions. It is an ideal retrofit solution to reinforce truss connections to transfer high wind loads to supporting walls. Sizes available for 1-ply, 2-ply, 3-ply and 4-ply trusses.

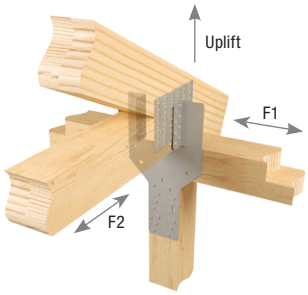
Materials: See chart

Finish: G90 galvanizing

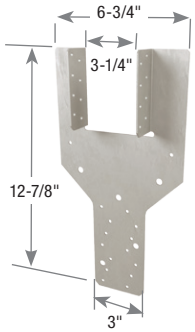
Codes: Factored resistances are derived from data submitted to various North American building code evaluators and are in accordance with CSA O86-14.

Installation:

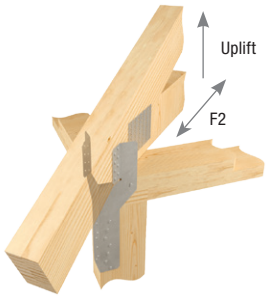
- Use all specified fasteners. See Product Notes, page 15.
- All fastener holes must be filled with specified fasteners to achieve loads listed in the chart. Large fastener holes are for concrete/masonry installations (reference page 168) and do not need to be filled when used for girder-to-stud applications.
- WS Wood Screws included with LUGT3 and LUGT4.



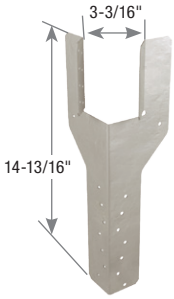
Typical LUGT2 installation



LUGT2

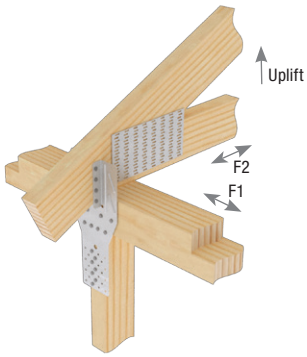


Typical LUGTC2 corner hip installation

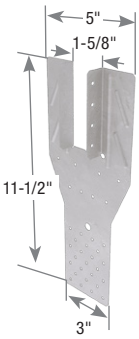


LUGTC2

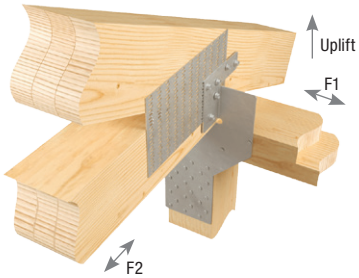
LUGT1 offset stud installation



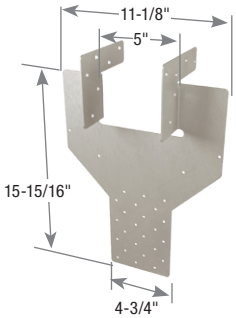
Typical LUGT1 installation



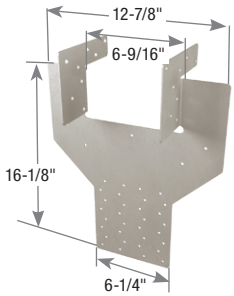
LUGT1



Typical LUGT3 installation (LUGT4 similar)



LUGT3



LUGT4

No. of Plies	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[3,6] Rafter/Truss Qty	Rafter/Truss Type	Plate Qty	Plate Type	Stud[4,5] Qty	Stud[4,5] Type	Unit	DF Factored Resistance Uplift 115%[1,2,5]	DF F1 115%[1,2]	DF F2 115%[1,2]	S-P-F Factored Resistance Uplift 115%[1,2,5]	S-P-F F1 115%[1,2]	S-P-F F2 115%[1,2]
1	**LUGT1**	H10S	**18**	8	8d x 1-1/2	8	8d x 1-1/2	7	8d x 1-1/2	Lbs	**1415**	**1090**	**290**	**1295**	**895**	**235**
										kN	**6.29**	**4.85**	**1.29**	**5.76**	**3.98**	**1.05**
2	LUGT2	LGT2	14	16	10d	2	10d	14	10d	Lbs	**3595**	**1795**	**805**	**2825**	**1410**	**630**
										kN	**15.99**	**7.98**	**3.58**	**12.57**	**6.27**	**2.80**
	LUGTC2	--	14	16	10d	2	10d	14	10d	Lbs	**3595**	--	**805**	**2825**	--	**630**
										kN	**15.99**	--	**3.58**	**12.57**	--	**2.80**
3	**LUGT3**	LGT3-SDS2.5	12	12	WS25	4	16d Sinker	24	16d Sinker	Lbs	**5485**	**3075**	**1380**	**4775**	**2415**	**1085**
										kN	**24.40**	**13.68**	**6.14**	**21.24**	**10.74**	**4.83**
4	**LUGT4**	LGT4-SDS3	12	16	WS3	5	16d Sinker	32	16d Sinker	Lbs	**7345**	--	--	**5765**	--	--
										kN	**32.67**	--	--	**25.64**	--	--

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Factored resistances apply where roof pitch is between 3:12 and 8:12.
3) Additional anchorage products to be designed by others.
4) For proper installation, the number of studs must be equal-to or greater-than the number of roof truss plies.
5) **The LUGT1 can be installed with the stud offset from the rafter a maximum of 1" (center-to-center) with no reduction in uplift capacity.**
6) **NAILS:** 8d x 1-1/2 are 0.131" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d Sinkers are 0.148" dia. x 3-1/4" long, WS25 Wood Screws are 1/4" dia. x 2-1/2" long (supplied with LUGT3) and WS3 Wood Screws are 1/4" dia. x 3" long (supplied with LUGT4).

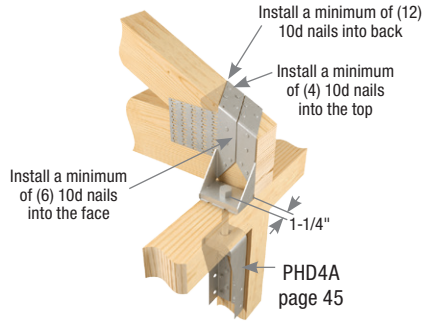
New products or updated product information are designated in **blue font.**

MUGT Girder Tiedown

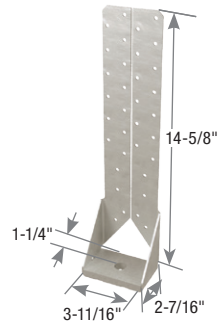
Designed for higher uplift resistance for wood frame construction. The MUGT15 can accommodate variable truss bearing depths.

Materials: 12 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- When straps are wrapped over the truss, install nails in backside of truss. See MUGT15 installation diagram for minimum nail requirements into the face and on top of the truss.
- If installed straight-up with no wrap over the top of the truss, fill all nail holes.
- **Moisture barrier may be required.**



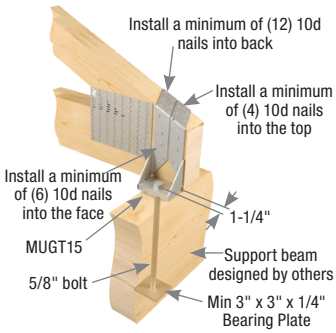
Typical MUGT15 top-min installation with PHD4A



MUGT15

USP Stock No.	Ref. No.	Steel Gauge	Mounting Condition	Fastener Schedule[2] Rod/Bolt[3] Qty	Rod/Bolt[3] Dia. (in)	Rafter/Truss[4] Top Qty	Rafter/Truss[4] Face Qty	Rafter/Truss[4] Back Qty	Rafter/Truss[4] Type	DF Factored Resistance Uplift 115%[1] Lbs	DF Uplift 115%[1] kN	S-P-F Factored Resistance Uplift 115%[1] Lbs	S-P-F Uplift 115%[1] kN
MUGT15	MGT	12	Face-Max	1	5/8	-- --	28	-- --	10d	4650	20.69	4000	17.79
			Top-Min	1	5/8	4	6	12	10d	4320	19.22	3715	16.53

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Additional anchorage products to be designed by others.
3) Designer must specify anchor bolt type, length, and holdown device.
4) **NAILS:** 10d nails are 0.148" dia. x 3" long.



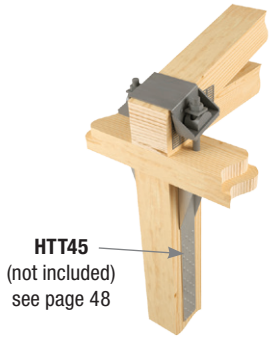
Typical MUGT15 connection to support beam

HUGT Girder Tiedowns

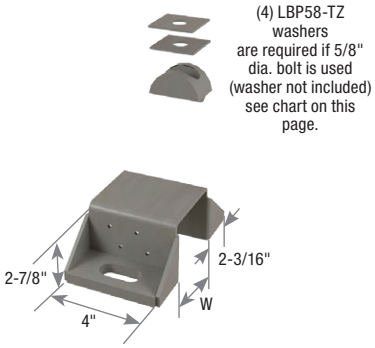
The HUGT series high uplift girder tiedowns can be installed on beams and top chords of trusses with slopes from 0˚ to 34˚.

Materials: 7 gauge
Finish: USP primer
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Install the HUGT over the beam or truss (see "W" dimension on chart for appropriate width).
- Install (4) LBP58-TZ washers if (2) 5/8˝ tension bolts are used.
- Attached members shall be designed to resist applied loads.
- **Moisture barrier may be required.**



Typical HUGT3 installation with HTT45's



HUGT

USP Stock No.	Ref. No.	Steel Gauge	W (in)	O.C. Dim Between Anchors (in)	Fastener Schedule[3,4] Anchor Washers Qty	Anchor Washers Type	Threaded Rod Qty	Threaded Rod Dia. (in)	Girder[5] Qty	Girder[5] Type	DF Factored Resistance Uplift[1,2] Lbs	DF Uplift[1,2] kN	S-P-F Factored Resistance Uplift[1,2] Lbs	S-P-F Uplift[1,2] kN
HUGT2	HGT-2	7	3-5/16	5-3/4	4	LBP58-TZ	2	5/8	8	10d	18575	82.63	9365	41.66
HUGT3	HGT-3	7	4-15/16	7-3/8	4	LBP58-TZ	2	5/8	8	10d	18575	82.63	9365	41.66
HUGT4	HGT-4	7	6-7/8	9	4	LBP58-TZ	2	5/8	8	10d	18575	82.63	9365	41.66

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Factored resistances apply where roof pitch is between 3:12 and 8:12.
3) Additional anchorage products to be designed by others.
4) Designer must specify anchor bolt type, length, and holdown device.
5) **NAILS:** 10d nails are 0.148" dia. x 3" long.

HC / HCPRS / HHCP / LFTA / RT Rafter Ties

These anchors tie trusses and rafters to top plates and may be used to tie wood framing members to resist uplift and lateral forces.

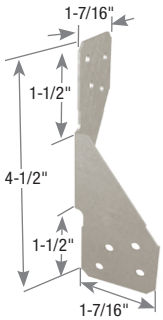
Materials: See chart

Finish: G90 galvanizing; HHCP4-TZ – G-185 galvanizing.

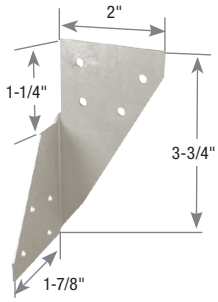
Options: See chart for Corrosion Finish Options

Codes: Factored resistances are derived from data submitted to various North American building code evaluators and are in accordance with CSA O86-09.

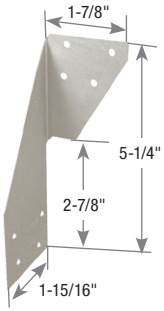
AVAILABLE IN GOLD COAT



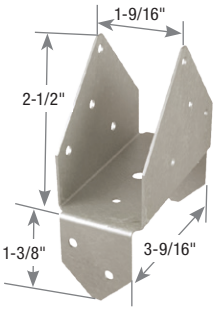
RT3A



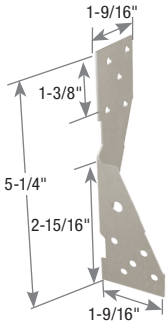
RT4



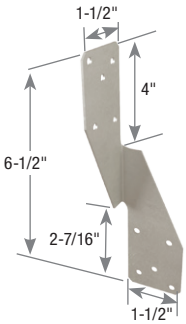
RT5



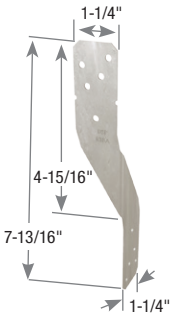
RT6



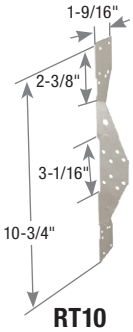
RT7



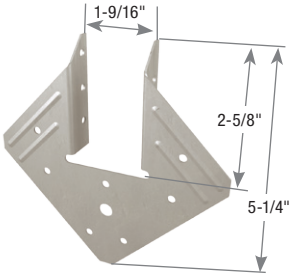
RT7A



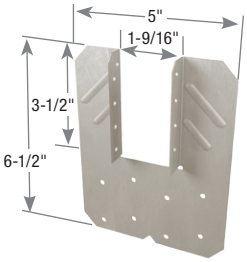
RT8A



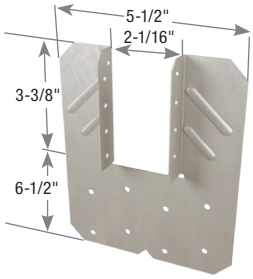
RT10



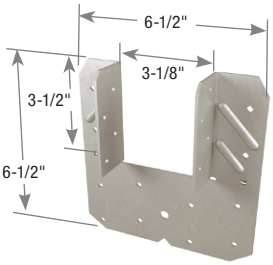
RT15



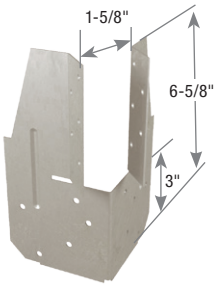
RT16A



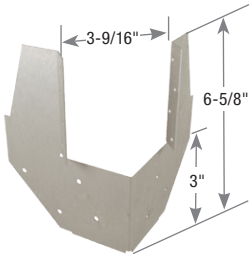
RT16AR



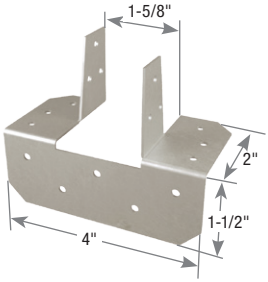
RT16-2



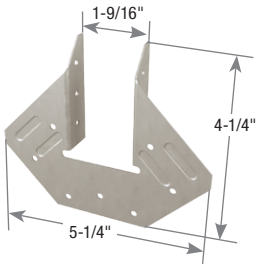
HHCP2



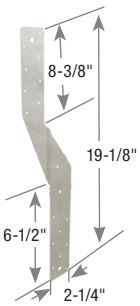
HHCP4-TZ



HC520



HCPRS



LFTA6

RT20

Continued on next page

HC / HCPRS / HHCP / LFTA / RT Rafter Ties

USP STRUCTURAL CONNECTORS MiTek

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- All nail holes must be filled with specified nails to achieve loads listed in the chart. For substituting with different nail sizes, refer to "Optional Nails" on page 19 or consult a design professional.
- Depending on pitch, birdsmouth notching may be required with some models to enable installers to fill all nail holes. Consult a design professional for appropriate notching.
- Designer shall determine if solid blocking is required.
- LFTA6, RT4, RT5, and RT7 ship in equal quantities of left and right versions. Left version images shown.

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[3] Truss/Rafter Qty	Truss/Rafter Type	Plate Qty	Plate Type	Stud Qty	Stud Type	Unit	DF Factored Resistance Uplift 115%[1]	DF F1 115%[1]	DF F2 115%[1]	S-P-F Factored Resistance Uplift 115%[1]	S-P-F F1 115%[1]	S-P-F F2 115%[1]	Corrosion	Finish
RT3A	H3	18	4	8d	4	8d	-- --	-- --	Lbs	1190	310	310	1020	265	265		
									kN	5.29	1.38	1.38	4.54	1.18	1.18		
RT4	H4	18	4	8d	4	8d	-- --	-- --	Lbs	760	350	350	650	300	300		
									kN	3.38	1.56	1.56	2.89	1.33	1.33		
RT5	H5	18	4	8d	4	8d	-- --	-- --	Lbs	995	425	425	855	365	365		
									kN	4.43	1.89	1.89	3.80	1.62	1.62		
RT6	HS24	18	8	10d x 1-1/2	6	10d x 1-1/2	-- --	-- --	Lbs	1070	1310	1310	915	1125	1125		
									kN	4.76	5.83	5.83	4.07	5.00	5.00		
RT7	H2.5	18	5	8d	5	8d	-- --	-- --	Lbs	940	315	315	805	270	270		
									kN	4.18	1.40	1.40	3.58	1.20	1.20		
RT7A	H2.5A	18	5	8d	5	8d	-- --	-- --	Lbs	1235	345	345	1060	295	295		
									kN	5.49	1.53	1.53	4.72	1.31	1.31		
RT8A	H8	18	5	10d x 1-1/2	5	10d x 1-1/2	-- --	-- --	Lbs	1430	350	350	1225	300	300		
									kN	6.36	1.56	1.56	5.45	1.33	1.33		
RT10	H2, H2A	18	6	8d	8	8d	6	8d	Lbs	940	315	315	805	270	270		
									kN	4.18	1.40	1.40	3.58	1.20	1.20		
RT15	H1	18	5	8d x 1-1/2	5	8d	-- --	-- --	Lbs	975	925	485	835	795	415		
									kN	4.34	4.11	2.16	3.71	3.54	1.85		
RT16A	H10A, H14	18	9	10d x 1-1/2	8	10d	-- --	-- --	Lbs	2545	1285	1195	2180	1100	1025		
									kN	11.32	5.72	5.32	9.70	4.89	4.56		
RT16AR	H10AR	18	9	10d x 1-1/2	8	10d	-- --	-- --	Lbs	2545	1285	1195	2180	1100	1025		
									kN	11.32	5.72	5.32	9.70	4.89	4.56		
RT16-2	H10-2	18	8	8d	8	8d	-- --	-- --	Lbs	1860	1050	675	1595	900	580		
									kN	8.27	4.67	3.00	7.09	4.00	2.58		
HHCP2	HCP2	18	10	10d x 1-1/2	10	10d x 1-1/2	-- --	-- --	Lbs	1505	710	-- --	1070	505	-- --		
									kN	6.69	3.16	-- --	4.76	2.25	-- --		
HHCP4-TZ	HCP4Z	16	8	10d	8	10d	-- --	-- --	Lbs	1835	690	-- --	1575	590	-- --		
									kN	8.16	3.07	-- --	7.01	2.62	-- --		
HC520	GBC	18	-- --	-- --	11	8d	6	8d	Lbs	640	510	560	555	440	485		
									kN	2.85	2.27	2.49	2.47	1.96	2.16		
HCPRS	-- --	18	-- --	-- --	5	8d	6	8d	Lbs	1020	945	340	660	665	240		
									kN	4.54	4.20	1.51	2.94	2.96	1.07		
LFTA6 [2]	H6	16	8	8d	8	8d	-- --	-- --	Lbs	1265	870	-- --	1075	775	-- --		
									kN	5.63	3.87	-- --	4.78	3.45	-- --		
RT20	-- --	16	9	10d x 1-1/2	4	10d	9	10d x 1-1/2	Lbs	1925	-- --	-- --	1650	-- --	-- --		
									kN	8.56	-- --	-- --	7.34	-- --	-- --		

1) 15% increase for short-term loads such as wind and earthquake has been taken into account for factored resistances, no further increase allowed.
2) LFTA6: To achieve F1 lateral loads, three nails must be installed on each side on the strap located closest to the bend line. Lateral F1 load direction does not apply to roof truss-to-top plate installations.
3) **NAILS:** 8d x 1-1/2 are 0.131" dia. x 1-1/2" long, 8d nails are 0.131" dia. x 2-1/2" long, 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.

New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

Typical RT3A truss/rafter to plate installation

Typical RT4 truss/rafter to plate installation

Typical RT5 truss/rafter to double plate installation

Typical RT6 truss/rafter to double plate installation

Typical RT7 truss/rafter to double plate installation

Typical RT7A truss/rafter to double plate installation

Typical RT8A stud to double plate installation

Typical RT10 truss/rafter to double plate to stud installation

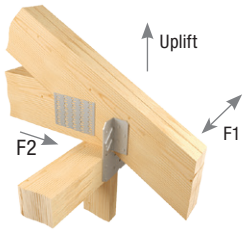
Typical RT15 truss/rafter to double plate installation

Continued on next page

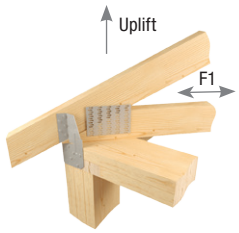
HC / HCPRS / HHCP / LFTA / RT Rafter Ties

Typical RT16A truss/rafter to double plate installation

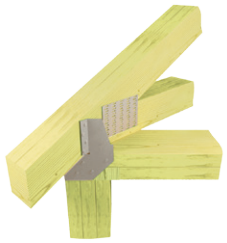
Typical RT16AR truss/rafter to double plate installation



Typical RT16-2 truss/rafter to double plate installation



Typical HHCP2 truss/rafter to double plate corner installation



Typical HHCP4-TZ truss/rafter to double plate corner installation

Typical HC520 stud to plate installation

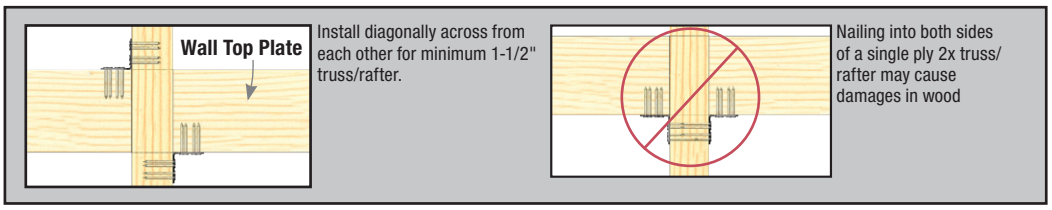
Typical HC520 gable brace installation

Typical HCPRS stud to plate installation

Typical LFTA6 stud to plate installation

Typical RT20 truss/rafter to double to stud installation

Anchor installation to achieve twice the load (using two identical anchors)



(Top View)

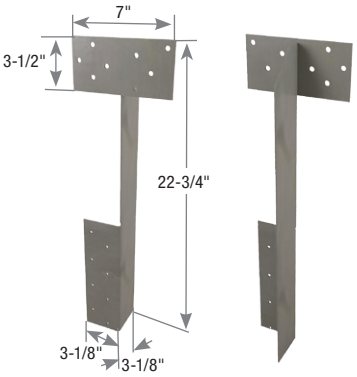
RUSC Retrofit Strap Connector

The RUSC Retro Uplift Strap Connector provides a wood-to-wood uplift connection attaching trusses with a 2 x 4 bottom chord to a double stud in the wall below. WS3 Wood Screws are utilized for fast installation. The connector can be installed after roof sheathing has been installed.

Materials: 10 gauge
Finish: USP primer
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- **The RUSC shall be installed in pairs.**
- Install on minimum 2 ply with equal wall studs centered directly below.
- Works with 2 x 4 bottom chord member and 2 x 4 wall studs.

Typical RUSC installation



RUSC

USP Stock No.	Ref. No.	Steel Gauge	No, of Plies[5]	Fastener Schedule[3,4] Rafter/Truss Qty	Rafter/Truss Type	Stud Qty	Stud Type	DF Factored Resistance Uplift 115%[1,2] Lbs	DF kN	S-P-F Factored Resistance Uplift 115%[1,2] Lbs	S-P-F kN
RUSC	-- --	10	2 Ply or greater	16	WS3	16	WS3	6250	27.80	5410	24.07

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
2) Designer must specify stud or post to resist published load values.
3) WS3 Wood Screws are 1/4" x 3" long and are included with RUSC connectors.
4) Fastener schedule is for two straps used together. The RUSC shall be installed in pairs with a minimum 2 ply truss and wall stud attachment.
5) Truss plies shall be fastened together to act as a single unit.

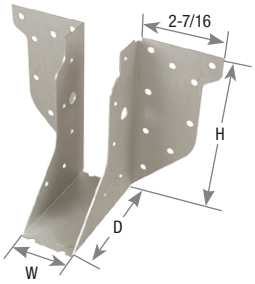
THDS Truss Hanger

THDS26 hangers can be used to support headers, joists and trusses in medium load conditions. An open back design allows installation after a member is placed in position.

Materials: 18 gauge
Finish: G90 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.

Typical THDS26 installation



THDS26

USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	H	D	Application[4] Header	Joist[3]	Fastener Schedule[5] Header Qty	Header Type	Joist[2] Qty	Joist Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
THDS26	--	18	1-5/8	5-1/8	3-1/2	(1) 2x6 S-P-F	(1) 2x6 S-P-F	18	16d x 2-1/2	10	10d x 1-1/2	Lbs	2110	1690	2110	1690
												kN	9.39	7.52	9.39	7.52
						(2) 2x6 S-P-F	(1) 2x6 S-P-F	18	16d x 2-1/2	10	10d x 1-1/2	Lbs	2340	1690	2340	1690
												kN	10.41	7.52	10.41	7.52
						(1) 2x6 S-P-F	(1) S-P-F plated truss	18	16d x 2-1/2	10	10d x 1-1/2	Lbs	3415	1690	3415	1690
												kN	15.19	7.52	15.19	7.52
						(2) 2x6 S-P-F	(1) S-P-F plated truss	18	16d x 2-1/2	10	10d x 1-1/2	Lbs	3640	1690	3640	1690
												kN	16.19	7.52	16.19	7.52

1) Factored uplift resistances have been increased 15% for short-term loading such as wind and earthquake; reduce for other load durations in accordance with the code.
2) When used in a truss application, the fasteners into the supported member will need to be driven through the truss plate to complete the installation.
3) Where truss plate is not within 1/4" of bottom surface use values for 2x6 S-P-F joist.
4) Supporting and supported wood members are to be designed by others. Ensure supporting member can accept all fasteners.
5) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 16d x 2-1/2 nails are 0.162" dia. x 2-1/2" long.
New products or updated product information are designated in **blue font.**

MUS / HUS Slant Nail Truss Hangers

The MUS / HUS hanger series offers double shear nailing. USP's raised dimple allows for 30° to 45° nailing through the joist into header, resulting in higher loads and less nailing.

Materials: MUS – 18 gauge; HUS – 16 gauge

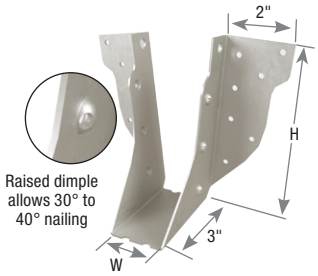
Finish: G90 galvanizing

Codes: Load values are derived from data submitted to various North American building code evaluators.

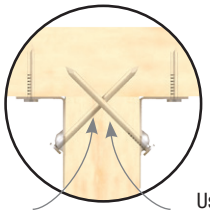
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Joist nails must be driven in at a 30° to 45° angle through the joist or truss into the header to achieve listed loads. **Standard length "double shear" nails must be used to achieve listed load values.**
- See EWP applications page 135.

