# ICC-ES Evaluation Report

**ESR-3444**

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**DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES**
**Section: 06 05 23—Wood, Plastic, and Composite Fastenings**

**REPORT HOLDER:**

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**EVALUATION SUBJECT:**

**MITEK USP TOP MOUNT HANGERS**

## 1.0 EVALUATION SCOPE

**Compliance with the following codes:**

- 2018, 2015, 2012, 2009 and 2006 *International Building Code®* (IBC)
- 2018, 2015, 2012, 2009 and 2006 *International Residential Code®* (IRC)

For evaluation for compliance with the codes adopted by the Los Angeles Department of Building and Safety (LADBS) see ESR-3444 LABC and LARC Supplement.

**Property evaluated:**

Structural

## 2.0 USES

The MiTek USP Top Mount Hangers described in this report (see Table 26 for a complete listing) are structural connectors used for connecting wood framing members in accordance with Section 2304.10.3 of the IBC (Section 2304.9.3 of the 2012, 2009 and 2006 IBC). The connectors may also be used in structures regulated under the IRC when an engineered design is submitted to, and approved by, the code official, in accordance with Section R301.1.3 of the IRC.

## 3.0 DESCRIPTION

### 3.1 BPH Beam and Purlin Hanger:

The BPH beam and purlin hanger is designed to support beams and purlins consisting of structural composite lumber (SCL), such as laminated veneer lumber (LVL), laminated strand lumber (LSL), and parallel strand lumber (PSL). The BPH beam and purlin hanger is cold-formed from No. 12 gage steel and is prepunched for 16d common nails into the header, and either 10d common or 10d-by-$1^1/_2$-inch-long nails into the joist. See Table 1 and Figure 1 for product dimensions, fastener schedules, allowable loads, and a typical installation detail.

### 3.2 HBPH Beam and Purlin Hanger:

The HBPH beam and purlin hanger is designed to support SCL beams and purlins. The HBPH beam and purlin hanger is cold-formed from No. 10 gage steel and is prepunched for 16d common nails into the header, and 16d common nails into the joist. See Table 2 and Figure 2 for product dimensions, fastener schedules, allowable loads, and a typical installation detail.

### 3.3 HDO Top Mount Hanger:

The HDO Top Mount Hanger is designed to support dimension sawn lumber headers over door or window openings. The HDO Top Mount Hanger is cold-formed from No. 12 gage steel; and is prepunched for either 16d common, 10d common, or 10d-by-$1^1/_2$-inch-long nails. See Table 3 and Figure 3 for product dimensions, fastener schedule, allowable loads, and typical installation details.

### 3.4 HL Light Gage Purlin Hanger:

The HL Light Gage Purlin Hanger is designed as a top-mount-type hanger, flanged at right angles to permit direct face nailing to the joist and header. The HL Light Gage Purlin Hanger is cold-formed from No. 18 gage steel and is prepunched for 16d common nails into the header, and in the case of model HL214, 10d-by-$1^1/_2$-inch-long nails into the joist. See Table 4 and Figure 4 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

### 3.5 HLBH Beam Hanger:

The HLBH beam hangers are designed as top mount hangers for applications supporting SCL beams. The HLBH is fabricated from No. 7 gage hot-rolled steel plate. The U-shaped portion of the HLBH hanger is factory-welded to the angle-shaped supporting flange. The HLBH beam hangers are prepunched for 0.148-inch-diameter (3.76 mm), $3^1/_2$-inch-long (89 mm), hardened post-frame ring shank nails into the header, and either 16d common or 10d-by-$1^1/_2$-inch-long nails into the joist. See Table 5 and Figure 5 for product dimensions, fastener schedules, allowable loads, and a typical installation detail.

### 3.6 JH Joist Hanger:

The JH joist hanger is used to connect joists to the face of header members. The hanger is manufactured from No. 18 gage steel, and is prepunched for 10d common nails. See Table 6 and Figure 6 for product dimensions, header sizes, fastener schedule, allowable loads, and typical installation details.

### 3.7 JPF Purlin Hanger:

The JPF Purlin Hanger is designed to support nominally 2-by lumber. The connector is provided with constant width and different heights and consists of "U" shaped straps with bent top flanges. The purlin hanger is cold-formed from No. 20 gage steel and is prepunched for 10d common nails. The joist nails must be driven at an angle from 30 to 45 degrees horizontally

through the joist into the header such that the joist is toe-nailed to the header. See Table 7 and Figure 7 for product dimensions, fastener schedule, allowable loads, and typical installation details.

**3.8 KEG, KMEG and KLEG Glulam Beam Hangers:**

The KEG, KMEG and KLEG hangers are designed to connect glued-laminated beams together, using $^3/_4$- or 1-inch-diameter (19 or 25.4 mm) through bolts. The U-straps and the KLEG and KMEG top flanges are manufactured from minimum No. 7 gage hot-rolled steel plate. The KEG top flanges are manufactured from No. 3 gage hot-rolled steel plate. All U-straps are welded to the flange component utilizing factory welds. See Table 8 and Figure 8 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.9 KEGQ Glulam Girder Hanger:**

The KEGQ hangers are designed to connect glued-laminated beams together using WS screws. The U-straps of the hangers are manufactured from No. 7 gage hot-rolled steel plate. The top flanges of the hangers are manufactured from No. 3 gage hot-rolled steel plate. The U-strap is welded to the top flange component utilizing factory welds. See Table 9 and Figure 9 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.10 KF Panel Hanger:**

The KF Panel Hanger is designed to fasten joist ends to the supporting construction. The KF Panel Hanger is cold-formed from No. 18 gage steel and is prepunched for 10d common nails into the header and 10d-by-$1^1/_2$-inch-long nails into the joist. See Table 10 and Figure 10 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.11 KGLS, KGLST, KHGLS and KHGLST Glulam Saddle Hangers:**

The KGLS and KHGLS Glulam Saddle Hangers are designed to connect glued-laminated or sawn lumber beams to a supporting member. The KGLST and KHGLST Glulam Saddle Hangers are designed to connect glued-laminated beams to a girder, and to transfer wind and seismic forces in drag strut applications. The U-shaped saddles are fabricated from minimum No. 7 gage hot-rolled steel plate, and the top flanges are fabricated from No. 3 gage hot-rolled steel plate. The saddles are connected to the top flange component and the side straps are factory-welded to each of the saddles of the KGLST and KHGLST hangers. The KGLS, KGLST, KHGLS and KHGLST Glulam Saddle Hangers are prepunched for WS screws. Additionally, the side straps and top flange on the KGLST and KHGLST have holes for installing $^3/_4$-inch-diameter (19 mm) bolts. See Table 11 and Figure 11 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.12 KGLT and KHGLT Glulam Beam Hangers:**

The KGLT and KHGLT Glulam Beam Hangers are designed to connect glued-laminated or sawn lumber beams to a supporting member. The U-shaped saddle is fabricated from minimum No. 7 gage hot-rolled steel plate and the top flange is fabricated from No. 3 gage hot-rolled steel plate. The saddle is factory-welded to the top flange component. The KGLT and KHGLT Glulam Beam Hangers are prepunched for WS screws. See Table 12 and Figure 12 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.13 KHC Hinge Connector and KHCST / KHCSTR Seismic Straps:**

The KHC Hinge Connector is designed to support end-to-end connected glued-laminated beams having the same width and top elevation. The connectors consist of steel top and bottom plates factory-welded to steel side plates forming a rectangular assembly. The side plates of the connector have holes for installing the required bolts. The KHCST and KHCSTR Seismic Strap is used as an independent part to transfer axial tension induced by wind or seismic loading from one beam to the other, and is used in conjunction with the KHC to provide additional resistance to horizontal loads when installed in pairs. The KHC Hinge Connector side plates and KHCST / KHCSTR Seismic Strap are fabricated from minimum No. 7 or No. 3 gage hot-rolled steel plate. The KHC Hinge Connector top and bottom plates are manufactured from $^3/_4$-inch-(19 mm), 1-inch-(25 mm), $1^1/_4$-inch- (32 mm) or $1^1/_2$-inch-thick (38 mm) hot-rolled steel plate. The KHC Hinge Connector and KHCST / KHCSTR Seismic Strap are installed with $^3/_4$-inch-diameter (19 mm) bolts. See Table 13 and Figure 13 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.14 KLB, KB, KHHB, KGB, KHGB Top Mount Hangers:**

The KLB, KB, KHHB, KGB, and KHGB hangers are top-mount hangers designed to connect glued-laminated beams together. The KLB hangers are formed from No. 14 gage steel and are prepunched for 10d-by-$1^1/_2$ inch long and 16d common nails. The KB hangers are formed from No. 12 gage steel and are prepunched for 10d-by-$1^1/_2$-inch-long and NA20D nails. The KHHB, KGB, and KHGB hangers are formed from No. 7 gage steel and are prepunched for WS screws. See Table 14 and Figure 14 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.15 MSH Strap Hanger:**

The MSH strap hanger is designed to allow a field-adjustable top flange, face mount, or combination for supporting dimension sawn lumber joists or open web wood trusses. The MSH strap hanger is cold-formed from either No. 14 gage, No. 16 gage or No. 18 gage steel. The MSH strap hanger is prepunched for either 16d common or 10d common nails into the header, and either 16d common, 10d common or 10d-by-$1^1/_2$-inch-long nails into the joist. See Table 15 and Figure 15 for product dimensions, fastener schedules, allowable loads, and typical installation details.

**3.16 PHG Panel Hanger:**

The PHG Panel Hanger is designed to fasten joist ends to the supporting wood member. The side flanges of the hanger are turned inward toward the joist to embed into the joist during installation. The PHG Panel Hanger is cold-formed from No. 18 gage steel and is prepunched for 8d or 10d common nails. See Table 16 and Figure 16 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.17 PHM Top Flange Hanger:**

The PHM top flange hangers are designed to connect structural composite lumber (SCL) beams to dimension sawn lumber or SCL headers. The U-shaped portion of the PHM top flange hanger is cold-formed from No. 10 gage steel, and is factory-welded to the angle-shaped supporting flange, which is cold-formed from No. 7 gage steel. The hangers are prepunched for 16d common nails into the header, and either 10d common or 10d-by-$1^1/_2$-inch-long nails into the joist. See Table 17 and Figure 17 for product dimensions, fastener schedules, allowable loads, and typical installation details.

**3.18 PHXU Beam and Purlin Hangers:**

PHXU beam and purlin hangers are used for connecting sawn lumber or SCL joists, beams and purlins to sawn lumber or SCL headers. The hangers are manufactured from No. 7 gage steel. The hangers are prepunched for 16d common nails into the header, and either 10d common or 10d-by-$1^1/_2$-inch-long nails into the joist. See Table 18 and Figure 18 for nailing schedules, dimensions and allowable loads.

**3.19 SW, SWH and KHW Top Mount Hangers:**

The SW, SWH and KHW top mount hangers consist of “U” shaped straps welded to bent top flanges in a variety of widths and heights, and are used to connect joists to header members. The hangers are manufactured from Nos. 12, 10, 7 and 3 gage steel. The hangers are prepunched for either 10d, 16d or 20d-

by-2$^1/_2$-inch-long nails into the header, and either 10d common or 10d-by-1$^1/_2$-inch-long nails into the joist. See Table 19 and Figure 19 for nailing schedules, dimensions and allowable loads.

**3.20 TFI Top Mount Hanger:**

The TFI Top Mount Hanger is designed as a top-flange-mounted hanger to support solid sawn lumber joists. The TFI Top Mount Hanger is cold-formed from No.16 gage steel and is prepunched for 16d common nails into the header and 10d-by-1$^1/_2$-inch-long nails into the solid sawn lumber joists. See Table 20 and Figure 20 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.21 TFL Wood I-Joist Hanger:**

The TFL Wood I-Joist Hanger is designed to support prefabricated wood I-joists, and is cold-formed from No. 18 gage steel. The TFL Wood I-Joist Hanger is prepunched for either 10d or 16d common nails into the header, and 10d-by-1$^1/_2$-inch-long nails into the supported I-joist. See Table 21 and Figure 21 for product dimensions, fastener schedule and allowable loads.

**3.22 THO Top Mount Hanger:**

The THO Top Mount Hanger is designed to provide lateral top chord support of an I-joist header in I-joist-to-header applications. The THO Top Mount Hanger is cold-formed from either No. 18 gage, No. 16 gage, or No. 12 gage steel; and is prepunched for either 16d common or 10d common nails into the header, and either 10d common or 10d-by-1$^1/_2$-inch-long nails into the joist. See Table 22 and Figure 22 for product dimensions, fastener schedule, allowable loads, and a typical installation detail.

**3.23 FWH Top Mount Firewall Hanger:**

The FWH Top Mount Firewall Hanger is designed for attaching wood truss, wood I-joist, solid sawn lumber, or engineered wood lumber floor framing members to either minimum double 2-by-6 nominal wall top plates of wood frame walls or double 2-by solid sawn lumber headers, prior to installation of two layers of $^5/_8$-inch-thick (15.9 mm) gypsum wallboard. The maximum center-to-center spacing of the wall framing is 16 inches (406 mm). The FWH hanger is cold-formed from No. 14 gage steel and is prepunched for 10d common nails for attachment to the wall top plates or headers and 10d-by-1$^1/_2$ (38.1 mm) nails for attachment to floor framing members, respectively. See Tables 23 and 24, and Figures 23 and 24 for product dimensions, fastener schedule, allowable loads and typical installation details.

**3.24 Materials:**

**3.24.1 Steel:** The specific types of steel and corrosion protection for each product described in this report are shown in Table 25. Minimum steel base-steel thicknesses for the different gages are shown in the following table:

| GAGE NO. | MINIMUM BASE-STEEL THICKNESS (inch) |
|---|---|
| 20 | 0.033 |
| 18 | 0.044 |
| 16 | 0.055 |
| 14 | 0.070 |
| 12 | 0.099 |
| 10 | 0.129 |
| 7 | 0.171 |
| 3 | 0.240 |

**3.24.2 Wood:** Wood members with which the connectors are used must be dimension sawn lumber or structural glued laminated timber with a minimum specific gravity of 0.50, or approved structural engineered wood products (structural composite lumber or prefabricated wood I-joists) with a minimum equivalent specific gravity of 0.50, unless otherwise noted in the applicable table within this report. Wood members must have a moisture content not exceeding 19 percent in sawn lumber (16 percent in structural composite lumber), except as noted in Section 4.1. For connectors installed with nails or screws, the thickness of each wood member must be sufficient such that the specified fasteners do not protrude through the opposite side of the member, unless otherwise permitted in the applicable table within this report. For installations in structural composite lumber, minimum allowable nail or screw spacing and end distance, as specified in an applicable evaluation report for the structural composite lumber, must be met. Refer to Section 3.24.4 for issues related to treated wood.

**3.24.3 Fasteners:** Required fastener types and sizes for use with the connectors described in this report are specified in this section and in Tables 1 through 24.

**3.24.3.1 Bolts:** At a minimum, bolts must comply with ASTM A307 and must have a minimum bending yield strength of 45,000 lbf/in$^2$ (310 MPa). Bolt diameters must be as specified in the applicable tables of this report.

**3.24.3.2 MiTek Pro Series Wood Screws:** The wood screws used for connectors described in this report are MiTek Pro Series wood screws. The screws are heat-treated cold-formed screws with rolled threads, spaced 10 threads per inch. Refer to ESR-2761 for required MiTek Pro Series wood screw dimensions and mechanical properties.

**3.24.3.3 Nails:** Nails used for connectors described in this report must be bright or hot-dipped galvanized carbon steel nails complying with material requirements, physical properties, tolerances, workmanship, protective coating and finishes, and packaging and package marking requirements specified in ASTM F1667, and must have lengths, diameters and bending yield strengths as shown in the following table:

| FASTENER DESIGNATION | FASTENER LENGTH (inches) | SHANK DIAMETER (inch) | MINIMUM REQUIRED $F_{yb}$ (psi) |
|---|---|---|---|
| 8d common | 2.5 | 0.131 | 100,000 |
| 10d common | 3.0 | 0.148 | 90,000 |
| 10d-by-1$^1/_2$ | 1.5 | 0.148 | 90,000 |
| 16d common | 3.5 | 0.162 | 90,000 |
| 3$^1/_2$″ P-F nail [1] | 3.5 | 0.148 | 115,000 |
| 20d x 2$^1/_2$ | 2.5 | 0.192 | 80,000 |
| NA20D | 2.5 | 0.192 | 80,000 |
| $^3/_4$″ dia. bolt | Varies | 0.750 | 45,000 |
| 1″ dia. bolt | Varies | 1.00 | 45,000 |

For **SI:** 1 inch = 25.4 mm, 1 psi = 6.895 kPa.

[1]The 3$^1/_2$" P-F nail is a hardened post-frame ring shank nail complying with ASTM F1667.

Alternatively, nails of other materials or finishes may be used when they are recognized in an ICC-ES evaluation report as having bending yield strength and withdrawal capacity equal to or better than those of a bright carbon steel of the same nominal diameter.

**3.24.4 Use in Treated Wood:** Connectors and fasteners used in contact with preservative-treated or fire-retardant-treated wood must comply with Section 2304.10.5 of the IBC (Section 2304.9.5 of the 2012, 2009 and 2006 IBC) or Section R317.3 of the IRC (Section R319.3 of the 2006 IRC), as applicable. The lumber treater or the holder of this report (MiTek), or both, should be contacted for recommendations on the appropriate level of corrosion resistance to specify for the connectors, as

well as the connection capacities of the fasteners used with the specific proprietary preservative-treated or fire-retardant-treated lumber. Fasteners used in contact with preservative-treated or fire-retardant-treated wood must be hot-dipped galvanized carbon steel nails. Alternatively, nails of other materials and finishes may be used when they are recognized in an ICC-ES evaluation report for use in the applicable treated lumber and have equivalent or greater capacities as those required in this report.