Typical HUS installation
(MUS similar)

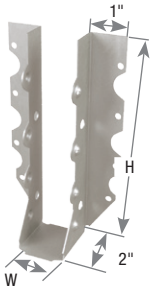


HUS



Double shear nail design features fewer nails and faster installation

Uses standard length nails



MUS

Joist / Truss Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Fastener Schedule[3] Header Qty	Header Type	Truss[2] Qty	Truss[2] Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%	Corrosion Finish
2 x 6 - 8	MUS26	MUS26	18	1-9/16	5-1/16	6	10d	6	10d	Lbs	2845	1425	2825	1415	
										kN	12.66	6.34	12.57	6.29	
	HUS26	HUS26, LJS26DS	16	1-5/8	5-7/16	14	16d	6	16d	Lbs	5480	3630	4305	2850	
										kN	24.38	16.15	19.15	12.68	
2 x 8 - 10	MUS28	MUS28	18	1-9/16	7-1/16	8	10d	8	10d	Lbs	3855	2030	3830	2015	
										kN	17.15	9.03	17.04	8.96	
	HUS28	HUS28	16	1-5/8	7-3/16	22	16d	8	16d	Lbs	7120	4840	5590	3800	
										kN	31.67	21.53	24.87	16.90	
2 x 10 - 12	HUS210	HUS210	16	1-5/8	9-3/16	30	16d	10	16d	Lbs	9030	6035	7085	4735	
										kN	40.17	26.85	31.52	21.06	
1-3/4 x 5-1/2 - 7-1/4	HUS175	HU1.81/5	16	1-13/16	5-3/8	14	16d	6	16d	Lbs	5480	3630	4305	2850	
										kN	24.38	16.15	19.15	12.68	
1-3/4 x 7-1/4 - 11-1/4	HUS177	-- --	16	1-13/16	7-1/8	22	16d	8	16d	Lbs	7120	4840	5590	3800	
										kN	31.67	21.53	24.87	16.90	
1-3/4 x 9-1/4 - 14	HUS179	HUS1.81/10	16	1-13/16	9-1/8	30	16d	10	16d	Lbs	9030	6035	7085	4735	
										kN	40.17	26.85	31.52	21.06	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Nails must be driven at a 30° to 45° angle through the joist or truss into the header to achieve the table loads.
3) **NAILS:** 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

THD Heavy-Duty Face Mount Truss Hangers

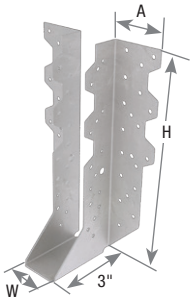
USP STRUCTURAL CONNECTORS
MiTek

Medium-to-heavy capacity face mount hanger. Some THD models are available with a min/max installation option.

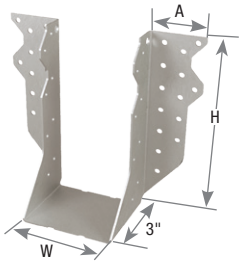
Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- **THD Min** – Fill all round nail holes.
- **THD Max** – Fill all round and diamond holes.

Typical THD28 installation



THD28



THD double or larger

Joist / Truss Size	USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	H	A	Fastener Schedule[2] Min/Max	Header Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%	Corrosion Finish
2 x 6 - 8	THD26	HTU26	16	1-5/8	5-1/16	1-7/8	Min	18	16d	12	10d x 1-1/2	Lbs	5010	4390	3935	3450	
												kN	22.29	19.53	17.50	15.35	
							Max	20	16d	20	10d x 1-1/2	Lbs	5230	4390	4535	3450	
												kN	23.26	19.53	20.17	15.35	
2 x 8 - 10	THD28	HTU28	16	1-5/8	7	1-7/8	Min	28	16d	16	10d x 1-1/2	Lbs	7350	4390	5770	3450	
												kN	32.69	19.53	25.67	15.35	
							Max	28	16d	26	10d x 1-1/2	Lbs	8135	4390	7055	3450	
												kN	36.19	19.53	31.38	15.35	
2 x 10 - 12	THD210	HTU210	16	1-5/8	9	1-7/8	Min	38	16d	20	10d x 1-1/2	Lbs	8380	5835	6580	4580	
												kN	37.28	25.96	29.27	20.37	
							Max	38	16d	32	10d x 1-1/2	Lbs	9675	6570	8385	5695	
												kN	43.04	29.22	37.30	25.33	
(2) 2 x 6 - 8	THD26-2	HHUS26-2, HTU26-2	14	3-7/16	5-3/8	2	--	18	16d	12	10d	Lbs	7090	5745	5565	4510	
												kN	31.54	25.56	24.75	20.06	
(2) 2 x 8 - 10	THD28-2	HHUS28-2, HTU28-2	14	3-7/16	7-1/8	2	--	28	16d	16	10d	Lbs	8195	4885	6435	3835	
												kN	36.45	21.73	28.62	17.06	
(2) 2 x 10 - 12	THD210-2	HHUS210-2, HTU210-2	14	3-7/16	9-1/8	2	--	38	16d	20	10d	Lbs	11540	8375	9060	7260	
												kN	51.33	37.25	40.30	32.29	
4 x 6 - 8	THD46	HHUS46	14	3-5/8	5-5/16	2	--	18	16d	12	10d	Lbs	7090	5745	5565	4510	
												kN	31.54	25.56	24.75	20.06	
4 x 8 - 10	THD48	HHUS48	14	3-5/8	7-1/16	2	--	28	16d	16	10d	Lbs	8195	4885	6435	3835	
												kN	36.45	21.73	28.62	17.06	
4 x 10 -12	THD410	HHUS410	14	3-5/8	9-1/16	2	--	38	16d	20	10d	Lbs	11540	8375	9060	7260	
												kN	51.33	37.25	40.30	32.29	
4 x 12 - 14	THD412	-- --	14	3-5/8	11	3	--	48	16d	20	10d	Lbs	11540	8375	9060	7260	
												kN	51.33	37.25	40.30	32.29	
4 x 14 - 16	THD414	-- --	14	3-5/8	12-7/8	3	--	58	16d	20	10d	Lbs	11540	8375	9060	7260	
												kN	51.33	37.25	40.30	32.29	
(3) 2 x 10 - 12	THD210-3	HHUS210-3	12	5-1/8	9	3	--	38	16d	20	10d	Lbs	12455	8375	9780	7260	
												kN	55.40	37.25	43.50	32.29	
6 x 10 -12	THD610	HHUS5.50/10	12	5-1/2	9	3	--	38	16d	20	10d	Lbs	12455	6425	9780	5045	
												kN	55.40	28.58	43.50	22.44	
6 x 12 - 14	THD612	-- --	12	5-1/2	11	3	--	48	16d	20	10d	Lbs	13785	9850	10825	7730	
												kN	61.32	43.81	48.15	34.38	
6 x 14 - 16	THD614	-- --	12	5-1/2	12-7/8	3	--	58	16d	20	10d	Lbs	13785	9850	10825	7730	
												kN	61.32	43.81	48.15	34.38	
(4) 2 x 10 - 12	THD210-4	HHUS210-4	12	6-3/4	9	3	--	38	16d	20	10d	Lbs	12455	8375	9780	7260	
												kN	55.40	37.25	43.50	32.29	
7 x 9-1/4 - 14	THD7210	HHUS7.25/10	12	7-1/4	9	3	--	38	16d	20	10d	Lbs	12455	6425	9780	5045	
												kN	55.40	28.58	43.50	22.44	

Some model designs may vary from illustration shown

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.

New products or updated product information are designated in **blue font.**

Corrosion Finish Stainless Steel, Gold Coat, HDG, Triple Zinc

Specialty Options Chart – refer to Specialty Options pages 220-221 for additional details.

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]	Inverted Flange
Range	1° to 45°	1° to 45°	See Sloped Seat and Skewed	Not available in widths < 3". Widths > 3" can have one flange inverted.
Factored Resistance	85% of table load	65% of table load	65% of table load	100% of table load. 65% of table load when nailing into the support members end grain.
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex. THD410_SK45R_SQ	Add *SL*, slope required, and up *(U)* or down *(D)*, to product number. Ex. THD410_SL30D	See Sloped Seat and Skewed. Ex. THD410_SK45R_SQ_SL30D	Add *1IF*, one flange, right *(R)* and left *(L)*, to product number. Ex. THD410_1IFR

1) Skewed hangers with skews greater than 15°may have all joist nailing on outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) **For skewed hangers, the required cut type (square or bevel) of joist member may vary based on skew angle and width of hanger. Some square cut hangers will require custom pricing due to welded back plate.**

New products or updated product information are designated in **blue font.**

THDH Heavy-Duty Truss Hangers

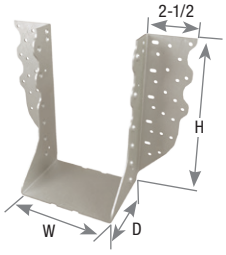
USP STRUCTURAL CONNECTORS MiTek

Materials: 12 gauge
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

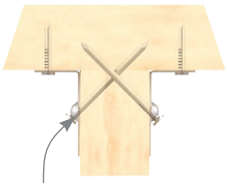
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Joist nails must be driven in at a 30° to 45° angle through the joist or truss into the header to achieve listed loads. **Standard length "double shear" nails must be used to achieve listed load values.**
- See EWP applications pages 135-136.

Typical THDH double shear installation

Typical THDH26-2 installation



THDH



Drive joist nails into header at 30° to 45° to achieve listed loads.

Joist / Truss Size	USP Stock No.	Ref. No.	Dimensions (in) W	H	D	Fastener Schedule[2,3] Header Qty	Header Type	Truss Qty	Truss Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%	Corrosion Finish
2 x 6 - 8	THDH26	HGUS26	1-5/8	5-7/16	5	20	16d	8	16d	Lbs	7540	4395	5920	3955	
										kN	33.54	19.55	26.33	17.59	
2 x 8 - 10	THDH28	HGUS28	1-5/8	7-3/16	5	36	16d	12	16d	Lbs	13075	8210	10265	7385	
										kN	58.16	36.52	45.66	32.85	
2 x 10 - 12	THDH210	-- --	1-5/8	9-3/16	5	46	16d	16	16d	Lbs	16120	10140	16120	9125	
										kN	71.71	45.10	71.71	40.59	
2-11/16 x 9-1/4 - 14	THDH27925	HGUS2.75/10	2-3/4	9-1/8	4	46	16d	12	16d	Lbs	14760	8210	11585	7385	
										kN	65.66	36.52	51.53	32.85	
2-11/16 x 11-1/4 - 16	THDH27112	HGUS2.75/12	2-3/4	10-7/8	4	56	16d	14	16d	Lbs	16130	8210	12660	7385	
										kN	71.75	36.52	56.31	32.85	
2-11/16 x 14 - 16	THDH2714	HGUS2.75/14	2-3/4	12-1/4	4	66	16d	16	16d	Lbs	17570	10140	15585	9125	
										kN	78.16	45.10	69.33	40.59	
3-1/4 x 9-1/2	THDH3210	HGUS3.25/10	3-3/16	9-3/8	4	46	16d	12	16d	Lbs	14760	8210	11585	7385	
										kN	65.66	36.52	51.53	32.85	
3-1/4 x 10-5/8	THDH3212	HGUS3.25/12	3-3/16	10-5/8	4	56	16d	14	16d	Lbs	16130	9845	12660	7730	
										kN	71.75	43.79	56.31	34.38	
(2) 2 x 6 - 8	THDH26-2	HGUS26-2	3-7/16	5-3/8	4	20	16d	8	16d	Lbs	7540	4395	5920	3955	
										kN	33.54	19.55	26.33	17.59	
(2) 2 x 8 - 10	THDH28-2	HGUS28-2	3-7/16	7-1/8	4	36	16d	10	16d	Lbs	13075	5380	10265	4770	
										kN	58.16	23.93	45.66	21.22	
(2) 2 x 10 - 12	THDH210-2	HGUS210-2	3-7/16	9-1/8	4	46	16d	12	16d	Lbs	14760	8210	11585	7385	
										kN	65.66	36.52	51.53	32.85	
4 x 6 - 8	THDH46	HGUS46	3-9/16	5-3/8	4	20	16d	8	16d	Lbs	7540	4395	5920	3955	
										kN	33.54	19.55	26.33	17.59	
4 x 8 - 10	THDH48	HGUS48	3-9/16	7-1/8	4	36	16d	10	16d	Lbs	12825	5380	10065	4770	
										kN	57.05	23.93	44.77	21.22	
4 x 10 - 12	THDH410	HGUS410	3-9/16	9-1/8	4	46	16d	12	16d	Lbs	14760	8210	11585	7385	
										kN	65.66	36.52	51.53	32.85	
4 x 12 - 14	THDH412	HGUS412	3-9/16	10-1/2	4	56	16d	14	16d	Lbs	16130	9845	12660	7730	
										kN	71.75	43.79	56.31	34.38	
4 x 14 - 16	THDH414	HGUS414	3-9/16	13-1/16	4	66	16d	16	16d	Lbs	17570	11335	15585	8895	
										kN	78.16	50.42	69.33	39.57	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Joist nails need to be toe nailed at a 30° to 45° angle to achieve factored resistances shown.
3) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

Continued on next page

THDH Heavy-Duty Truss Hangers

USP STRUCTURAL CONNECTORS MiTek

Joist / Truss Size	USP Stock No.	Ref. No.	Dimensions (in) W	H	D	Fastener Schedule[2,3] Header Qty	Header Type	Truss Qty	Truss Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%	Corrosion Finish
(3) 2 x 6 - 8	THDH26-3	HGUS26-3	5-1/8	5-7/16	4	20	16d	8	16d	Lbs	7540	4395	5920	3955	
										kN	33.54	19.55	26.33	17.59	
(3) 2 x 8 - 10	THDH28-3	HGUS28-3	5-1/8	7-3/16	4	36	16d	12	16d	Lbs	11005	8210	8790	7385	
										kN	48.95	36.52	39.10	32.85	
(3) 2 x 10 - 12	THDH210-3	HGUS210-3	5-1/8	9-3/16	4	46	16d	16	16d	Lbs	16120	10140	16120	9125	
										kN	71.71	45.10	71.71	40.59	
(3) 2 x 12 - 14	THDH212-3	HGUS212-3	5-1/8	11-3/16	4	56	16d	20	16d	Lbs	15465	10140	15465	9125	
										kN	68.79	45.10	68.79	40.59	
(3) 2 x 14 - 16	THDH214-3	HGUS214-3	5-1/8	13-3/16	4	66	16d	22	16d	Lbs	17570	11335	15585	8895	
										kN	78.16	50.42	69.33	39.57	
6 x 10 - 12	THDH610	HGUS5.25/10, HGUS5.50/10	5-1/2	9	4	46	16d	16	16d	Lbs	12645	10140	9925	9125	
										kN	56.25	45.10	44.15	40.59	
6 x 12 - 14	THDH612	HGUS5.25/12, HGUS5.50/12	5-1/2	11	4	56	16d	20	16d	Lbs	15465	10140	15465	9125	
										kN	68.79	45.10	68.79	40.59	
6 x 14 - 16	THDH614	HGUS5.50/14	5-1/2	13	4	66	16d	22	16d	Lbs	17570	11335	15585	8895	
										kN	78.16	50.42	69.33	39.57	
(4) 2 x 6 - 8	**THDH26-4**	HGUS26-4	6-9/16	5-7/16	4	20	16d	8	16d	Lbs	7540	4395	5920	3955	
										kN	33.54	19.55	26.33	17.59	
(4) 2 x 8 - 10	**THDH28-4**	HGUS28-4	6-7/16	7-9/16	4	36	16d	12	16d	Lbs	11005	8210	8790	7385	
										kN	48.95	36.52	39.10	32.85	
6-3/4 x 9 - 14-1/2	THDH6710	HGUS210-4, HGUS6.88/10	6-7/8	8-13/16	4	46	16d	12	16d	Lbs	12645	8210	9925	7385	
										kN	56.25	36.52	44.15	32.85	
6-3/4 x 11 - 18	THDH6712	HGUS212-4, HGUS6.88/12	6-7/8	10-13/16	4	56	16d	14	16d	Lbs	12645	9845	9925	7730	
										kN	56.25	43.79	44.15	34.38	
6-3/4 x 13 - 20-1/2	THDH6714	HGUS214-4, HGUS6.88/14	6-7/8	12-13/16	4	66	16d	16	16d	Lbs	17570	11335	15585	8895	
										kN	78.16	50.42	69.33	39.57	
7 x 9-1/4 - 14	THDH7210	HGUS7.25/10	7-1/4	9	4	46	16d	12	16d	Lbs	12645	8210	9925	7385	
										kN	56.25	36.52	44.15	32.85	
7 x 11-1/4 - 16	THDH7212	HGUS7.25/12	7-1/4	10-1/2	4	56	16d	14	16d	Lbs	12645	9845	9925	7730	
										kN	56.25	43.79	44.15	34.38	
7 x 14 - 18	THDH7214	HGUS7.25/14	7-1/4	12-1/4	4	66	16d	16	16d	Lbs	17570	11335	15585	8895	
										kN	78.16	50.42	69.33	39.57	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Joist nails need to be toe nailed at a 30° to 45° angle to achieve factored resistances shown.
3) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font.**

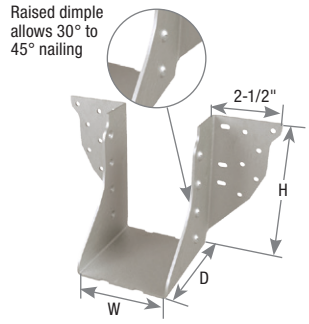
Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

Specialty Options Chart

– refer to Specialty Options pages 220-221 for additional details.

Option	Skewed[1,3]	Sloped Seat[2]	Sloped / Skewed[1,2,3]
Range	1° to 45°	1° to 45°	See Sloped Seat and Skewed
Factored Resistance	85% of table allowable load. 50% of table uplift load.	85% of table allowable load	52% of table allowable load. 50% of table uplift load.
Ordering	Add *SK*, angle required, right *(R)* or left *(L)*, and **square cut *(SQ)* or bevel cut *(BV)*** to product number. Ex. THDH410_SK45R_BV	Add SL, slope required, and up (U) or down (D), to product number. Ex. THDH410_SL30D	See Sloped Seat and Skewed. Ex. THDH410_SK45R_BV_SL30D

1) Skewed THDH hangers with skews greater than 15° always have all joist nailing on one side of the outside flange.
2) Sloped or sloped / skewed hangers with slopes greater than 15° may have additional joist nails.
3) Skewed hangers typically require a bevel cut. A square cut option may be available as a custom.
Inverted flange option is not available for THDH models.
New products or updated product information are designated in **blue font**.



THDH26-2

Some model designs may vary from illustration shown

THDHQ Girder Truss Hangers

USP STRUCTURAL CONNECTORS
MiTek

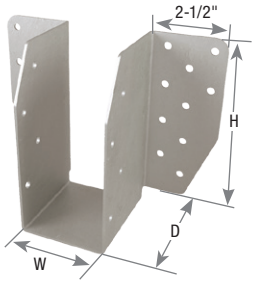
The new THDHQ hangers are designed to attach multi-ply girder trusses together using USP's WS Wood Screws for higher design load capacity. THDHQ hangers can also be used to attach structural composite lumber (SCL).

Materials: 12 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners.
- WS Wood Screws are supplied with THDHQ hangers.
- See table footnotes.

Typical THDHQ28-2 truss installation

Typical THDHQ28-2 SCL installation



THDHQ28-2

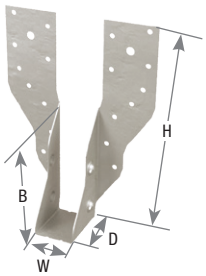
Supported Member	USP Stock No.	Ref. No.	Dimensions (in) W	H	D	A	Fastener Schedule[2,7] Supporting Member[3,4,5] Qty	Type	Supported Member Qty	Type	Unit	DF Factored Resistance Vertical 100%	Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	Uplift[1] 115%
Double 2x Sizes															
(2) 2 x 6 - 8	THDHQ26-2	HGUQ26-2-SDS3	3-5/16	5-7/16	4	1-15/16	12	WS3	4	WS3	Lbs	8130	3545	6380	2845
											kN	36.16	15.77	28.38	12.66
(2) 2 x 8 - 10	THDHQ28-2	HGUQ28-2-SDS3	3-5/16	7-3/16	4	2-13/16	20	WS3	8	WS3	Lbs	14660	6290	11510	5240
											kN	65.21	27.98	51.20	23.31
(2) 2 x 10 - 12	THDHQ210-2	HGUQ210-2-SDS3	3-5/16	9-3/16	4	2-13/16	28	WS3	8	WS3	Lbs	16195	9695	12715	8075
											kN	72.04	43.13	56.56	35.92
Triple 2x Sizes															
(3) 2 x 6 - 8	THDHQ26-3	HGUQ26-3-SDS4.5	4-15/16	5-7/16	4	1-15/16	12	WS45	4	WS45	Lbs	8130	3545	6380	2845
											kN	36.16	15.77	28.38	12.66
(3) 2 x 8 - 10	THDHQ28-3	HGUQ28-3-SDS4.5	4-15/16	7-3/16	4	2-13/16	20	WS45	8	WS45	Lbs	14660	6290	11510	5240
											kN	65.21	27.98	51.20	23.31
(3) 2 x 10 - 12	THDHQ210-3	HGUQ210-3-SDS4.5	4-15/16	9-3/16	4	2-13/16	28	WS45	8	WS45	Lbs	16195	9695	12715	8075
											kN	72.04	43.13	56.56	35.92
Quadruple 2x Sizes															
(4) 2 x 6 - 8	THDHQ26-4	HGUQ26-4-SDS6	6-9/16	5-7/16	4	1-15/16	12	WS6	4	WS6	Lbs	8130	4565	6380	3585
											kN	36.16	20.31	28.38	15.95
(4) 2 x 8 - 10	THDHQ28-4	HGUQ28-4-SDS6	6-9/16	7-3/16	4	2-13/16	20	WS6	8	WS6	Lbs	14660	8335	11510	6945
											kN	65.21	37.08	51.20	30.89
(4) 2 x 10 - 12	THDHQ210-4	HGUQ210-4-SDS6	6-9/16	9-3/16	4	2-13/16	28	WS6	8	WS6	Lbs	16195	7695	12715	6410
											kN	72.04	34.23	56.56	28.51
4x Sizes															
4 x 6 - 8	THDHQ46	HGUQ46-SDS3	3-5/8	5-7/16	4	1-15/16	12	WS3	8	WS3	Lbs	8130	3545	6380	2845
											kN	36.16	15.77	28.38	12.66
4 x 8 - 10	THDHQ48	HGUQ48-SDS3	3-5/8	7-3/16	4	2-13/16	20	WS3	8	WS3	Lbs	14660	6290	11510	5240
											kN	65.21	27.98	51.20	23.31
4 x 10 - 12	THDHQ410	HGUQ410-SDS3	3-5/8	9-3/16	4	2-13/16	28	WS3	8	WS3	Lbs	16195	9695	12715	8075
											kN	72.04	43.13	56.56	35.92

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) WS3 is 1/4" x 3" long wood screw, WS45 is 1/4" x 4-1/2" long wood screw, WS6 is 1/4" x 6" long wood screw and are included with THDHQ hangers.
3) WS Wood Screw length into supporting member is based on supporting member width being equal to supported member width. See notes 4 and 5 for fastening information.
4) WS Wood Screws shall penetrate properly into all plies of the supporting member and as a minimum, penetration into the last ply of the supporting member shall be at least one inch. Additional WS screws (not supplied) can be installed to the back side of the outer ply, designed by others, when the aforementioned penetration requirement is not met.
5) For construction safety concern, if the supplied WS Wood Screws protrude past the last ply of the supporting member, shorter length WS screws can be used; ex. WS3 screws may be substituted for WS45 screws and WS45 screws may be substituted for WS6 screws, with no load reduction. Alternately, a backer block member may be used as determined by the designer.
6) Cross-grain tension may limit factored resistances per CSA O86-14 Section 12.2.1.4. For assistance, contact USP Structural Connectors.
7) WS Wood Screws may be installed through metal truss connector plates as approved by the Truss Designer, provided the requirements of CSA O86-14 Section 5.3.8 and TPIC-2014 Section 7.5 are met. (Pre-drilling required through the plate using a maximum of 5/32" bit).
8) For hanger installations supported by LSL, of specific gravity no less than 0.50, use the DF factored resistances.
New products or updated product information are designated in **blue font**.

MSH Adjustable Strap Hangers

The MSH is field adjustable. The flanges can be used in top mount, face mount, or combination installations. An open back design allows installation after a member is placed in position.

Materials: See chart
Finish: G90 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Web stiffeners are required for I-Joist installations.



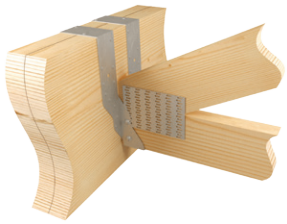
MSH

Mounting Conditions

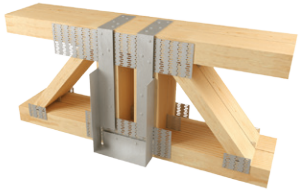
Face Max
All header nails used should be driven into the wide face of the header.


Typical MSH face-max installation

Top-Max
The hanger is installed in a top mount condition with at least six lower header face nail holes filled, and four top flange nails filled. The strap must wrap over the top at least 2-1/2".


Typical MSH top-max installation

Top-Min
The hanger is installed in a top mount condition with at least the top two header face nail holes filled, and four top flange nail holes filled. The strap must wrap over the top at least 2-1/2" and the joist nails shall be installed straight into the joist for all models.


Typical MSH top-min installation

Combination Face-Max / Top-Max
Face-Max values apply for the entire connection. Follow fastening directions above for the applicable mounting condition for each individual flange strap.


Typical MSH combination installation

Joist Material & Width	USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	H	D	B	Mounting Condition	Fastener Schedule[2] Header Top Qty	Header Face Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%
2x Lumber or Trusses	MSH29	THA29	18	1-5/8	8-3/4	2-1/4	5	face-max	--	18	10d	4	10d x 1-1/2	4625	1435	20.57	6.38	3630	1125	16.15	5.00
								top-max	4	6	10d	4	10d x 1-1/2	4785	1435	21.28	6.38	3760	1125	16.73	5.00
								top-min	4	2	10d	4	10d x 1-1/2	3630	--	16.15	--	2850	--	12.68	--
	MSH213	THA213	18	1-5/8	12-3/4	2-1/4	5	face-max	--	20	10d	4	10d	4625	1435	20.57	6.38	3630	1125	16.15	5.00
								top-max	4	6	10d	4	10d	4785	1435	21.28	6.38	3760	1125	16.73	5.00
								top-min	4	2	10d	4	10d x 1-1/2	3630	--	16.15	--	2850	--	12.68	--
	MSH218	THA218	18	1-5/8	16-3/4	2-1/4	5	face-max	--	26	10d	4	10d x 1-1/2	4625	1435	20.57	6.38	3630	1125	16.15	5.00
								top-max	4	6	10d	4	10d x 1-1/2	4785	1435	21.28	6.38	3760	1125	16.73	5.00
								top-min	4	2	10d	4	10d x 1-1/2	3630	--	16.15	--	2850	--	12.68	--
	MSH222	THAI222	18	1-5/8	23	1-3/4	10-13/16	face-max	--	22	10d	4	10d x 1-1/2	3640	1085	16.19	4.83	2860	850	12.72	3.78
								top-max	4	6	10d	4	10d x 1-1/2	4125	1085	18.35	4.83	3235	850	14.39	3.78
								top-min	4	2	10d	4	10d x 1-1/2	3440	--	15.30	--	2700	--	12.01	--

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

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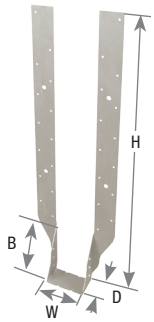
MSH Adjustable Strap Hangers

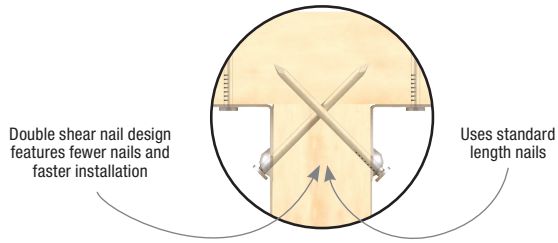
USP STRUCTURAL CONNECTORS MiTek

MSH222

MSH422IF



MSH426



Joist Material & Width	USP Stock No.	Ref. No.	Ga.	Dimensions (in) W	H	D	B	Mounting Condition	Fastener Schedule[2] Header Top Qty	Header Face Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	Lbs Uplift[1] 115%	kN Vertical 100%	kN Uplift[1] 115%	Corrosion Finish
1-3/4" LVL or I-Joist	MSH1713	--	18	1-13/16	14-7/16	1-3/4	10-3/4	face-max	--	12	10d	4	10d	3640	1085	16.19	4.83	2860	850	12.72	3.78	
								top-max	4	6	10d	4	10d	4125	1085	18.35	4.83	3235	850	14.39	3.78	
								top-min	4	2	10d	4	10d x 1-1/2	3440	--	15.30	--	2700	--	12.01	--	
	MSH1722	THAI1.81/22	18	1-13/16	22-7/8	1-3/4	10-3/4	face-max	--	22	10d	4	10d x 1-1/2	3410	940	15.17	4.18	2900	800	12.90	3.56	
								top-max	4	6	10d	4	10d x 1-1/2	4495	975	19.99	4.34	3660	795	16.28	3.54	
								top-min	4	2	10d	4	10d x 1-1/2	3370	--	14.99	--	2750	--	12.23	--	
2" wide I-Joist	MSH2022	THAI2.06/22	18	2-1/16	22-5/8	1-3/4	10-7/16	face-max	--	22	10d	4	10d	3410	940	15.17	4.18	2900	800	12.90	3.56	
								top-max	4	6	10d	4	10d	4495	975	19.99	4.34	3660	795	16.28	3.54	
								top-min	4	2	10d	4	10d	3370	--	14.99	--	2750	--	12.23	--	
2-5/16" wide I-Joist	MSH2322	THAI3522	18	2-3/8	22-5/8	1-3/4	10-7/16	face-max	--	22	10d	4	10d x 1-1/2	3410	940	15.17	4.18	2900	800	12.90	3.56	
								top-max	4	6	10d	4	10d x 1-1/2	4495	975	19.99	4.34	3660	795	16.28	3.54	
								top-min	4	2	10d	4	10d x 1-1/2	3370	--	14.99	--	2750	--	12.23	--	
2-1/2" wide Floor Trusses	MSH322	THAI322	18	2-9/16	22-1/2	1-3/4	10-3/8	face-max	--	22	10d	4	10d x 1-1/2	3410	940	15.17	4.18	2900	800	12.90	3.56	
								top-max	4	6	10d	4	10d x 1-1/2	4495	975	19.99	4.34	3660	795	16.28	3.54	
								top-min	4	2	10d	4	10d x 1-1/2	3370	--	14.99	--	2750	--	12.23	--	
(2) 2x Lumber or Trusses	MSH218-2	THA218-2	16	3-1/8	17-3/4	1-3/4	10-1/16	face-max	--	16	10d	4	10d	3940	1105	17.53	4.92	3090	865	13.75	3.85	
								top-max	4	6	10d	4	10d	5530	1105	24.60	4.92	4340	865	19.31	3.85	
								top-min	4	2	10d	4	10d	3425	--	15.24	--	2690	--	11.97	--	
	MSH222-2	THA222-2	16	3-1/8	22-1/4	1-3/4	10-1/16	face-max	--	22	10d	4	10d	5335	1105	23.73	4.92	4190	865	18.64	3.85	
								top-max	4	6	10d	4	10d	5530	1105	24.60	4.92	4340	865	19.31	3.85	
								top-min	4	2	10d	4	10d	3425	--	15.24	--	2690	--	11.97	--	
3-1/2" wide Floor Trusses	MSH413	THA413	16	3-9/16	14	1-3/4	7-5/8	face-max	--	14	10d	6	10d	5505	2865	24.49	12.74	4320	2250	19.22	10.01	
								top-max	4	6	10d	6	10d	5125	2865	22.80	12.74	4020	2250	17.88	10.01	
								top-min	4	2	10d	6	10d	3215	--	14.30	--	2525	--	11.23	--	
	MSH418	THA418	16	3-9/16	17-1/2	1-3/4	7-5/8	face-max	--	18	10d	6	10d	6930	2865	30.83	12.74	5440	2250	24.20	10.01	
								top-max	4	6	10d	6	10d	5125	2865	22.80	12.74	4020	2250	17.88	10.01	
								top-min	4	2	10d	6	10d	3215	--	14.30	--	2525	--	11.23	--	
	MSH422	THA422, THAI422	16	3-9/16	21-1/2	1-3/4	7-5/8	face-max	--	22	10d	6	10d	6015	2490	26.76	11.08	5115	2115	22.75	9.41	Triple Zinc
								top-max	4	6	10d	6	10d	5125	2865	22.80	12.74	4020	2250	17.88	10.01	Triple Zinc
								top-min	4	2	10d	6	10d	3215	--	14.30	--	2525	--	11.23	--	Triple Zinc
	MSH422IF	THAC418, THAC422	16	3-5/8	22	1-3/4	9-13/16	face-max	--	22	10d	4	10d	5335	1105	23.73	4.92	4190	865	18.64	3.85	
								top-max	4	6	10d	4	10d	5530	1105	24.60	4.92	4340	865	19.31	3.85	
								top-min	4	2	10d	4	10d	3425	--	15.24	--	2690	--	11.97	--	
	MSH424	--	16	3-5/8	21-1/2	2	5-3/16	face-max	--	36	10d	6	10d	6285	2345	27.96	10.43	4935	1840	21.95	8.18	
								top-max	4	6	10d	6	10d	4705	2345	20.93	10.43	3695	1840	16.44	8.18	
								top-min	4	2	10d	6	10d	2455	--	10.92	--	1930	--	8.59	--	
	MSH426 MSH426IF	THA426, THAC426	14	3-5/8	26	1-3/4	8	top-max	4	8	16d	6	16d	6115	3415	27.20	15.19	4800	2685	21.35	11.94	
								top-min	4	2	16d	6	16d	4340	905	19.31	4.03	3405	710	15.15	3.16	
(2) 3-1/2" wide Floor Trusses	MSH422-2 MSH422-2IF	THA422-2 THAC422-2	14	7-1/4	22-1/8	2	11	face-max	--	26	16d	6	16d	9025	1935	40.15	8.61	7355	1575	32.72	7.01	
								top-max	4	10	16d	6	16d	7275	2145	32.36	9.54	5710	1685	25.40	7.50	
								top-min	4	4	16d	6	16d	6665	--	29.65	--	5230	--	23.26	--	
	MSH426-2	THA426-2	14	7-1/4	26-1/16	2	11	face-max	--	22	10d	4	10d	9025	1935	40.15	8.61	7355	1575	32.72	7.01	
								top-max	4	6	10d	4	10d	7275	2145	32.36	9.54	5710	1685	25.40	7.50	
								top-min	4	4	10d	4	10d	6665	--	29.65	--	5230	--	23.26	--	
4-5/8" wide I-Joist	MSH2322-2	--	16	4-3/4	22	1-3/4	9-1/4	face-max	--	46	10d	4	10d	8120	995	36.12	4.43	6375	810	28.36	3.60	
								top-max	4	6	10d	4	10d	5240	995	23.31	4.43	4115	810	18.30	3.60	
								top-min	4	2	10d	4	10d	3475	--	15.46	--	2830	--	12.59	--	
	MSH2622-2	--	16	5-3/8	22	1-3/4	9-1/4	face-max	--	46	10d	4	10d	8120	995	36.12	4.43	6375	810	28.36	3.60	
								top-max	4	6	10d	4	10d	5240	995	23.31	4.43	4115	810	18.30	3.60	
								top-min	4	2	10d	4	10d	3475	--	15.46	--	2830	--	12.59	--	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

MSHL / R Skewed Truss Hanger

USP STRUCTURAL CONNECTORS MiTek

The MSHL/R is a versatile 45-degree skewed hanger with multiple installation options. It can be installed on a supporting girder truss as well as solid-sawn and structural composite lumber headers.

Materials: See chart

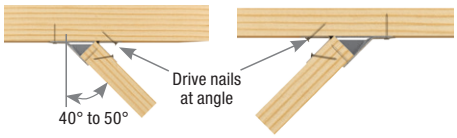
Finish: G90 galvanizing

Installation:

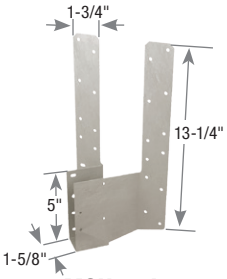
- Install the required number of fasteners according to the load table.
- Install fasteners into the carrying members at the locations described below based on the proper "Mounting Condition."
- Web stiffeners are required for I-Joist installations.
- Hanger is factory skewed at 45° left or right.

Typical MSH213R installation
right skew

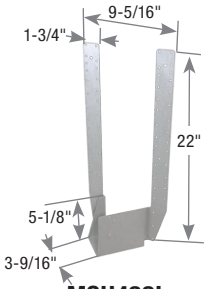
Typical MSH213L installation
left skew



Right skew **Left skew**



MSH213L
left skew



MSH422L
left skew

MSH422R
right skew

CONNECTION TO CARRYING MEMBER
Mounting Condition

Face-Max

For MSH422L/R, bottom six (6) fastener holes (three on each side of bucket) must be filled. Install eight (8) additional fasteners (four (4) in each strap) where applicable. For MSH213L/R, bottom eight (8) fastener holes must be filled (four (4) in each strap). Install fourteen (14) additional fasteners, seven (7) in each strap. Min. 2x6 bottom chord required.

Typical MSH422R face-max installation

Top-Max

The straps must be field-bent over the header a minimum of 2" to allow four (4) top flange nail holes to be filled (two in each strap). The bottom six (6) fastener holes (three on each side of the bucket) must be filled. Min. 2x6 bottom chord required.

Typical MSH422R top-max installation

Top-Min

The straps must be field bent over the header a minimum of 2" to allow four (4) top flange nail holes to be filled (two in each strap). Also install the two (2) uppermost face nails (one on each strap) near the top of the header.

Typical MSH422R top-min installation

Combination Face-Max/Top-Max

Follow the Face-Max installation for one side of the connector and the Top-Max installation for the opposite side of the connector. The Face-Max factored resistances apply to this type of installation. Min. 2x6 bottom chord required.

Typical MSH422R combination installation

CONNECTION TO CARRIED MEMBER - All Mounting Conditions

Install six (6) 10d x 1-1/2" nails into 2x carried member, or six (6) 10d nails into 3-1/2" wide carried member.

Joist Material & Width	USP Stock No.	Ref. No.	Steel Gauge	Mounting Condition	Fastener Schedule[2] Header Top Qty	Header Face Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
2x Lumber or Trusses	MSH213L/R	--	18	face-max	--	22	10d	6	10d x 1-1/2	Lbs	2795	1155	2790	1150
										kN	12.43	5.14	12.41	5.12
				top-max	4	6	10d	6	10d x 1-1/2	Lbs	2700	1155	2600	1150
										kN	12.01	5.14	11.57	5.12
				top-min	4	2	10d	6	10d x 1-1/2	Lbs	1925	--	1855	--
										kN	8.56	--	8.25	--
				combination	2	14	10d	6	10d x 1-1/2	Lbs	2795	1155	2790	1150
										kN	12.43	5.14	12.41	5.12
3-1/2" LVL or Floor Trusses	MSH422L/R	THAL/R422	16	face-max	--	14	10d	6	10d	Lbs	2630	995	2065	780
										kN	11.70	4.43	9.19	3.47
				top-max	4	6	10d	6	10d	Lbs	2605	995	2045	780
										kN	11.59	4.43	9.10	3.47
				top-min	4	2	10d	6	10d	Lbs	2290	--	1800	--
										kN	10.19	--	8.01	--
				combination	2	10	10d	6	10d	Lbs	2630	995	2065	780
										kN	11.70	4.43	9.19	3.47

1) Factored uplift resistances have been increased 15% for short-term loads such as wind or earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long

New products or updated product information are designated in **blue font.**

MSHA Adjustable Strap Skewed Hangers

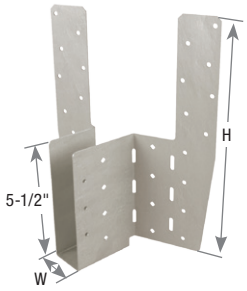
USP STRUCTURAL CONNECTORS
MiTek

USP's MSHA Series hanger offers the most flexible field solution for truss-to-truss connections accommodating a range of skews and challenging web-chord geometry often found in truss framing. Eliminating the need for special orders, the MSHA Series hanger provides economical solutions for 1-ply or 2-ply roof trusses and 1-ply floor trusses skewed between 22-1/2° to 75°. MSHA hangers can be installed in top-min, top-max, face-max or combination conditions as required.

Materials: 16 gauge
Finish: G90 galvanizing

Installation:

- Install the required number of fasteners according to the load table.
- Install fasteners into the carrying member at the locations described below based on the proper "Mounting Condition".
- Product is factory skewed 22-1/2° and may be field skewed from 22-1/2° to 75°. See installation sequence below for skews greater than 22-1/2°.
- Face-Max and Combination mounting conditions require a minimum chord or header height of 7-1/4". Top-Max and Top-Min mounting conditions require a minimum chord or header height of 5-1/2".



MSHA29L
Left Shown

MSHA29R-2
Right Shown

CONNECTION TO CARRYING MEMBER
Mounting Conditions:

Face-Max

Fill the lowest four holes nearest each side of the bucket. For a 22-1/2° skew, fill the four diamond holes on one side and 4 round holes on the other. For skews greater than 22-1/2°, fill the 4 round holes on each side.

Add an equal amount of nails in each side of the hanger in any of the remaining nail holes to meet the minimum fastener requirements listed in the table on page 187.

Typical MSHA face-max installation

Top-Max

Field bend the strap over the supporting member. The bent strap must extend a minimum of 2 inches over the carrying member to allow for the four top flange nail holes to be filled.

Fill the lowest four nail holes nearest each side of the bucket. For a 22-1/2° skew, fill the four diamond holes on one side and 4 round holes on the other. For skews greater than 22-1/2°, fill the 4 round holes on each side.

Typical MSHA top-max installation

Top-Min

Field bend the strap over the supporting member. The bent strap must extend a minimum of 2 inches over the carrying member to allow for the four top flange nail holes to be filled.

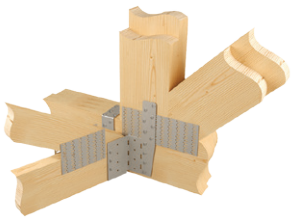
Fill the four nail holes (two each strap) nearest the top of the carrying member.

Typical MSHA top-min installation

Combination (Face-Max/Top-Max)

Follow the Face-Max installation for one side of the connector. Follow the Top-Max installation for the opposite side of the connector.

The Face-Max factored resistance apply to this type of installation.



Typical MSHA combination installation

CONNECTION TO CARRIED MEMBER
Mounting Conditions:

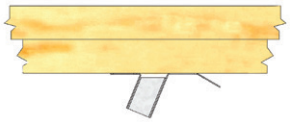
For the 22-1/2° skew installation, all round and diamond holes must be filled. For skews greater than 22-1/2°, only the diamond holes must be filled.

Continued on next page

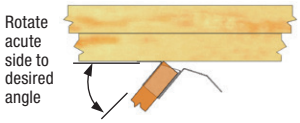
MSHA Adjustable Strap Skewed Hangers

USP STRUCTURAL CONNECTORS MiTek

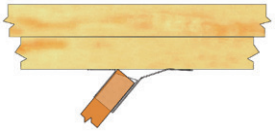
Installation Sequence for Skews > 22-1/2°



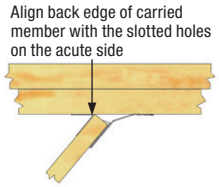
Step 1: Install acute side top and/or face header fasteners.



Step 2: Utilizing a piece of scrap fastened to the hanger on the obtuse side, bend the hanger to the desired angle.



Step 3: Bend the obtuse side of hanger back toward the header until the flange lies flat against the header, and install header top and/or face fasteners as noted above.



Step 4: Install carried truss and all required fasteners working from the bottom up.

Joist Width	USP Stock No.	Ref. No.	Dimensions (in) W	Dimensions (in) H	Min H_{eff}[2] (in)	Mounting Condition[3]	Skew Angle (degrees)	Fastener Schedule[4] Carrying Member Top Qty	Carrying Member Face Qty	Carrying Member Type	Carried Member Qty	Carried Member Type	DF Factored Resistance Lbs Vertical 100%	DF Lbs Uplift[1] 115%	DF kN Vertical 100%	DF kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Vertical 100%	S-P-F Lbs Uplift[1] 115%	S-P-F kN Vertical 100%	S-P-F kN Uplift[1] 115%
2x Trusses	MSHA29L/R	THASR/L29	1-5/8	10-3/4	7-1/4	face-max	22-1/2	--	12	10d	7	10d x 1-1/2	2335	1625	10.39	7.23	2015	1400	8.96	6.23
							23 to 45	--	12	10d	4	10d x 1-1/2	2025	930	9.01	4.14	1590	805	7.07	3.58
							46 to 75	--	12	10d	4	10d x 1-1/2	2025	930	9.01	4.14	1590	805	7.07	3.58
					5-1/2	top-max	22-1/2	4	8	10d	7	10d x 1-1/2	2870	1625	12.77	7.23	2260	1360	10.05	6.05
							23 to 45	4	8	10d	4	10d x 1-1/2	2435	930	10.83	4.14	1915	755	8.52	3.36
							46 to 75	4	8	10d	4	10d x 1-1/2	2190	930	9.74	4.14	1720	755	7.65	3.36
						top-min	22-1/2	4	4	10d	7	10d x 1-1/2	1955	--	8.70	--	1685	--	7.50	--
							23 to 45	4	4	10d	4	10d x 1-1/2	1765	--	7.85	--	1385	--	6.16	--
							46 to 75	4	4	10d	4	10d x 1-1/2	950	--	4.23	--	745	--	3.31	--
2-2x Trusses	MSHA29L/R-2	THASR/L29-2	3-1/8	10-3/4	7-1/4	face-max	22-1/2	--	12	10d	7	10d	2340	1630	10.41	7.25	1955	1360	8.70	6.05
							23 to 45	--	12	10d	4	10d	1910	935	8.50	4.16	1495	755	6.65	3.36
							46 to 75	--	12	10d	4	10d	1910	935	8.50	4.16	1495	755	7.70	3.36
					5-1/2	top-max	22-1/2	4	8	10d	7	10d	2880	1630	12.81	7.25	2260	1360	10.05	6.05
							23 to 45	4	8	10d	4	10d	2470	935	10.99	4.16	1970	780	8.76	3.47
							46 to 75	4	8	10d	4	10d	2125	935	9.45	4.16	1665	780	7.41	3.47
						top-min	22-1/2	4	4	10d	7	10d	1960	--	8.72	--	1685	--	7.50	--
							23 to 45	4	4	10d	4	10d	1765	--	7.85	--	1385	--	6.16	--
							46 to 75	4	4	10d	4	10d	950	--	4.23	--	745	--	3.31	--
4x Trusses	MSHA422L/R	THASR/L422	3-5/8	22-1/8	7-1/4	face-max	22-1/2	--	12	10d	7	10d	2320	1615	10.32	7.18	2015	1400	8.96	6.23
							23 to 45	--	12	10d	4	10d	2025	925	9.01	4.11	1590	805	7.07	3.58
							46 to 75	--	12	10d	4	10d	2025	925	9.01	4.11	1590	805	7.07	3.58
					5-1/2	top-max	22-1/2	4	8	10d	7	10d	2855	1615	12.70	7.18	2260	1360	10.05	6.05
							23 to 45	4	8	10d	4	10d	2450	925	10.90	4.11	1970	780	8.76	3.47
							46 to 75	4	8	10d	4	10d	2125	925	9.45	4.11	1665	780	7.41	3.47
						top-min	22-1/2	4	4	10d	7	10d	1940	--	8.63	--	1685	--	7.50	--
							23 to 45	4	4	10d	4	10d	1765	--	7.85	--	1385	--	6.16	--
							46 to 75	4	4	10d	4	10d	950	--	4.23	--	745	--	3.31	--

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) H_{eff} is the minimum distance from the top of the hanger seat to the top of the carrying member.
3) For tabulated top-mount installation loads, the straps must be wrapped over the header a minimum of 2".
4) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font**.

MSSHL/R Severely Skewed Hangers

USP STRUCTURAL CONNECTORS MiTek

USP's MSSH217 hanger accommodates a skew range of 60° to 85° (5° minimum to 30° maximum off the girder) without the need for a more expensive custom design hanger. Face nail to webs or bend the flange strap over the chord. Available in left (L) or right (R) configurations.

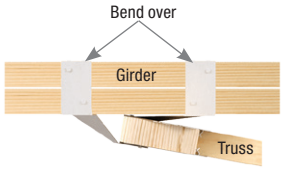
Materials: 18 gauge

Finish: G90 galvanizing

Installation:

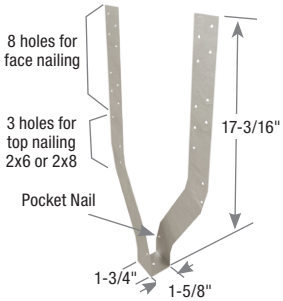
- Use all specified fasteners. See Product Notes, page 15.
- The 3 lower holes on each strap are for top nailing when the strap is bent over the truss chord. These holes are not for face nailing.
- One or both straps may be bent over the bottom chord of the girder with top and backside nailing.
- **Note:** Select the correct (right or left) hanger so that the strap on the outside of the angle will pass the end of the truss. When facing the hanger, the strap in the rear turns in the direction of the skew. The front strap turns to pass behind the end of the carried member.
- Attach the hanger at the end of the truss with a single 10d (0.148" dia) x 1-1/2" nail into the side flange or bottom.
- Place the truss in position against the girder. Push the outside strap past the end of the truss to the girder web and face nail through the top 8 holes with 10d (0.148" dia) x 1-1/2" nails into the girder.
- The strap inside the angle can be formed over diagonal webs (if design allows) or bend over the girder chord. Use two nails into the top and fill all nail holes on the front/back side of the girder.
- If the outside strap does not contact a web, bend the strap tightly over the girder chord. Use two nails into the top and fill all nail holes on the back side of the girder.
- For uplift resistance, other means of attachment are required. If both the truss and girder have vertical webs, attach a scab to pack out the girder web nearly flush with the truss web and use a field adjustable MP framing angle across the two. A top chord connection for uplift requires a flat LSTA strap tie wrapped under the girder and over the truss chord.

MSSH217L
Left shown attached to web and top of chord

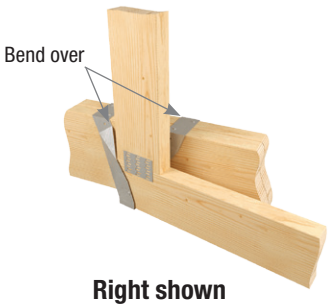


Top view right shown

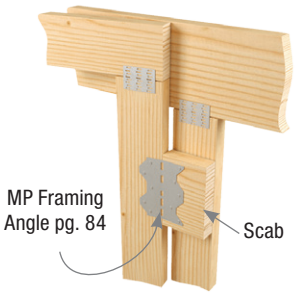
MSSH217R
Right shown attached to webs



MSSH217R
right shown

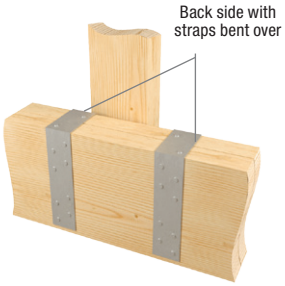


Right shown bent over bottom chord



Additional strapping for high uplift

Additional strapping for high uplift



Back view shown

USP Stock No.	Ref. No.	Steel Gauge	Mounting Condition	Fastener Schedule[2,3,5] Supporting Member Top (per strap) Qty	Type	Face/Backside (per strap) Qty	Type	Supported Member Qty	Type	Girder Plies	DF Factored Resistance[1] Vertical 100% Lbs	kN	S-P-F Factored Resistance[1] Vertical 100% Lbs	kN
MSSH217L/R	--	18	face-max	--	--	8	10d x 1-1/2	1	10d x 1-1/2	1 or 2	2115	9.41	1720	7.65
			top-min	2	10d	3	10d x 1-1/2	1	10d x 1-1/2		2115	9.41	1720	7.65

1) No uplift value with this hanger. Use other hardware higher on carried member to counteract uplift.
2) One or both straps may be bent over chord member with top and backside nailing.
3) Maintain minimum 3/4" edge distance when installing nails.
4) The supported member shall be supported by blocking or other means to prevent rotation.
5) **Nails:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" x 3" long.
Note: The lower holes on each strap are for top nailing when strap is bent. These holes are not for face nailing.

SNP Skewed Nail Plate

The SNP3 Skewed Nail Plate is designed and tested for connecting square cut corner jack trusses at skews up to 45˚.

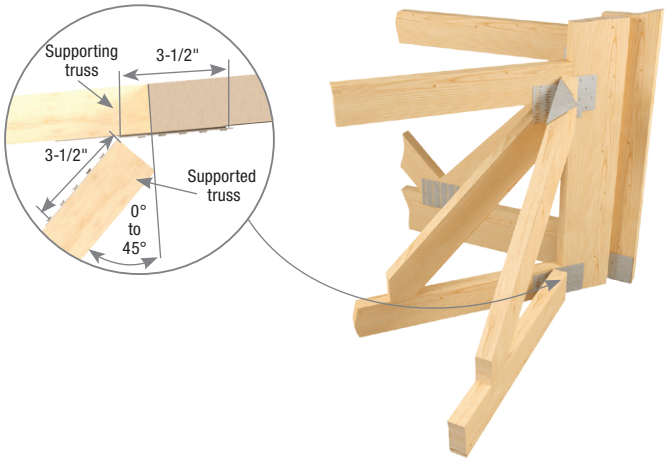
Materials: 16 gauge

Finish: G90 galvanizing

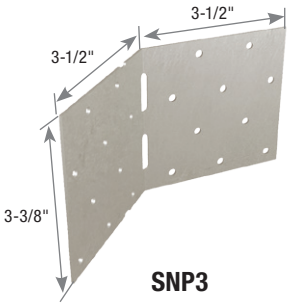
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Install specified fasteners from bend line out from each end. Not all nail holes will be filled.
- Attach to the supported truss on the acute angle side so the SNP3 runs behind the end of the jack.
- Set jack truss against supporting truss and nail on exposed flange.
- **Bend angle only once.**
- 8d common (0.131" dia. x 2-1/2" long) nails may be substituted for 8d x 1-1/2" nails with no reduction in load.