## 4.0 DESIGN AND INSTALLATION

### 4.1 Design:

The allowable loads in Tables 1 through 24 are based on allowable stress design. The use of the allowable load values for the products listed in Table 26 must comply with all applicable requirements and conditions specified in this report. Tabulated allowable loads are for normal load duration and short load duration, based on load duration factors, $C_D$, in accordance with Section 11.3.2 of the 2018 and 2015 *National Design Specification*® (NDS) *for Wood Construction* (Section 10.3.2 of the 2012 and 2005 NDS for the 2012, 2009 and 2006 IBC and IRC), as indicated in Tables 1 through 24 of this report. No further increases are permitted for load durations other than those specified. Tabulated allowable loads are for connections in wood seasoned to a maximum moisture content of 19 percent (16 percent for SCL) or less, used under continuously dry conditions and where sustained temperatures are limited to 100°F (37.8°C) or less. When connectors are installed in wood having a moisture content greater than 19 percent (16 percent for SCL), or where the in-service moisture content is expected to exceed this value, the applicable wet service factor, $C_M$, must be applied. Unless otherwise noted in the tables of this report, the applicable wet service factor, $C_M$, is as specified in the NDS for lateral loading of dowel-type fasteners. When connectors are installed in wood that will experience sustained exposure to temperatures exceeding 100°F (37.8°C), the allowable loads in this evaluation report must be adjusted by the temperature factor, $C_t$, specified in Section 11.3.4 of the NDS (Section 10.3.4 of the 2012 and 2005 NDS). Group action factor, $C_g$, has been accounted for, in accordance with Section 10.3.6 of the NDS, in the tabulated allowable loads, where applicable. For connectors installed with bolts, minimum edge distances and end distances within the wood members must be met, such that the geometry factor, $C_\Delta$, is 1.0, in accordance with Section 12.5.1 of the NDS (Section 11.5.1 of the 2012 and 2005 NDS). Connected wood members must be checked for load-carrying capacity at the connection in accordance with Section 11.1.2 of the NDS (Section 10.1.2 of the 2012 and 2005 NDS).

### 4.2 Installation:

Installation of the connectors must be in accordance with this evaluation report and the manufacturer's published installation instructions. Bolts must be installed in accordance with Section 12.1 of the NDS (Section 11.1 of the 2012 and 2005 NDS).

**Special Inspection:**

**4.2.1 Main Wind-force-resisting Systems under the IBC:** Periodic special inspection must be conducted for components within the main wind-force-resisting system, where required in accordance with Sections 1704.2 and 1705.12 of the 2018 and 2015 IBC, Sections 1704.2 and 1705.10 of the 2012 IBC, Sections 1704 and 1706 of the 2009 IBC, and Section 1704 of the 2006 IBC, as applicable.

**4.2.2 Seismic-force-resisting Systems under the IBC:** Periodic special inspection must be conducted for components within the seismic-force-resisting system, where required in accordance with Sections 1704.2 and 1705.12 of the 2018 and 2015 IBC, Sections 1704.2 and 1705.11 of the 2012 IBC, and Sections 1704 and 1707 of the 2009 and 2006 IBC, as applicable.

**4.2.3 Installations under the IRC:** Special inspections are normally not required for connectors used in structures regulated under the IRC. However, for components and systems requiring an engineered design in accordance with IRC Section R301, periodic special inspection requirements and exemptions must be in accordance with Sections 4.3.1 and 4.3.2 of this report.

## 5.0 CONDITIONS OF USE

The MiTek USP Top Mount Hangers described in this report comply with, or are suitable alternatives to what is specified in, those codes listed in Section 1.0 of this report, subject to the following conditions:

**5.1** The connectors are manufactured, identified and installed in accordance with this report and the manufacturer's published installation instructions. A copy of the manufacturer's published installation instructions must be available at the jobsite at all times during installation. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

**5.2** Calculations showing compliance with this report must be submitted to the code official. The calculations must be prepared by a registered design professional where required by the statutes of the jurisdiction in which the project is to be constructed.

**5.3** Connected wood members and fasteners must comply with Sections 3.24.2 and 3.24.3, respectively.

**5.4** Adjustment factors noted in Section 4.1 of this report and the applicable codes must be considered, where applicable.

**5.5** Use of connectors and fasteners with preservative-treated or fire-retardant-treated lumber must be in accordance with Section 3.24.4.

**5.6** Connectors with factory welds are identified in Table 26 as being manufactured at the designated facilities under a quality-control program with inspections by ICC-ES.

## 6.0 EVIDENCE SUBMITTED

Data in accordance with of the ICC-ES Acceptance Criteria for Joist Hangers and Similar Devices (AC13), dated October 2018.

## 7.0 IDENTIFICATION

Each connector described in this report is identified by the product model (stock) number, the number of the ICC-ES index evaluation report for MiTek (ESR-2685), and by one or more of the following designations: MiTek, USP Structural Connectors, or USP.

**TABLE 1—BPH BEAM AND PURLIN HANGER ALLOWABLE LOADS[1,2,3,5]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (in.) | | | | FASTENER SCHEDULE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Header | | | Joist | |
| | | W | H | D[4] | TF[4] | Top Qty. | Face Qty. | Type | Qty. | Type |
| BPH15925 - BPH1514 | 12 | $1^{9}/_{16}$ | $9^{1}/_{4}$ - 14 | $2^{3}/_{8}$ | $1^{1}/_{2}$ | 4 | 6 | 16d Com. | 4 | 10d x $1^{1}/_{2}$ |
| BPH17925 - BPH1716 | 12 | $1^{13}/_{16}$ | $9^{1}/_{4}$ - 16 | $2^{3}/_{8}$ | $1^{11}/_{16}$ | 4 | 6 | 16d Com. | 4 | 10d x $1^{1}/_{2}$ |
| BPH27925 | 12 | $2^{3}/_{4}$ | $9^{1}/_{4}$ | $2^{3}/_{8}$ | $2^{7}/_{16}$ | 4 | 6 | 16d Com. | 4 | 10d x $1^{1}/_{2}$ |
| BPH2795 | 12 | $2^{3}/_{4}$ | $9^{1}/_{2}$ | $2^{3}/_{8}$ | $2^{1}/_{8}$ | 4 | 6 | 16d Com. | 4 | 10d x $1^{1}/_{2}$ |
| BPH27112 – BPH2716 | 12 | $2^{3}/_{4}$ | $11^{1}/_{4}$ - 16 | $2^{3}/_{8}$ | $2^{1}/_{2}$ | 4 | 6 | 16d Com. | 4 | 10d x $1^{1}/_{2}$ |
| BPH31925 - BPH3114 | 12 | $3^{1}/_{8}$ | $9^{1}/_{4}$ - 14 | 3 | $2^{3}/_{32}$ | 4 | 6 | 16d Com. | 4 | 10d Com. |
| BPH35925 - BPH35118 | 12 | $3^{9}/_{16}$ | $9^{1}/_{4}$ - $11^{7}/_{8}$ | $2^{3}/_{8}$ | $2^{3}/_{8}$ | 4 | 6 | 16d Com. | 4 | 10d Com. |
| BPH3512 - BPH3532 | 12 | $3^{9}/_{16}$ | 12 - 32 | $2^{3}/_{4}$ | $2^{1}/_{32}$ | 4 | 6 | 16d Com. | 6 | 10d Com. |
| BPH52925 | 12 | $5^{3}/_{8}$ | $9^{1}/_{4}$ | $2^{3}/_{8}$ | $2^{7}/_{16}$ | 4 | 6 | 16d Com. | 4 | 10d Com. |
| BPH5295 - BPH5218 | 12 | $5^{3}/_{8}$ | $9^{1}/_{2}$ - 18 | 3 | 2 | 4 | 6 | 16d Com. | 6 | 10d Com. |
| BPH5595 | 12 | $5^{9}/_{16}$ | $9^{1}/_{2}$ | 3 | $2^{5}/_{32}$ | 4 | 6 | 16d Com. | 4 | 10d Com. |
| BPH55118 - BPH5518 | 12 | $5^{9}/_{16}$ | $11^{7}/_{8}$ - 18 | $2^{1}/_{2}$ | $2^{1}/_{32}$ | 4 | 6 | 16d Com. | 6 | 10d Com. |
| BPH71925 - BPH7195 | 12 | $7^{1}/_{8}$ | $9^{1}/_{4}$ - $9^{1}/_{2}$ | 3 | $2^{3}/_{8}$ | 4 | 6 | 16d Com. | 6 | 10d Com. |
| BPH7110 | 12 | $7^{1}/_{8}$ | 10 | $2^{1}/_{2}$ | $2^{1}/_{2}$ | 4 | 6 | 16d Com. | 6 | 10d Com. |
| BPH71112 - BPH7124 | 12 | $7^{1}/_{8}$ | $11^{1}/_{4}$ - 24 | 3 | $2^{3}/_{16}$ | 4 | 6 | 16d Com. | 6 | 10d Com. |

| STOCK NO. | ALLOWABLE LOADS (lbs.) | | | | | | |
|---|---|---|---|---|---|---|---|
| | DF-L; $F_{c\text{-}perp}$ = 625 psi | | | LVL; $F_{c\text{-}perp}$ = 750 psi | | | Uplift |
| | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.6 |
| BPH15925 - BPH1514 | 2,825 | 2,830 | 2,830 | 2,830 | 2,830 | 2,830 | 850 |
| BPH17925 - BPH1716 | 2,970 | 2,970 | 2,970 | 2,970 | 2,970 | 2,970 | 850 |
| BPH27925 | 3,105 | 3,105 | 3,105 | 3,105 | 3,105 | 3,105 | 850 |
| BPH2795 | 3,065 | 3,065 | 3,065 | 3,065 | 3,065 | 3,065 | 850 |
| BPH27112 – BPH2716 | 3,105 | 3,105 | 3,105 | 3,105 | 3,105 | 3,105 | 850 |
| BPH31925 - BPH3114 | 3,055 | 3,055 | 3,055 | 3,055 | 3,055 | 3,055 | 850 |
| BPH35925 - BPH35118 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 850 |
| BPH3512 - BPH3532 | 3,050 | 3,050 | 3,050 | 3,050 | 3,050 | 3,050 | 1,140 |
| BPH52925 | 3,105 | 3,105 | 3,105 | 3,105 | 3,105 | 3,105 | 850 |
| BPH5295 - BPH5218 | 3,050 | 3,050 | 3,050 | 3,050 | 3,050 | 3,050 | 1,275 |
| BPH5595 | 3,065 | 3,065 | 3,065 | 3,065 | 3,065 | 3,065 | 850 |
| BPH55118 - BPH5518 | 3,050 | 3,050 | 3,050 | 3,050 | 3,050 | 3,050 | 1,275 |
| BPH71925 - BPH7195 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 3,100 | 1,275 |
| BPH7110 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 3,250 | 1,275 |
| BPH71112 - BPH7124 | 3,075 | 3,075 | 3,075 | 3,075 | 3,075 | 3,075 | 1,275 |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of either 625 psi (4.31 MPa), or 750 psi (5.17 MPa), as specified in the table above.
[4]The *D* and *TF* dimensions listed are the minimum values for hangers within the ranges of stock numbers shown.
[5]BPH Series hangers provide torsional resistance, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm). The height, H, of the joist hanger must be equal to the height of the joist to ensure proper attachment of the sheathing to the joist and supporting member.

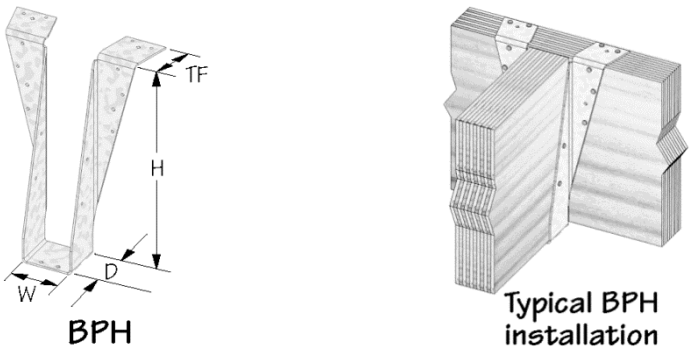



**FIGURE 1—BPH BEAM AND PURLIN HANGER**

**TABLE 2—HBPH BEAM AND PURLIN HANGER ALLOWABLE LOADS[1,2,3,4,5]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (IN) | | | | FASTENER SCHEDULE | | | | | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Header | | | Joist | | $F_{C\perp}$ = 625 psi | | | Uplift |
| | | W | H | D | TF | Top | Face | Type | Qty | Type | 100% | 115% | 125% | 160% |
| HBPH35925 | 10 | 3 9/16 | 9 1/4 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3595 | 10 | 3 9/16 | 9 1/2 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH35112 | 10 | 3 9/16 | 11 1/4 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH35118 | 10 | 3 9/16 | 11 7/8 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3512 | 10 | 3 9/16 | 12 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3514 | 10 | 3 9/16 | 14 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3516 | 10 | 3 9/16 | 16 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3518 | 10 | 3 9/16 | 18 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3520 | 10 | 3 9/16 | 20 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3522 | 10 | 3 9/16 | 22 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3524 | 10 | 3 9/16 | 24 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3526 | 10 | 3 9/16 | 26 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3528 | 10 | 3 9/16 | 28 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH3530 | 10 | 3 9/16 | 30 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,310 | 6,310 | 6,310 | 2,705 |
| HBPH5116 | 10 | 5 1/8 | 16 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5118 | 10 | 5 1/8 | 18 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5120 | 10 | 5 1/8 | 20 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5122 | 10 | 5 1/8 | 22 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5124 | 10 | 5 1/8 | 24 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5126 | 10 | 5 1/8 | 26 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5128 | 10 | 5 1/8 | 28 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5130 | 10 | 5 1/8 | 30 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH55725 | 10 | 5 1/2 | 7 1/4 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH55925 | 10 | 5 1/2 | 9 1/4 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5595 | 10 | 5 1/2 | 9 1/2 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH55112 | 10 | 5 1/2 | 11 1/4 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH55118 | 10 | 5 1/2 | 11 7/8 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5512 | 10 | 5 1/2 | 12 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5514 | 10 | 5 1/2 | 14 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5516 | 10 | 5 1/2 | 16 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5518 | 10 | 5 1/2 | 18 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH5520 | 10 | 5 1/2 | 20 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH71925 | 10 | 7 1/8 | 9 1/4 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7195 | 10 | 7 1/8 | 9 1/2 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH71112 | 10 | 7 1/8 | 11 1/4 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH71118 | 10 | 7 1/8 | 11 7/8 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7114 | 10 | 7 1/8 | 14 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7116 | 10 | 7 1/8 | 16 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7118 | 10 | 7 1/8 | 18 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7120 | 10 | 7 1/8 | 20 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7122 | 10 | 7 1/8 | 22 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7124 | 10 | 7 1/8 | 24 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7126 | 10 | 7 1/8 | 26 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |
| HBPH7128 | 10 | 7 1/8 | 28 | 3 1/2 | 3 | 6 | 16 | 16d Com. | 10 | 16d Com. | 6,185 | 6,185 | 6,185 | 2,705 |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp.}$, of 625 psi (4.31 MPa), as specified in the table above.
[4]The *D* and *TF* dimensions listed are the minimum values for hangers within the ranges of stock numbers shown.
[5]HBPH Series hangers provide torsional resistance, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm). The height, H, of the joist hanger must be equal to the height of the joist to ensure proper attachment of the sheathing to the joist and supporting member.