Typical SNP3 installation



SNP3

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2] Each End Qty	Fastener Schedule[2] Each End Type	Unit	DF Factored Resistance Vertical 100%	DF Factored Resistance Upift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Factored Resistance Upift[1] 115%
SNP3	TJC37	16	6	8d x 1-1/2	Lbs	865	995	680	780
					kN	3.85	4.43	3.02	3.47

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
2) **NAILS:** 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long.
New products or updated product information are designated in **blue font.**

HHC / HJC / HJHC / HTHJ Hip / Jack Connectors

HHC – Designed to support hip/hip and jack truss/rafter. Contact USP when using in multi-ply applications.

HJHC – Allows for hip/hip support and hip/jack/hip installations.

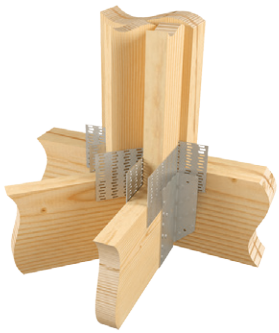
HJC & HTHJ – Used to simultaneously hang a combination of hips and jacks off girder trusses. These hangers fit both left-hand and right-hand applications. An open back design allows for retrofit installations.

Materials: HHC, HJC, & HJHC – 12 gauge, HTHJ –18 gauge

Finish: G90 galvanizing

Options: See Specialty Options Chart on page 190.

Codes: Load values are derived from data submitted to various North American building code evaluators.

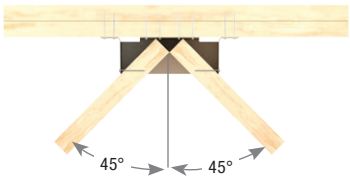


Typical HJC/HTHJ installation

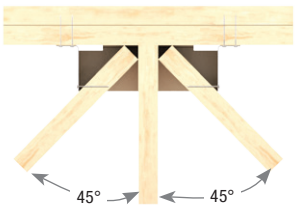
Installation:

- Use all specified fasteners. See Product Notes, page 15.

Typical HJC/HTHJ installation top view



Typical HHC installation top view

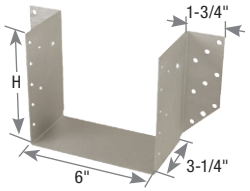


Typical HJHC installation top view

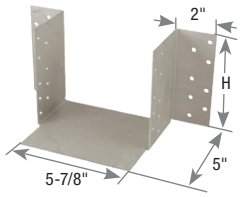
Continued on next page

HHC / HJC / HJHC / HTHJ Hip/Jack Connectors

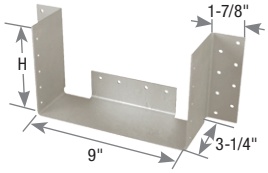
USP STRUCTURAL CONNECTORS MiTek



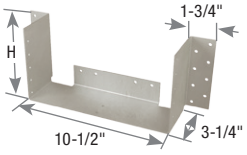
HJC



HTHJ



HHC



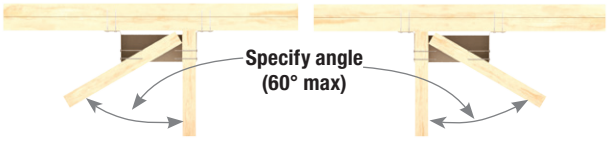
HJHC

Description	USP Stock No.	Ref. No.	Steel Gauge	H (in)	Fastener Schedule[4,5] Carrying Member Qty	Carrying Member Type[3]	Carried Member per Hip Qty	per Hip Type	per Jack Qty	per Jack Type	Unit	DF Factored Resistance[2] Vertical 100%	DF Uplift[1,3] 115%	S-P-F Factored Resistance[2] Vertical 100%	S-P-F Uplift[1,3] 115%
2 x 6 right / left	HJC26	LTHJA26, THJA26, THJU26	12	5-3/8	16	16d	5	10d	7	10d	Lbs	5740	4540	4505	3565
											kN	25.53	20.19	20.04	15.86
2 x 6 terminal	HHC26	LTHJA26, THJA26	12	5-7/16	20	16d	5	10d	--	--	Lbs	5740	3105	4505	2725
											kN	25.53	13.81	20.04	12.12
	HJHC26	--	12	5-7/16	20	16d	5	10d	2	10d	Lbs	5740	2175	4505	1910
											kN	25.53	9.67	20.04	8.50
	HTHJ26-18	--	18	5	16	16d	7	16d	5	16d	Lbs	3695	2570	2900	2020
											kN	16.44	11.43	12.90	8.99
2 x 8 right / left	HJC28	--	12	7-1/8	20	16d	6	10d	8	10d	Lbs	5740	4540	4505	3565
											kN	25.53	20.19	20.04	15.86
2 x 8 terminal	HHC28	--	12	7-3/16	24	16d	6	10d	--	--	Lbs	5740	3725	4505	3270
											kN	25.53	16.57	20.04	14.55
	HJHC28	--	12	7-3/16	24	16d	6	10d	2	10d	Lbs	5740	2485	4505	2180
											kN	25.53	11.05	20.04	9.70

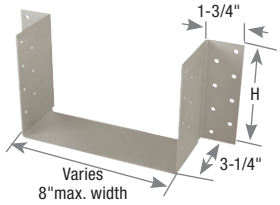
1) 15% increase for short-term loads such as wind and earthquake has been taken into consideration, no further increase allowed.
2) Loading published for total load of hip / jack connection.
3) For maximum factored uplift resistance for individual hip or jack member, consult USP design professional.
4) For single 2x carrying member (header), 10d header nails may be substituted with 10d x 1-1/2" and multiply the listed factored resistances by 0.90; 16d header nails may be substituted with 10d x 1-1/2" and multiply the listed fastored resistances by 0.78.
5) **NAILS:** 10d nails are 0.148" dia. x 3" long, 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

HJC Specialty Options Chart

Option	Hip Truss Skew
Range	30˚ to 60˚
Factored Resistance	100% of table load
Ordering	Add SK, angle of hip required, to product number. Ex. HJC26_SK55



Typical HJC (skewed) installation with alternate skew angle top view



HJC (skewed)

BN Breakfast Nook Hangers

Designed to carry four mono trusses in one connector, it reduces installation time and cost. Provides a tested, load rated connection. Standard configuration spacing: 22-1/2°, 45°, 45°, 45°, 22-1/2°. The design also includes field adjustable nailing tabs.

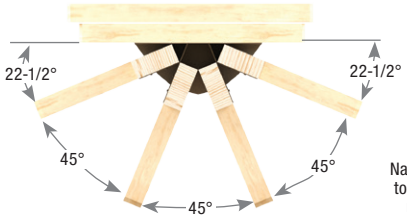
Materials: 14 gauge

Finish: USP primer

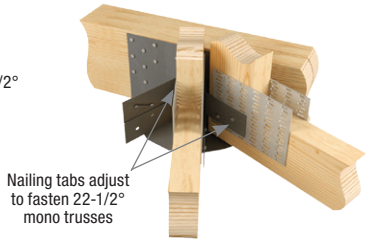
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

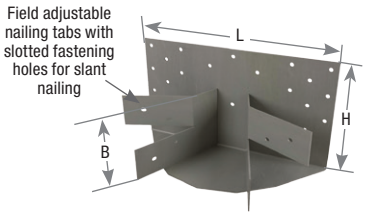
- Use all specified fasteners. See Product Notes, page 15.
- Allow a 2" setback for each mono truss.
- For pitched ceiling, design mono trusses with end-vertical upset. Upset equals tangent of the ceiling slope times 5.6".
- **Bend tab only once.**



Standard configuration
(top view)



Typical BN264 installation



BN264

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) L	H	B	Fastener Schedule[3] Carrying Member Qty	Type	Carried Member per Mono Truss Qty	Type	DF Factored Resistance[2] Vertical (100%) Lbs.	kN	Uplift (115%)[1] Lbs.	kN	S-P-F Factored Resistance[2] Vertical (100%) Lbs.	kN	Uplift (115%)[1] Lbs.	kN
BN264	THJM2-4-SDS3	14	10	5-3/8	3-1/4	20	10d	2	10d x 1-1/2	4565	20.31	1060	4.72	3585	15.95	830	3.69
BN284	-- --	14	10	7-1/8	3-1/4	20	10d	2	10d x 1-1/2	4565	20.31	1060	4.72	3585	15.95	830	3.69

1) **Short-term load duration factor has been taken into consideration; no further increase allowed.**
2) Loading published for total load of connection. **Factored load on each single member shall not exceed 25% of the factored resistance listed.**
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font.**

LDSC / DSC Drag Strut Connectors

Transfers lateral loads from girder truss into bearing walls.

Materials: See chart

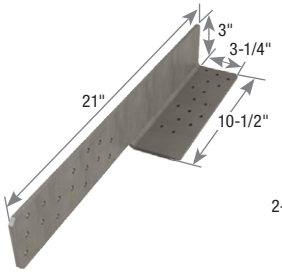
Finish: USP primer

Codes: Load values are derived from data submitted to various North American building code evaluators.

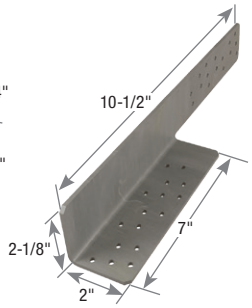
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- WS3 Wood Screw, 1/4" dia. x 3" long, are supplied with DSC4 connector.

Typical DSC4R installation



DSC4R right shown



LDSC4L left shown

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2,3] Truss Qty	Truss Type	Top Plate Qty	Top Plate Type	DF Factored Resistance Compression 115%[1] Lbs	kN	Tension 115%[1] Lbs	kN	S-P-F Factored Resistance Compression 115%[1] Lbs	kN	Tension 115%[1] Lbs	kN
LDSC4L/R	-- --	14	9	10d x 1-1/2	9	10d x 1-1/2	1700	7.56	1700	7.56	1475	6.56	1475	6.56
DSC4L/R	DSC5R/L-SDS3	3	16	WS3	16	WS3	6165	27.42	6140	27.31	5305	23.60	5280	23.49

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) WS3 wood screws are 1/4" x 3" and are included with DCS4 connector.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.

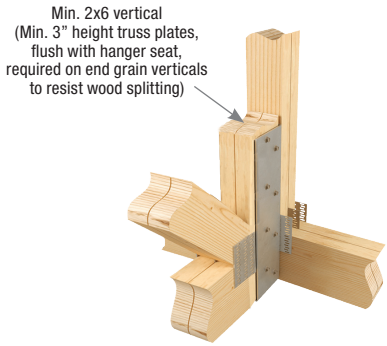
GTWS High Uplift Girder Truss Hangers

The GTWS series girder-to-girder hangers feature high uplift capacities along with high gravity load ratings.

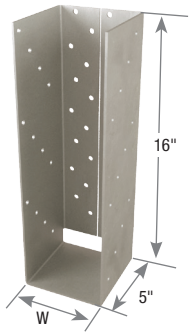
Materials: 10 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

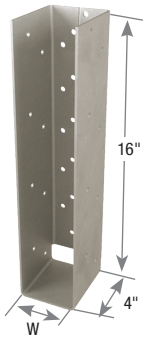
- Use all specified fasteners. See Product Notes, page 15.
- WS Wood Screws are included with hangers where specified.
- **GTWS2T** shall be installed to a minimum 2x4 vertical member of a girder truss with no restriction on the size of the bottom chord.
- **GTWS3T** shall be installed to a minimum 2x6 vertical member of a girder truss with no restriction on the size of the bottom chord.
- **GTWS4T** shall be installed to a minimum 2x8 vertical member of a girder truss with no restriction on the size of the bottom chord.



Typical GTWS installation



GTWS3T



GTWS2T

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule: Supporting Truss Qty	Supporting Truss Wood Screw[2,3]	Supported Truss Qty	Supported Truss Wood Screw[2,3]	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
GTWS2T	--	10	3-1/4	16	4	22	WS3	16	WS3	Lbs	20425	**18400**	**16035**	**14445**
										kN	90.85	**81.85**	**71.33**	**64.25**
GTWS3T	--	10	4-7/8	16	5	28	WS3	24	WS3	Lbs	20425	23530	**16035**	**18470**
										kN	90.85	104.67	**71.33**	**82.16**
GTWS4T	--	10	6-1/2	16	5	28	WS3	24	WS3	Lbs	20425	23530	**16035**	**18470**
										kN	90.85	104.67	**71.33**	**82.16**

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) WS3 wood screws are 1/4" x 3" long and are included with the GTWS hangers.
3) The wood screws of the GTWS hangers may be installed in both vertical and horizontal members.
New products or updated product information are designated in **blue font**.

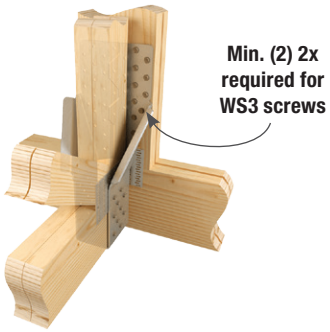
GTQ / GTQM Girder Truss Hangers

USP STRUCTURAL CONNECTORS MiTek

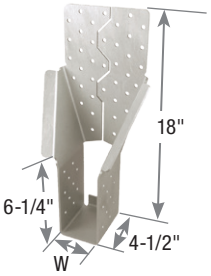
The GTQ / GTQM hangers connect to multi-ply girder truss with USP's WS Wood Screws offering high load capacities. Design features minimum and maximum fastening installation options to accommodate various sizes of vertical web. GTQM's are designed for LVL sizes, for example GTQM218.

Materials: 7 gauge
Finish: G90 galvanizing

Installation:
- Use all WS wood screws as specified.
- Install hanger centered on vertical web.
- GTQ's are designed to be installed on various sizes of vertical web. Maintain a minimum 5/8" fastener edge distance as per the National Design Specification where truss connector plates are not present.
- Install WS wood screws in all fastener holes including diamond holes for maximum values.

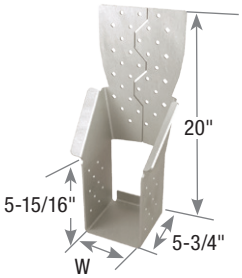


Typical GTQ218 installation
(GTQM218 similar)



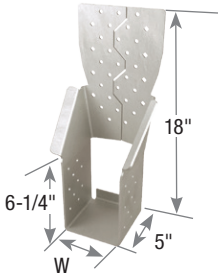
GTQ218
(GTQM218 similar)

Typical GTQ420 installation
(GTQM420 similar)



GTQ420
(GTQM420 similar)

Typical GTQ318 installation
(GTQM318 similar)



GTQ318
(GTQM318 similar)

USP Stock No.	Ref. No.	Dimensions (in) W	H	D	Install Type	Min. Vert. Web Size	Fastener Schedule: Supporting Truss Qty	Supporting Truss Type[2,3,4]	Supporting Truss Min. # of Plies	Supported Member Qty	Supported Member Type[2,4]	Supported Member No. of Plies	Unit	DF Factored Resistance Vertical 100%	DF Uplift[1] 115%	S-P-F Factored Resistance Vertical 100%	S-P-F Uplift[1] 115%
GTQ218	THGQ2, THGQH2	3-1/4	18	4-1/2	Min	2x6	18	USP WS (See Footnote 3)	2	20	WS3	2	Lbs	12935	8660	10490	7020
													kN	57.54	38.52	46.66	31.23
					Max	2x8	30	USP WS (See Footnote 3)	2	20	WS3		Lbs	21195	8660	17190	7020
													kN	94.28	38.52	76.46	31.23
GTQM218	-- --	3-5/8	18	4-1/2	Min	2x6	18	USP WS (See Footnote 3)	2	20	WS3	2	Lbs	12935	8660	10490	7020
													kN	57.54	38.52	46.66	31.23
					Max	2x8	30	USP WS (See Footnote 3)	2	20	WS3		Lbs	21195	8660	17190	7020
													kN	94.28	38.52	76.46	31.23
GTQ318	THGQ3, THGQH3	4-7/8	18	5	Min	2x6	25	USP WS (See Footnote 3)	2	20	WS45	3	Lbs	16665	8660	13515	7020
													kN	74.13	38.52	60.12	31.23
					Max	2x8	33	USP WS (See Footnote 3)	2	20	WS45		Lbs	21295	8965	17265	7270
													kN	94.72	39.88	76.80	32.34
GTQM318	-- --	5-1/2	18	5	Min	2x6	25	USP WS (See Footnote 3)	2	20	WS45	3	Lbs	16665	8660	13515	7020
													kN	74.13	38.52	60.12	31.23
					Max	2x8	33	USP WS (See Footnote 3)	2	20	WS45		Lbs	21295	8965	17265	7270
													kN	94.72	39.88	76.80	32.34
GTQ420	THGQH4	6-1/2	20	5-3/4	Min	2x8	41	USP WS (See Footnote 3)	3	20	WS6	4	Lbs	20960	8835	16455	6935
													kN	93.23	39.30	73.20	30.85
					Max	2x10	47	USP WS (See Footnote 3)	3	20	WS6		Lbs	26035	8835	20440	6935
													kN	115.81	39.30	90.92	30.85
GTQM420	-- --	7-1/4	20	5-3/4	Min	2x8	41	USP WS (See Footnote 3)	3	20	WS6	4	Lbs	20960	8835	16455	6935
													kN	93.23	39.30	73.20	30.85
					Max	2x10	47	USP WS (See Footnote 3)	3	20	WS6		Lbs	26035	8835	20440	6935
													kN	115.81	39.30	90.92	30.85

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) WS3 is 1/4" x 3" long wood screw, WS45 is 1/4" x 4-1/2" long wood screw, WS6 is 1/4" x 6" long wood screw and are included with GTQ and GTQM hangers.
3) When fastening to a multi-ply supporting truss: use WS3 for 2-ply, WS45 for 3-ply and WS6 for 4-ply.
4) WS Wood Screws may be installed through metal truss connector plates as approved by the Truss Designer, provided the requirements of CSA O86-14 Subsection 5.3.8. and TPIC-2014 Section 7.5 are met. (Pre-drilling required through the plate using a maximum 5/32" bit).
5) Truss plies of the supporting member must be fastened together to transfer the load (through all truss plies) that is not transferred by the hanger screws; fastening schedule is to be specified by the truss designer.
6) Supported members on GTQM hangers shall have Specific Gravity of not less than 0.46.
7) The span of the supported member shall be shortened by ½" at the hanger end to allow space for screw head and back plate (7 ga).
New products or updated product information are designated in **blue font.**

GT / GTD / GTS Girder Truss Hangers

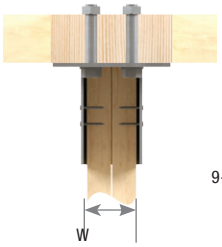
USP STRUCTURAL CONNECTORS
MiTek

The GT primarily hangs girder trusses off other girder trusses, although a wide variety of other heavy-duty installations apply.

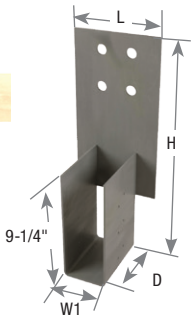
Materials: Back Plate – 3 gauge; Strap – 7 gauge
Finish: USP primer
Options: All models available in LVL sizes, use M in place of T, as in GT2M4B.
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Minimum heel height is 9-1/4" for GT hangers.

Typical GT2T4B installation



GT top view



GT2T4B

GT Load Table

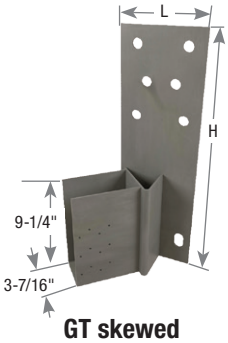
Supported Member	USP Stock No.	Ref. No.	Dimensions (in) W1	L	H	D	Fastener Schedule[3,4] Supporting Truss Qty	Supporting Truss Bolt Dia.[2] (in)	Supported Truss Qty	Supported Truss Type	Unit	DF Factored Resistance[1] Supporting Member 1 Ply 100%	2 Ply 100%	3 Ply 100%	Uplift 115%[1]	S-P-F Factored Resistance[1] Supporting Member 1 Ply 100%	2 Ply 100%	3 Ply 100%	Uplift 115%[1]
2 ply	GT2T2B	--	3-7/16	6	19	4-1/2	2	3/4	12	16d	Lbs	2880	4230	5575	3340	2265	3320	4375	2620
											kN	12.81	18.82	24.80	14.86	10.08	14.77	19.46	11.65
	GT2T2BH	--	3-7/16	6	22-1/4	4-1/2	2	1	12	16d	Lbs	3790	6670	9545	3340	2975	5235	7495	2620
											kN	16.86	29.67	42.46	14.86	13.23	23.29	33.34	11.65
	GT2T3B	--	3-7/16	6	22	4-1/2	3	3/4	12	16d	Lbs	4180	6250	8320	3340	3285	4910	6530	2620
											kN	18.59	27.80	37.01	14.86	14.61	21.84	29.05	11.65
	GT2T4B	THGB2	3-7/16	7	19	5-1/2	4	3/4	12	16d	Lbs	5785	9720	13650	3340	4540	7630	10715	2620
											kN	25.73	43.24	60.72	14.86	20.19	33.94	47.66	11.65
	GT2T6B	--	3-7/16	7-1/4	22	6	6	3/4	12	16d	Lbs	8685	14855	21020	3340	6815	11660	16500	2620
											kN	38.63	66.08	93.50	14.86	30.31	51.87	73.40	11.65
	GT2T6BH	--	3-7/16	7-1/4	26-1/4	6	6	1	12	16d	Lbs	11450	16515	21575	3340	8990	12965	16935	2620
											kN	50.93	73.46	95.97	14.86	39.99	57.67	75.33	11.65
	GT2T8B	THGBH2	3-7/16	7-1/4	25	6	8	3/4	12	16d	Lbs	11580	17530	23475	3340	9090	13760	18430	2620
											kN	51.51	77.98	104.42	14.86	40.43	61.21	81.98	11.65
3 ply	GT3T3B	-- --	5-1/8	6	22	4-1/2	3	3/4	12	16d	Lbs	4180	6250	8320	3340	3285	4910	6530	2620
											kN	18.59	27.80	37.01	14.86	14.61	21.84	29.05	11.65
	GT3T3BH	-- --	5-1/8	6	26-1/4	4-1/2	3	1	12	16d	Lbs	5335	9760	14180	3340	4190	7660	11130	2620
											kN	23.73	43.41	63.08	14.86	18.64	34.07	49.51	11.65
	GT3T4B	THGB3	5-1/8	7	19	5-1/2	4	3/4	12	16d	Lbs	5785	9720	13650	3340	4540	7630	10715	2620
											kN	25.73	43.24	60.72	14.86	20.19	33.94	47.66	11.65
	GT3T4BH	--	5-1/8	7	22-1/4	5-1/2	4	1	12	16d	Lbs	7630	14750	21865	3340	5990	11580	17165	2620
											kN	33.94	65.61	97.26	14.86	26.64	51.51	76.35	11.65
	GT3T6B	--	5-1/8	7-1/4	22	6	6	3/4	12	16d	Lbs	8685	14855	21020	3340	6815	11660	16500	2620
											kN	38.63	66.08	93.50	14.86	30.31	51.87	73.40	11.65
	GT3T6BH	--	5-1/8	7-1/4	26-1/4	6	6	1	12	16d	Lbs	11450	16515	21575	3340	8990	12965	16935	2620
											kN	50.93	73.46	95.97	14.86	39.99	57.67	75.33	11.65
	GT3T8B	THGBH3	5-1/8	7-1/4	25	6	8	3/4	12	16d	Lbs	11580	17530	23475	3340	9090	13760	18430	2620
											kN	51.51	77.98	104.42	14.86	40.43	61.21	81.98	11.65
	GT3T8BH	--	5-1/8	7-1/4	30-1/4	6	8	1	12	16d	Lbs	15270	23485	31695	3340	11985	18435	24885	2620
											kN	67.92	104.47	140.99	14.86	53.31	82.00	110.69	11.65
4 ply	GT4T4B	--	6-1/2	7-1/2	19	5-1/2	4	3/4	12	16d	Lbs	5785	9720	13650	3340	4540	7630	10715	2620
											kN	25.73	43.24	60.72	14.86	20.19	33.94	47.66	11.65
	GT4T4BH	--	6-1/2	7-1/2	22-1/4	5-1/2	4	1	12	16d	Lbs	7630	14750	21865	3340	5990	11580	17165	2620
											kN	33.94	65.61	97.26	14.86	26.64	51.51	76.35	11.65
	GT4T6B	--	6-1/2	7-1/2	22	6	6	3/4	12	16d	Lbs	8685	14855	21020	3340	6815	11660	16500	2620
											kN	38.63	66.08	93.50	14.86	30.31	51.87	73.40	11.65
	GT4T6BH	--	6-1/2	7-1/2	26-1/4	6	6	1	12	16d	Lbs	11440	16510	21575	3340	8980	12960	16935	2620
											kN	50.89	73.44	95.97	14.86	39.95	57.65	75.33	11.65
	GT4T8B	THGBH4	6-1/2	7-1/2	25	6	8	3/4	12	16d	Lbs	11570	17525	23475	3340	9085	13760	18430	2620
											kN	51.47	77.96	104.42	14.86	40.41	61.21	81.98	11.65
5 ply	GT5T8BH	--	8-1/8	9-1/4	30-1/4	6	8	1	12	16d	Lbs	15230	23465	31695	3340	11955	18420	24885	2620
											kN	67.75	104.38	140.99	14.86	53.18	81.94	110.69	11.65

1) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) Bolts shall conform to ASTM A 307 Grade A or better.
3) GT series require 2 x 6 vertical member for 2, 3, and 4 bolt hangers and 2 x 8 for 6 and 8 bolt hangers.
4) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

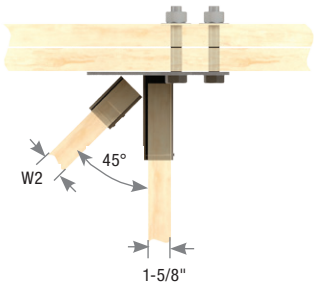
Continued on next page

GT / GTD / GTS Girder Truss Hangers

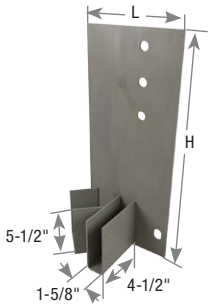
USP STRUCTURAL CONNECTORS MiTek



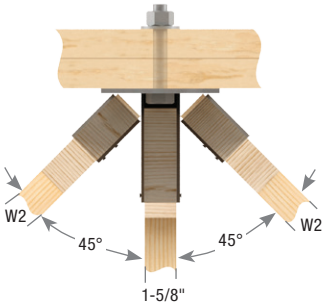
GT skewed



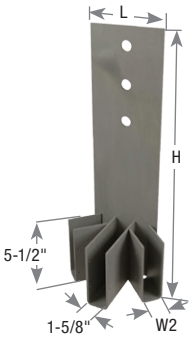
GTS
top view (left shown)



GTS1T2H3BSKL
(left shown)



GTD
top view



GTD1T1H3B

GTD / GTS Load Table

Supported Member	USP Stock No.[6]	Ref. No.	Dimensions (in) W2[5]	L	H	Fastener Schedule[4,7] Supporting Truss Qty	Supporting Truss Bolt Dia.[3] (in)	Supported Truss Qty	Supported Truss Type	Supported Hip Qty	Supported Hip Type	Unit	DF Factored Resistance[1] Supporting Member 1 Ply 100%	2 Ply 100%	3 Ply 100%	Uplift 115%[2]	S-P-F Factored Resistance[1] Supporting Member 1 Ply 100%	2 Ply 100%	3 Ply 100%	Uplift 115%[2]
2 ply skewed 45°	*GT2T2BSKL/R	--	--	6	19	3	3/4	12	16d	--	--	Lbs	2880	4230	5575	3340	2265	3320	4375	2620
												kN	12.81	18.82	24.80	14.86	10.08	14.77	19.46	11.65
	*GT2T4BSKL/R	--	--	7-1/4	19	5	3/4	12	16d	--	--	Lbs	5785	9720	13650	3340	4540	7630	10715	2620
												kN	25.73	43.24	60.72	14.86	20.19	33.94	47.66	11.65
1 ply hip & jack	*GTS1T1H3BSKL/R	--	1-5/8	9-1/4	22	4	3/4	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	4180	6250	8320	--	3285	4910	6530	--
												kN	18.59	27.80	37.01	--	14.61	21.84	29.05	--
	*GTS1T1H4BSKL/R	--	1-5/8	9-1/4	19	5	3/4	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	5785	9720	13650	--	4540	7630	10715	--
												kN	25.73	43.24	60.72	--	20.19	33.94	47.66	--
2 ply hip & 1 ply jack	*GTS1T2H3BSKL/R	--	3-7/16	9-1/4	22	4	3/4	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	4180	6250	8320	--	3285	4910	6530	--
												kN	18.59	27.80	37.01	--	14.61	21.84	29.05	--
1 ply terminal hip	GTD1T1H3B	--	1-5/8	6	22	3	3/4	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	4180	6250	8320	--	3285	4910	6530	--
												kN	18.59	27.80	37.01	--	14.61	21.84	29.05	--
2 ply terminal hip	GTD1T2H3B	--	3-7/16	8	22	3	3/4	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	4180	6250	8320	--	3285	4910	6530	--
												kN	18.59	27.80	37.01	--	14.61	21.84	29.05	--

1) Factored resistance for GTS and GTD is the total of hip and jack connection.
2) Factored uplift resistance has been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
3) Bolts shall conform to ASTM A 307 or better.
4) GT Series require 2 x 6 vertical member for 2, 3, and 4 bolt hangers and 2 x 8 for 6 and 8 bolt hangers.
5) All side pocket applications assume 45° angle.
6) Must specify right or left for all GTS and GT skewed.
7) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 16d nails are 0.162" dia. x 3-1/2" long.
New products or updated product information are designated in **blue font**.

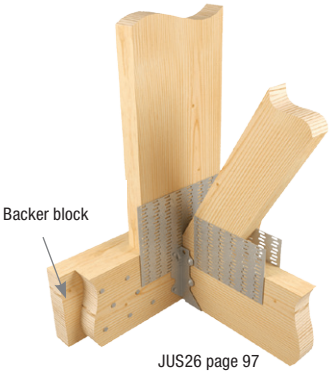
ALTERNATE INSTALLATIONS

USP STRUCTURAL CONNECTORS MiTek

Backer block installation

Wood blocking used to achieve full design load value of a face mount hanger attached to a carrying member. **(Blocking to be designed by truss designer or engineer of record)**.

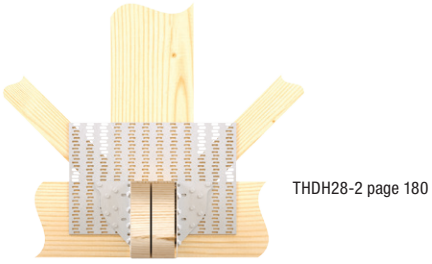
- Wood blocking should be of similar size/grade as the truss member to which it is attached. The blocking should be designed to act as one unit with truss members.
- Truss designer shall approve blocking size/grade, fasteners required, and application.
- All fasteners used to attach wood blocking should be independent of the fasteners in the truss hanger.



Panel joint installation

Connection with face mount hanger attaching to a truss panel joint.

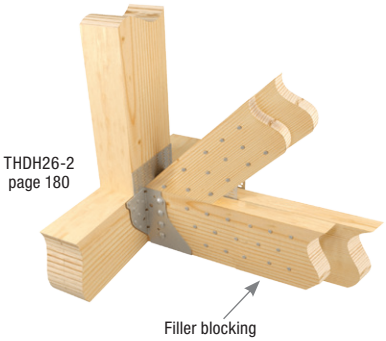
- Hanger nails that do not penetrate wood at panel joint provide no load resistance; reduce listed factored resistance accordingly.



Filler block installation

Wood filler blocking used for supported member of width less than hanger width. **(Blocking and blocking fasteners/quantity to be designed by truss designer or engineer of record)**.

- Wood blocking should be of similar or better grade as the truss member to which it is attached. The blocking should be designed to act as one unit with truss member.



TRUSS BRACE & SPACER (STABILIZER™)

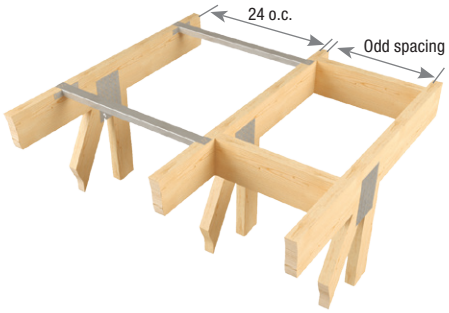
The Stabilizer™ Truss Brace & Spacer provides temporary construction bracing in the roof and ceiling planes, as well as permanent lateral bracing for webs as specified by your truss engineering.

The Stabilizer™ is easily installed by embedding the patented MII 20 teeth on the top flange straight into the edge of the truss member to be braced with a framing hammer. The side tabs are then secured by driving the teeth into the face of the truss member being braced.

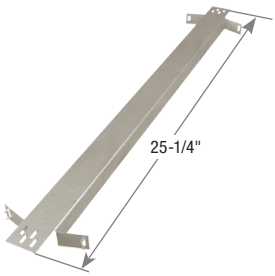
Materials: 20 gauge

Finish: G60 galvanizing

Codes: Load values are derived from data submitted to various North American building code evaluators.



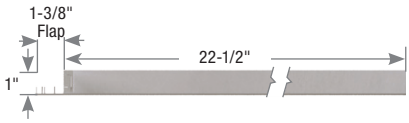
Temporary construction bracing installation



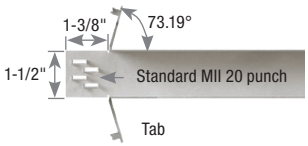
31-24 Stabilizer™

Installation:

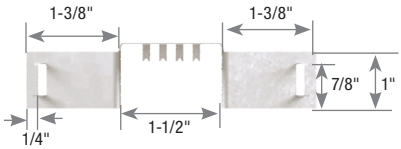
- Use 31-16 for standard 16" o.c. spacing and 31-24 for standard 24" o.c. spacing. For odd spacing, cut and insert a solid block between the trusses.
- Typically, The Stabilizer™ is installed at 6'– 8' centers along the roof plane and 10'– 15' along the ceiling plane. (Refer to engineering specifications BCSI 1-03, published by The Truss Plate Institute for specific bracing requirements.)
- The Stabilizer™ must be supplemented with diagonal bracing in the roof and ceiling planes and cross bracing in the web plane at required intervals.
- Web forces are not to exceed 8000 lbs.
- The Stabilizer™ is properly installed when the top flap and side tabs are flush with the member being braced.



Side view

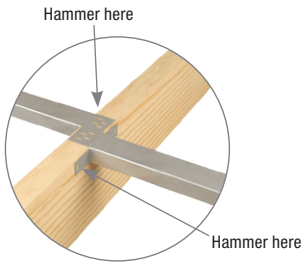


Top view



End view

Important: The erection contractor is responsible for determining and installing the temporary bracing for the structure, including the trusses. It is most important for the installer to provide adequate means for bracing the first truss installed. The performance of the entire bracing system depends on the adequacy of the ground bracing or other means of bracing the first group of trusses installed. The building designer is responsible for the permanent bracing design of the overall structure including the truss. This includes the design of required supplemental diagonal and cross bracing.



Chord attachment detail

Web bracing installation

USP Stock No.	Ref. No.	Steel Gauge	O.C. Spacing (in)	Factored Axial Loads (Lbs.)		
				Tension	Tension with Fastener	Compression
31-16	TSBR2-16	20	16	152	222	608
31-24	TSBR2-24	20	24	152	222	608

1) 1 pound = 4.448N
2) Fastener shall be (1) 8d or 10d common wire nail inserted through nail slot.
3) **NAILS:** 8d nails are 0.131" dia. x 2-1/2" long, 10d nails are 0.148" dia. x 3" long.

TS / TSX Truss Spacers

Truss spacers give framers fast and accurate spacing for trusses, rafters, or floor joists. The TS and TSX eliminate the need to mark layouts on bearing plates, improve installation speed, and help eliminate spacing errors. These spacers are light weight and compact.

Materials: See chart

Finish: G90 galvanizing

Installation:

- Use (1) 8d nail per end to fasten units to trusses, rafters, or floor joists.

Important: These units provide spacing guides only. Do not rely on the TS or TSX for bracing.

Typical TSX installation

TS single-unit spacer

TSX multi-unit spacer

Joist Width	USP Stock No.[1]	Ref. No.	Steel Gauge	O. C. Spacing	Overall Length	Sections Per Piece
1-1/2	TS	-- --	20	24	2' 1-1/2"	1
	TSX16	TSF2-16	22	16	8'	6
	TSX24	TSF2-24	22	24	10'	5

1) TSX spacers are shipped folded.

SBP Supplementary Bearing Plates

Use the SBP instead of extra truss plies or nail-on scabs to distribute concentrated truss reactions and avoid top plate crushing. The two-piece design accommodates any number of girder plys. A wraparound design gives superior uplift resistance, and reinforcement ribs effectively distribute bearing loads. Works with both single and double 2x4 or 2x6 top plates.

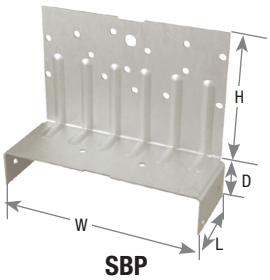
Materials: 16 gauge

Finish: G90 galvanizing

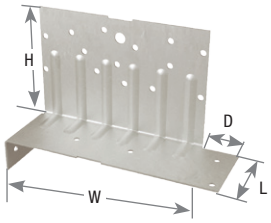
Codes: Factored resistances are derived from data submitted to various North American building code evaluators and are in accordance with CSA 086-09.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- **The SBP shall be installed in pairs.**



SBP



SBP one tab up

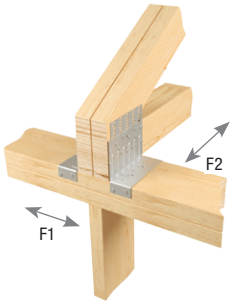
Continued on next page

SBP Supplementary Bearing Plates

USP STRUCTURAL CONNECTORS MiTek

Wood Species	f_{cp} (psi)	No. of Truss Plies	Factored Resistance (Lbs)			Factored Resistance (kN)		
			SBP's Alone	SBP + Truss Bearing		SBP's Alone	SBP + Truss Bearing	
			100%	100%	EBL	100%	100%	EBL
SBP4 on 2x4 / 2x6 Top Plate and Alternate Installation								
DF	1015	1	5035	9300	7.63	22.40	41.37	193.88
		2	5035	13565	5.57	22.40	60.33	141.39
		3	5035	17825	4.88	22.40	79.30	123.89
		4	5035	22090	4.53	22.40	98.27	115.14
S-P-F	769	1	3575	6805	7.38	15.90	30.26	187.34
		2	3575	10030	5.44	15.90	44.63	138.12
		3	3575	13260	4.79	15.90	58.99	121.71
		4	3575	16490	4.47	15.90	73.35	113.51
Hem Fir	667	1	3930	6730	8.41	17.48	29.95	213.59
		2	3930	9535	5.95	17.48	42.41	151.24
		3	3930	12335	5.14	17.48	54.88	130.46
		4	3930	15140	4.73	17.48	67.34	120.07
SBP6 on 2x6 / 2x8 Top Plate and Alternate Installation								
DF	1015	1	7315	14015	11.50	32.54	62.35	292.21
		2	7315	20715	8.50	32.54	92.15	215.96
		3	7315	27415	7.50	32.54	121.96	190.54
		4	7315	34115	7.00	32.54	151.77	177.83
S-P-F	769	1	5195	10270	11.13	23.11	45.68	282.75
		2	5195	15340	8.31	23.11	68.24	211.23
		3	5195	20415	7.38	23.11	90.81	187.38
		4	5195	25490	6.91	23.11	113.38	175.46
Hem Fir	667	1	5705	10110	12.63	25.38	44.97	320.70
		2	5705	14510	9.06	25.38	64.55	230.20
		3	5705	18915	7.88	25.38	84.14	200.03
		4	5705	23320	7.28	25.38	103.73	184.95

1) Factored resistance is for a pair of SBP devices.
2) Multiple ply trusses shall be fastened together to act as a single unit.
3) EBL denotes effective bearing length and includes the actual bearing length plus the contribution of the SBP device.
4) Assumes full seating of truss on top plate.



Typical SBP installation

Typical SBP6 one tab up on a 2x8 top plate installation (SBP4 similar)

Typical SBP one tab up alternate installation

USP Stock No.	Ref. No.	W (in)	Truss/Joist Thickness	Fastener Schedule[2,6] Plate Top[5] Qty	Plate Sides Qty	Plate Type	Truss Qty	Truss Type	Application	Factored Resistance (115%)[1,3] DF (Lbs) Uplift	DF (Lbs) F1	DF (Lbs) F2	DF (kN) Uplift	DF (kN) F1	DF (kN) F2	S-P-F (Lbs) Uplift	S-P-F (Lbs) F1	S-P-F (Lbs) F2	S-P-F (kN) Uplift	S-P-F (kN) F1	S-P-F (kN) F2
SBP4	TBE4	3-1/2	2-7/8" or less	4	8	10d	20	10dx1-1/2	Standard Installation	**2435**	2880	3065	**10.83**	12.81	13.63	**1730**	2045	2175	**7.70**	9.10	9.68
			3" or more				20	10d													
			2-7/8" or less	4	8	10d	20	10dx1-1/2	One Tab Up (2x6 Top Plate)	**1435**	2880	**2230**	**6.38**	12.81	**9.92**	**805**	2045	**1965**	**3.58**	9.10	**8.74**
			3" or more				20	10d													
			2-7/8" or less	4	8	10d	20	10dx1-1/2	**One Tab Up (Alternate)**	**1435**	**1880**	**1315**	**6.38**	**8.36**	**5.85**	**805**	**1120**	**1125**	**3.58**	**4.98**	**5.00**
			3" or more				20	10d													
SBP6	TBE6	5-1/2	2-7/8" or less	4	8	10d	28	10dx1-1/2	Standard Installation	**2435**	2880	3065	**10.83**	12.81	13.63	**1730**	2045	2175	**7.70**	9.10	9.68
			3" or more				28	10d													
			2-7/8" or less	4	8	10d	28	10dx1-1/2	One Tab Up (2x8 Top Plate)	**1435**	2880	**2230**	**6.38**	12.81	**9.92**	**805**	2045	**1965**	**3.58**	9.10	**8.74**
			3" or more				28	10d													
			2-7/8" or less	4	8	10d	28	10dx1-1/2	**One Tab Up (Alternate)**	**1435**	**1880**	**1315**	**6.38**	**8.36**	**5.85**	**805**	**1120**	**1125**	**3.58**	**4.98**	**5.00**
			3" or more				28	10d													

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed. For standard term loads divide the values by 1.15.
2) Fastener schedule is for a pair of SBP devices.
3) Factored resistances are for a pair of SBP devices,
4) Multiple ply trusses shall be fastened together to act as a single unit.
5) Where truss sits on a single top plate, 10d x 1-1/2 nails may be used on the top side of the top plate.
6) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.
New products or updated product information are designated in **blue font**.

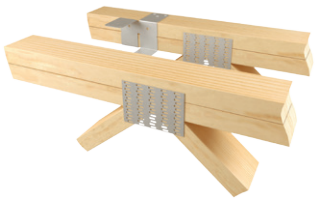
FTC / FTCF Floor Truss Clips

USP STRUCTURAL CONNECTORS MiTek

FTC clips slide easily onto the top or bottom chord and provides a guide to help position and support the second truss during assembly.

FTCF clips easily install after the trusses are installed.

Materials: 18 gauge
Finish: G90 galvanizing
Codes: Factored resistances are derived from data submitted to various North American building code evaluators.



Typical FTC installation

Typical FTC 2-ply metal web truss installation

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- The truss designer must determine the number of clips required and the spacing between clips based on loading conditions.

Concentrated Load Condition: (Side-loaded onto a 2-ply truss):
- The FTC clips shall be installed in pairs, or multiples of two, on either side of, and within 12" of a concentrated load.
- Divide half of the concentrated load by the clip capacity to determine the number of clips required.

Example:
Concentrated (point) load = 3000 lbs, FTC1 capacity (SPF) = 1080 lbs

$$\frac{1/2\ (3000\ \text{lbs})}{1080\ \text{lbs}} = 1.4 = 2\ \text{clips}$$

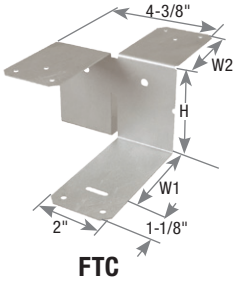
Install two FTC1 clips, one on each side of, and within 12" of concentrated load.

Uniform Load condition (side-loaded onto a 2-ply truss):
- To transfer uniform loads to the second ply, the FTC clips shall be installed at a regular interval along the loaded chord. Spacing between clips is limited to 24" maximum.
- Divide the clip capacity by half the required load per lineal foot (PLF) to determine the spacing between clips.

Example:
Uniform distributed load = 500 PLF.
FTC1 capacity (SPF) = 1080 lbs

$$\frac{1080\ \text{lbs}}{1/2\ (500)\ \text{PLF}} = 4.32'\ \text{spacing}$$

Space clips at 24" (MAX) along the loaded chord.

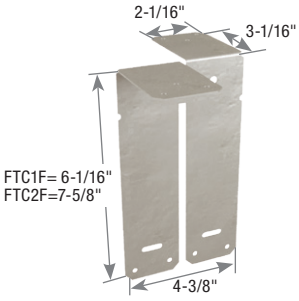


FTC

Step 1

Step 2

Typical FTC2F retrofit installation



FTC_F

Truss Size	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W1	W2	H	Fastener Schedule[3] Qty	Type	Unit	DF Factored Maximum Transfer Resistance[1,2] 100%	S-P-F Factored Maximum Transfer Resistance[1,2] 100%
3 x 2	FTC32	-- --	18	2-1/2	2-1/16	1-1/2	10	10d x 1-1/2	Lbs	980	850
									kN	4.36	3.78
4 x 2	FTC1	-- --	18	3-1/2	3-1/16	1-1/2	10	10d x 1-1/2	Lbs	1245	1080
									kN	5.54	4.80
	FTC1F	-- --	18	-- --	-- --	-- --	10	10d x 1-1/2	Lbs	1245	1080
									kN	5.54	4.80
(2) 4 x 2	FTC2	-- --	18	3-1/2	3-1/16	3	10	10d	Lbs	1245	1080
									kN	5.54	4.80
	FTC2F	-- --	18	-- --	-- --	-- --	10	10d	Lbs	1245	1080
									kN	5.54	4.80

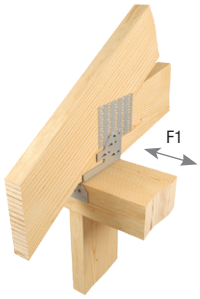
1) Factored transfer resistances are for 100% floor load, and shall not be increased for short term load duration.
2) Truss designer shall determine the number of clips for concentrated loads and the spacing for uniform loads.
3) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.

STC Truss Clips

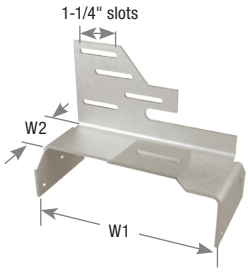
The STC provides uplift resistance by securing trusses to top plates. Slotted nail holes allow for horizontal movement up to 1-1/4" as scissor trusses deflect.

Materials: 12 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- When installing, do not fully set nails.
- Locate nails into the center of slots to allow for horizontal movement.



Typical STC installation



STC

USP Stock No.	Ref. No.	Steel Gauge	Description	Dimensions (in) W1	Dimensions (in) W2	Fastener Schedule[2] Truss Qty	Truss Type	Plate Qty	Plate Type	DF Factored Resistance Uplift 115%[1]	DF Factored Resistance F1 115%[1]	S-P-F Factored Resistance Uplift 115%[1]	S-P-F Factored Resistance F1 115%[1]
STC24	TC24	12	2 x 4 top plate	3-9/16	1-5/8	5	10d x 1-1/2	6	10d x 1-1/2	1525	550	1085	390
										6.78	2.45	4.83	1.73
STC26	TC26	12	2 x 6 top plate	5-1/2	1-5/8	5	10d x 1-1/2	6	10d x 1-1/2	1525	550	1085	390
										6.78	2.45	4.83	1.73
STC28	TC28	12	2 x 8 top plate	7-1/4	1-5/8	5	10d x 1-1/2	6	10d x 1-1/2	1525	550	1085	390
										6.78	2.45	4.83	1.73

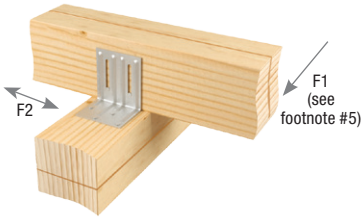
1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.

TR Roof Truss Ties

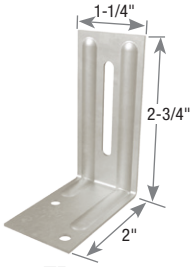
Slotted design allows truss to deflect without imposing load on wall below.

Materials: See chart
Finish: G90 galvanizing

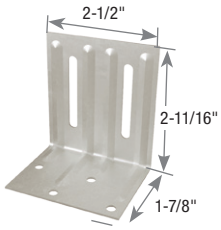
Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Do not fully set nails.
- Locate nails into the center of slots.
- **Due to the potential for squeaks, the TR series products are not recommended for floor applications.**



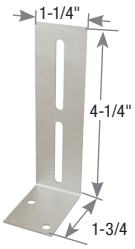
Typical TR2 installation



TR1



TR2



TR1T

Description	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[6] Truss Qty	Plate Qty	Type	Unit	DF Factored Resistance Without Gap[2] F1[5] 115%	F2 115%	With 1/4" Gap[3] F1[5] 115%	F2 115%	With 1/2" Gap[4] F1[5] 115%	F2 115%	S-P-F Factored Resistance Without Gap[2] F1[5] 115%	F2 115%	With 1/4" Gap[3] F1[5] 115%	F2 115%	With 1/2" Gap[4] F1[5] 115%	F2 115%
Single slot	TR1	STC	18	1	2	8d	Lbs	105	60	45	45	-- --	-- --	90	50	35	35	-- --	-- --
							kN	0.47	0.27	0.20	0.20	-- --	-- --	0.40	0.22	0.16	0.16	-- --	-- --
	TR1T	STCT	16	1	2	8d	Lbs	375	-- --	205	-- --	125	-- --	320	-- --	175	-- --	110	-- --
							kN	1.67	-- --	0.91	-- --	0.56	-- --	1.42	-- --	0.78	-- --	0.49	-- --
Double slot	TR2	DTC	18	2	4	8d	Lbs	155	260	105	170	-- --	-- --	130	220	90	140	-- --	-- --
							kN	0.69	1.16	0.47	0.76	-- --	-- --	0.58	0.98	0.40	0.62	-- --	-- --

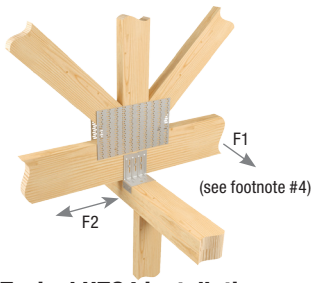
1) Factored resistances have been increased for short-term loading; no further increase is allowed.
2) Truss must be bearing on top plate to achieve the factored resistances under "Without Gap".
3) Installed with maximum 1/4" space between rafter or truss and top plate under "With 1/4" Gap". Space is not limited to 1/4", where resistances are not required.
4) Installed with maximum 1/2" space between rafter or truss and top plate under "With 1/2" Gap". Space is not limited to 1/2", where resistances are not required.
5) To achieve F1 loads in both directions, clips must be installed on both sides of the trussand staggered to avoid nail interference.
6) **NAILS:** 8d nails are 0.131" dia. x 2-1/2" long.
New products or updated product information are designated in **blue font**.

HTC Heavy Truss Deflection Clip

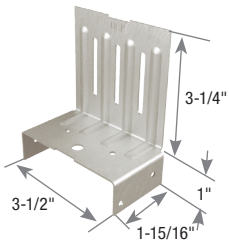
Slotted design allows truss to deflect without imposing load on wall below.

Materials: 16 gauge
Finish: G90 galvanizing
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Do not fully set nails.



Typical HTC4 installation



HTC4

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[5] Plate Top Qty	Plate Side Qty	Truss/Rafter Qty	Type	Unit	DF Factored Resistance[1] Without Gap[2] F1 115%[4]	DF Without Gap[2] F2 115%	DF With 1-1/4" Gap[3] F1 115%[4]	DF With 1-1/4" Gap[3] F2 115%	S-P-F Factored Resistance[1] Without Gap[2] F1 115%[4]	S-P-F Without Gap[2] F2 115%	S-P-F With 1-1/4" Gap[3] F1 115%[4]	S-P-F With 1-1/4" Gap[3] F2 115%
HTC4	HTC4	16	2	4	3	10d x 1-1/2	Lbs	265	545	55	305	230	470	45	260
							kN	1.18	2.42	0.24	1.36	1.02	2.09	0.20	1.16

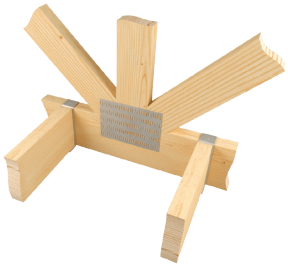
1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) Truss/Rafter must be bearing on top plate to achieve the allowable loads under "Without Gap".
3) When installed with maximum 1-1/4" space between truss/rafter and top plate, use loads under "With 1-1/4" Gap".
4) To achieve F1 loads in both directions, clips must be installed on both sides of the truss and staggered to avoid nail interference.
5) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.
New products or updated product information are designated in **blue font**.

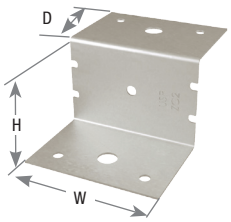
ZC Blocking Supports

ZC clips secure blocking between joists or trusses which provides support for drywall or sheathing.

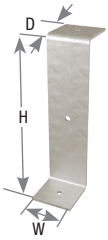
Materials: See chart
Finish: G90 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.


Typical ZC installation



ZC2



ZC4

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	H	D	Fastener Schedule[2] Header Qty	Header Type	Blocking Qty	Blocking Type	Unit	DF Factored Resistance[1] Vertical 100%	S-P-F Factored Resistance[1] Vertical 100%
ZC2	Z2	20	2-1/4	1-9/16	1-1/2	2	10d x 1-1/2	2	10d x 1-1/2	Lbs	670	475
										kN	2.98	2.11
ZC4	Z4	12	1-1/2	3-9/16	1-3/8	2	10d x 1-1/2	1	10d x 1-1/2	Lbs	460	385
										kN	2.05	1.71
ZC24	Z28	28	**2-9/32**	1-9/16	1-3/8	10d x 1-1/2		10d x 1-1/2		Lbs	-- --	-- --
										kN	-- --	-- --
ZC34	Z38	28	**2-9/32**	2-9/16	1-5/16	10d x 1-1/2		10d x 1-1/2		Lbs	-- --	-- --
										kN	-- --	-- --

1) Factored resistance shall not be increased for other load duration factors.
2) **NAILS**: 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.
New products or updated product information are designated in **blue font**.