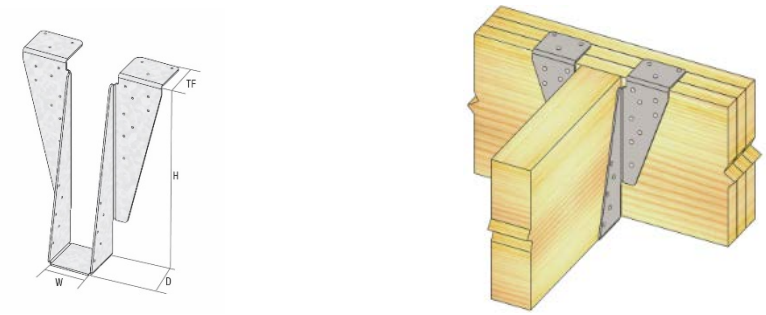



**FIGURE 2—HBPH BEAM AND PURLIN HANGER AND TYPICAL INSTALLATION DETAIL**

**TABLE 3—HDO TOP MOUNT HANGER ALLOWABLE LOADS[1,2,3,4,5]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (inches) | | | | | FASTENER SCHEDULE | | | | | ALLOWABLE LOADS (lbs.) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Header | | | Joist | | $F_{C\text{-}PERP}$ = 460 psi | | | $F_{C\text{-}PERP}$ = 625 psi | | | Uplift |
| | | W | H | D | A | T.F. | Top | Face | Type | Qty | Type | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.6 |
| HDO24 | 12 | 1 9/16 | 3 7/16 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 2 | 16d Common | 2 | 10dx1 1/2 | 1,850 | 1,885 | 1,905 | 2,405 | 2,440 | 2,460 | 330 |
| HDO26 | 12 | 1 9/16 | 5 3/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 6 | 16d Common | 4 | 10dx1 1/2 | 2,150 | 2,215 | 2,260 | 2,705 | 2,770 | 2,815 | 825 |
| HDO28 | 12 | 1 9/16 | 7 1/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 6 | 16d Common | 4 | 10dx1 1/2 | 2,150 | 2,215 | 2,260 | 2,705 | 2,770 | 2,815 | 825 |
| HDO210 | 12 | 1 9/16 | 9 1/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 8 | 16d Common | 4 | 10dx1 1/2 | 2,150 | 2,215 | 2,260 | 2,705 | 2,770 | 2,815 | 825 |
| HDO212 | 12 | 1 9/16 | 11 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 10 | 16d Common | 6 | 10dx1 1/2 | 2,445 | 2,545 | 2,610 | 3,005 | 3,105 | 3,165 | 1,190 |
| HDO214 | 12 | 1 9/16 | 13 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 12 | 16d Common | 6 | 10dx1 1/2 | 2,445 | 2,545 | 2,610 | 3,005 | 3,105 | 3,140 | 1,190 |
| HDO216 | 12 | 1 9/16 | 15 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 14 | 16d Common | 8 | 10dx1 1/2 | 2,745 | 2,875 | 2,965 | 3,300 | 3,435 | 3,520 | 1,700 |
| HDO34 | 12 | 2 9/16 | 3 7/16 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 4 | 16d Common | 2 | 10dx1 1/2 | 2,965 | 2,965 | 2,965 | 2,965 | 2,965 | 2,965 | 330 |
| HDO36 | 12 | 2 9/16 | 5 3/8 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 6 | 16d Common | 4 | 10dx1 1/2 | 3,455 | 3,535 | 3,580 | 4,125 | 4,320 | 4,450 | 825 |
| HDO38 | 12 | 2 9/16 | 7 1/8 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 8 | 16d Common | 4 | 10dx1 1/2 | 3,470 | 3,535 | 3,580 | 4,465 | 4,570 | 4,575 | 825 |
| HDO310 | 12 | 2 9/16 | 9 1/8 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 10 | 16d Common | 6 | 10dx1 1/2 | 3,770 | 3,870 | 3,935 | 4,575 | 4,575 | 4,575 | 1,065 |
| HDO312 | 12 | 2 9/16 | 11 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 12 | 16d Common | 6 | 10dx1 1/2 | 3,770 | 3,870 | 3,935 | 4,800 | 4,900 | 4,965 | 1,115 |
| HDO314 | 12 | 2 9/16 | 13 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 14 | 16d Common | 8 | 10dx1 1/2 | 4,065 | 4,200 | 4,285 | 5,100 | 5,230 | 5,315 | 1,115 |
| HDO316 | 12 | 2 9/16 | 15 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 16 | 16d Common | 8 | 10dx1 1/2 | 4,065 | 4,200 | 4,285 | 5,100 | 5,230 | 5,315 | 1,700 |
| HDO24-2 | 12 | 3 1/8 | 3 7/16 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 4 | 16d Common | 2 | 10d Common | 2,965 | 2,965 | 2,965 | 2,965 | 2,965 | 2,965 | 400 |
| HDO26-2 | 12 | 3 1/8 | 5 3/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 6 | 16d Common | 4 | 10d Common | 3,455 | 3,650 | 3,780 | 4,125 | 4,320 | 4,450 | 825 |
| HDO28-2 | 12 | 3 1/8 | 7 1/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 8 | 16d Common | 4 | 10d Common | 3,700 | 3,765 | 3,810 | 4,465 | 4,575 | 4,575 | 825 |
| HDO210-2 | 12 | 3 1/8 | 9 1/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 10 | 16d Common | 6 | 10d Common | 4,000 | 4,100 | 4,165 | 4,575 | 4,575 | 4,575 | 1,275 |
| HDO212-2 | 12 | 3 1/8 | 11 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 12 | 16d Common | 6 | 10d Common | 4,345 | 4,445 | 4,510 | 5,155 | 5,465 | 5,675 | 1,275 |
| HDO214-2 | 12 | 3 1/8 | 13 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 14 | 16d Common | 8 | 10d Common | 4,640 | 4,775 | 4,860 | 5,500 | 5,845 | 6,080 | 1,510 |
| HDO216-2 | 12 | 3 1/8 | 15 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 16 | 16d Common | 8 | 10d Common | 4,640 | 4,775 | 4,860 | 5,845 | 6,010 | 6,100 | 1,700 |
| HDO44 | 12 | 3 9/16 | 3 7/16 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 4 | 16d Common | 2 | 10d Common | 2,965 | 2,965 | 2,965 | 2,965 | 2,965 | 2,965 | 400 |
| HDO46 | 12 | 3 9/16 | 5 3/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 6 | 16d Common | 4 | 10d Common | 3,455 | 3,650 | 3,780 | 4,125 | 4,320 | 4,450 | 825 |
| HDO48 | 12 | 3 9/16 | 7 1/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 8 | 16d Common | 4 | 10d Common | 3,795 | 4,030 | 4,190 | 4,465 | 4,575 | 4,575 | 825 |
| HDO410 | 12 | 3 9/16 | 9 1/8 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 10 | 16d Common | 6 | 10d Common | 4,140 | 4,415 | 4,595 | 4,785 | 4,785 | 4,785 | 1,275 |
| HDO412 | 12 | 3 9/16 | 11 | 2 1/4 | 1 1/4 | 2 1/2 | 4 | 12 | 16d Common | 6 | 10d Common | 4,485 | 4,615 | 4,680 | 5,155 | 5,465 | 5,675 | 1,275 |
| HDO414 | 12 | 3 9/16 | 13 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 14 | 16d Common | 8 | 10d Common | 4,830 | 5,175 | 5,410 | 5,500 | 5,845 | 6,080 | 1,510 |
| HDO416 | 12 | 3 9/16 | 15 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 16 | 16d Common | 8 | 10d Common | 5,175 | 5,350 | 5,435 | 5,845 | 6,230 | 6,460 | 1,700 |
| HDO210-3 | 12 | 4 11/16 | 9 1/8 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 10 | 16d Common | 6 | 16d Common | 4,140 | 4,415 | 4,565 | 4,575 | 4,575 | 4,575 | 1,450 |
| HDO212-3 | 12 | 4 11/16 | 11 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 12 | 16d Common | 6 | 16d Common | 4,485 | 4,795 | 5,005 | 5,155 | 5,465 | 5,675 | 1,490 |
| HDO214-3 | 12 | 4 11/16 | 13 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 14 | 16d Common | 8 | 16d Common | 4,830 | 5,175 | 5,410 | 5,500 | 5,845 | 6,080 | 1,985 |
| HDO216-3 | 12 | 4 11/16 | 15 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 16 | 16d Common | 8 | 16d Common | 5,175 | 5,560 | 5,820 | 5,845 | 6,230 | 6,460 | 1,985 |
| HDO66 | 12 | 5 1/2 | 5 3/8 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 6 | 16d Common | 4 | 16d Common | 3,455 | 3,650 | 3,780 | 4,125 | 4,320 | 4,450 | 990 |
| HDO68 | 12 | 5 1/2 | 7 1/8 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 8 | 16d Common | 4 | 16d Common | 3,795 | 4,030 | 4,190 | 4,465 | 4,575 | 4,575 | 990 |
| HDO610 | 12 | 5 1/2 | 9 1/8 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 10 | 16d Common | 6 | 16d Common | 4,140 | 4,415 | 4,565 | 4,575 | 4,575 | 4,575 | 1,450 |
| HDO612 | 12 | 5 1/2 | 11 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 12 | 16d Common | 6 | 16d Common | 4,485 | 4,795 | 5,005 | 5,155 | 5,465 | 5,675 | 1,365 |
| HDO614 | 12 | 5 1/2 | 13 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 14 | 16d Common | 8 | 16d Common | 4,830 | 5,175 | 5,410 | 5,500 | 5,845 | 6,080 | 1,510 |
| HDO616 | 12 | 5 1/2 | 15 | 2 1/2 | 1 1/4 | 2 1/2 | 4 | 16 | 16d Common | 8 | 16d Common | 5,175 | 5,560 | 5,820 | 5,845 | 6,230 | 6,460 | 1,830 |

For **SI:** 1 inch = 25.4mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See sections 4.1 and 4.2 for additional design and installation requirements.
[2]See section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of either 460 psi (3.17 MPa), or 625 psi (4.31 MPa), as specified in the table above.
[4]HDO hangers provide torsional resistance up to a maximum joist depth of H + 1 inch (H + 25.4 mm), where torsional resistance is defined as a moment not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm).
[5]HDOIF inverted flange hangers are available in widths of 3.125 inches (79.4 mm) or greater at the same design loads as corresponding HDO models.

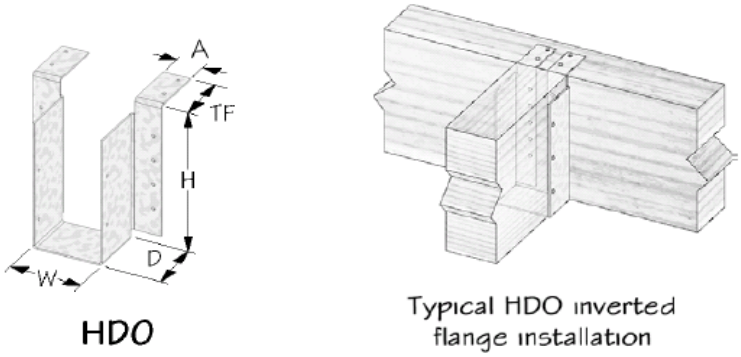



**FIGURE 3—HDO TOP MOUNT HANGER**

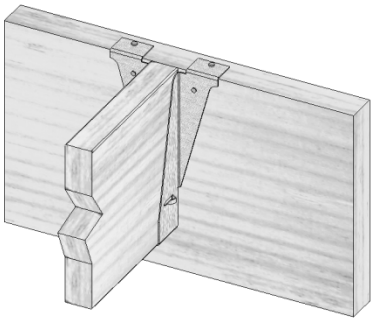
**TABLE 4—HL LIGHT GAGE PURLIN HANGER ALLOWABLE LOADS[1,2,3]**

| STOCK NO. | STEEL GA. | DIMENSIONS (inches) | | | | FASTENER SCHEDULE | | | | ALLOWABLE DOWNWARD LOAD (lbs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Header | | Joist | | | | |
| | | W | H | D | TF | Qty | Type | Qty | Type | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 |
| HL26 | 18 | $1^9/_{16}$ | $5^3/_8$ | $1^1/_2$ | $1^5/_{16}$ | 6 | 16d Common | ---- | ---- | 1,255 | 1,255 | 1,255 |
| HL28 | 18 | $1^9/_{16}$ | $7^5/_{16}$ | $1^3/_4$ | $1^5/_{16}$ | 6 | 16d Common | ---- | ---- | 1,490 | 1,490 | 1,490 |
| HL210 | 18 | $1^9/_{16}$ | $9^5/_{16}$ | 2 | $1^5/_{16}$ | 6 | 16d Common | ---- | ---- | 1,490 | 1,490 | 1,490 |
| HL212 | 18 | $1^9/_{16}$ | $11^1/_4$ | $2^1/_8$ | $1^5/_{16}$ | 6 | 16d Common | ---- | ---- | 1,490 | 1,490 | 1,490 |
| HL214 | 18 | $1^9/_{16}$ | $13^1/_8$ | 2 | $2^1/_2$ | 8 | 16d Common | 2 | 10d x $1^1/_2$ | 1,490 | 1,490 | 1,490 |

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

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp,}$ of 625 psi (4.31 MPa) or greater.


HL



Typical HL Installation

**FIGURE 4—HL LIGHT GAGE PURLIN HANGER**

**TABLE 5—HLBH BEAM HANGER ALLOWABLE LOADS[1,2,3,5]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (inches) | | | | | FASTENER SCHEDULE | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Header | | | Joist | |
| | | W | H | D | L | TF | Top Qty. | Face Qty. | Type [4] | Qty. | Type |
| **Installations in Parallel Strand Lumber (PSL)** | | | | | | | | | | | |
| HLBH-27xxx | 7 | $2^3/_4$ | $9^1/_4$ - 30 | 6 | 12 | $2^3/_4$ | 3 | 12 | $3^1/_2$" P-F nail | 6 | 10d x $1^1/_2$ |
| HLBH-35xxx | 7 | $3^5/_8$ | $9^1/_4$ - 30 | 6 | 12 | $3^1/_8$ | 3 | 12 | $3^1/_2$" P-F nail | 6 | 16d Common |
| HLBH-52xxx | 7 | $5^3/_8$ | $9^1/_4$ - 30 | 6 | 12 | $3^1/_8$ | 3 | 12 | $3^1/_2$" P-F nail | 6 | 16d Common |
| HLBH-71xxx | 7 | $7^1/_8$ | $9^1/_4$ - 32 | 6 | 12 | $3^1/_8$ | 3 | 12 | $3^1/_2$" P-F nail | 6 | 16d Common |
| **Installations in Laminated Veneer Lumber (LVL)** | | | | | | | | | | | |
| HLBH-35xxx | 7 | $3^5/_8$ | $9^1/_4$ - 30 | 6 | 12 | $3^1/_8$ | 3 | 12 | $3^1/_2$" P-F nail | 6 | 16d Common |
| HLBH-52xxx | 7 | $5^3/_8$ | $9^1/_4$ - 30 | 6 | 12 | $3^1/_8$ | 3 | 12 | $3^1/_2$" P-F nail | 6 | 16d Common |
| HLBH-55xxx | 7 | $5^9/_{16}$ | $9^1/_4$ - 30 | 6 | 12 | $3^1/_8$ | 3 | 12 | $3^1/_2$" P-F nail | 6 | 16d Common |
| HLBH-71xxx | 7 | $7^1/_8$ | $9^1/_4$ - 30 | 6 | 12 | $3^1/_8$ | 3 | 12 | $3^1/_2$" P-F nail | 6 | 16d Common |

| STOCK NO. | ALLOWABLE LOADS (lbs) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | $F_{c\text{-}perp}$ = 460 psi | | | $F_{c\text{-}perp}$ = 560 psi | | | $F_{c\text{-}perp}$ = 625 psi | | | Uplift |
| | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.6 |
| **Installations in Parallel Strand Lumber (PSL)** | | | | | | | | | | |
| HLBH-27xxx | 8,420 | 8,715 | 8,815 | 9,770 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 1,115 |
| HLBH-35xxx | 9,500 | 9,820 | 10,040 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 1,420 |
| HLBH-52xxx | 9,500 | 9,820 | 10,040 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 1,580 |
| HLBH-71xxx | 9,500 | 9,820 | 10,040 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 1,580 |
| **Installations in Laminated Veneer Lumber (LVL)** | | | | | | | | | | |
| HLBH-35xxx | 9,500 | 9,820 | 10,040 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 1,420 |
| HLBH-52xxx | 9,500 | 9,820 | 10,040 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 1,580 |
| HLBH-55xxx | 9,500 | 9,820 | 10,040 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 1,580 |
| HLBH-71xxx | 9,500 | 9,820 | 10,040 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 10,045 | 1,580 |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.2423.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of either 460 psi (3.17 MPa), 560 psi (3.86 MPa), or 625 psi (4.31 MPa), as specified in the table above.
[4]Requires the use of $3^1/_2$-inch-long (88.9 mm) hardened post-frame ring shank nails complying with ASTM F1667 into the header.
[5]HLBH Series hangers provide torsional resistance, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm). The height, H, of the joist hanger must be equal to the height of the joist to ensure proper attachment of the sheathing to the joist and supporting member.

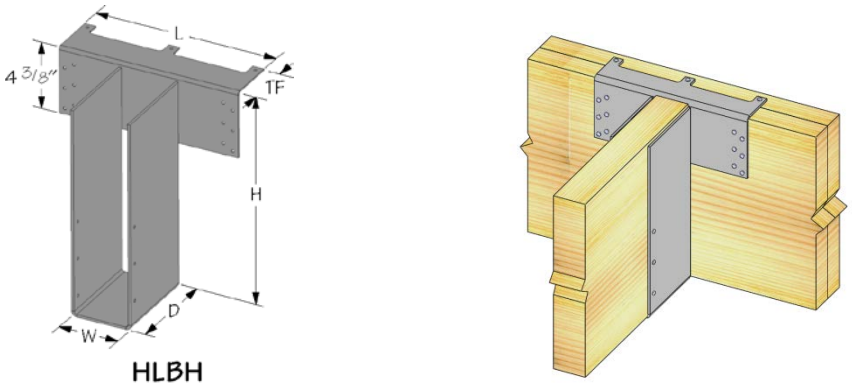



**FIGURE 5—HLBH BEAM HANGERS**

**TABLE 6—JH JOIST HANGER ALLOWABLE LOADS[5]**

| STOCK NUMBER | STEEL GAGE | DIMENSIONS (inches) | | | | | HEADER SIZE | FASTENER SCHEDULE | | | | | | ALLOWABLE LOADS (lbs.)[1,3] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Header | | | | Joist | | Download | | | Uplift |
| | | | | | | | | Top | | Face | | | | | | | |
| | | W | H | D | B | TF | | Qty | Type[2] | Qty | Type[2] | Qty | Type[2,4] | $C_D$ = 1.00 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.60 |
| JH20 | 18 | $1^9/_{16}$ | $10^1/_{16}$ | $2^1/_4$ | $5^1/_8$ | $1^3/_{16}$ | 2 x 6 | 2 | 10d common | 4 | 10d common | 6 | 10d common | 1,910 | 2,070 | 2,175 | 1,300 |
| | | | | | | $1^7/_{16}$ | 2 x 8 | 2 | 10d common | 8 | 10d common | 6 | 10d common | 2,555 | 2,780 | 2,935 | 1,300 |
| | | | | | | $^7/_{16}$ | 2 x 10 | 2 | 10d common | 12 | 10d common | 6 | 10d common | 2,295 | 2,595 | 2,790 | 1,300 |
| | | | | | | - - | 2 x 12 | - - | - - | 14 | 10d common | 6 | 10d common | 2,210 | 2,545 | 2,765 | 1,300 |
| JH30 | 18 | $3^1/_4$ | $10^3/_{16}$ | $2^1/_4$ | $4^1/_4$ | $1^5/_{16}$ | 2 x 6 | 2 | 10d common | 6 | 10d common | 6 | 10d common | 2,230 | 2,425 | 2,555 | 1,285 |
| | | | | | | $1^9/_{16}$ | 2 x 8 | 2 | 10d common | 10 | 10d common | 6 | 10d common | 2,875 | 2,900 | 2,900 | 1,285 |
| | | | | | | $^9/_{16}$ | 2 x 10 | 2 | 10d common | 14 | 10d common | 6 | 10d common | 2,620 | 2,900 | 2,900 | 1,285 |
| | | | | | | - - | 2 x 12 | - - | - - | 16 | 10d common | 6 | 10d common | 2,445 | 2,810 | 2,900 | 1,285 |

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

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS, and are not permitted to be adjusted for other load durations. See Section 4.1 for additional design requirements.
[2]Allowable loads shown are for installations in sawn lumber or structural composite lumber complying with Section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, Fc-perp, of 625 psi (4.31 MPa), or greater.
[3]See Section 3.24.3 for required nail dimensions and mechanical properties.
[4]Joist nails must be driven horizontally into the joist at a 30- to 45-degree angle, such that they penetrate through the joist, and into the header.
[5]The hangers provide torsional resistance up to a maximum joist depth of H + 1 inch (H + 25.4 mm), where torsional resistance is defined as a moment not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm).

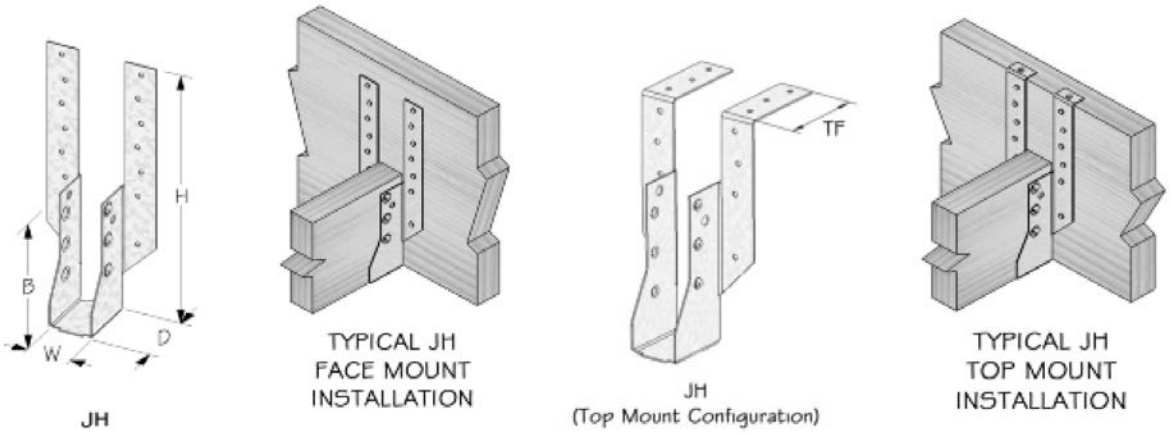



**FIGURE 6—DIMENSIONS AND INSTALLATION OF JH JOIST HANGER**

**TABLE 7—JPF PURLIN HANGER ALLOWABLE LOADS[1,2,3,4]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (in.) | | | | MEMBER SIZE | FASTENER SCHEDULE | | | | | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | W | H | D | TF | | Header | | | Joist[5] | | Download | | | Uplift |
| | | | | | | | Top | Face | Type | Qty | Type | $C_D$=1.0 | $C_D$=1.15 | $C_D$=1.25 | $C_D$=1.6 |
| JPF24 | 20 | $1^9/_{16}$ | $3^3/_8$ | $1^1/_2$ | $1^1/_{16}$ | 2 x 4 | 2 | 0 | 10d Common | 2 | 10d Common | 1,035 | 1,035 | 1,035 | 315 |
| | | | | | | | 2 | 2 | 10d Common | 2 | 10d Common | 1,305 | 1,305 | 1,305 | 425 |
| JPF26 | 20 | $1^9/_{16}$ | $5^3/_8$ | $1^1/_2$ | $1^1/_{16}$ | 2 x 6 | 2 | 0 | 10d Common | 2 | 10d Common | 1,035 | 1,035 | 1,035 | 315 |
| | | | | | | | 2 | 2 | 10d Common | 2 | 10d Common | 1,305 | 1,305 | 1,305 | 425 |

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

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.2423.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of 625 psi (4.31 MPa) or greater.
[4]JPF hangers provide torsional resistance, where torsional resistance is defined as a moment not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm).
[5]Joist nails must be driven horizontally into the joist at an angle of 30- to 45-degrees from normal, such that they penetrate through the joist, and into the header.

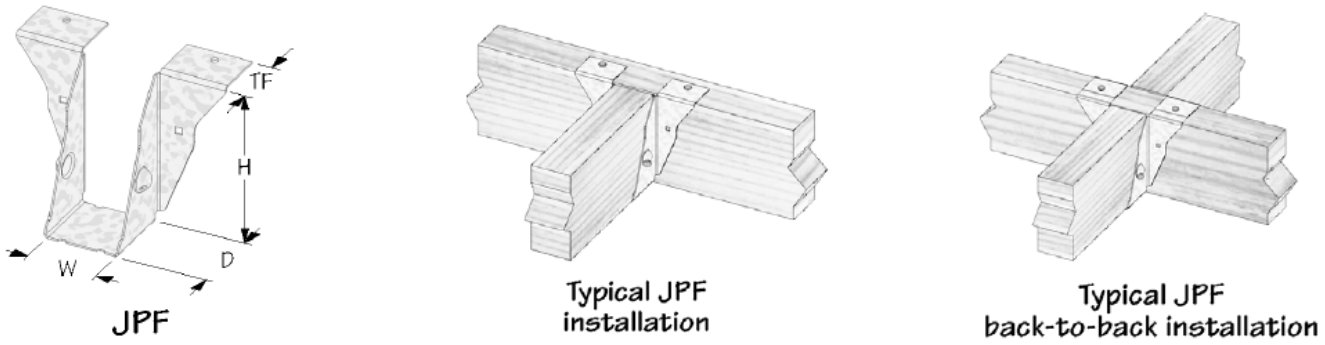



**FIGURE 7—JPF PURLIN HANGER**

**TABLE 8—KEG, KMEG and KLEG GLULAM BEAM HANGER ALLOWABLE LOADS[1,2,3]**

| STOCK NO. | STEEL GAGE | | DIMENSIONS[4] (in.) | | | | | BOLT SCHEDULE | | | ALLOWABLE LOADS (lbs.) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Top Flange | U-Strap | W | H[5] | D | TF | L | Hdr Qty | Joist Qty | Bolt Dia. (in.) | With Top Flange | | | Without Top Flange | | | Uplift |
| | | | | | | | | | | | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.6 |
| KLEG3 | 7 | 7 | 3 1/4 | Specify | 6 | 2 1/2 | 12 | 4 | 2 | 3/4 | 11,980 | 12,165 | 12,165 | 3,580 | 4,115 | 4,470 | 3,845 |
| KLEG5 | 7 | 7 | 5 1/4 | Specify | 6 | 2 1/2 | 12 | 4 | 2 | 3/4 | 11,980 | 12,165 | 12,165 | 3,580 | 4,115 | 4,470 | 4,690 |
| KLEG7 | 7 | 7 | 6 7/8 | Specify | 6 | 2 1/2 | 12 | 4 | 2 | 3/4 | 11,980 | 12,165 | 12,165 | 3,580 | 4,115 | 4,470 | 4,690 |
| KMEG5 | 7 | 7 | 5 1/4 | Specify | 6 | 2 1/2 | 12 | 6 | 2 | 3/4 | 12,635 | 12,635 | 12,635 | 5,345 | 6,150 | 6,685 | 4,690 |
| KMEG7 | 7 | 7 | 6 7/8 | Specify | 6 | 2 1/2 | 12 | 6 | 2 | 3/4 | 12,635 | 12,635 | 12,635 | 5,345 | 6,150 | 6,685 | 4,690 |
| KEG5 | 3 | 7 | 5 1/4 | Specify | 6 | 2 1/2 | 12 | 8 | 2 | 1 | 17,615 | 18,995 | 19,920 | 9,215 | 10,595 | 11,520 | 7,305 |
| KEG7 | 3 | 7 | 6 7/8 | Specify | 6 | 2 1/2 | 13 1/2 | 8 | 2 | 1 | 18,695 | 20,080 | 21,005 | 9,245 | 10,630 | 11,555 | 9,275 |
| KEG9 | 3 | 7 | 8 7/8 | Specify | 6 | 2 1/2 | 15 1/2 | 8 | 2 | 1 | 20,125 | 21,145 | 21,145 | 9,275 | 10,665 | 11,595 | 9,305 |
| KEG11 | 3 | 7 | 10 7/8 | Specify | 6 | 2 1/2 | 17 1/2 | 8 | 2 | 1 | 21,145 | 21,145 | 21,145 | 9,295 | 10,690 | 11,620 | 9,325 |

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

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference perpendicular to grain design value, $F_{c\text{-}perp}$, of 560 psi (3.17 MPa) or greater. Header members must have a minimum dimension of 5.5 inches (140 mm) in the direction parallel to the bolt axis.
[4]The hanger height dimension must be specified by the design professional, and must be 12 inches (305 mm) or greater.
[5]The header member height must be no less than 10 inches (254 mm) for KLEG, 13 inches (330 mm) for KMEG, and 20 inches (508 mm) for KEG hangers.

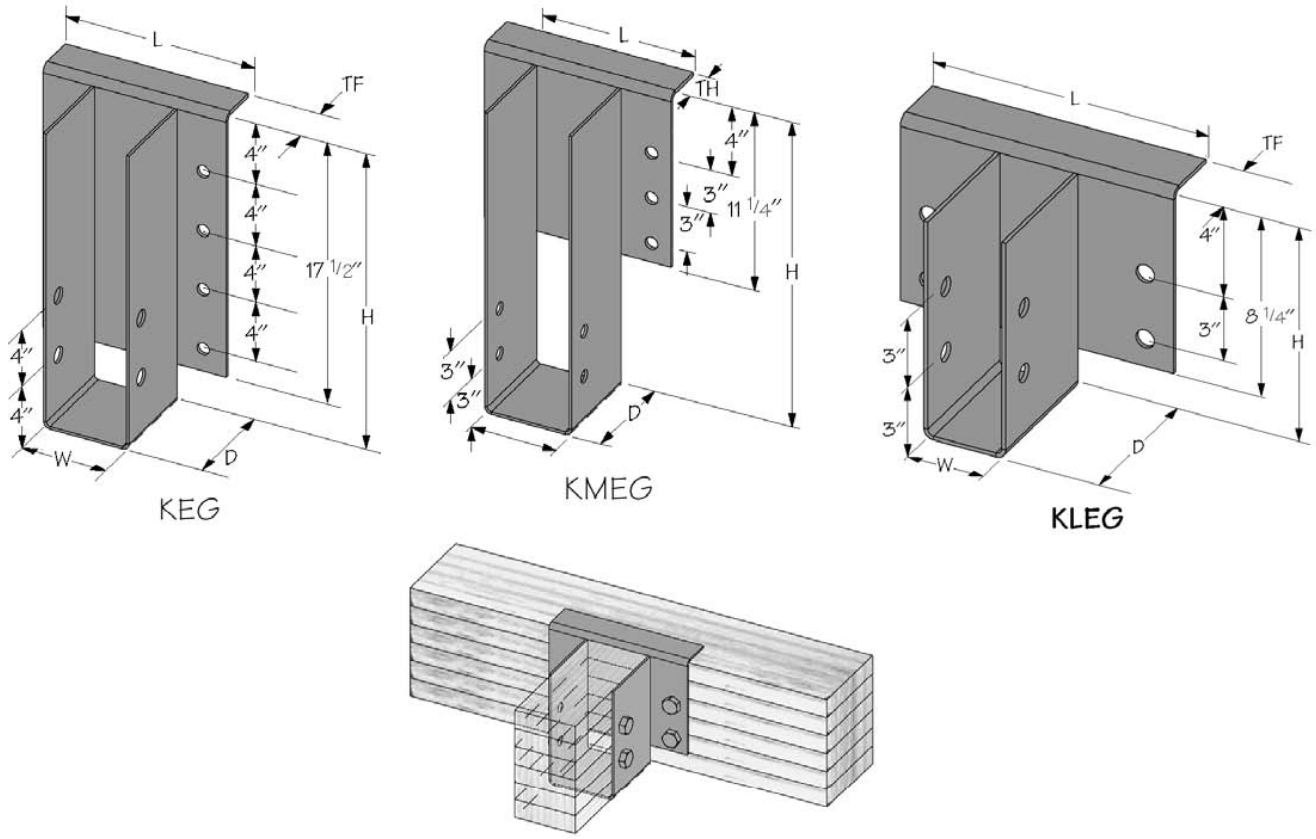



**FIGURE 8—KEG, KMEG, & KLEG GLULAM BEAM HANGERS**

**TABLE 9—KEGQ TOP MOUNT GLULAM GIRDER HANGER ALLOWABLE LOADS[1,2,3]**

| STOCK NO. | STEEL GAGE | | DIMENSIONS | | | | | FASTENER SCHEDULE | | | | ALLOWABLE LOAD | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Top | U-strap | W | H | D | $TF_L$ | $TF_D$ | Header | | Joist | | Download | | | Uplift |
| | | | (in.) | | | | | Qty | Type | Qty | Type | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.60 |
| KEGQ3 | 3 | 7 | 3 1/4 | Spec. | 6 | 18 | 3 | 28 | WS3 | 12 | WS3 | 17,265 | 17,265 | 17,265 | 4,695 |
| KEGQ5 | 3 | 7 | 5 1/2 | Spec. | 6 | 18 | 3 | 28 | WS3 | 12 | WS3 | 17,265 | 17,265 | 17,265 | 7,430 |
| KEGQ7 | 3 | 7 | 7 1/4 | Spec. | 6 | 18 | 3 | 28 | WS3 | 12 | WS3 | 17,265 | 17,265 | 17,265 | 7,430 |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See ESR-2761 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp.}$, of 625 psi (4.31 MPa) or greater.
[4]The hanger height dimension must be specified by the design professional, and must be 11 inches (279 mm) or greater.
[5]The header member height must be no less than 11 inches (279 mm) for KEGQ5 and 11 inches (279 mm) for KEGQ7 hangers.

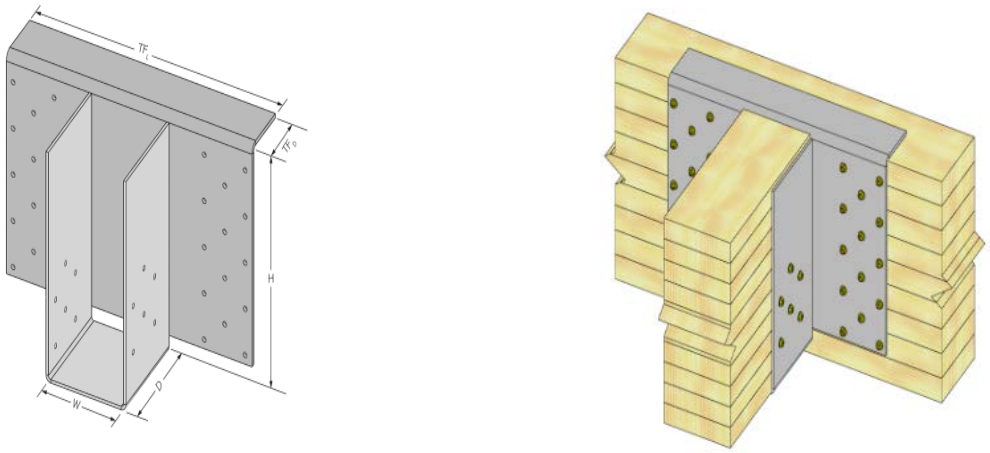



**FIGURE 9—KEGQ TOP MOUNT GIRDER HANGER AND TYPICAL INSTALLATION DETAIL**

**TABLE 10—KF PANEL HANGER ALLOWABLE LOADS[1,2,3]**

| STOCK NO. | STEEL GA. | DIMENSIONS (in.) | | | | FASTENER SCHEDULE | | | | ALLOWABLE LOADS (lbs.) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | W | H | D | TF | Header | | Joist | | Download | | |
| | | | | | | Qty | Type | Qty | Type | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 |
| KF44 | 18 | $3^9/_{16}$ | $3^3/_8$ | 1 | $1^1/_8$ | 2 | 10d Common | 1 | 10d x $1^1/_2$ | 695 | 695 | 695 |
| KF46 | 18 | $3^9/_{16}$ | $5^3/_8$ | 1 | $1^1/_8$ | 2 | 10d Common | 1 | 10d x $1^1/_2$ | 810 | 810 | 810 |

For **SI:** 1 inch = 25.4 mm, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of 625 psi (4.31 MPa) or greater.