DTB Deck Tie Back

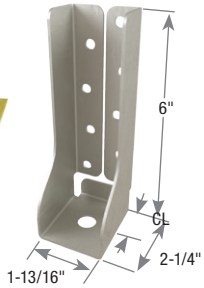
Deck Tie Back reinforces the connection of rail posts to a deck. Also provides lateral strength of deck-to-ledger attachment by securing deck to house framing.

Materials: 14 gauge
Finish: G-185 galvanizing
Options: See chart for Corrosion Finish Options
Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Install with USP's THR 1/2" threaded rod or equivalent.
- Drive WS15-HDG wood screws into joist.
- Re-install threaded rod or anchor bolt. Secure with washer and nut.
- Tighten anchor bolt nuts finger tight snug to base plus 1⁄3 to 1⁄2 additional turns with wrench.

Typical DTB-TZ installation

Typical DTB-TZ Deck to ledger installation



DTB-TZ

USP Stock No.	Ref. No.	Steel Gauge	Rod / Bolt Anchor Dia. (in)	CL (in)	Fastener Schedule[2]		DF Factored Resistance				S-P-F Factored Resistance				Corrosion Finish
							Lbs		kN		Lbs		kN		
					Qty	Wood Screws	100%	115%[1]	100%	115%[1]	100%	115%[1]	100%	115%[1]	
DTB-TZ	DTT2Z, FSC	14	1/2	1-1/8	8	**WS15-HDG**	2640	2640	11.74	11.74	2220	2220	9.88	9.88	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) WS15-HDG Wood Screws are 1/4" dia. x 1-1/2" long and are included with DTB-TZ Deck Tie-Backs.
New products or updated product information are designated in **blue font.**

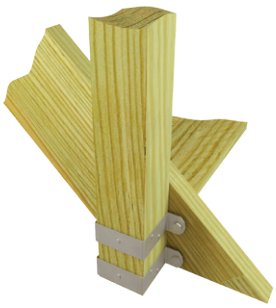
Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

SDPT Strap Post Ties

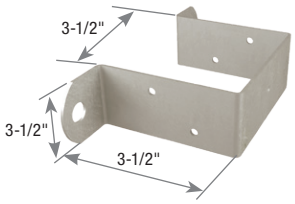
Connects 2 x 4 stair posts and 4 x 4 posts to deck rim joist or stair stringers.

Materials: 14 gauge
Finish: G-185 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Install units in pairs on 2x4 (SDPT5-TZ) or 4x4 (SDPT7-TZ) post. Space the connectors 5" apart from center to center on the post. Use through bolts to fasten connectors to rim joist or stringer. Do not use lag bolts. Fasten to post with specified nails (see chart).



Typical SDPT7-TZ installation

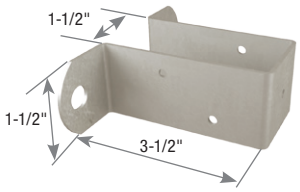


SDPT7-TZ

Post Size	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[1,2]				Corrosion Finish
				Qty	Type	Qty	Type	
2 x 4	SDPT5-TZ	DPT5Z	14	5	10d x 1-1/2 HDG	2	3/8 HDG	
4 x 4	SDPT7-TZ	DPT7Z	14	5	10d x 1-1/2 HDG	2	3/8 HDG	

1) Bolts shall conform to ASTM A 307 or better.
2) **NAILS:** 10d x 1-1/2" nails are 0.148" dia. x 1-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc



SDPT5-TZ

CSH Concealed Stringer Hanger

The CSH-TZ concealed stringer hanger provides a method of connecting a stair stringer with a hidden hanger. The seat of the hanger is adjustable to match the slope of the stair stringer.

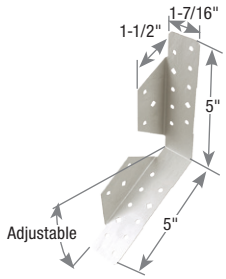
The reversible design allows the connector to be used on the left, right, or interior stringers. The CSH-TZ may be used with USP's SCA Stair Angles for a complete, easy-to-use stair framing solution.

Materials: 18 gauge

Finish: G-185 galvanizing

Codes: Load values are derived from data submitted to various North American building code evaluators.

Typical CSH-TZ installation



CSH-TZ

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- **Bend angle only once.**

Steps:

1. Attach CSH-TZ to header with tabs positioned towards the inside of the stringer member.
2. Adjust the seat of the CSH-TZ to match the slope of the stringer member. Diamond shaped holes in the connector allow temporary installation of wood screws to aid in installation of the CSH-TZ.
3. Install 10d x 1-1/2" nails into the stringer and header members.

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2]				DF Factored Resistance				S-P-F Factored Resistance				Corrosion Finish
			Rim Joist		Stringer		Lbs		kN		Lbs		kN		
			Qty	Type	Qty	Type	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%	Vertical 100%	Uplift[1] 115%	
CSH-TZ	LSCZ	18	8	10d x 1-1/2 HDG	5	10d x 1-1/2 HDG	1455	545	6.47	2.42	1030	385	4.58	1.71	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase is allowed.
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

SDJT Joist Tie

Secures 2x joists to posts.

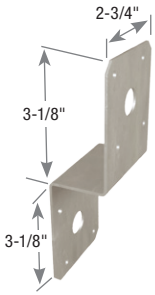
Materials: 14 gauge

Finish: G-185 galvanizing

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Use with 2x lumber for joists (minimum height is 2x4). Install with either specified nails or through bolts. Do not use lag bolts. To ease installation, attach to 4x4 post first.

Typical SDJT14-TZ installation



SDJT14-TZ

Post Size	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[1,2]		Unit	DF Factored Resistance	S-P-F Factored Resistance	Corrosion Finish
				Qty	Type		100%	100%	
4 x 4	SDJT14-TZ	DJT14Z	14	8	16d HDG	Lbs	1615	1355	
						kN	7.18	6.03	
				2	3/8 HDG	Lbs	2015	1695	
						kN	8.96	7.54	

1) Bolts shall conform to ASTM A 307 or better.
2) **NAILS:** 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

SCA Stair Angles

USP STRUCTURAL CONNECTORS MiTek

Stair angles simplify stair construction. There is no need to calculate and notch stair stringers. Stronger and safer than wood blocking, and the angle and fasteners are hidden from view.

Materials: 12 gauge

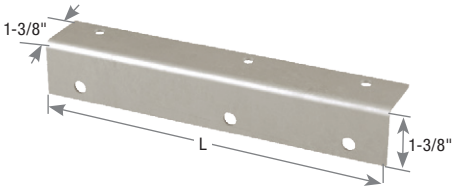
Finish: G-185 galvanizing

Codes: Load values are derived from data submitted to various North American building code evaluators.

Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Use the SCA9-TZ for single 2x10 stair treads. Use the SCA10-TZ for double 2 x 6 stair treads.
- To calculate stair construction do the following:
  1. Find the number of steps needed by taking the vertical drop from the deck surface to grade. Divide by 7. Round off to the nearest whole number. (Ex: Vertical drop of 39" divided by 7 equals 5.57" rounded off is 6")
  2. Find the step rise by dividing the vertical drop by the number of steps (39" divided by 6 = 6.5")
  3. Find the step run by measuring the depth of your tread board (Ex: (2) 2x6s have a run of 11-1⁄4")
  4. Find the stairway span by multiplying the run by the number of treads minus one (Ex: 11-1⁄4" x 5 = 56-1⁄4")
- Using the above calculations, mark stair angle locations on each stringer. Attach a stair angle to the inside of each stringer at the marked locations. Attach stringers to deck rim joist and railing posts. Position treadboards on angles and fasten from below.

Typical SCA9-TZ installation



SCA9-TZ

AVAILABLE IN GOLD COAT

Typical SCA10-TZ installation

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Fastener Schedule		DF Factored Resistance		S-P-F Factored Resistance		Corrosion Finish
							Down 100%[1]		Down 100%[1]		
			w	L	Qty	Screws	Lbs	kN	Lbs	kN	
SCA9-TZ	TA9Z	12	1-3/8	9	6	1/4" x 1-1/2" HDG	1925	8.56	1365	6.07	
SCA10-TZ	TA10Z	12	1-3/8	10	8	1/4" x 1-1/2" HDG	1925	8.56	1365	6.07	

1) Loads assume rise over run of 7/11.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

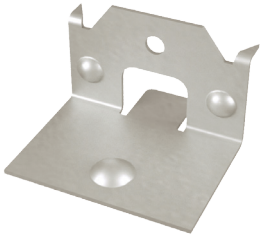
DC Deck Clip

Connects deck boards to joists without face nails or screws. Eliminates rust stains on decks, as well as splintering or wood rot caused by screw or nail “craters”. The DC50-TZ works like tongue-in-groove flooring and is easy to install. Raised dimples on the clip provide consistent spacing between deck boards.

Materials: 20 gauge
Finish: G-185 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Fits 1-1/8" or thicker decking.
- Fasten the first deck board onto the joists by toenailing up through the joist below into the deck board. Be sure no sharp points protrude above the deck surface. For subsequent deck board rows, nail DC50-TZ's onto the deck board edge, positioned 2" from each joist. Slide the deck board along the joist until the DC50-TZ “lip” is under the previously laid deck board. Toenail the deck board’s exposed edge to the joist. Repeat until decking is completed. The last deck board will require toenailing up from below to secure the outside edge.

Typical DC50-TZ installation



DC50-TZ

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[1,2] Qty	Fastener Schedule[1,2] Type	Corrosion Finish
DC50-TZ	DBT1Z	20	1	8d x 1-1/2 HDG	

1) Use with 1-1/8" minimum thickness decking.
2) **NAILS**: 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long.

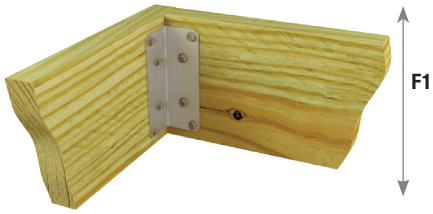
Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

ML Angles

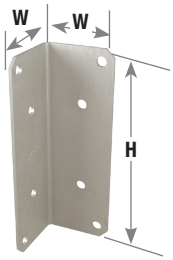
ML angles are multi-purpose angles that install easily with USP’s WS15 wood screws. The staggered fastener pattern allows for back-to-back installations.

Materials: 12 gauge
Finish: G-185 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- USP WS15 (1/4" x 1-1/2") are not supplied with ML angles.



Typical ML26-TZ installation
(ML24-TZ similar)



ML26-TZ
(ML24-TZ similar)

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Fastener Schedule[2,3] Header Qty	Header Type	Joist Qty	Joist Type	Unit	DF Factored Resistance[1] 100%	DF 115%	S-P-F Factored Resistance[1] 100%	S-P-F 115%	Corrosion Finish
ML24-TZ	ML24Z	12	2	4	3	WS15	3	WS15	Lbs	1100	1265	780	900	
									kN	4.89	5.63	3.47	4.00	
ML26-TZ	ML26Z	12	2	6	4	WS15	4	WS15	Lbs	1890	2175	1340	1545	
									kN	8.41	9.68	5.96	6.87	

1) Factored resistances have been increased 15% for short-term, duration loading; no further increase allowed.
2) USP's WS15 Wood Screws are 1/4" diameter x 1-1/2" long and are not included with angles.
3) For exterior applications use WS15-HDG screws with the hot-dip galvanized finish.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

PRT Pipe Rail Ties

PRT15-TZ – is for 1-5/8" vertical pipe posts (1-7/8" outside pipe diameter). Can be field bent 90° for outside corner installations.

PRT2-TZ / PRT2H-TZ – is for 2" vertical pipe posts (2-3/8" outside pipe diameter). Can be field bent 90° for outside corner installations.

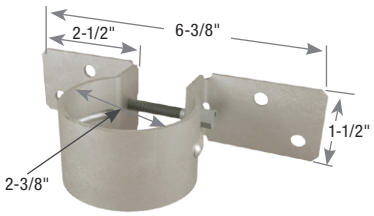
PRTIC2-TZ – is for inside corner installations. For 2" vertical pipe posts (2-3/8" outside pipe diameter).

Materials: See chart
Finish: G-185 galvanizing

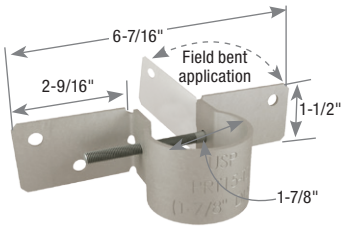
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- PRT15-TZ, PRT2H-TZ and PRTIC2-TZ - 1/4" Self Tapping Bolts are supplied with PRT models.
- Install self tapping bolts with 3/8" socket in pre-drilled holes.
- PRT2-TZ fastens with (1) 1/4" carriage bolt and nut (included) for tightening PRT2-TZ to pipe and (4) 1/4" lag bolts for attaching tie to rail.
- Install 3 to 4 PRT's per pipe.
- PRT15-TZ, PRT2-TZ and PRT2H-TZ may be bent once to fit corner and angled conditions.

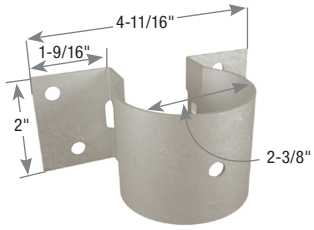
Typical PRT2H-TZ installation
PRT15-TZ & PRT2-TZ similar



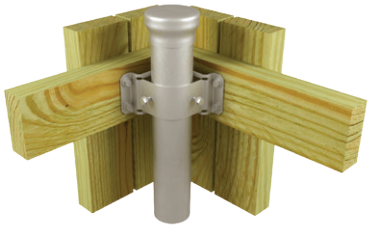
PRT2H-TZ



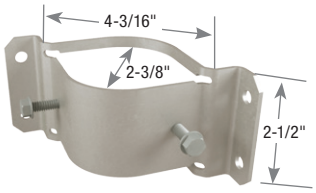
PRT15-TZ



PRT2-TZ



Typical PRTIC2-TZ installation



PRTIC2-TZ

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[1] Pipe Qty	Pipe Type	Rail Qty	Rail Type	Corrosion Finish
PRT15-TZ	PGT1.5Z-R	12	1	1/4" Self Tapping Bolt	4	1/4" Lag Bolt	
PRT2-TZ	PGT2E	16	1	1/4" HDG Carriage Bolt	4	1/4" Lag Bolt	
PRT2H-TZ	PGT2Z-R, PGT2A	12	1	1/4" Self Tapping Bolt	4	1/4" Lag Bolt	
PRTIC2-TZ	PGTIC2Z-R	12	2	1/4" Self Tapping Bolt	4	1/4" Lag Bolt	

1) WS15 wood screws can be substituted for specified lag bolts.
2) Install self tapping bolts (included) with 3/8" socket in predrilled holes.
3) Install 3 to 4 PRT's per pipe.
4) PRT15, PRT2 and PRT2H Pipe Rail Ties may be bent once to fit corner and angled conditions.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

ERB / FB / FRB Fence Brackets

USP STRUCTURAL CONNECTORS MiTek

ERB24 – Designed to mount prefabricated fence sections and works with 2x4 horizontal section rails.

FB26 – Secures 2x6 rails to wood posts.

FRB24 – Secures continuous 2x4 rails to wood posts. Pre-punched holes allow installers to splice 2x4 rail ends within the bracket.

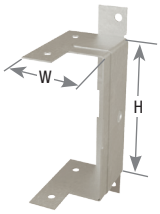
Materials: See chart

Finish: G-185 galvanizing

Installation:

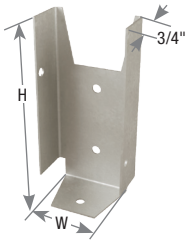
- Use all specified fasteners. See Product Notes, page 15.

Typical ERB24-TZ installation



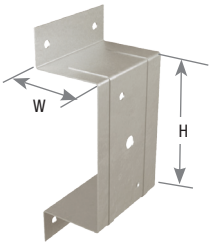
ERB24-TZ

Typical FB24-TZ installation

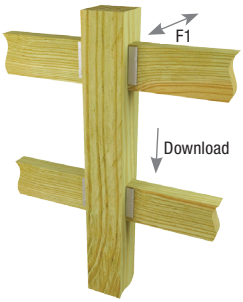


FB24-TZ

Typical FRB24-TZ installation

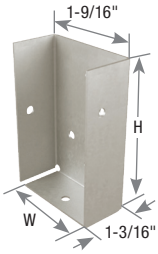


FRB24-TZ



Typical FB26-TZ installation

FB26-TZ



FB23-TZ

FB14-TZ

Rail Size	USP Stock No.	Ref. No	Steel Gauge	Dimensions (in) W	Dimensions (in) H	Fastener Schedule[2] Qty	Fastener Schedule[2] Rail	Fastener Schedule[2] Qty	Fastener Schedule[2] Post	Unit	DF Factored Resistance[1] Down	DF Factored Resistance[1] F1	S-P-F Factored Resistance[1] Down	S-P-F Factored Resistance[1] F1	Corrosion Finish
1 x 4	FB14-TZ	-- --	20	3/4	3-1/2	3	14 ga. x 3/4 HDG	2	8d x 1-1/2 HDG	-- --	-- --	-- --	-- --	-- --	
2 x 3	FB23-TZ	-- --	20	1-9/16	2-3/8	3	8d x 1-1/2 HDG	4	8d x 1-1/2 HDG	-- --	-- --	-- --	-- --	-- --	
2 x 4	ERB24-TZ	-- --	18	1-1/2	3-9/16	4	8d HDG	3	8d HDG	-- --	-- --	-- --	-- --	-- --	
	FB24-TZ	FB24Z, FBR24, FBR24Z	20	1-9/16	3-3/8	2	8d HDG	2	8d HDG	-- --	-- --	-- --	-- --	-- --	
	FRB24-TZ	-- --	18	1-9/16	3-9/16	2	10d x 1-1/2 HDG	4	10d HDG	-- --	-- --	-- --	-- --	-- --	
2 x 6	FB26-TZ	FB26	18	1-9/16	5	4	10d x 1-1/2 HDG	4	10d x 1-1/2 HDG	Lbs	550	700	390	495	
										kN	2.45	3.11	1.73	2.20	
						4	LL915	4	LL915	Lbs	780	715	550	505	
										kN	3.47	3.18	2.45	2.25	

1) Factored resistances have been increased 15% for short-term loading such as wind and earthquake; no further increase is permitted.
2) **NAILS:** 6d nails are 0.120" dia. x 2" long, 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long, 8d nails are 0.131" dia. x 2-1/2" long, 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long, LL915 denotes a USP LumberLok Screw, #9 x 1-3/8" long.
New products or updated product information are designated in **blue font.**

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

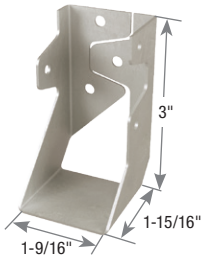
FPH Fence Rail Hanger

The FPH24-TZ attaches 2 x 4 fence rails to wood posts. The Triple Zinc (G-185) galvanized finish offers superior corrosion resistance in outdoor applications and/or with treated wood.

Materials: 18 gauge
Finish: G-185 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- Fasteners need to be Hot-Dip Galvanized for outdoor applications and for use with preservative treated wood.

Typical FPH24-TZ installation



FPH24-TZ

Joist Size	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[2] Header Qty	Header Type	Joist Qty	Joist Type	DF Factored Resistance Lbs Bearing 100%	Lbs Uplift[1] 115%	kN Bearing 100%	kN Uplift[1] 115%	S-P-F Factored Resistance Lbs Bearing 100%	Lbs Uplift[1] 115%	kN Bearing 100%	kN Uplift[1] 115%	Corrosion Finish
2 x 4	FPH24-TZ	-- --	18	3	8d x 1-1/2 HDG	3	8d x 1-1/2 HDG	410	545	1.82	2.42	350	465	1.56	2.07	
				3	10d x 1-1/2 HDG	3	10d x 1-1/2 HDG	485	560	2.16	2.49	420	485	1.87	2.16	

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; reduce for other load durations in accordance with the code.
2) **NAILS:** 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long, 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

PCP Plastic Post Caps

These seamless caps keep water off post tops, protecting wood from moisture damage. The PCP's plastic construction is corrosion-proof and paintable. Not available in rough or full lumber sizes.

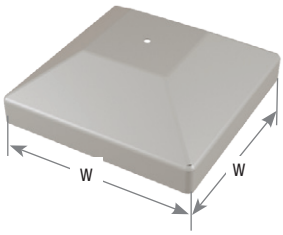
Materials: Hi-impact plastic
Finish: Gray

Installation:
- Fasten cap to post top with (1) 8d HDG or 10d HDG nail.

Post/Column Size[1]	USP Stock No.	Ref. No.	Dimension (in) W	Color
4 x 4	PCP44	DPPC4BK	3-5/8	Gray
6 x 6	PCP66	DPPC6BK	5-5/8	Gray

1) Not available in rough or full lumber sizes.

Typical PCP44 installation



PCP66

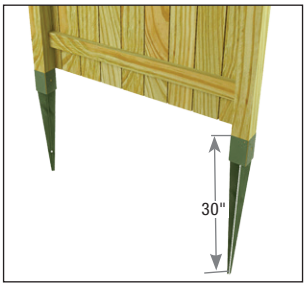
SFP / SMP Fence Post Connectors

Take the work out of fence post installation and repair with the Speedpost, SFP30, and Speedmender, SMP. The Speedpost is used to install 4 x 4 fence posts without digging post holes or pouring concrete. The Speedmender plates act as reinforcement brackets for rotted or damaged 4 x 4 fence posts.

SFP30 – For 6' nominally-sized 4 x 4 fence posts.

SMP – For nominally-sized 4 x 4 posts.

Materials: 13 gauge
Finish: Paint



Typical SFP30 installation

SFP30

Installation:
- Step-by-step installation instructions are labeled onto each product.

Post Size	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[1,2]	
				Qty	Type
4 x 4	SFP30	FPBS44	13	3	1/4" HDG Lag Bolts
	SMP	FPBM44E	13	20	10d HDG

1) Fastener schedule is per pair of SMP's.
2) **NAILS:** 10d nails are 0.148" dia. x 3" long.

Typical SMP installation

SMP

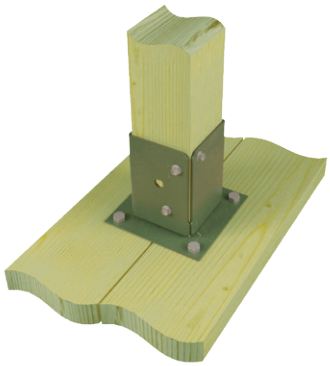
BD Bolt Down

Anchors 4 x 4 post to wood or concrete surfaces.

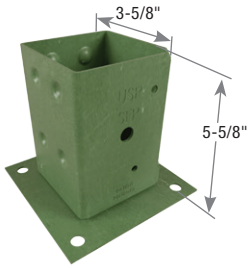
Materials: 13 gauge
Finish: Paint

Installation:
- Use all specified fasteners. See Product Notes, page 15.

Post Size	USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule	
				Qty	Lag Bolts
4 x 4	BD	FPBB44	13	3	1/4" x 1-1/2" HDG



Typical BD installation



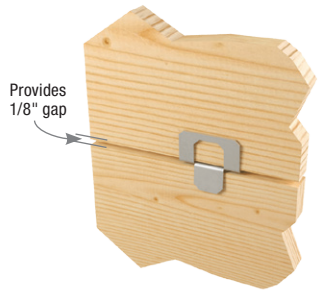
BD

RC Plywood Clips

Steel plywood clips. All models feature embossed dimples to provide 1/8" gap.

Materials: 18 gauge
Finish: G90 galvanizing

USP Stock No.	Ref. No.	Steel Gauge	Plywood Thickness (in)
RC38	PSCL3/8	18	3/8
RC716	PSCL7/16, PSCA7/16	18	7/16
RC1532	PSCL15/32, PSCA15/32	18	15/32
RC12	PSCL1/2	18	1/2
RC58	PSCL5/8	18	5/8



Typical RC installation

RC

DC Drywall Clip

Drywall clips or "stops" help support drywall or wood paneling and reduce wood blocking on top plates, end walls, and corners.

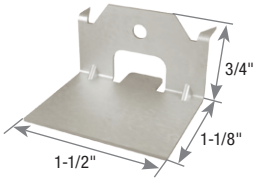
Materials: 20 gauge
Finish: G90 galvanizing

Installation:
- Use 8d nails to install DC1, 16" on-center or less.

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule[1]	
			Qty	Type
DC1	DS	20	1	8d

1) **NAILS:** 8d nails are 0.131" dia. x 2-1/2" long.

Typical DC1 installation



DC1

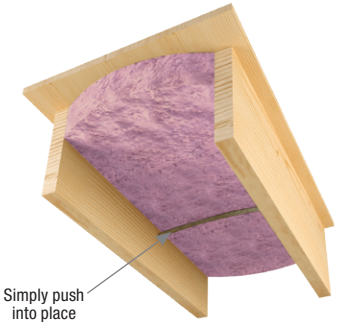
IS Insulation Supports

Insulation supports secure batt-type insulation in place between joists. Chisel-cut ends dig into joists for permanent holding. Easy to install in hard-to-reach crawl spaces.

Materials: 13 gauge carbon steel wire
Finish: None

Installation:
- Use IS16 for joist spaced 16" O.C. and IS24 for 24" O.C. spacing.
- Position insulation batt in place between joists. Hold IS unit at the center and push into place.
- Wear gloves and safety glasses during installation.

USP Stock No.	Ref. No.	Steel Gauge	Joist Spacing (in)	Dimensions (in)
				Overall Length
IS16	IS16-R100	13	16" O. C.	15-1/2
IS24	IS24-R100	13	24" O. C.	23-1/2



Typical IS installation

TT D.I.Y. Products

USP STRUCTURAL CONNECTORS MiTek

Connectors for home owner/D.I.Y. projects.

TTA12-TZ - an angle connects two 1x wood members at 90º angles.

TTA2-TZ - an angle connects two 2x wood members at 90º angles.

TTB22-TZ - a bracket connects two intersecting 2x wood members at 90º angles.

TTC24-TZ - a corner tie connects 2x wood members at 90º to the corner of a 2x4 post. Mirror design allows for post to be oriented in either direction.

TTC42-TZ - a corner tie connects 2x wood members at 90º to the corner of a 4x4 post.

TTF22-TZ - a bracket connects 2x wood members to opposite sides of a 2x4 or 4x4 post.

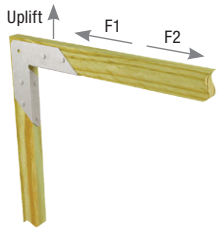
TTR-TZ - a clip connects a 2x wood member to the face of another wood member.

TTU2-TZ - a U-clip connects 2x wood members crossing at 90º.

Materials: See chart

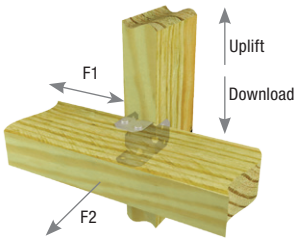
Finish: G-185 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- USP LumberLok LL915 (#9 x 1-3/8" long) wood screws are not supplied with connectors.



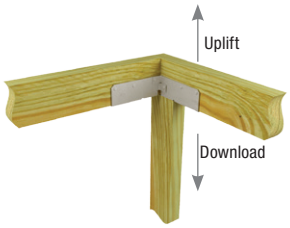
Typical TTA12-TZ installation

TTA12-TZ
(TTA2-TZ Similar)



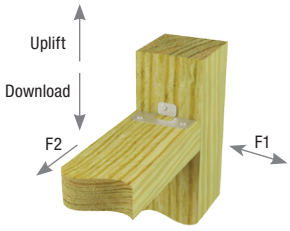
Typical TTB22-TZ installation

TTB22-TZ

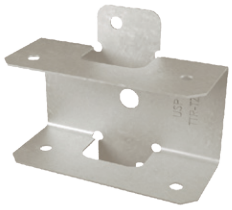


Typical TTC24-TZ installation

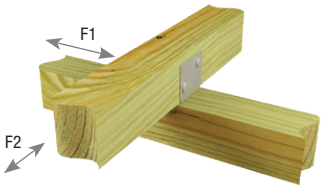
TTC24-TZ
(TTC42-TZ Similar)



Typical TTR-TZ installation

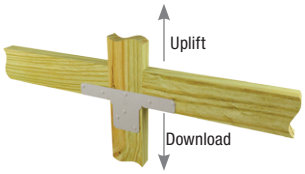


TTR-TZ



Typical TTU2-TZ installation

TTU2-TZ



Typical TTF22-TZ installation

TTF22-TZ

USP Stock No.	Ref. No.	Steel Gauge	Post Size	Joist Size	Fastener Schedule[1] Post Qty	Post Type	Joist (Total) Qty	Joist (Total) Type	Unit	DF Factored Resistance[2,3,4] Download	Uplift	F1	F2	S-P-F Factored Resistance[2,3,4] Download	Uplift	F1	F2	Corrosion Finish
TTA12-TZ	RTA12	18	1x	1x	4	LL915	4	LL915	Lbs	-- --	355	330	355	-- --	255	235	255	
									kN	-- --	1.58	1.47	1.58	-- --	1.13	1.05	1.13	
TTA2-TZ	RTA2Z	16	2x	2x	4	LL915	4	LL915	Lbs	-- --	315	440	315	-- --	225	315	225	
									kN	-- --	1.40	1.96	1.40	-- --	1.00	1.40	1.00	
TTB22-TZ	RTB22	20	2x	2x	4	LL915	4	LL915	Lbs	610	610	610	425	435	435	435	300	
									kN	2.71	2.71	2.71	1.89	1.93	1.93	1.93	1.33	
TTC24-TZ	RTC24Z	18	2 x 4	2x	9	LL915	8	LL915	Lbs	1125	715	-- --	-- --	800	505	-- --	-- --	
									kN	5.00	3.18	-- --	-- --	3.56	2.25	-- --	-- --	
TTF22-TZ	RTF2Z	18	2 x 4	2x	4	LL915	8	LL915	Lbs	1075	430	-- --	-- --	765	305	-- --	-- --	
									kN	4.78	1.91	-- --	-- --	3.40	1.36	-- --	-- --	
TTC42-TZ	RTC42, RTC42Z	18	4 x 4	2x	14	LL915	8	LL915	Lbs	1400	750	-- --	-- --	995	530	-- --	-- --	
									kN	6.23	3.34	-- --	-- --	4.43	2.36	-- --	-- --	
TTR-TZ	RTR	20	2x	2x	2	LL915	4	LL915	Lbs	545	545	490	235	390	390	350	170	
									kN	2.42	2.42	2.18	1.05	1.73	1.73	1.56	0.76	
TTU2-TZ	RTU2	18	2x	2x	2	LL915	4	LL915	Lbs	-- --	-- --	550	565	-- --	-- --	390	400	
									kN	-- --	-- --	2.45	2.51	-- --	-- --	1.73	1.78	

1) LL915 denotes a USP LumberLok Screw, #9 x 1-3/8" long.
2) Factored resistances have been increased 15% for short duration loading. No further increase is permitted.
3) TTF22-TZ: Factored resistances must be equally distributed on both joists.
4) TTC24-TZ and TTC42-TZ: Factored resistances listed in this table are for each joist being carried by the post.

Corrosion Finish
- Stainless Steel
- Gold Coat
- HDG
- Triple Zinc

ICPL / KNS / PL Protection Plates

Easy-to-install plates protect plumbing and power/communication wiring from nail or screw penetration.

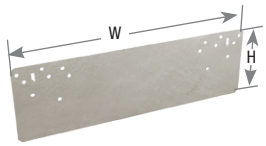
ICPL58 – Installs with nails.

KNS1 / PL4 – Prongs allow for quick installation.

Materials: 16 gauge
Finish: ICPL516-TZ – G-185 galvanizing; All others – G90 galvanizing
Options: See chart for Corrosion Finish Options

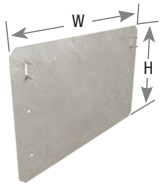
Installation:
- Use all specified fasteners. See Product Notes, page 15.

Typical ICPL516-TZ installation

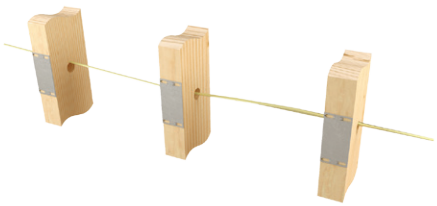


ICPL516-TZ

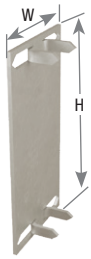
Typical ICPL58 installation



ICPL58



Typical KNS1 & PL4 installation



KNS1

PL4

USP Stock No.	Ref. No.	Steel Thickness	Dimensions (in)		Fastener Schedule[2]		Installation Type	DF Factored Resistance		S-P-F Factored Resistance		Corrosion Finish
								Uplift 115%[1]		Uplift 115%[1]		
			W	H	Qty	Type		Lbs	kN	Lbs	kN	
KNS1	NS1	1/16	1-1/2	3	-- --	prongs	-- --	-- --	-- --	-- --	-- --	
PL4	NS2	1/16	2	5	-- --	prongs	-- --	-- --	-- --	-- --	-- --	
ICPL58	-- --	1/16	8-1/16	5	4	8d or prongs	-- --	-- --	-- --	-- --	-- --	
ICPL516-TZ	PSPN516Z	1/16	16	5	12	16d HDG + prongs	Sill Plate	1405	6.25	1205	5.36	
					16	16d HDG + prongs	Double Top Plate	1870	8.32	1600	7.12	

1) Factored uplift resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **NAILS:** 8d nails are 0.131" dia. x 2-1/2" long, 16d nails are 0.162" dia. x 3-1/2" long.

Corrosion Finish Stainless Steel Gold Coat HDG Triple Zinc

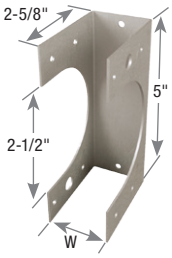
STS Stud Shoes

Stud shoes reinforce joists, plates, studs, or rafters which have been drilled or notched during construction.

Materials: 16 gauge
Finish: G90 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- **STS units are not structurally rated and should not be used as a total member replacement in structural applications.**
- For use with 2" O.D. pipe.

Typical STS1 installation



STS

USP Stock No.	Ref. No.	Steel Gauge	Description	Dimension (in)	Fastener Schedule[1,2]	
				W	Qty	Type
STS1	SS1.5	16	Single Stud	1-9/16	10	10d x 1-1/2
STS2	SS3	16	Double Stud	3-1/16	12	10d
STS3	SS4.5	16	Triple Stud	4-9/16	14	10d

1) Maximum hole size = 2".
2) **NAILS:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, 10d nails are 0.148" dia. x 3" long.

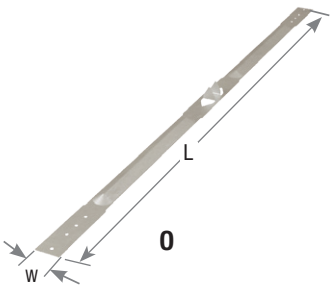
O / N Bridging

O – The O series spans three joists in under/over installation. Prong teeth in the center help reduce nailing.

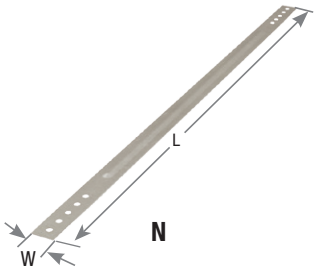
N – The N series spans two joists per unit. Can be used for bridging or bracing I-Joists. See chart.

Materials: See chart
Finish: G90 galvanizing

Typical O installation



Typical N installation



Installation:

- Use specified fasteners in models with fastener requirements.
- Install prior to subfloor sheathing. Use (2) 8d x 1-1/2" nails at each end. Fully seat nails to avoid any movement against the bridging and subsequent floor noise.

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Fastener Schedule[3]		Joist Spacing O.C. (in)[1,2]
			W	L	Qty	Type	
N16	LTB20, TB20	22	3/4	19-3/4	4	8d x 1-1/2	16
O40	LTB40	22	3/4	39-3/4	4	8d x 1-1/2	16
O16	-- --	18	1	44	4	8d x 1-1/2	16
N27	TB27	20	3/4	26-13/16	4	8d x 1-1/2	-- --
N30	TB30	20	3/4	29-13/16	4	8d x 1-1/2	-- --
N36	TB36	20	3/4	35-13/16	4	8d x 1-1/2	-- --
N42	TB42	20	3/4	42	4	8d x 1-1/2	-- --
N48	TB48	20	3/4	48	4	8d x 1-1/2	-- --
N54	TB54	20	3/4	54	4	8d x 1-1/2	-- --
N56	TB56	20	1	56	4	8d x 1-1/2	-- --
N60	TB60	20	1	60	4	8d x 1-1/2	-- --

1) For joist spacing, refer to the Joist Installation chart.
2) Joist spacing is based on a 1-1/2" joist. Consult USP regarding wider joist applications.
3) **NAILS:** 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long.

Joist Installations

Sized for Joist-to-Joist X Bridging									
I-Beam Height	Joist Spacing[1]								
	12"	16"	19.2"	24"	30"	32"	36"	42"	48"
7-1/4	-- --	N16/O16 /O40	-- --	-- --	-- --	-- --	-- --	-- --	-- --
9-1/4	N16	N16/O16 /O40	N27	N27/N30	N36	N36/N42	N42	N48	N54/N56
9-1/2	N16	N16	N27	N27/N30	N36	N36/N42	N42	N48	N54/N56
10	N16	N16	N27	N27/N30	N36	N36/N42	N42	N48	N54/N56
11-1/4	N16	N16	N27	N30	N36	N36/N42	N42	N48	N54/N56
11-7/8	N16	N27	N27	N30	N36	N36/N42	N42	N48	N54/N56
12	N16	N27	N27	N30	N36	N36/N42	N42	N48	N54/N56
14	N16	N27	N27/N30	N30	N36/N42	N36/N42	N42	N48	N54/N56
16	N27	N27	N27/N30	N30	N36/N42	N42	N42/N48	N48/N54	N54/N56
18	N27	N27/N30	N30	N36	N36/N42	N42	N42/N48	N48/N54	N54/N56
20	N27/N30	N27/N30	N30	N36	N42	N42	N42/N48	N48/N54	N54/N56/N60
22	N27/N30	N30	N36	N36/N42	N42	N42/N48	N48	N54/N56	N54/N56/N60
24	N30	N36	N36	N36/N42	N42	N42/N48	N48	N54/N56	N56/N60
26	N30/N36	N36	N36/N42	N42	N42/N48	N48	N48/N54	N54/N56	N56/N60
28	N36	N36/N42	N36/N42	N42	N42/N48	N48	N48/N54	N54/N56	N60
30	N36/N42	N36/N42	N42	N42/N48	N48	N48	N48/N54/N56	N54/N56/N60	N60
32	N36/N42	N42	N42	N42/N48	N48	N48/N54	N54/N56	N54/N56/N60	N60

All models require (2) 8d x 1-1/2 nails at each end.
1) Based on 1-1/2" joist. Consult USP for suitable product for wider joists.

MB16 / MBG Bridging

MBG – Grip tooth bridging. Features special teeth which grip joists and provide easy single-nail installation. Can be installed after subfloor is in place.

MB16 – Snap-on, no-nail bridging can be placed in existing floor systems where joist movement is suspected. Two-piece construction creates a solid diagonal brace against joist movement.

Materials: See chart

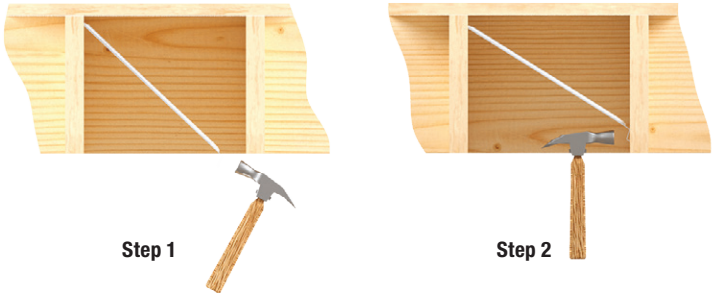
Finish: G90 galvanizing

Installation:

- Use specified fasteners in models with fastener requirements.
- **MBG** – May be installed before or after sheathing. Position the unbent end of the bridging unit near the top of the joist and drive prongs into wood with a hammer blow to the heel of the bent end. Wedge bent end near the lower edge of the opposite joist, set teeth into wood with hammer blow. Nail holes are provided at the bent end if prongs are damaged during installation. Fully seat nails to avoid any movement against the bridging and subsequent floor noise.
- **MB16** – Two-piece unit is shipped as one piece. Bend unit in center up and down to break into two pieces. Slide narrower piece inside wider piece, setting the end tab into slot appropriate for joist spacing. Setting one prong end near the top of one joist and the opposite prong end near the bottom of the opposite joist, pull down on the center of the bridging until the wider piece snaps into place over the narrow piece and creates a rigid, one-piece bridging unit. Wear gloves during installation.

MB16

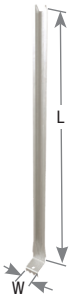
Typical MB16 installation



Typical MBG installation

Joist Size	Joist Spacing O.C. (in)[1]	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Fastener Schedule[2]	
					W	L	Qty	Type
2 x 8	12	MBG812	NCA2X8-12	22	15/16	11-3/4	1	8d x 1-1/2
2 x 10	12	MBG1012	NCA2X10-12	22	15/16	12-3/4	1	8d x 1-1/2
2 x 12	12	MBG1212	NCA2X12-12	22	15/16	14	1	8d x 1-1/2
2 x 14	12	MBG1412	-- --	22	15/16	16	1	8d x 1-1/2
2 x 16	12	MBG1612	-- --	22	15/16	17	1	8d x 1-1/2
2 x 8-12	16	MB16	-- --	22	11/16	-- --	-- --	-- --
2 x 8	16	MBG816	NCA2X8-16	22	15/16	15-9/16	1	8d x 1-1/2
2 x 10	16	MBG1016	NCA2X10-16	22	15/16	16-5/16	1	8d x 1-1/2
2 x 12	16	MBG1216	NCA2X12-16	22	15/16	17-1/4	1	8d x 1-1/2
2 x 14	16	MBG1416	-- --	22	15/16	18-7/16	1	8d x 1-1/2
2 x 16	16	MBG1616	-- --	22	15/16	19-5/8	1	8d x 1-1/2
2 x 8	24	MBG824	-- --	22	1-5/16	23-1/2	1	8d x 1-1/2
2 x 10	24	MBG1024	-- --	22	1-5/16	24	1	8d x 1-1/2
2 x 12	24	MBG1224	-- --	22	1-5/16	24-3/4	1	8d x 1-1/2
2 x 14	24	MBG1424	-- --	22	1-5/16	25-5/8	1	8d x 1-1/2
2 x 16	24	MBG1624	-- --	22	15/16	26-5/8	1	8d x 1-1/2

1) Joist spacing is based on a 1-1/2" joist, consult USP regarding wider joist applications.
2) **NAILS:** 8d x 1-1/2 nails are 0.131" dia. x 1-1/2" long.



MBG

RWB / WB / WBC / WBT Wall Bracing

RWB – Flat bracing conveniently packaged in a handy roll out dispenser. Perfect for unexpected job site shortages. The 35-pound dispenser pack fits easily into a truck bed for transport. Pre-embossed snap-off points can be broken off by hand (wear gloves for safety).

WB – A flat style bracing engineered to easily nail to studs. No cutting or fitting needed.

WBC – L-shaped design for additional strength and rigidity.

WBT – Rolled edges and T-style design gives the WBT strength, rigidity, and eliminates sharp, sheared edges.

Materials: See chart
Finish: G90 galvanizing

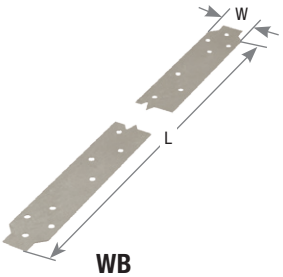
Installation:

- Use all specified fasteners. See Product Notes, page 15.
- Bracing is a framing aid, not a substitute for structural shearwall components.
- **RWB / WB** – Use with 16" or 24" o.c. studs. Install in pairs forming an "X" or opposing "V" at each end of a maximum 25-foot long wall panel.

  Steps: Square the panel. Straighten any kinks in bracing caused by handling. Lay bracing on the panel flush to the top of top plate and flush to the bottom of the bottom plate. Secure bracing to the top plate and bottom plate using 16d nails (WB) or 8d nails (RWB). Position second bracing at an angle opposite to the first brace to form an "X" and secure to top and bottom plate as with the first bracing. Using 8d nails, secure bracing to all intersecting studs.
- **WBC / WBT** – Use with 16" o.c. studs. Install one brace at each end of wall section, not exceeding 25 feet, in an opposing "V" pattern. Use the web portion of a length of bracing as a straight edge to mark studs. Cut a saw kerf 5/8" deep (1" deep for WBC). Insert the bracing web into the saw kerf, and drive one nail into the top plate. Raise the wall section into place and plumb. Finish fastening according to the nail schedule.

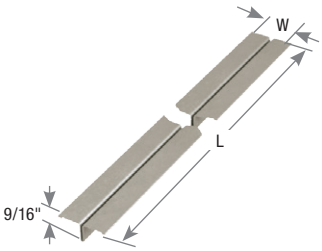
RWB pre-embossed snap-off points

Typical RWB/WB installation

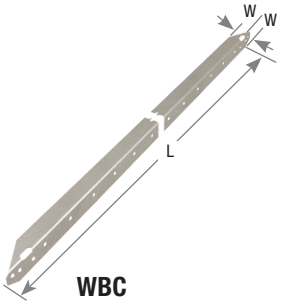


WB

Typical WBC/WBT installation



WBT



WBC

USP Stock No.[1]	Ref. No.	Steel Gauge	Dimensions (in)		Pieces Per Roll	Wall Height	Install Angle	Fastener Schedule[2,3]			
								Each Plate		Each Stud	
			W	L (ft - in)				Qty	Type	Qty	Type
RWB96	WB106C	16	1-1/4	9' 6"	15	8'	60°	4	8d	1	8d
RWB114	WB126C	16	1-1/4	11' 4-3/8"	12	8'	45°	4	8d	1	8d
RWB143	WB143C	16	1-1/4	14' 3"	10	10'	45°	4	8d	1	8d
WBC10	RCWB10	18	15/16	9' 5-3/4"	-- --	8'	60°	2	16d	1	8d
WBC12	RCWB12	18	15/16	11' 4-3/8"	-- --	8'	45°	2	16d	1	8d
WBT10	TWB10	22	1-3/8	9' 3"	-- --	8'	60°	4	8d	1	8d
WBT12	TWB12	22	1-3/8	11' 4"	-- --	8'	45°	4	8d	1	8d
WBT14	RCWB14, TWB14	22	1-3/8	14' 2"	-- --	10'	45°	4	8d	1	8d
WB106	WB106	16	1-1/4	9' 5-1/2"	-- --	8'	60°	3	16d	1	8d
WB126	WB126	16	1-1/4	11' 4-1/4"	-- --	8'	45°	3	16d	1	8d

1) These products substitute for code prescribed 1 x 4 let-in bracing.
2) **NAILS:** 8d nails are 0.131" dia. x 2-1/2" long, 16d nails are 0.162" dia. x 3-1/2" long.

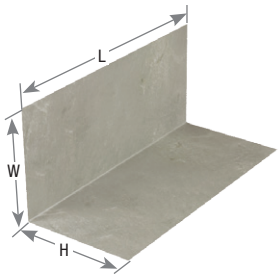
SF Step Flashing

Pre-sized, ready to install, versatile flashing unit. Ideal for roof applications.

Materials: 28 gauge
Finish: G90 galvanizing

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		
			W	H	L
SF8	-- --	28	3-1/2	3-1/2	8

Typical SF8 installation



SF8

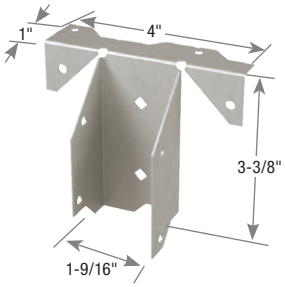
RR Ridge Rafter Hanger

The RR Ridge Rafter supports rafter pitches up to 7:12 (30°). Nesting top flange for installation on 2x support beams.

Materials: 18 gauge
Finish: G90 galvanizing

Installation:
- Use all specified fasteners. See Product Notes, page 15.
- The rafter end at the ridge must be plumb cut to achieve published loads.
- Optional diamond nail holes can be used to fasten RR to end of rafter before setting rafter into place.

Typical RR installation



RR

USP Stock No.	Ref. No.	Steel Gauge	Min Rafter Size	Fastener Schedule[2]				Unit	DF Factored Resistance[1]		S-P-F Factored Resistance[1]	
				Header		Rafter			Download 100%	Uplift 115%	Download 100%	Uplift 115%
				Qty	Type	Qty	Type					
RR	RR	18	2 x 6	4	10d x 1-1/2	4	10d x 1-1/2	Lbs	590	380	465	300
								kN	2.67	1.80	1.89	1.29
				4	LL915	4	LL915	Lbs	705	345	500	245
								kN	3.14	1.53	2.22	1.09

1) Factored resistances have been increased 15% for short-term loads such as wind and earthquake; no further increase allowed.
2) **Nails:** 10d x 1-1/2 nails are 0.148" dia. x 1-1/2" long, LL915 denotes a USP LumberLok Screw, #9 x 1-3/8" long.
New products or updated product information are designated in **blue font**.

KSCT Corner Tie

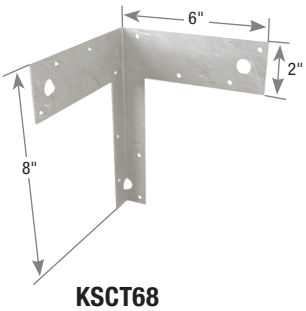
The Corner Tie secures three-way wood-to-wood connections. Handy for building workbenches, utility tables, or shelving using 2x4 lumber.

Materials: 14 gauge
Finish: G90 galvanizing

Installation:
- Use (12) #10 panhead screws to fasten the KSCT68 to wood framing.

USP Stock No.	Ref. No.	Steel Gauge	Fastener Schedule	
			Qty	Screws
KSCT68	-- --	14	12	#10 panhead

Typical KSCT68 installation



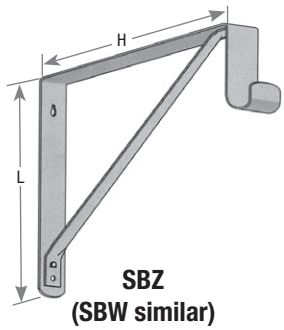
KSCT68

SB Shelf Brackets

This shelf bracket combines shelving capabilities and closet rod support in a one-piece design.

Materials: 13 gauge cold rolled steel
Finish: SBZ – Zinc plated; SBW – Electro-static powdered coat (white)

Finish	USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)	
				H	L
Zinc Plated	SBZ	-- --	13	11	11
White Powder Coat	SBW	-- --	13	11	11

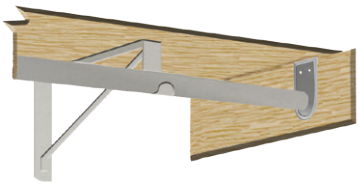


SBZ
(SBW similar)

CRZP / CRWP Closet Rods

These adjustable Closet Rods are available in various lengths which attach easily to wall studs or shelf support strapping (see diagram).

Materials: 20 gauge cold rolled steel
Finish: CRZP – Zinc plated; CRWP – Electro-static powdered coat (white)



Typical CRZP installation
(CRWP similar)

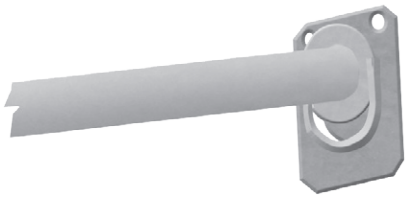
CRZP
(CRWP similar)

Finish	USP Stock No.	Ref. No.	Steel Gauge	Adjustable Size (in)
Zinc Plated	CRZP1830	-- --	20	18 - 30
	CRZP3048	-- --	20	30 - 48
	CRZP4872	-- --	20	48 - 72
	CRZP7296	-- --	20	72 - 96
	CRZP96120	-- --	20	96 - 120
White Powder Coat	CRWP1830	-- --	20	18 - 30
	CRWP3048	-- --	20	30 - 48
	CRWP4872	-- --	20	48 - 72
	CRWP7296	-- --	20	72 - 96
	CRWP96120	-- --	20	96 - 120

CRZFP / CRWFP Fluted Closet Rods

These adjustable Fluted Closet Rods are a two-piece design which consists of separate end brackets to be installed prior to inserting the closet rods into place.

Materials: 20 gauge cold rolled steel
Finish: CRZFP – Zinc plated; CRWFP – Electro-static powdered coat (white)



CRZFP
(CRWFP similar)

Finish	USP Stock No.	Ref. No.	Steel Gauge	Adjustable Size (in)
Zinc Plated	CRZFP1830	-- --	20	18 - 30
	CRZFP3048	-- --	20	30 - 48
	CRZFP4872	-- --	20	48 - 72
	CRZFP7296	-- --	20	72 - 96
	CRZFP96120	-- --	20	120 - 144
White Powder Coat	CRWFP1830	-- --	20	18 - 30
	CRWFP3048	-- --	20	30 - 48
	CRWFP4872	-- --	20	48 - 72
	CRWFP7296	-- --	20	72 - 96
	CRWFP96120	-- --	20	96 - 120

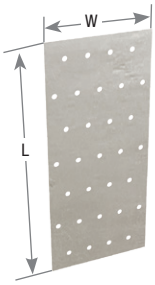
NP Nail Plates

Materials: 20 gauge
Finish: G90 galvanizing

Installation:
- Use nails appropriate for intended use. Holes are sized for 8d common or 8d x 1-1/2" nails.
- The designer shall determine appropriate load values.

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)		Number of Nail Holes
			W	L	
NP15	TP15	20	1-13/16	5	12
NP35	TP35	20	3	5	22
NP37	TP37	20	3-1/8	7	31
NP39	TP39	20	3-1/8	9	40
NP311	TP311	20	3-1/8	11	49
NP45	TP45	20	4-1/8	5	30
NP47	TP47	20	4-1/8	7	42
NP49	TP49	20	4-1/8	9	54
NP411	TP411	20	4-1/8	11	66
NP57	TP57	20	5-3/4	7	59

Typical nail plate installation



NP

JNP / TPP Mending Plates

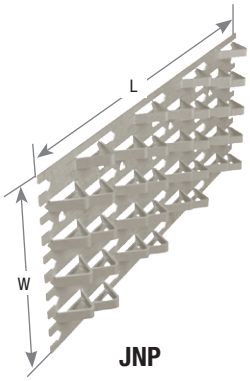
TPP – Prong plates with straight prongs.
JNP – Prong plates with angled, hammer-in prongs.