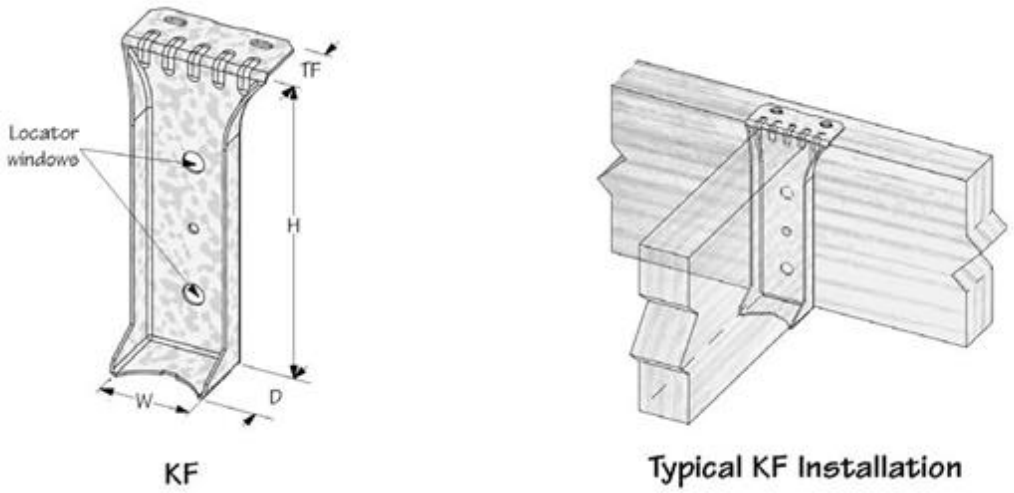



**FIGURE 10—KF PANEL HANGER**

**TABLE 11—KGLS, KGLST, KHGLS and KHGLST GLULAM SADDLE HANGER ALLOWABLE LOADS[1,2,3]**

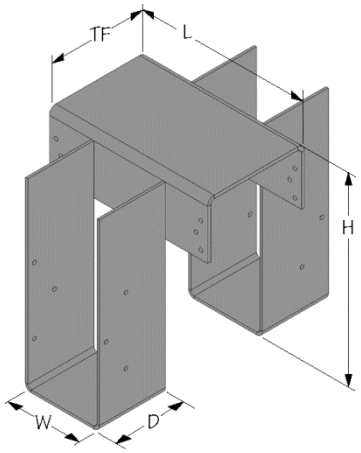
| STOCK NO. | JOIST SIZE & TYPE | STEEL GAGE | | HANGER DIMENSIONS[4] (in.) | | | | | FASTENER SCHEDULE PER SIDE | | | | BOLT SCHEDULE PER SIDE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | Header | | Joist | | Header | | Joist | |
| | | Top Flange | Stirrup | W | H[5] | D | L | TF | Qty | Type | Qty | Type | Qty | Type | Qty | Type |
| KGLS35 | 3 1/8 Glulam | 3 | 7 | 3 1/4 | spec. | 5 | 6 | 5 1/4 | 6 | WS3 | 6 | WS3 | - | | - | |
| KGLST35 | 3 1/8 Glulam | 3 | 7 | 3 1/4 | spec. | 6 1/2 | 10 | 5 1/4 | 6 | WS3 | 6 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KGLS37 | 3 1/8 Glulam | 3 | 7 | 3 1/4 | spec. | 5 | 6 | 6 7/8 | 6 | WS3 | 6 | WS3 | - | | - | |
| KGLST37 | 3 1/8 Glulam | 3 | 7 | 3 1/4 | spec. | 6 1/2 | 10 | 6 7/8 | 6 | WS3 | 6 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KGLS39 | 3 1/8 Glulam | 3 | 7 | 3 1/4 | spec. | 5 | 6 | 8 7/8 | 6 | WS3 | 6 | WS3 | - | | - | |
| KGLST39 | 3 1/8 Glulam | 3 | 7 | 3 1/4 | spec. | 6 1/2 | 10 | 8 7/8 | 6 | WS3 | 6 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KGLS55 | 5 1/8 Glulam | 3 | 7 | 5 1/4 | spec. | 5 | 9 | 5 1/4 | 6 | WS3 | 6 | WS3 | - | | - | |
| KGLST55 | 5 1/8 Glulam | 3 | 7 | 5 1/4 | spec. | 6 1/2 | 12 | 5 1/4 | 6 | WS3 | 6 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KGLS57 | 5 1/8 Glulam | 3 | 7 | 5 1/4 | spec. | 5 | 9 | 6 7/8 | 6 | WS3 | 6 | WS3 | - | | - | |
| KGLST57 | 5 1/8 Glulam | 3 | 7 | 5 1/4 | spec. | 6 1/2 | 12 | 6 7/8 | 6 | WS3 | 6 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KGLS77 | 6 3/4 Glulam | 3 | 7 | 6 7/8 | spec. | 5 | 12 | 6 7/8 | 6 | WS3 | 6 | WS3 | - | | - | |
| KGLST77 | 6 3/4 Glulam | 3 | 7 | 6 7/8 | spec. | 6 1/2 | 12 | 6 7/8 | 6 | WS3 | 6 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KGLS79 | 6 3/4 Glulam | 3 | 7 | 6 7/8 | spec. | 5 | 12 | 8 7/8 | 6 | WS3 | 6 | WS3 | - | | - | |
| KGLST79 | 6 3/4 Glulam | 3 | 7 | 6 7/8 | spec. | 6 1/2 | 12 | 8 7/8 | 6 | WS3 | 6 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KHGLS5 | 5 1/8 Glulam | 3 | 7 | 5 1/4 | spec. | 6 1/2 | 12 | spec. | 14 | WS3 | 8 | WS3 | - | | - | |
| KHGLST5 | 5 1/8 Glulam | 3 | 7 | 5 1/4 | spec. | 6 | 12 | spec. | 14 | WS3 | 8 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KHGLS7 | 6 3/4 Glulam | 3 | 7 | 6 7/8 | spec. | 6 | 12 | spec. | 14 | WS3 | 8 | WS3 | - | | - | |
| KHGLST7 | 6 3/4 Glulam | 3 | 7 | 6 7/8 | spec. | 6 1/2 | 14 | spec. | 14 | WS3 | 8 | WS3 | 2 | 3/4 | 3 | 3/4 |
| KHGLS9 | 8 3/4 Glulam | 3 | 7 | 8 7/8 | spec. | 6 | 12 | spec. | 14 | WS3 | 8 | WS3 | - | | - | |
| KHGLST9 | 8 3/4 Glulam | 3 | 7 | 8 7/8 | spec. | 6 1/2 | 16 | spec. | 14 | WS3 | 8 | WS3 | 2 | 3/4 | 3 | 3/4 |

| STOCK NO. | JOIST SIZE & TYPE | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|
| | | Download | | | Tension |
| | | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.60 |
| KGLS35 | 3 1/8 Glulam | 11,070 | 11,420 | 11,650 | - |
| KGLST35 | 3 1/8 Glulam | 13,695 | 14,045 | 14,275 | 15,310 |
| KGLS37 | 3 1/8 Glulam | 11,070 | 11,420 | 11,650 | - |
| KGLST37 | 3 1/8 Glulam | 13,695 | 14,045 | 14,275 | 15,310 |
| KGLS39 | 3 1/8 Glulam | 11,070 | 11,420 | 11,650 | - |
| KGLST39 | 3 1/8 Glulam | 13,695 | 14,045 | 14,275 | 15,310 |
| KGLS55 | 5 1/8 Glulam | 15,655 | 16,065 | 16,340 | - |
| KGLST55 | 5 1/8 Glulam | 19,960 | 20,370 | 20,645 | 15,310 |
| KGLS57 | 5 1/8 Glulam | 16,670 | 17,020 | 17,250 | - |
| KGLST57 | 5 1/8 Glulam | 20,975 | 21,325 | 21,555 | 15,310 |
| KGLS77 | 6 3/4 Glulam | 21,220 | 21,570 | 21,800 | - |
| KGLST77 | 6 3/4 Glulam | 25,420 | 25,830 | 26,105 | 15,310 |
| KGLS79 | 6 3/4 Glulam | 21,220 | 21,570 | 21,800 | - |
| KGLST79 | 6 3/4 Glulam | 26,890 | 27,240 | 27,470 | 15,310 |
| KHGLS5 | 5 1/8 Glulam | 21,750 | 22,215 | 22,525 | - |
| KHGLST5 | 5 1/8 Glulam | 20,315 | 20,780 | 21,090 | 15,310 |
| KHGLS7 | 6 3/4 Glulam | 23,195 | 24,155 | 24,795 | - |
| KHGLST7 | 6 3/4 Glulam | 25,995 | 26,955 | 27,595 | 15,310 |
| KHGLS9 | 8 3/4 Glulam | 23,195 | 24,155 | 24,795 | - |
| KHGLST9 | 8 3/4 Glulam | 28,795 | 29,755 | 30,395 | 15,310 |

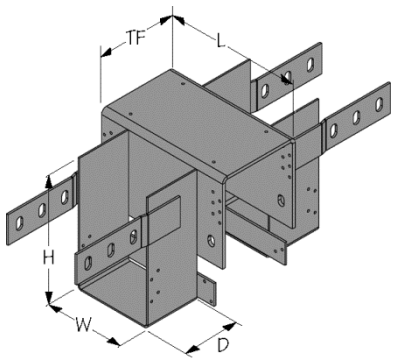
For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for design and installation requirements.
[2]See ESR-2761 for required fastener dimensions and mechanical properties.

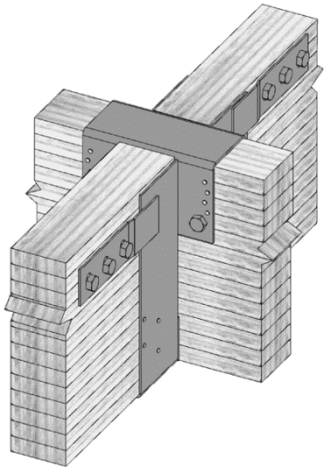
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp\ \perp}$, of 560 psi (3.86 MPa) or greater.
[4]The hanger height dimension must be specified by the design professional, and must be 12 inches (305 mm) or greater.
[5]The header member height must be no less than 8.5 inches (216 mm) for KGLS, 9 inches (229 mm) for KGLST, 10.5 inches (267 mm) for KHGLS and 12 inches (305 mm) for KHGLST hangers.




KGLS
(KHGLS similar)




KHGLST



Typical KHGLST
installation

**FIGURE 11—KGLS, KGLST, KHGLS & KHGLST GLULAM SADDLE HANGERS**

**TABLE 12—KGLT and KHGLT GLULAM HANGER ALLOWABLE LOADS[1,2,3]**

| STOCK NO. | STEEL GAGE | | DIMENSIONS (in.) | | | | FASTENER SCHEDULE | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | Top Flange | U-Strap | W | H[4] | D | L | Header | | Joist | Screw |
| | | | | | | | Top | Face | Qty | Type |
| KGLT3 | 3 | 7 | 3 1/4 | Spec. | 5 | 10 | 4 | 6 | 8 | WS3 |
| KGLT4 | 3 | 7 | 3 5/8 | Spec. | 5 | 10 | 4 | 6 | 8 | WS3 |
| KGLT5 | 3 | 7 | 5 1/4 | Spec. | 5 | 10 | 4 | 6 | 8 | WS3 |
| KGLT6 | 3 | 7 | 5 5/8 | Spec. | 5 | 10 | 4 | 6 | 8 | WS3 |
| KGLT7 | 3 | 7 | 6 7/8 | Spec. | 5 | 10 | 4 | 6 | 8 | WS3 |
| KGLT9 | 3 | 7 | 8 7/8 | Spec. | 5 | 10 | 4 | 6 | 8 | WS3 |
| KHGLT3 | 3 | 7 | 3 1/4 | Spec. | 6 | 12 | 6 | 12 | 6 | WS3 |
| KHGLT4 | 3 | 7 | 3 5/8 | Spec. | 6 | 12 | 6 | 12 | 6 | WS3 |
| KHGLT5 | 3 | 7 | 5 1/4 | Spec. | 6 | 12 | 6 | 12 | 6 | WS3 |
| KHGLT6 | 3 | 7 | 5 5/8 | Spec. | 6 | 12 | 6 | 12 | 6 | WS3 |
| KHGLT7 | 3 | 7 | 6 7/8 | Spec. | 6 | 12 | 6 | 12 | 6 | WS3 |
| KHGLT9 | 3 | 7 | 8 7/8 | Spec. | 6 | 14 | 6 | 12 | 6 | WS3 |
| KHGLT11 | 3 | 7 | 10 7/8 | Spec. | 6 | 16 | 6 | 12 | 6 | WS3 |

| STOCK NO. | ALLOWABLE LOADS (lbs.) | | | | | | |
|---|---|---|---|---|---|---|---|
| | $F_{C\text{-}perp}$ = 460 psi | | | $F_{C\text{-}perp}$ = 625 psi | | | Uplift |
| | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.6 |
| KGLT3 | 8,490 | 8,900 | 9,175 | 10,555 | 10,965 | 11,055 | 1,935 |
| KGLT4 | 8,490 | 8,900 | 9,175 | 10,555 | 10,965 | 11,055 | 1,935 |
| KGLT5 | 8,490 | 8,900 | 9,175 | 10,555 | 10,965 | 11,055 | 1,935 |
| KGLT6 | 8,490 | 8,900 | 9,175 | 10,555 | 10,965 | 11,055 | 1,935 |
| KGLT7 | 8,490 | 8,900 | 9,175 | 10,555 | 10,965 | 11,055 | 1,935 |
| KGLT9 | 8,490 | 8,900 | 9,175 | 10,555 | 10,965 | 11,055 | 1,935 |
| KHGLT3 | 10,945 | 11,295 | 11,525 | 12,495 | 12,495 | 12,495 | 1,935 |
| KHGLT4 | 11,980 | 12,330 | 12,495 | 12,495 | 12,495 | 12,495 | 1,935 |
| KHGLT5 | 12,380 | 12,495 | 12,495 | 12,495 | 12,495 | 12,495 | 1,935 |
| KHGLT6 | 12,380 | 12,495 | 12,495 | 12,495 | 12,495 | 12,495 | 1,935 |
| KHGLT7 | 12,380 | 12,495 | 12,495 | 12,495 | 12,495 | 12,495 | 1,935 |
| KHGLT9 | 12,380 | 12,495 | 12,495 | 12,495 | 12,495 | 12,495 | 1,935 |
| KHGLT11 | 12,495 | 12,495 | 12,495 | 12,495 | 12,495 | 12,495 | 1,935 |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See ESR-2761 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a minimum adjusted compression perpendicular to grain design value, $F_{c\text{-}perp}$, of either 460 psi (3.17 MPa) or 625 psi (4.31 MPa), as indicated in the table.
[4]The hanger height dimension must be specified by the design professional, and must be 7.5 inches (191 mm) or greater.

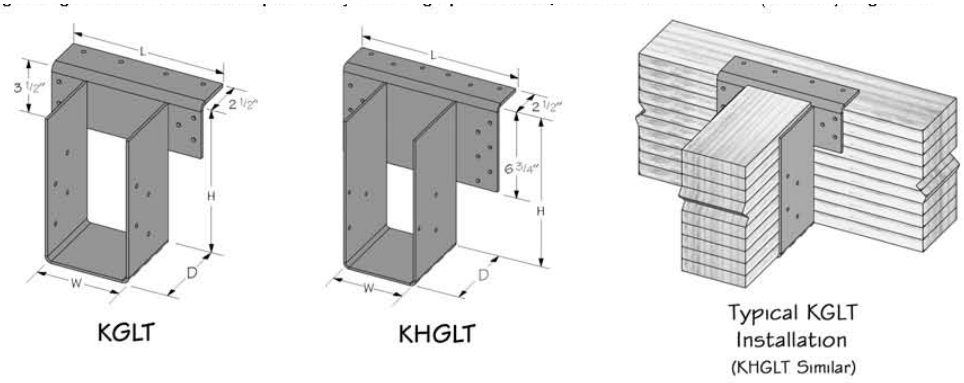



**FIGURE 12—KGLT & KHGLT GLULAM HANGERS**

**TABLE 13—KHC HINGE CONNECTOR AND KHCST SEISMIC STRAP ALLOWABLE LOADS[1,2,3,4]**

| STOCK NO. | WOOD MEMBERS | | STEEL THICKNESS | | DIMENSIONS (inches) | | | | FASTENER SCHEDULE | | MINIMUM HEIGHT[5,6] (in) | | ALLOWABLE LOADS (lbs) | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Beam Type | Beam Size (in) | Sides Gage | T (in.) | W | PD | PT | H | Qty | Bolt Dia. | 2 Bolt | 3 Bolt | $F_{C\text{-}perp}$ = 410 psi | $F_{C\text{-}perp}$ = 560 psi |
| KHC55 | Glulam | 5 1/8 | 7 | 3/4 | 5 1/4 | 5 | 3/4 | Spec. | Spec. | 3/4 | 17 1/2 | 14 | 10,505 | 14,350 |
| KHC56 | Glulam | 5 1/8 | 7 | 3/4 | 5 1/4 | 6 | 3/4 | Spec. | Spec. | 3/4 | 22 3/4 | 17 1/2 | 12,610 | 17,220 |
| KHC57 | Glulam | 5 1/8 | 7 | 3/4 | 5 1/4 | 7 | 3/4 | Spec. | Spec. | 3/4 | 28 3/4 | 21 3/4 | 14,710 | 20,090 |
| KHC59 | Glulam | 5 1/8 | 7 | 3/4 | 5 1/4 | 9 | 3/4 | Spec. | Spec. | 3/4 | 43 1/2 | 32 | 18,910 | 25,830 |
| KHC75 | Glulam | 6 3/4 | 7 | 1 | 6 7/8 | 5 | 1 | Spec. | Spec. | 3/4 | 20 3/4 | 16 | 13,840 | 18,900 |
| KHC76 | Glulam | 6 3/4 | 7 | 1 | 6 7/8 | 6 | 1 | Spec. | Spec. | 3/4 | 27 1/2 | 20 3/4 | 16,605 | 22,680 |
| KHC77 | Glulam | 6 3/4 | 7 | 1 | 6 7/8 | 7 | 1 | Spec. | Spec. | 3/4 | 35 1/2 | 26 1/4 | 19,375 | 26,460 |
| KHC79 | Glulam | 6 3/4 | 7 | 1 | 6 7/8 | 9 | 1 | Spec. | Spec. | 3/4 | 55 | 40 | 24,910 | 34,020 |
| KHC95 | Glulam | 8 3/4 | 7 | 1 1/4 | 8 7/8 | 5 | 1 1/4 | Spec. | Spec. | 3/4 | 24 3/4 | 18 3/4 | 17,940 | 24,500 |
| KHC96 | Glulam | 8 3/4 | 7 | 1 1/4 | 8 7/8 | 6 | 1 1/4 | Spec. | Spec. | 3/4 | 33 1/2 | 24 3/4 | 21,525 | 29,400 |
| KHC97 | Glulam | 8 3/4 | 7 | 1 1/4 | 8 7/8 | 7 | 1 1/4 | Spec. | Spec. | 3/4 | 43 3/4 | 32 | 25,115 | 34,300 |
| KHC99 | Glulam | 8 3/4 | 7 | 1 1/4 | 8 7/8 | 9 | 1 1/4 | Spec. | Spec. | 3/4 | 69 1/4 | 49 3/4 | 32,290 | 44,100 |
| KHC115 | Glulam | 10 3/4 | 3 | 1 1/2 | 10 7/8 | 5 | 1 1/2 | Spec. | Spec. | 3/4 | 27 1/4 | 20 1/4 | 22,040 | 30,100 |
| KHC116 | Glulam | 10 3/4 | 3 | 1 1/2 | 10 7/8 | 6 | 1 1/2 | Spec. | Spec. | 3/4 | 37 1/4 | 27 | 26,445 | 36,120 |
| KHC117 | Glulam | 10 3/4 | 3 | 1 1/2 | 10 7/8 | 7 | 1 1/2 | Spec. | Spec. | 3/4 | 49 1/4 | 35 1/4 | 30,855 | 42,140 |
| KHC119 | Glulam | 10 3/4 | 3 | 1 1/2 | 10 7/8 | 9 | 1 1/2 | Spec. | Spec. | 3/4 | 78 1/4 | 55 1/4 | 39,670 | 54,180 |

| STOCK NO. | DIMENSIONS (inches) | | | FASTENER SCHEDULE | | ALLOWABLE F1 LOAD[7,8] (lbs) |
|---|---|---|---|---|---|---|
| | Steel Gage | W | L | Qty | Bolt Dia. | $C_D$ = 1.6 |
| KHCST2 | 7 | 3 1/2 | 25 5/8 | 4 | 3/4 | 10,075 |
| KHCST3 | 7 | 3 1/2 | 31 5/8 | 6 | 3/4 | 14,685 |
| KHCST4 | 3 | 3 1/2 | 37 5/8 | 8 | 3/4 | 20,145 |
| KHCSTR2 | 7 | 3 1/2 | 25 5/8 | 4 | 3/4 | 10,075 |
| KHCSTR3 | 7 | 3 1/2 | 31 5/8 | 6 | 3/4 | 14,685 |
| KHCSTR4 | 3 | 3 1/2 | 37 5/8 | 8 | 3/4 | 20,145 |

For **SI**: 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 5.89 kPa.

[1]Allowable download loads correspond to a load duration, $C_D$, of 1.0. No further increases for duration of load permitted, Allowable F1 loads have been adjusted for a load duration factor of 1.6, corresponding to a ten-minute load duration (i.e., wind or earthquake loading) in accordance with the NDS. The allowable F1 loads do not apply to loads of other durations. See Sections 4.1 and 4.2 for design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of 410 psi (2.83 MPa) or 560 psi (3.86 MPa), as indicated in the table above.
[4]KHCST and KHCSTR seismic straps must be used in conjunction with the KHC devise whenever the design loads include a horizontal tension load in the F1 direction.
[5]Specify 2 or 3 bolt rotation tab. The minimum height depends on the rotation tab specified.
[6]Minimum heights correspond to loads shown. Allowable loads must be reduced in direct proportion for lesser heights.
[7]Allowable F1 (tension) loads for the KHCST and KHCSTR apply for installations on beams with a minimum width of 5.125 inches (130 mm).
[8]KHCST and KHCSTR seismic straps must be used in pairs, with one strap on each side of the beam, such that the bolts are loaded in double shear. Allowable F1 loads apply to one pair of seismic straps.

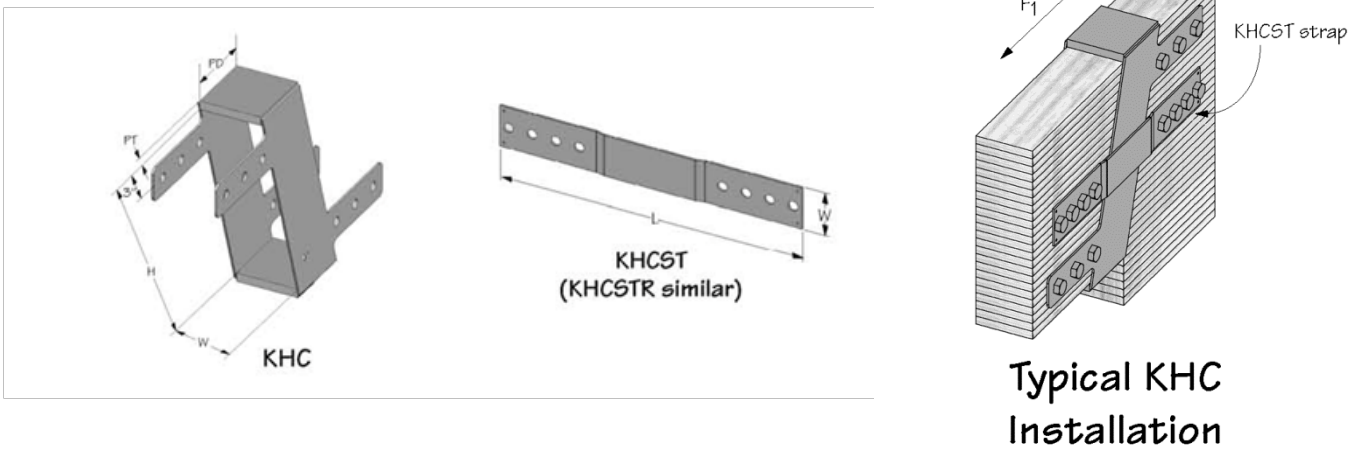



**FIGURE 13—KHC HINGE CONNECTOR & KHCST SEISMIC STRAP**

**TABLE 14—KLB, KB, KHHB, KGB, AND KHGB TOP MOUNT HANGER ALLOWABLE LOADS[1,2,3,4,5]**

| STOCK NO. | STEEL GA. | DIMENSIONS (in.) | | | | FASTENER SCHEDULE | | | | | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Header | | | Joist | | Download | | | Uplift |
| | | W | H | D | TF | Top | Face | Type | Qty | Type | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.60 |
| KLB26 | 14 | 1 9/16 | 5 3/8 | 1 1/2 | 1 3/8 | 2 | 4 | 16d Com. | 2 | 10d x 1/2 | 1,670 | 1,705 | 1,725 | 390 |
| KLB28 | 14 | 1 9/16 | 7 1/4 | 1 3/4 | 1 3/8 | 2 | 4 | 16d Com. | 2 | 10d x 1/2 | 1,905 | 1,935 | 1,960 | 390 |
| KLB210 | 14 | 1 9/16 | 9 1/4 | 2 | 1 3/8 | 2 | 4 | 16d Com. | 2 | 10d x 1/2 | 2,140 | 2,170 | 2,195 | 390 |
| KLB212 | 14 | 1 9/16 | 11 1/8 | 2 | 1 3/8 | 2 | 4 | 16d Com. | 2 | 10d x 1/2 | 2,140 | 2,170 | 2,195 | 390 |
| KB38 | 12 | 2 9/16 | 7 1/4 | 2 | 1 1/2 | 2 | 2 | NA20D | 2 | 10d x 1/2 | 2,535 | 2,535 | 2,535 | 425 |
| KB310 | 12 | 2 9/16 | 9 1/4 | 2 | 1 1/2 | 2 | 2 | NA20D | 2 | 10d x 1/2 | 2,535 | 2,535 | 2,535 | 425 |
| KB312 | 12 | 2 9/16 | 11 1/8 | 2 3/8 | 2 1/2 | 2 | 2 | NA20D | 2 | 10d x 1/2 | 2,535 | 2,535 | 2,535 | 425 |
| KB314 | 12 | 2 9/16 | 13 1/8 | 2 3/8 | 2 1/2 | 2 | 2 | NA20D | 2 | 10d x 1/2 | 2,535 | 2,535 | 2,535 | 425 |
| KB316 | 12 | 2 9/16 | 15 1/8 | 2 3/8 | 2 1/2 | 2 | 2 | NA20D | 2 | 10d x 1/2 | 2,535 | 2,535 | 2,535 | 425 |
| KB48 | 12 | 3 9/16 | 7 1/4 | 2 | 2 1/2 | 2 | 2 | NA20D | 2 | 10d x 1/2 | 2,605 | 2,605 | 2,605 | 580 |
| KB410 | 12 | 3 9/16 | 9 1/4 | 2 3/8 | 2 1/2 | 2 | 2 | NA20D | 2 | NA20D | 2,605 | 2,605 | 2,605 | 580 |
| KB412 | 12 | 3 9/16 | 11 1/8 | 2 3/8 | 2 1/2 | 4 | 2 | NA20D | 2 | NA20D | 4,075 | 4,155 | 4,185 | 580 |
| KB414 | 12 | 3 9/16 | 13 1/8 | 2 3/8 | 2 1/2 | 4 | 2 | NA20D | 2 | NA20D | 4,075 | 4,155 | 4,185 | 580 |
| KB416 | 12 | 3 9/16 | 15 1/8 | 2 3/8 | 2 1/2 | 4 | 2 | NA20D | 2 | NA20D | 4,075 | 4,155 | 4,185 | 580 |
| KB610 | 12 | 5 1/2 | 9 1/4 | 2 3/8 | 2 1/2 | 4 | 6 | NA20D | 2 | NA20D | 4,795 | 4,920 | 4,920 | 580 |
| KB612 | 12 | 5 1/2 | 11 1/8 | 2 3/8 | 2 1/2 | 4 | 6 | NA20D | 2 | NA20D | 4,795 | 4,920 | 4,920 | 580 |
| KB614 | 12 | 5 1/2 | 13 1/8 | 2 3/8 | 2 1/2 | 4 | 6 | NA20D | 2 | NA20D | 4,795 | 4,920 | 4,920 | 580 |
| KB616 | 12 | 5 1/2 | 15 1/8 | 2 3/8 | 2 1/2 | 4 | 6 | NA20D | 2 | NA20D | 4,795 | 4,920 | 4,920 | 580 |
| KHHB3 | 7 | 3 1/4 | Spec. | 3 | 2 1/2 | 4 | 6 | WS3[6] | 6 | WS3[6] | 6,480 | 6,480 | 6,480 | 2,215 |
| KHHB5 | 7 | 5 1/4 | Spec. | 3 | 2 1/2 | 4 | 6 | WS3[6] | 6 | WS3[6] | 6,480 | 6,480 | 6,480 | 2,215 |
| KHHB7 | 7 | 6 7/8 | Spec. | 3 | 2 1/2 | 4 | 6 | WS3[6] | 6 | WS3[6] | 6,480 | 6,480 | 6,480 | 2,215 |
| KGB3 | 7 | 3 1/4 | Spec. | 3 1/2 | 2 1/2 | 4 | 10 | WS3[6] | 6 | WS3[6] | 6,480 | 6,480 | 6,480 | 2,215 |
| KGB5 | 7 | 5 1/4 | Spec. | 3 1/2 | 2 1/2 | 4 | 10 | WS3[6] | 6 | WS3[6] | 6,480 | 6,480 | 6,480 | 2,215 |
| KGB7 | 7 | 6 7/8 | Spec. | 3 1/2 | 2 1/2 | 4 | 10 | WS3[6] | 6 | WS3[6] | 6,480 | 6,480 | 6,480 | 2,215 |
| KHGB5 | 7 | 5 1/4 | Spec. | 4 | 2 1/2 | 4 | 12 | WS3[6] | 6 | WS3[6] | 6,480 | 6,480 | 6,480 | 2,215 |
| KHGB7 | 7 | 6 7/8 | Spec. | 4 | 2 1/2 | 4 | 12 | WS3[6] | 6 | WS3[6] | 6,480 | 6,480 | 6,480 | 2,215 |

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

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of 625 psi (4.31 MPa) or greater.
[4]The hanger height dimension for KHHB, KGB and KHGB hangers must be specified by the design professional, and must be a minimum of 8 inches (203 mm) for KHHB, 9 inches (229 mm) for KGB and 11 inches (279 mm) KHGB hangers.
[5]The header member height must be no less than 8 inches (203 mm) for KHHB, 9 inches (229 mm) for KGB, and 11 inches (279 mm) for KHGB hangers.
[6]Refer to ESR-2761 for required fastener dimensions and mechanical properties

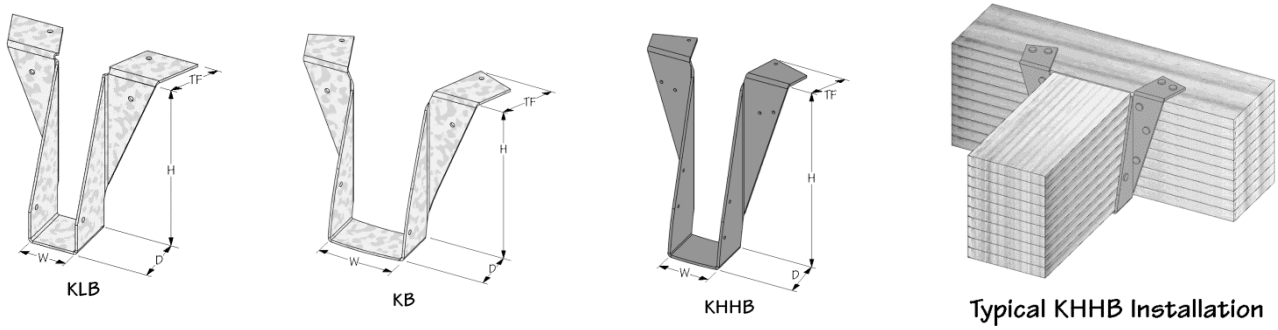



**FIGURE 14—KLB, KB, KHHB, KGB, AND KHGB TOP MOUNT HANGERS**

**TABLE 15—MSH STRAP HANGER ALLOWABLE LOADS[1,2,3]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (in.) | | | | MOUNTING CONDITION[4] | FASTENERS | | | | | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Header | | | Joist | | Download | | | Uplift |
| | | W | D | H | B | | Top Qty | Face Qty | Type | Qty | Type | $C_D$=1.0 | $C_D$=1.15 | $C_D$=1.25 | $C_D$=1.6 |
| MSH29[5] | 18 | 1 5/8 | 2 1/4 | 8 3/4 | 5 | Face-Max | - | 18 | 10d Com. | 4 | 10d Com. | 2,550 | 2,640 | 2,640 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 2,945 | 2,945 | 2,945 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,390 | 2,390 | 2,390 | - |
| MSH213[5] | 18 | 1 5/8 | 2 1/4 | 12 3/4 | 5 | Face-Max | - | 20 | 10d Com. | 4 | 10d Com. | 2,640 | 2,640 | 2,640 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 2,945 | 2,945 | 2,945 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,390 | 2,390 | 2,390 | - |
| MSH218[5] | 18 | 1 5/8 | 2 1/4 | 16 3/4 | 5 | Face-Max | - | 26 | 10d Com. | 4 | 10d Com. | 2,640 | 2,640 | 2,640 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 2,945 | 2,945 | 2,945 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,390 | 2,390 | 2,390 | - |
| MSH222 | 18 | 1 5/8 | 1 3/4 | 23 | 10 13/16 | Face-Max | - | 22 | 10d Com. | 4 | 10d x 1 1/2 | 2,120 | 2,190 | 2,230 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d x 1 1/2 | 2,120 | 2,190 | 2,230 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,120 | 2,190 | 2,230 | - |
| MSH179 | 18 | 1 13/16 | 2 1/4 | 8 11/16 | 4 15/16 | Face-Max | - | 18 | 10d Com | 4 | 10d Com | 2,550 | 2,640 | 2,640 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com | 4 | 10d Com | 2,945 | 2,945 | 2,945 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com | 4 | 10d x 1 1/2 | 2,390 | 2,390 | 2,390 | - |
| MSH1713 | 18 | 1 13/16 | 1 3/4 | 14 7/16 | 10 3/4 | Face-Max | - | 12 | 10d Com. | 4 | 10d Com. | 1,440 | 1,640 | 1,770 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 2,395 | 2,460 | 2,505 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,390 | 2,390 | 2,390 | - |
| MSH1718 | 18 | 1 13/16 | 1 3/4 | 16 5/8 | 10 3/4 | Face-Max | - | 22 | 10d Com. | 4 | 10d x 1 1/2 | 1,920 | 2,190 | 2,280 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d x 1 1/2 | 2,395 | 2,460 | 2,505 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,390 | 2,390 | 2,390 | - |
| MSH1722 | 18 | 1 13/16 | 1 3/4 | 22 7/8 | 10 3/4 | Face-Max | - | 22 | 10d Com. | 4 | 10d x 1 1/2 | 2,280 | 2,280 | 2,280 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d x 1 1/2 | 2,395 | 2,460 | 2,505 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,390 | 2,390 | 2,390 | - |
| MSH2022 | 18 | 2 1/16 | 1 3/4 | 22 5/8 | 10 7/16 | Face-Max | - | 22 | 10d Com. | 4 | 10d x 1 1/2 | 2,350 | 2,350 | 2,350 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d x 1 1/2 | 2,670 | 2,735 | 2,780 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,390 | 2,390 | 2,390 | - |
| MSH2318 | 18 | 2 3/8 | 1 3/4 | 18 1/8 | 10 7/16 | Face-Max | - | 16 | 10d Com. | 4 | 10d x 1 1/2 | 1,920 | 2,190 | 2,350 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d x 1 1/2 | 3,010 | 3,075 | 3,120 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,395 | 2,395 | 2,395 | - |
| MSH2322 | 18 | 2 3/8 | 1 3/4 | 22 5/8 | 10 7/16 | Face-Max | - | 22 | 10d Com. | 4 | 10d x 1 1/2 | 2,350 | 2,350 | 2,350 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d x 1 1/2 | 3,010 | 3,075 | 3,120 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,395 | 2,395 | 2,395 | - |
| MSH318 | 18 | 2 9/16 | 1 3/4 | 18 | 10 3/8 | Face-Max | - | 16 | 10d Com. | 4 | 10d x 1 1/2 | 1,920 | 2,190 | 2,350 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d x 1 1/2 | 3,240 | 3,240 | 3,240 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,395 | 2,395 | 2,395 | - |
| MSH322 | 18 | 2 9/16 | 1 3/4 | 22 1/2 | 10 3/8 | Face-Max | - | 22 | 10d Com. | 4 | 10d x 1 1/2 | 2,350 | 2,350 | 2,350 | 715 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d x 1 1/2 | 3,240 | 3,240 | 3,240 | 715 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d x 1 1/2 | 2,395 | 2,395 | 2,395 | - |
| MSH218-2 | 16 | 3 1/8 | 1 3/4 | 17 3/4 | 10 1/16 | Face-Max | - | 16 | 10d Com. | 4 | 10d Com. | 2,000 | 2,245 | 2,420 | 675 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 3,485 | 3,575 | 3,640 | 675 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d Com. | 2,435 | 2,435 | 2,435 | - |
| MSH222-2 | 16 | 3 1/8 | 1 3/4 | 22 1/4 | 10 1/16 | Face-Max | - | 22 | 10d Com. | 4 | 10d Com. | 2,750 | 3,085 | 3,330 | 675 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 3,485 | 3,575 | 3,640 | 675 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d Com. | 2,435 | 2,435 | 2,435 | - |
| MSH413[5] | 16 | 3 9/16 | 1 3/4 | 14 | 7 5/8 | Face-Max | - | 14 | 10d Com. | 6 | 10d Com. | 2,340 | 2,640 | 2,855 | 1,815 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 6 | 10d Com. | 3,875 | 3,875 | 3,875 | 1,815 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 6 | 10d Com. | 2,530 | 2,530 | 2,530 | - |
| MSH418[5] | 16 | 3 9/16 | 1 3/4 | 17 1/2 | 7 5/8 | Face-Max | - | 18 | 10d Com. | 6 | 10d Com. | 2,840 | 3,200 | 3,460 | 1,815 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 6 | 10d Com. | 3,875 | 3,875 | 3,875 | 1,815 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 6 | 10d Com. | 2,530 | 2,530 | 2,530 | - |
| MSH422[5] | 16 | 3 9/16 | 1 3/4 | 21 1/2 | 7 5/8 | Face-Max | - | 22 | 10d Com. | 6 | 10d Com. | 3,340 | 3,765 | 4,065 | 1,815 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 6 | 10d Com. | 3,525 | 3,705 | 3,830 | 1,815 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 6 | 10d Com. | 2,530 | 2,530 | 2,530 | - |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

(See footnotes on following page)