Materials: See chart
Finish: G90 galvanizing

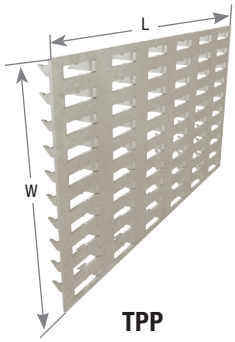
Installation:
- **These products are not intended for structural use. No load ratings are assigned. These plates are not intended for use in truss assembly.**

USP Stock No.	Ref. No.	Steel Gauge	Dimensions (in)	
			W	L
JNP24	-- --	18	1-1/2	4
JNP26	-- --	18	1-1/2	6
JNP46	-- --	18	3-3/16	6
JNP48	-- --	18	3-3/16	8
TPP14	MP14	22	13/16	3-1/2
TPP24	MP24	22	1-11/16	3-1/2
TPP36	MP36	22	2-3/4	5-1/4
TPP58	-- --	22	4-3/16	7-13/16

Typical mending plate installation



JNP



TPP

SPECIALTY OPTIONS & GENERAL NOTES

The information listed only applies to hangers manufactured by USP Structural Connectors® and installed according to the instructions listed in this catalog. Some of the options listed may not have been evaluated on a single hanger. The designer must always evaluate each connection, including the joist and header capacities, before specifying a specialty connector. USP sloped hangers are manufactured with the plumb cut of the joist already calculated. If a hanger with a different height is needed, it must be specified at the time of ordering.

Materials: Steel gauge may vary from that specified depending on the specialty option and manufacturing process used. Some formed hangers may be welded when modifying the hanger. Hanger configurations, fastener schedules, and height may vary from the tables depending on the joist size, skew, and slope.

Finish: See specific hanger option tables. Welded hangers are painted with USP gray primer. Non-catalog hangers available in Hot-dip galvanized, use HDG after product number.

Factored Resistance: For multiple options for the same connector, use the most conservative reduction to give the lowest design load.

Installation:

- Fill all nail holes with fasteners specified in the tables.
- Fastener quantities may increase from the amount listed in the tables depending on hanger option.
- NA16D-RS and NA20D nails are supplied with hangers.
- For type A skewed hangers, the end of joist must be bevel cut; for type B skewed hangers, the end of joist must be square cut.

Codes: Modified hangers are not code evaluated due to their numerous variations.

USP Series	Width	Skewed (Maximum)	Sloped Seat (Maximum)	Sloped / Skewed	Sloped Top Flange (Maximum)	Top Flange Offset	Saddle Hanger	Ridge Hanger (Maximum)	Inverted Flange	Uplift	Weldability	USP Series Catalog Page Reference
BPH	all	50º	45º	•	45º					•	•	138, 141-142, 144-148, 150-154
FWH	all	45º								•		109-110
GHF	all	50º	45º	•					• width > 4-1/2"	•		158-159
HBPH	all	50º	45º	•	45º					•	•	138, 145-148, 150-154
HD[1]	1-3/4" or less	67-1/2º	45º	•					• width > 2-1/4"	•		96-103, 130, 134-136
	> 1-3/4"	50º										
HDO	1-3/4" or less	67-1/2º	45º	•					• width > 3-1/8"	•		104, 106-108
	> 1-3/4"	50º										
HDQIF	all								•			96, 98-103, 130, 135-136
HGU	all	45º							• one flange width > 5-1/4"	•		157-158
HJC	all	60º								•		189-190
HLBH	all	50º	45º	•	45º	•	•	45º		•	•	139, 144-147, 150-154
HUS	all								• width > 2-1/4"	•		95, 97-99, 101-102, 130, 135, 178
HWUH	all	45º	45º	•		•	•			•		120-121
KB	all									•	•	104, 107-108
KEG	all	45º	45º			•				•		160
KGB	all									•	•	161
KGH	all	45º					•					41
KGLS	all	50º	45º	•	30º	•	•			•	•	163-164
KGLST	all						•			•	•	163-164
KGLT	all	50º	45º	•	45º	•	•			•	•	162-163
KHGB	all									•	•	161
KHGLS	all	50º	45º		30º	•	•			•	•	163-164
KHGLST	all						•			•	•	163-164
KHGLT	all	50º	45º	•	45º	•	•			•	•	162-163
KHHB	all									•	•	161
KHW	all	84º	45º	•	35º	•	•	45º			•	105-108
KLB	all										•	104, 106
KLEG	all	45º	45º			•				•		160
KMEG	all	45º	45º			•				•		160
LGU	all	45º							• one flange width > 3-5/8"	•		157-158
LSSH	all	45º	45º	•						•		156
MGU	all	45º							• one flange width > 5-1/4"	•		157-158
MPH[1]	all	60º	45º	•		•						122-123
MSHA	all	75º								•		186-187
MSHL/R	all	45º								•		185
PHM[1]	all	84º	45º	•	35º	•	•	45º			•	140-143, 145-154
PHXU[1]	all	60º	45º	•	35º	•	•			•	•	140-142, 144-148, 150-154
SKH	all	45º								•		113-115
SKHH	all	45º								•		113, 115
SUH	1-3/4" or less	67-1/2º	45º	•						•		94, 97-103
	> 1-3/4"	50º										
SW[1]	all	84º	45º	•	35º	•	•	45º			•	105-107
SWH[1]	all	84º	45º	•	35º	•	•	45º			•	105-108
THD	all	45º	45º	•					• one flange width > 3"	•		131, 135-136, 179
THDH	all	45º	45º	•						•		131, 135-136, 180-181
THF	1-3/4" or less	67-1/2º	45º	•					• width > 2-1/4"	•		129, 132-134
	> 1-3/4"	50º										

1) Skews greater than 45° will have square cut joist with back plate.
Refer to Typical PHXU hanger skewed, left shown, Type B illustration on page 222.
New products or updated product information are designated in **blue font**.

FACE MOUNT HANGER SPECIALTY DETAILS

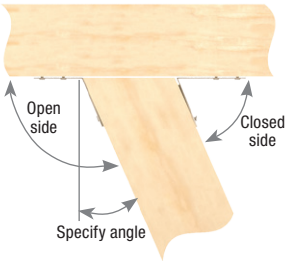
See the Specialty Options Chart for each hanger series for load reductions and hanger maximum range of skew, slope, etc.

Skewed Hanger:
- Consider SKH or SKHH hangers for 45° skews.
- Joist nails on the closed side may be relocated to the open side to ensure proper nailing.
- Specify skew angle, type (square cut or bevel cut), and direction when ordering.

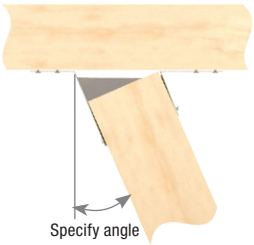
Sloped Seat Hanger:
- Consider LSSH series for sloped applications.
- Additional nail holes may be added to joist flanges.
- Specify slope angle and direction when ordering.

Sloped/Skewed Hanger:
- See nailing notes for both skewed and sloped hangers.
- Specify skew and slope angles as well as skew/slope directions and skew type (square cut or bevel cut) when ordering.

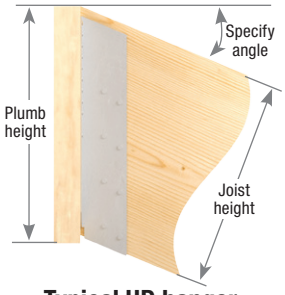
Inverted Flange Hanger:
- When nailing into the carrying member's end grain, the factored resistance is 0.65 of the table load.
- Hangers with one flange inverted achieve 100% of listed table load.
- Specify right or left flange when inverting only one flange.



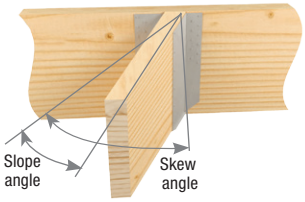
Typical SUH hanger skewed, right shown (bevel cut)



Typical SUH formed hanger skewed, right shown (square cut)



Typical HD hanger sloped seat, down shown



Typical HD hanger sloped down, skewed left shown

Typical GHF hanger one flange inverted, left shown

Typical HD hanger inverted flange

OPEN TOP FLANGE HANGER SPECIALTY DETAILS

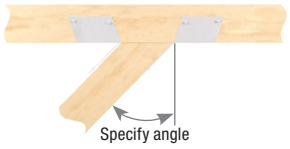
See Specialty Options Chart for each hanger series for load reductions and hanger maximum range of skew, slope, etc.

Skewed Hanger:
- Joist nails may be located on obtuse side to ensure proper nailing.
- Specify skew angle, type (square cut or bevel cut), and direction when ordering.

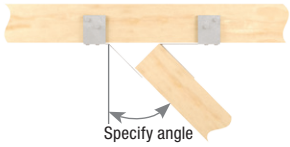
Sloped Seat Hanger:
- Additional nail holes may be added to joist flanges.
- Specify slope angle, direction, and joist height when ordering.

Sloped/Skewed Hanger:
- See nailing notes for both skewed and sloped hangers.
- Specify skew and slope angles as well as skew/slope directions, and skew type (square cut or bevel cut) when ordering.
- Similar to face mount skewed/sloped hanger, refer to illustration on page 221: Typical HD hanger sloped down, skewed left shown.
- Specify if hanger is to be high side flush, low side flush, or center flush.

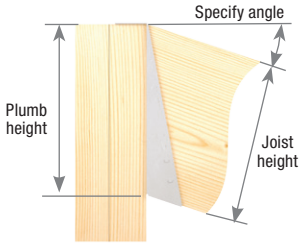
Sloped/Skewed/Sloped Top Flange Hanger:
- See nailing notes for both skewed and sloped hangers.
- Specify skew, slope, and top flange slope angles as well as skew/slope and top flange slope directions when ordering.
- Hangers may be galvanized or painted.
- Hangers may be made with solid top flange.



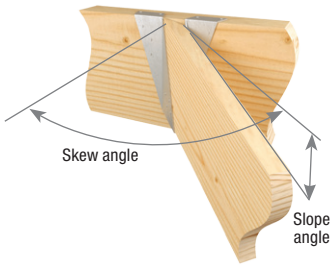
Typical BPH hanger skewed, left shown
(bevel cut)



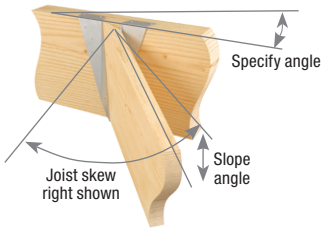
Typical HDO hanger skewed, right shown
(square cut)



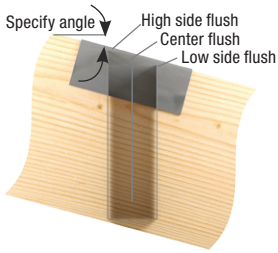
Typical BPH hanger sloped seat, down shown



Typical BPH hanger sloped down, skewed right, high side flush shown



Typical BPH hanger skewed right, sloped down, top flange sloped



Typical BPH hanger sloped top flange right shown
(this configuration will not be open back)

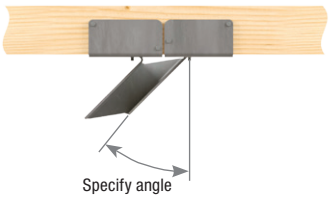
SOLID TOP FLANGE HANGER SPECIALTY DETAILS

See Specialty Options Chart for each hanger series for load reductions and hanger maximum range of skew, slope, etc.

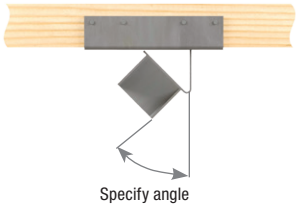
Skewed Hanger:
- Joist nails may be located on obtuse side to ensure proper nailing.
- Specify skew angle, type (square cut or bevel cut), and direction when ordering.

Sloped Seat Hanger:
- Additional nail holes may be added to joist flanges.
- Specify slope angle, direction, and joist height when ordering.

Sloped/Skewed Hanger:
- See nailing notes for both skewed and sloped hangers.
- Specify skew and slope angles as well as skew/slope directions, and skew type (square cut or bevel cut) when ordering.
- Specify if hanger is to be high side flush, low side flush, or center flush.



Typical PHXU hanger skewed, left shown
(bevel cut)



Typical PHXU hanger skewed, left shown
(square cut)

Continued on next page

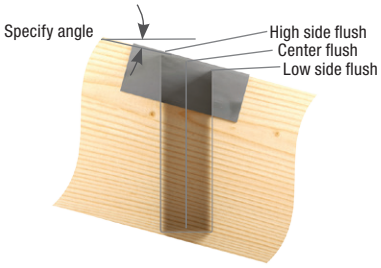
SOLID TOP FLANGE HANGER SPECIALTY DETAILS

Sloped Top Flange Hanger:
- Additional nail holes may be added to top angle.
- Specify top flange slope and direction when ordering.
- Specify if hanger is to be high side flush, low side flush, or center flush.

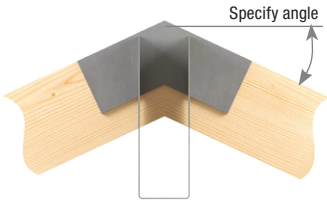
Ridge Hanger:
- Specify flush top of beam at center, right side, or left side.
- Specify angle of slope when ordering.

Top Flange Offset Hanger:
- Specify offset, left (L) or right (R), when ordering.

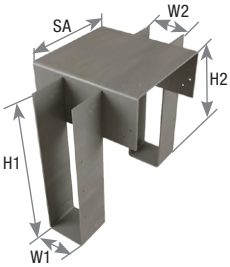
Saddle Hanger:
- Specify saddle width, "SA" when ordering. Allow clearance for saddled member.



Typical HLBH hanger sloped top flange, right shown

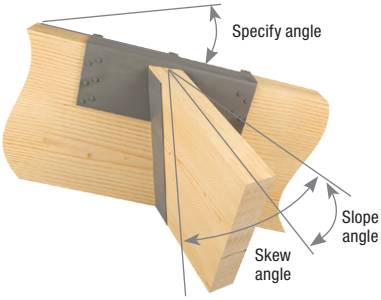


Typical HLBH hanger ridge, top flange slope

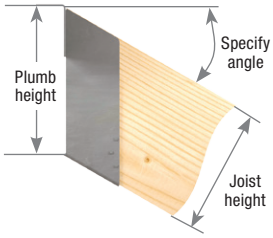


Typical PHXU hanger saddle option

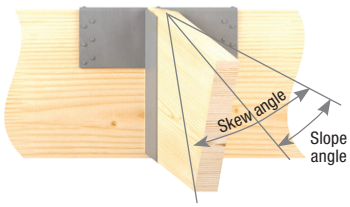
Typical HLBH hanger top flange offset, right shown



Typical HLBH hanger skewed right, sloped down, top flange sloped



Typical HLBH hanger sloped seat, down shown



Typical HLBH hanger sloped down, skewed right, center flush shown

WELDED TOP FLANGE

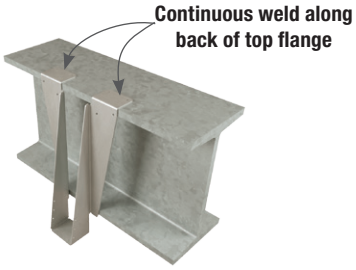
- Weld sizes and lengths shown on chart.
- Weld-on applications produce maximum factored resistance listed. **Uplift loads do not apply to this application.**

Top Angle Weld Length Chart

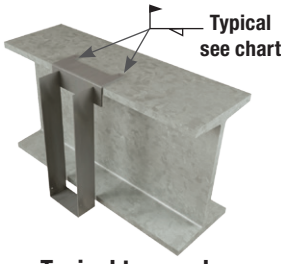
USP Welded Hanger Series	Weld Length
SW	3"
BPH, HBPH, PHM, SWH	4"
KLB, KHW, PHXU	6"
KB, KGB, KHGB, KHHB, KGLS, KGLST, KGLT, KHGLS, KHGLST	8"
HLBH, KHGLT	10"

Weld shall be distributed evenly.

Top Angle Steel Gauge	Weld Size
10 gauge or lighter	1/8"
7 gauge	3/16"
3 gauge	1/4"



Typical top flange welded installation



Typical top angle welded installation

PART NUMBER SYSTEM

Part Numbers assigned to TFL, THO, and THF I-Joist hangers reveal the I-Joist sizes to be used with the specific hanger. This guide will teach you how to recognize I-Joist dimensions in the part numbers.

1st, 3rd, and sometimes 4th digits are whole numbers
(This example denotes 2 and 11)
4th digit may be part of a decimal –

TFL 23118

2nd and 5th digits are decimals
(see guide below)
(This example denotes .3125
[5/16] and .875 [7/8])
5th digit may be (0) or dropped if height is even

Part Number Guide for Decimals

1 = .125	or	1/8 inch
2 or 25 = .25	or	1/4 inch
3 = .3125	or	5/16 inch
5 = .5	or	1/2 inch
6 = .625	or	5/8 inch
7 = .75	or	3/4 inch
8 = .875	or	7/8 inch

THO35925-2

THO	35	925	-2
Letters refer to Hanger Series ex.: THO	First (2) Digits refer to Member Width ex.: 3.5 inches	Last (2) or (3) Digits refer to Member Height ex.: 9.25 inches	Digits after Dash refer to Number of Plys ex.: 2 ply

Some Examples:

THO15950 ..... 1-1/2" x 9-1/2"

THF17925 ..... 1-3/4" x 9-1/4"

THO16925-2 ..... double 1-5/8" x 9-1/4"

THF23140-2..... double 2-5/16" x 14"

Note: USP's Product Catalog lists a range of heights for THF hangers. Face mount hangers can usually accommodate more than one I-Joist height. The hanger height must be tall enough to support the top chord of the I-Joist to eliminate web stiffener requirements for lateral support. The THF hanger must be a minimum of 60% of the joist height.

SHEAR WALL SYSTEMS

USP STRUCTURAL CONNECTORS MiTek

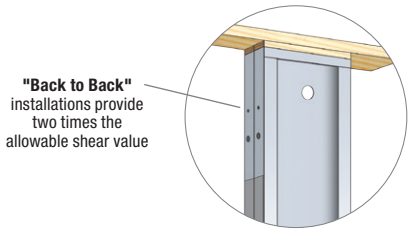
Hardy Frame is the industry leading pre-fabricated shear wall system. Building Design Professionals specify the Hardy Frame System not only to resist wind and earthquake loads but to also maximize wall openings economically.

The Hardy Frame product line includes Panels, Brace Frames and Accessories.

Hardy Frame®

HFX-Series Panels

- Panels are available in 9, 12, 15, 18, 21 and 24 inch widths
- Standard Heights range from 78 inches for portal applications to 20 feet for Balloon Walls
- Custom heights are manufactured routinely
- With proper detailing and anchorage "Back to Back" installations provide two times the factored shear value without increasing the wall width



Hardy Frame®

HFX-Series Brace Frames

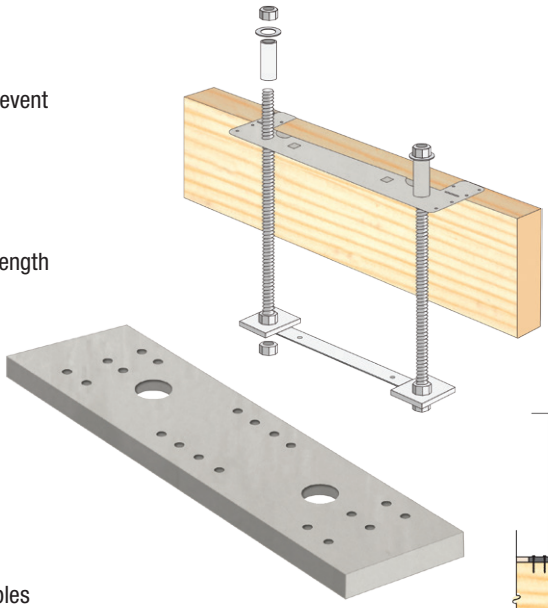
- Brace Frames are available in 32 and 44 inch widths
- Standard Heights range from nominal 8 to 13 feet
- Custom heights are manufactured routinely
- For a given shear load, installing a wider shear wall results in reduced overturning

Hardy Frame® Brace Frame | **Hardy Frame Portal installation** | **Hardy Frame® Panel** | **Hardy Frame® Panel Back to Back**

Template Kit (HFXTK & HFXTK-HS)

Includes:

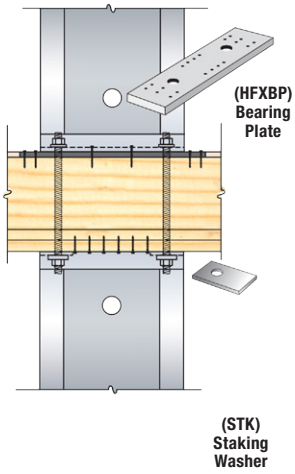
- One Template for accurate anchor spacing and alignment
- One Bolt Brace for installation at embed end of anchors to prevent independent sway while pouring concrete
- Two 1-1/8 inch diameter hold down anchors
- Six Grade 8 hex nuts
- Two hardened round washers
- Two 1/2" x 3" x 3" plate washers are included when high strength (HS) anchors are specified



Hardy Frame®

Bearing Plate (HFXBP)

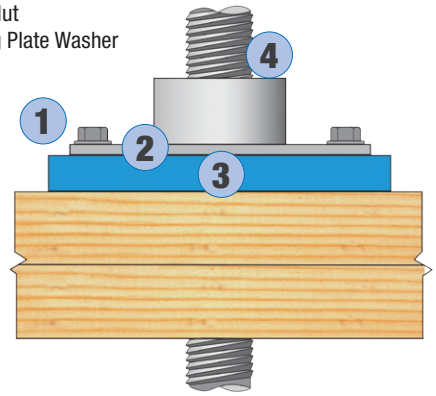
- 3/4" thick x 3-1/2" wide ASTM A36 steel
- Length extends 3" beyond Panel edges. **Check for outside corner conditions!**
- Reduces wood deformation from overturning forces
- Reduces effects of shrinkage by eliminating bottom plate
  Note: The allowable values in raised floor and upper floor tables assume installation of HFXBP. Installation without a HFXBP may result in a reduction of allowable loads.



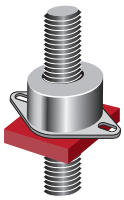
TIE-DOWN SYSTEMS

Z4 Tie-Down Systems utilize Z4 CNX-Series Cinch Nuts to compensate for wood shrinkage and building settlement that cause connections to loosen over time. The Cinch Nut uses a self-ratcheting action that permits movement or an internal "travel" perpetually in one direction along the length of a threaded rod. Cinch nuts are available for installation with threaded rods that are 3/8 inch through 1-1/2 inch diameter in 1/8 inch increments.

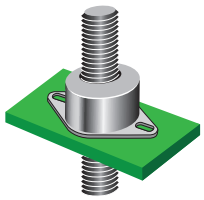
1. USP WS-Screws
2. Cinch Nut
3. Bearing Plate Washer
4. Z-Rod



- Place the specified Bearing Plate Washer onto the bottom plate of a wood framed wall.
- With the "wings" oriented downward, place Cinch Nut over the Z-Rod extending from below and push down until it seats firmly on the Bearing Plate Washer.
- Install 1/4 inch diameter USP WS-Series screws through the wings, penetrating 1-1/2 inches (minimum) into the wood bottom plate.
- Model numbers BPW5 and BPW6 fit in-between the screws fastening the wings.
- Model numbers BPW7 (3-1/4 x 4-3/8) and larger are provided with two screw holes. Align the wing and the Bearing Plate Washer screw holes to allow installation of 1/4 inch diameter WS-Series screws.



BPW5, BPW6 installation

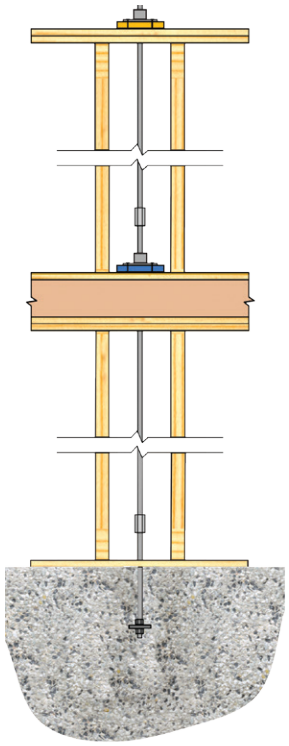


BPW7 and larger installation

INSTALLATION

Z4 Tie-Down System for Lateral Loads

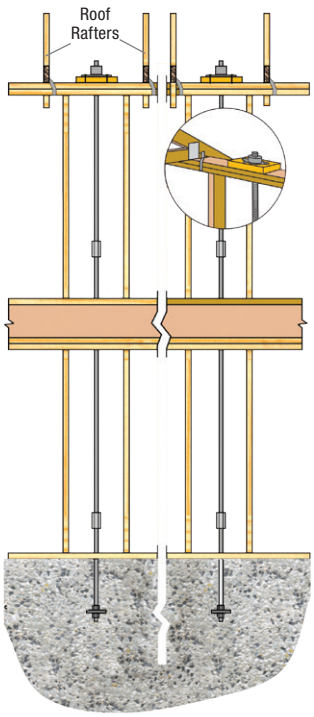
To resist tension loads due to overturning moments in multi-story buildings the CNX Cinch Nut is installed over a Bearing Plate Washer at each level in a fast and easy application. At the upper-most level a Cinch Nut is installed over a Bearing Plate Washer above the top plates. At walls below that bear on wood floor systems, the Cinch Nut and Bearing Plate Washer are installed over the bottom plate. Tension loads are gathered at each level and transferred into the foundation through a continuous system of Cinch Nuts, Bearing Plate Washers, Z-Rods/ATRs and Couplers all available from **MiTek® Builder Products.**



For Lateral Loads

Z4 Tie-Down System for Wind Uplift

For resisting roof uplift loads resulting from wind the Z4 Cinch Nut is installed over a Bearing Plate Washer above the top plates with roof framing above to create a tie-down system. Uplift forces are transferred into a continuous system of Z-Rods / ATRs and Couplers that form a load path to the foundation.



For Wind Ulift Loads

Let our reliability carry your load.

At MiTek, our knowledge and experience is integrated into every product we manufacture. Each product is engineered, tested, analyzed and retested to provide the most efficient design to safely support structural loads.

Our professional engineers, drafters and test lab technicians are united in creating innovative solutions to challenges, old and new. When you specify and use USP connectors, you can be confident you're getting products thoughtfully designed and rigorously tested to meet the latest code requirements.

USP engineers provide support to all involved in the building industry. To contact an engineer:

CA: 855-633-2725 Email: mbp-orders@mitek.ca

US: 800-328-5934 Email: uspcustomerservice.com

USP
STRUCTURAL CONNECTORS

CUSTOMER SERVICE:
Phone: 1-855-633-2725
Fax: 1-905-952-2903
Email: mbp-orders@mitek.ca
Websites: USPconnectors.com
MitekBuilderProducts.com

Made in North America. Designed to Last.

USP Structural Connectors are manufactured and distributed in 8 strategic locations in North America. We are proud of our quality products and the service we offer our valued customers.

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Alberta
c/o Landtran Logistics Inc.
4819 – 90A Avenue NW
Edmonton, AB T6B 2Y3

Québec
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Laval, QC H7P 6E3

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c/o Atlantic Open Joist
55 Maxime Drive
Dieppe, NB E1A 9B5

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Montgomery, MN 56069

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7890 W Lincoln Street
Phoenix, AZ 85353