**TABLE 15—MSH STRAP HANGER ALLOWABLE LOADS (Continued)[1,2,3]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (in.) | | | | MOUNTING CONDITION[4] | FASTENERS | | | | | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Header | | | Joist | | Download | | | Uplift |
| | | W | D | H | B | | Top Qty | Face Qty | Type | Qty | Type | $C_D$=1.0 | $C_D$=1.15 | $C_D$=1.25 | $C_D$=1.6 |
| MSH422IF | 16 | $3^5/_8$ | $1^3/_4$ | 22 | $9^{13}/_{16}$ | Face-Max | - | 22 | 10d Com. | 4 | 10d Com. | 2,750 | 3,085 | 3,330 | 675 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 3,485 | 3,575 | 3,640 | 675 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d Com. | 2,530 | 2,530 | 2,530 | - |
| MSH424[5] | 16 | $3^5/_8$ | 2 | $21^1/_2$ | $5^3/_{16}$ | Face-Max | - | 36 | 10d Com. | 6 | 10d Com. | 5,090 | 5,725 | 5,975 | 1,815 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 6 | 10d Com. | 3,875 | 3,875 | 3,875 | 1,815 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 6 | 10d Com. | 2,530 | 2,530 | 2,530 | - |
| MSH422-2 | 14 | $7^1/_4$ | 2 | $22^1/_8$ | 11 | Face-Max | - | 26 | 16d Com. | 6 | 16d Com. | 4,005 | 4,515 | 4,845 | 1,380 |
| | | | | | | Top-Max | 4 | 10 | 16d Com. | 6 | 16d Com. | 4,665 | 4,860 | 4,990 | 1,380 |
| | | | | | | Top-Min | 4 | 4 | 16d Com. | 6 | 16d Com. | 3,740 | 3,820 | 3,870 | - |
| MSH422-2IF | 14 | $7^1/_4$ | 2 | $22^1/_8$ | 11 | Face-Max | - | 26 | 16d Com. | 6 | 16d Com. | 4,005 | 4,515 | 4,845 | 1,380 |
| | | | | | | Top-Max | 4 | 10 | 16d Com. | 6 | 16d Com. | 4,665 | 4,860 | 4,990 | 1,380 |
| | | | | | | Top-Min | 4 | 4 | 16d Com. | 6 | 16d Com. | 3,740 | 3,820 | 3,870 | - |
| MSH426[5] | 14 | $3^5/_8$ | $1^3/_4$ | 26 | 8 | Face-Max | - | 38 | 16d Com. | 6 | 16d Com. | 5,455 | 5,675 | 5,825 | 1,815 |
| | | | | | | Top-Max | 4 | 8 | 16d Com. | 6 | 16d Com. | 3,760 | 3,760 | 3,760 | 1,795 |
| | | | | | | Top-Min | 4 | 2 | 16d Com. | 6 | 16d Com. | 2,435 | 2,435 | 2,435 | - |
| MSH426IF[5] | 14 | $3^5/_8$ | $1^3/_4$ | 26 | 8 | Face-Max | - | 38 | 16d Com. | 6 | 16d Com. | 5,455 | 5,675 | 5,825 | 1,815 |
| | | | | | | Top-Max | 4 | 8 | 16d Com. | 6 | 16d Com. | 3,760 | 3,760 | 3,760 | 1,795 |
| | | | | | | Top-Min | 4 | 2 | 16d Com. | 6 | 16d Com. | 2,435 | 2,435 | 2,435 | - |
| MSH426-2 | 14 | $7^1/_4$ | 2 | $26^1/_{16}$ | 11 | Face-Max | - | 26 | 16d Com. | 6 | 16d Com. | 4,005 | 4,515 | 4,845 | 1,380 |
| | | | | | | Top-Max | 4 | 10 | 16d Com. | 6 | 16d Com. | 4,665 | 4,860 | 4,990 | 1,380 |
| | | | | | | Top-Min | 4 | 4 | 16d Com. | 6 | 16d Com. | 3,740 | 3,820 | 3,870 | - |
| MSH2322-2 | 16 | $4^3/_4$ | $1^3/_4$ | 22 | $9^1/_4$ | Face-Max | - | 46 | 10d Com. | 4 | 10d Com. | 5,560 | 5,620 | 5,665 | 675 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 3,485 | 3,575 | 3,640 | 675 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d Com. | 2,530 | 2,530 | 2,530 | - |
| MSH2622-2 | 16 | $5^3/_8$ | $1^3/_4$ | 22 | $9^1/_4$ | Face-Max | - | 46 | 10d Com. | 4 | 10d Com. | 5,560 | 5,620 | 5,665 | 675 |
| | | | | | | Top-Max | 4 | 6 | 10d Com. | 4 | 10d Com. | 3,485 | 3,575 | 3,640 | 675 |
| | | | | | | Top-Min | 4 | 2 | 10d Com. | 4 | 10d Com. | 2,530 | 2,530 | 2,530 | - |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of 625 psi (4.31 MPa) or greater.
[4]See Figure 15 for installation details. Mounting conditions are as follows:
*Face-Max* – The specified number of header nails must be driven into the wide face of the header.
*Top-Max* – The hanger is installed in a top mount condition with at least six nail holes filled on the face of the header, and four nail holes filled on the top of the header. The straps must wrap over the top of the header at least 2.5 inches (63.5 mm).
*Top-Min* – The hanger is installed in a top mount condition with at least the top two nail holes filled on the face of the header, and four nail holes filled on the top of the header. The straps must wrap over the top of the supporting member at least 2.5 inches (63.5 mm).
*Combination* – Follow fastening directions above for the applicable mounting condition for each individual flange strap. The lesser of the two allowable loads applies.
[5]Joist nails must be driven horizontally into the joist at an angle of 30- to 45-degrees from normal, such that they penetrate through the joist, and into the header for the MSH29, MSH213, MSH218, MSH413, MSH418, MSH422, MSH424, MSH426 and MSH426IF models.

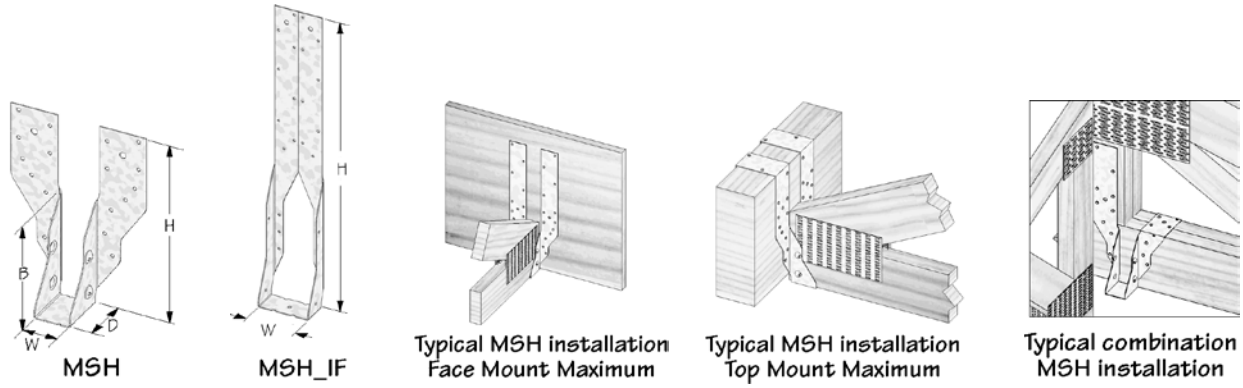



**FIGURE 15—MSH STRAP HANGER**

**TABLE 16—PHG PANEL HANGER ALLOWABLE LOADS[1,2,3]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (inches) | | | | FASTENER SCHEDULE | | | | ALLOWABLE LOADS (lbs) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Header | | Joist | | Download | | |
| | | W | H | D | TF | Qty | Type | Qty | Type | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 |
| PHG24 | 18 | $1^{9}/_{16}$ | $3^{1}/_{2}$ | $1^{3}/_{16}$ | $1^{1}/_{16}$ | 2 | 8d Common | -- | -- | 580 | 580 | 580 |
| PHG26 | 18 | $1^{9}/_{16}$ | $5^{3}/_{8}$ | 1 | $1^{1}/_{16}$ | 2 | 10d Common | -- | -- | 650 | 650 | 650 |
| PHG34 | 18 | $2^{9}/_{16}$ | $3^{1}/_{2}$ | 1 | $1^{1}/_{8}$ | 2 | 10d Common | -- | -- | 650 | 650 | 650 |
| PHG36 | 18 | $2^{9}/_{16}$ | $5^{3}/_{8}$ | 1 | $1^{1}/_{8}$ | 2 | 10d Common | -- | -- | 650 | 650 | 650 |
| PHG24-2 | 18 | $3^{1}/_{8}$ | $3^{1}/_{2}$ | 1 | $1^{1}/_{8}$ | 2 | 10d Common | -- | -- | 650 | 650 | 650 |
| PHG26-2 | 18 | $3^{1}/_{8}$ | $5^{3}/_{8}$ | 1 | $1^{1}/_{8}$ | 2 | 10d Common | -- | -- | 650 | 650 | 650 |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable downward loads correspond to a load duration, $C_D$, as shown in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for design and installation requirements

[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.

[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of 625 psi (4.31 MPa) or greater.

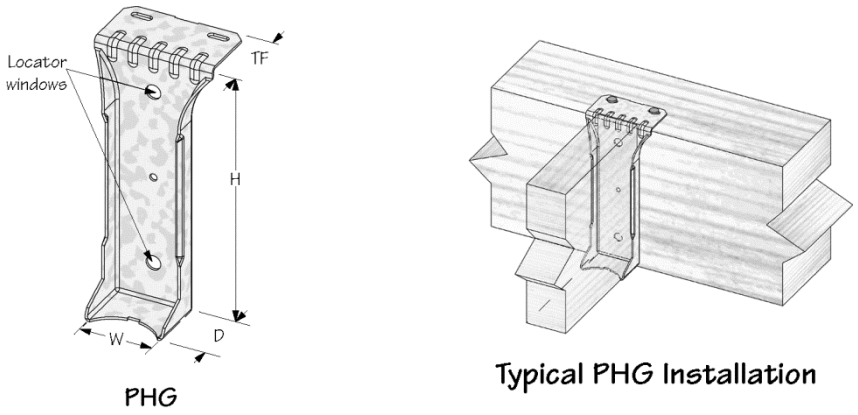



**FIGURE 16—PANEL HANGER**

**TABLE 17—PHM TOP FLANGE HANGER ALLOWABLE LOADS[1,2,3,4]**

| STOCK NO. | STEEL GAGE | | DIMENSIONS (in) | | | | | FASTENER SCHEDULE | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Header | | Joist | |
| | Top | Strap | W | H | D | L | TF | Qty | Type | Qty | Type |
| **Installations in Laminated Veneer Lumber (LVL)** | | | | | | | | | | | |
| PHM17xxx | 7 | 10 | $1^{13}/_{16}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d x $1^{1}/_{2}$ |
| PHM23xxx | 7 | 10 | $2^{3}/_{8}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d x $1^{1}/_{2}$ |
| PHM25xxx | 7 | 10 | $2^{9}/_{16}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d x $1^{1}/_{2}$ |
| PHM35xxx | 7 | 10 | $3^{5}/_{8}$ | $9^{1}/_{4}$ - 32 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d Common |
| PHM23xxx-2 | 7 | 10 | $4^{3}/_{4}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d Common |
| PHM25xxx-2 | 7 | 10 | $5^{1}/_{8}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d Common |
| PHM35xxx-2 | 7 | 10 | $7^{1}/_{8}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 10 | 3 | 2 | 16d Common | 2 | 10d Common |
| PHM42xxx | 7 | 10 | $4^{3}/_{16}$ | $9^{1}/_{2}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d Common |
| PHM55xxx | 7 | 10 | $5^{5}/_{8}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d Common |
| **Installations in Parallel Strand Lumber (PSL)** | | | | | | | | | | | |
| PHM27xxx | 7 | 10 | $2^{3}/_{4}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | $2^{3}/_{4}$ | 2 | 16d Common | 2 | 10d x $1^{1}/_{2}$ |
| PHM35xxx | 7 | 10 | $3^{9}/_{16}$ | $9^{1}/_{4}$ - 32 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d Common |
| PHM52xxx | 7 | 10 | $5^{3}/_{8}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d Common |
| PHM55xxx | 7 | 10 | $5^{5}/_{8}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 7 | 3 | 2 | 16d Common | 2 | 10d Common |
| PHM35xxx-2 | 7 | 10 | $7^{1}/_{8}$ | $9^{1}/_{4}$ - 30 | $2^{1}/_{2}$ | 10 | 3 | 2 | 16d Common | 2 | 10d Common |

| STOCK NO, | ALLOWABLE LOADS (lbs) | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | $F_{c\text{-}perp}$ = 460 psi | | | $F_{c\text{-}perp}$ = 625 psi | | | $F_{c\text{-}perp}$ = 750 psi | | |
| | $C_D$=1.0 | $C_D$=1.15 | $C_D$=1.25 | $C_D$=1.0 | $C_D$=1.15 | $C_D$=1.25 | $C_D$=1.0 | $C_D$=1.15 | $C_D$=1.25 |
| **Installations in Laminated Veneer Lumber (LVL)** | | | | | | | | | |
| PHM17xxx | 2,340 | 2,385 | 2,410 | 3,060 | 3,110 | 3,130 | 3,335 | 3,335 | 3,335 |
| PHM23xxx | 2,985 | 3,035 | 3,055 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 |
| PHM25xxx | 3,200 | 3,250 | 3,275 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 |
| PHM35xxx | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 |
| PHM23xxx-2 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 |
| PHM25xxx-2 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 |
| PHM35xxx-2 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 |
| PHM42xxx | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 |
| PHM55xxx | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 |
| **Installations in Parallel Strand Lumber (PSL)** | | | | | | | | | |
| PHM27xxx | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 |
| PHM35xxx | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 | 3,335 |
| PHM52xxx | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 |
| PHM55xxx | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 | 3,265 |
| PHM35xxx-2 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 | 3,390 |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of either 460 psi (3.17 MPa), 625 psi (4.31 MPa), or 750 psi (5.17 MPa), as specified in the table above.
[4]PHM Series hangers provide torsional resistance, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm). The height, H, of the joist hanger must be equal to the height of the joist to ensure proper attachment of the sheathing to the joist and supporting member.

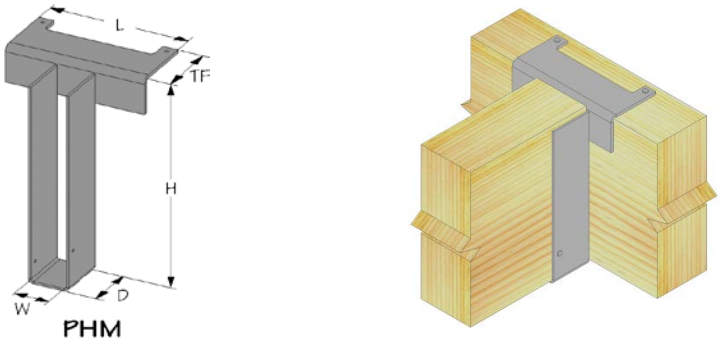


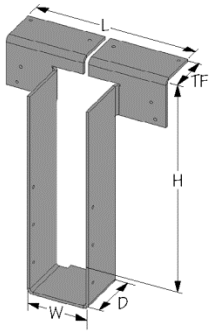

**FIGURE 17—PHM TOP FLANGE HANGERS**

**TABLE 18—PHXU BEAM AND PURLIN HANGER ALLOWABLE LOADS[4]**

| STOCK NUMBER | STEEL GAGE | DIMENSIONS (inches) | | | | | FASTENER SCHEDULE | | | | ALLOWABLE LOADS (lbs.)[1,3] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Header | | Joist | | Download | | | Uplift |
| | | W | H | D | L | TF | Qty | Type[2] | Qty | Type[2] | $C_D$ = 1.00 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.60 |
| PHXU17xxx | 7 | $1^{13}/_{16}$ | $7^1/_4$ - 20 | $3^1/_4$ | 10 | $2^1/_2$ | 8 | 16d common | 6 | 10d x $1^1/_2$" | 4,350 | 4,350 | 4,350 | 930 |
| PHXU23xxx | 7 | $2^3/_8$ | $9^1/_4$ - 30 | $3^1/_4$ | 10 | $2^1/_2$ | 8 | 16d common | 6 | 10d x $1^1/_2$" | 5,370 | 5,370 | 5,370 | 870 |
| PHXU25xxx | 7 | $2^9/_{16}$ | $9^1/_4$ - 30 | $3^1/_4$ | 10 | $2^1/_2$ | 8 | 16d common | 6 | 10d x $1^1/_2$" | 5,370 | 5,370 | 5,370 | 870 |
| PHXU26xxx | 7 | $2^{11}/_{16}$ | $9^1/_4$ - 30 | $3^1/_4$ | 10 | $2^1/_2$ | 8 | 16d common | 6 | 10d x $1^1/_2$" | 5,370 | 5,370 | 5,370 | 870 |
| PHXU27xxx | 7 | $2^3/_4$ | $9^1/_4$ - 30 | $3^1/_4$ | 10 | $2^1/_2$ | 8 | 16d common | 6 | 10d x $1^1/_2$" | 5,370 | 5,370 | 5,370 | 870 |
| PHXU31xxx | 7 | $3^1/_8$ | $9^1/_4$ - 30 | $3^1/_4$ | 10 | $2^1/_2$ | 8 | 16d common | 6 | 10d x $1^1/_2$" | 5,370 | 5,370 | 5,370 | 870 |
| PHXU35xxx | 7 | $3^9/_{16}$ | $7^1/_4$ - 32 | $3^1/_4$ | 10 | $2^1/_2$ | 8 | 16d common | 6 | 10d common | 5,910 | 5,910 | 5,910 | 1,120 |
| PHXU23xxx - 2 | 7 | $4^3/_4$ | $9^1/_4$ - 30 | $3^1/_4$ | $10^3/_4$ | $2^1/_2$ | 8 | 16d common | 6 | 10d common | 5,910 | 5,910 | 5,910 | 1,120 |
| PHXU25xxx - 2 | 7 | $5^1/_8$ | $9^1/_4$ - 30 | $3^1/_4$ | $11^1/_8$ | $2^1/_2$ | 8 | 16d common | 6 | 10d common | 5,910 | 5,910 | 5,910 | 1,120 |
| PHXU52xxx | 7 | $5^3/_8$ | $9^1/_4$ - 30 | $3^1/_4$ | $11^3/_8$ | $2^1/_2$ | 8 | 16d common | 6 | 10d common | 5,910 | 5,910 | 5,910 | 1,120 |
| PHXU55xxx | 7 | $5^1/_2$ | $9^1/_4$ - 30 | $3^1/_4$ | $11^1/_2$ | $2^1/_2$ | 8 | 16d common | 6 | 10d common | 5,910 | 5,910 | 5,910 | 1,120 |
| PHXU71xxx | 7 | $7^1/_8$ | $9^1/_4$ - 32 | $3^1/_4$ | $13^1/_8$ | $2^1/_2$ | 8 | 16d common | 6 | 10d common | 5,910 | 5,910 | 5,910 | 1,120 |

For **S1:** 1 inch = 25.4 mm, 1 lbf = 4.45 N.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS, and are not permitted to be adjusted for other load durations. See Section 4.1 for additional design requirements.
[2]See Section 3.24.3 for required nail dimensions and mechanical properties.
[3]Allowable loads shown are for installations in sawn lumber or structural composite lumber complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, F c-perp, of 625 psi (4.31 MPa) or greater.
[4]The hangers provide torsional resistance, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm). The height, H, of the joist hanger must be equal to the height of the joist to ensure proper attachment of the sheathing to the joist and supporting member.



PHXU

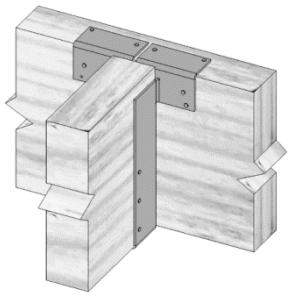

Typical PHXU Installation

**FIGURE 18—DIMENSIONS AND INSTALLATION OF PHXU SERIES HANGERS**

**TABLE 19—SW, SWH AND KHW TOP MOUNT HANGER ALLOWABLE LOADS**

| STOCK NUMBER | STEEL GAGE | | DIMENSIONS (inches) | | | | | FASTENER SCHEDULE | | | | ALLOWABLE LOADS (lbs.)[1,3] | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | Header[5] | | Joist | | Download | | | Uplift |
| | Top Flange | U-Strap | L | W | H | D | TF | Qty | Type[2] | Qty | Type[2] | $C_D$ = 1.00 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.60 |
| SW26 | 12 | 12 | 6 1/2 | 1 9/16 | 5 3/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,315 | 2,315 | 2,315 | 135 |
| SW28 | 12 | 12 | 6 1/2 | 1 9/16 | 7 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,315 | 2,315 | 2,315 | 135 |
| SW210 | 12 | 12 | 6 1/2 | 1 9/16 | 9 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,315 | 2,315 | 2,315 | 135 |
| SW212 | 12 | 12 | 6 1/2 | 1 9/16 | 11 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,315 | 2,315 | 2,315 | 135 |
| SW214 | 12 | 12 | 6 1/2 | 1 9/16 | 13 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,315 | 2,315 | 2,315 | 135 |
| SW216 | 12 | 12 | 6 1/2 | 1 9/16 | 15 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,315 | 2,315 | 2,315 | 135 |
| SW36 | 12 | 12 | 6 1/2 | 2 9/16 | 5 3/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,520 | 2,520 | 2,250 | 135 |
| SW38 | 12 | 12 | 6 1/2 | 2 9/16 | 7 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,520 | 2,520 | 2,520 | 135 |
| SW310 | 12 | 12 | 6 1/2 | 2 9/16 | 9 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d x 1/2" | 2,520 | 2,520 | 2,520 | 135 |
| SW46 | 12 | 12 | 6 1/2 | 3 9/16 | 5 3/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d common | 2,520 | 2,520 | 2,520 | 135 |
| SW48 | 12 | 12 | 6 1/2 | 3 9/16 | 7 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d common | 2,520 | 2,520 | 2,520 | 135 |
| SW410 | 12 | 12 | 6 1/2 | 3 9/16 | 9 1/8 | 2 1/2 | 2 1/2 | 2 | 10d common | 2 | 10d common | 2,520 | 2,520 | 2,520 | 135 |
| | | | | | | | | | | | | | | | |
| SWH26-2 | 7 | 12 | 7 | 3 1/8 | 5 3/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH28-2 | 7 | 12 | 7 | 3 1/8 | 7 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH210-2 | 7 | 12 | 7 | 3 1/8 | 9 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH212-2 | 7 | 12 | 7 | 3 1/8 | 11 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH214-2 | 7 | 12 | 7 | 3 1/8 | 13 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH216-2 | 7 | 12 | 7 | 3 1/8 | 15 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH312 | 7 | 12 | 7 | 2 9/16 | 11 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d x 1/2" | 3,305 | 3,305 | 3,305 | 135 |
| SWH314 | 7 | 12 | 7 | 2 9/16 | 13 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d x 1/2" | 3,305 | 3,305 | 3,305 | 135 |
| SWH316 | 7 | 12 | 7 | 2 9/16 | 15 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d x 1/2" | 3,305 | 3,305 | 3,305 | 135 |
| SWH410 | 7 | 12 | 7 | 3 9/16 | 9 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH412 | 7 | 12 | 7 | 3 9/16 | 11 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH414 | 7 | 12 | 7 | 3 9/16 | 13 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH416 | 7 | 12 | 7 | 3 9/16 | 15 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH66 | 7 | 12 | 7 | 5 1/2 | 5 3/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH68 | 7 | 12 | 7 | 5 1/2 | 7 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| SWH610 | 7 | 12 | 7 | 5 1/2 | 9 1/8 | 2 1/2 | 2 1/2 | 2 | 16d common | 2 | 10d common | 3,305 | 3,305 | 3,305 | 135 |
| | | | | | | | | | | | | | | | |
| KHW46 | 3 | 10 | 10 | 3 9/16 | 5 3/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW48 | 3 | 10 | 10 | 3 9/16 | 7 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW410 | 3 | 10 | 10 | 3 9/16 | 9 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW412 | 3 | 10 | 10 | 3 9/16 | 11 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW414 | 3 | 10 | 10 | 3 9/16 | 13 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW416 | 3 | 10 | 10 | 3 9/16 | 15 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW66 | 3 | 10 | 10 | 5 1/2 | 5 3/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW68 | 3 | 10 | 10 | 5 1/2 | 7 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW610 | 3 | 10 | 10 | 5 1/2 | 9 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW612 | 3 | 10 | 10 | 5 1/2 | 11 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW614 | 3 | 10 | 10 | 5 1/2 | 13 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW616 | 3 | 10 | 10 | 5 1/2 | 15 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW86 | 3 | 10 | 10 | 7 1/2 | 5 3/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW88 | 3 | 10 | 10 | 7 1/2 | 7 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW810 | 3 | 10 | 10 | 7 1/2 | 9 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW812 | 3 | 10 | 10 | 7 1/2 | 11 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW814 | 3 | 10 | 10 | 7 1/2 | 13 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW816 | 3 | 10 | 10 | 7 1/2 | 15 1/8 | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW26 | 3 | 10 | 10 | 2 11/16 | Spec. | 4 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d x 1/2" | 5,295 | 5,295 | 5,295 | 135 |
| KHW3 | 3 | 10 | 10 | 3 1/4 | Spec. | 3 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |
| KHW5 | 3 | 10 | 10 | 5 1/4 | Spec. | 2 1/2 | 2 1/2 | 4 | 20d x 2 1/2 | 2 | 10d common | 5,535 | 5,535 | 5,535 | 135 |

For **S1:** 1 inch = 25.4 mm, 1 lbf = 4.45 N.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS, and are not permitted to be adjusted for other load durations. See Section 4.1 for additional design requirements.
[2]See Section 3.24.3 for required nail dimensions and mechanical properties.
[3]Allowable loads shown are for installations in sawn lumber or structural composite lumber complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, F c-perp, of 625 psi (4.31 MPa) or greater.
[4]The hangers provide torsional resistance, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm). The height, H, of the joist hanger must be equal to the height of the joist to ensure proper attachment of the sheathing to the joist and supporting member.
[5]Headers must have a minimum thickness of 2 inches (51 mm).

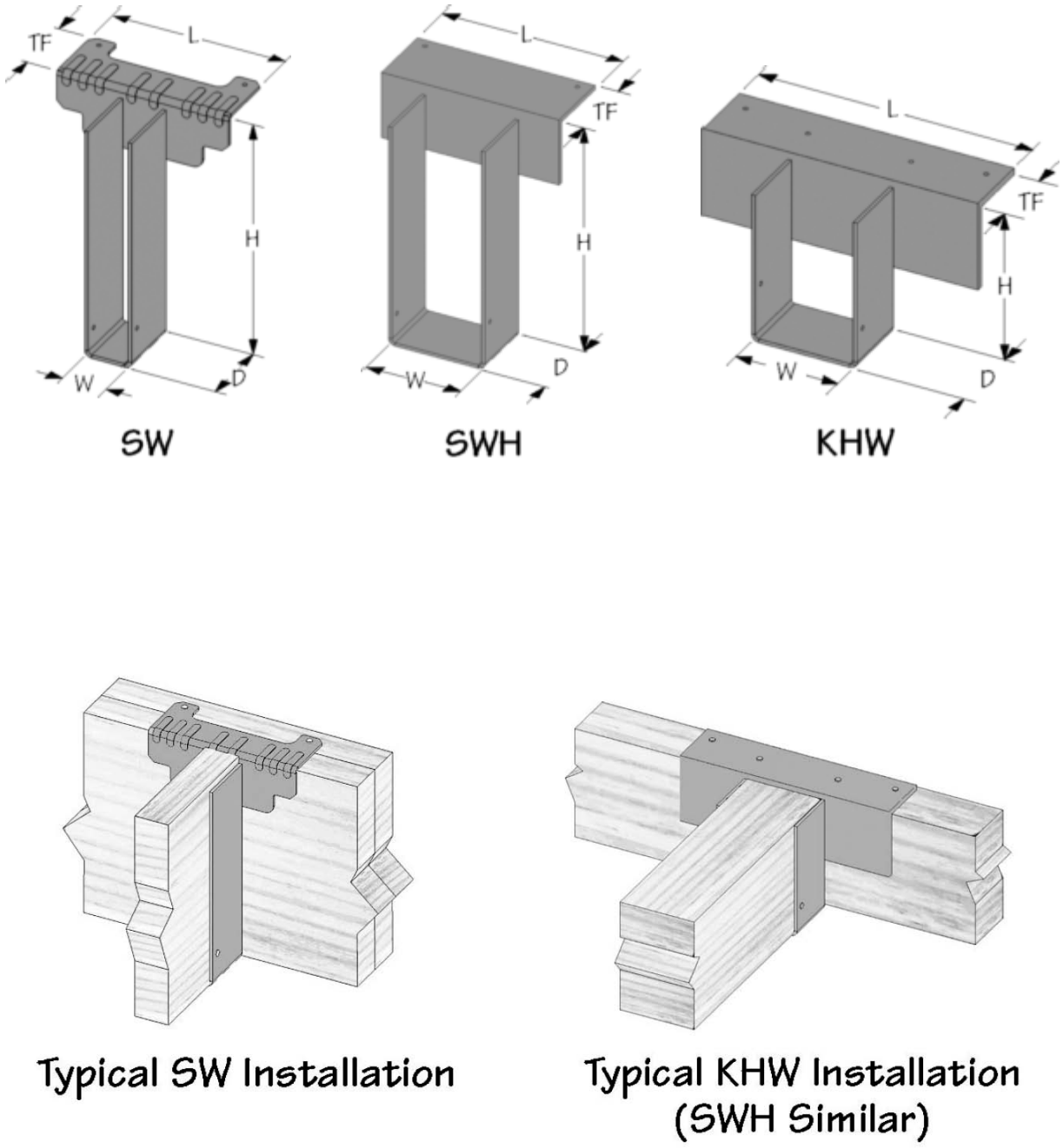



**FIGURE 19—DIMENSIONS AND INSTALLATION OF SW, SWH AND KHW TOP MOUNT HANGERS**

**TABLE 20—TFI TOP MOUNT HANGER ALLOWABLE LOADS[1,2,3]**

| STOCK NO. | STEEL GAGE | DIMENSIONS (inches) | | | | FASTENER SCHEDULE | | | | | ALLOWABLE LOADS (lbs) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Header | | | Joist | | Download | | | Uplift |
| | | W | H | D | TF | Top Qty | Min Face Qty | Type | Qty | Type | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.6 |
| TFI3514 | 16 | $2^3/_8$ | 14 | $2^1/_2$ | $2^1/_{16}$ | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI3516 | 16 | $2^3/_8$ | 16 | $2^1/_2$ | $2^1/_{16}$ | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI3518 | 16 | $2^3/_8$ | 18 | $2^1/_2$ | $2^1/_{16}$ | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI3520 | 16 | $2^3/_8$ | 20 | $2^1/_2$ | $2^1/_{16}$ | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI314 | 16 | $2^9/_{16}$ | 14 | $2^1/_2$ | 2 | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI316 | 16 | $2^9/_{16}$ | 16 | $2^1/_2$ | 2 | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI318 | 16 | $2^9/_{16}$ | 18 | $2^1/_2$ | 2 | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,820 | 2,820 | 2,820 | 215 |
| TFI320 | 16 | $2^9/_{16}$ | 20 | $2^1/_2$ | 2 | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,820 | 2,820 | 2,820 | 215 |
| TFI322 | 16 | $2^9/_{16}$ | 22 | $2^1/_2$ | 2 | 4 | 6 | 16d Common | 2 | 10dx$1^1/_2$ | 2,820 | 2,820 | 2,820 | 215 |
| TFI324 | 16 | $2^9/_{16}$ | 24 | $2^1/_2$ | 2 | 4 | 6 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI326 | 16 | $2^9/_{16}$ | 26 | $2^1/_2$ | 2 | 4 | 6 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI414 | 16 | $3^9/_{16}$ | 14 | $2^1/_2$ | $2^1/_8$ | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI416 | 16 | $3^9/_{16}$ | 16 | $2^1/_2$ | $2^1/_8$ | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI418 | 16 | $3^9/_{16}$ | 18 | $2^1/_2$ | $2^1/_8$ | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,820 | 2,820 | 2,820 | 215 |
| TFI420 | 16 | $3^9/_{16}$ | 20 | $2^1/_2$ | $2^1/_8$ | 4 | 2 | 16d Common | 2 | 10dx$1^1/_2$ | 2,820 | 2,820 | 2,820 | 215 |
| TFI422 | 16 | $3^9/_{16}$ | 22 | $2^1/_2$ | $2^1/_8$ | 4 | 6 | 16d Common | 2 | 10dx$1^1/_2$ | 2,820 | 2,820 | 2,820 | 215 |
| TFI424 | 16 | $3^9/_{16}$ | 24 | $2^1/_2$ | $2^1/_8$ | 4 | 6 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |
| TFI426 | 16 | $3^9/_{16}$ | 26 | $2^1/_2$ | $2^1/_8$ | 4 | 6 | 16d Common | 2 | 10dx$1^1/_2$ | 2,715 | 2,715 | 2,715 | 215 |

For **SI:** 1 inch = 25.4 mm, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp}$ of 625 psi (4.31 MPa), or greater.

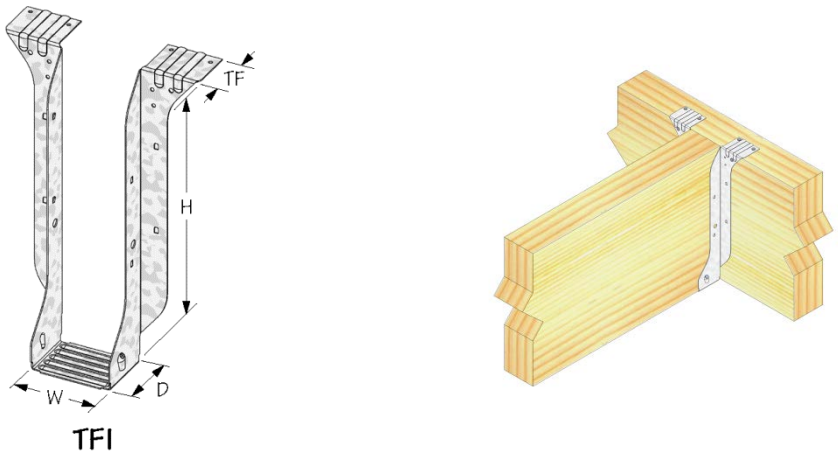



**FIGURE 20—TFI TOP MOUNT HANGER AND TYPICAL INSTALLATION**

**TABLE 21—TFL WOOD I-JOIST HANGER ALLOWABLE LOADS[1,3]**

| STOCK NUMBER | STEEL GAGE | DIMENSIONS (in.) | | | | NAIL SCHEDULE [2] | | | | | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Header | | | Joist | | Download | | | Uplift |
| | | W | H | D | TF | Top | Face | Type | Qty | Type | $C_D$=1.0 | $C_D$=1.15 | $C_D$=1.25 | $C_D$=1.6 |
| TFL17xxx | 18 | $1^3/_4$ | $9^1/_4$ - 20 | 2 | $1^1/_2$ | 4 | 2 | 10d Common | 2 | 10d × $1^1/_2$ | 1,585 | 1,585 | 1,585 | 130 |
| | | | | | | | | 16d Common | 2 | 10d × $1^1/_2$ | 1,745 | 1,745 | 1,745 | 130 |
| TFL20xxx | 18 | $2^1/_8$ | $9^1/_4$ - 20 | 2 | $1^1/_2$ | 4 | 2 | 10d Common | 2 | 10d × $1^1/_2$ | 1,585 | 1,585 | 1,585 | 130 |
| | | | | | | | | 16d Common | 2 | 10d × $1^1/_2$ | 1,745 | 1,745 | 1,745 | 130 |
| TFL23xxx | 18 | $2^5/_{16}$ | $9^1/_4$ - 20 | 2 | $1^1/_2$ | 4 | 2 | 10d Common | 2 | 10d × $1^1/_2$ | 1,585 | 1,585 | 1,585 | 130 |
| | | | | | | | | 16d Common | 2 | 10d × $1^1/_2$ | 1,745 | 1,745 | 1,745 | 130 |
| TFL25xxx | 18 | $2^1/_2$ | $9^1/_4$ - 20 | 2 | $1^1/_2$ | 4 | 2 | 10d Common | 2 | 10d × $1^1/_2$ | 1,585 | 1,585 | 1,585 | 130 |
| | | | | | | | | 16d Common | 2 | 10d × $1^1/_2$ | 1,745 | 1,745 | 1,745 | 130 |

For **SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must also have a reference compression perpendicular to grain design value, $F_{c\text{-}perp}$ of 625 psi (4.31 MPa) or greater.

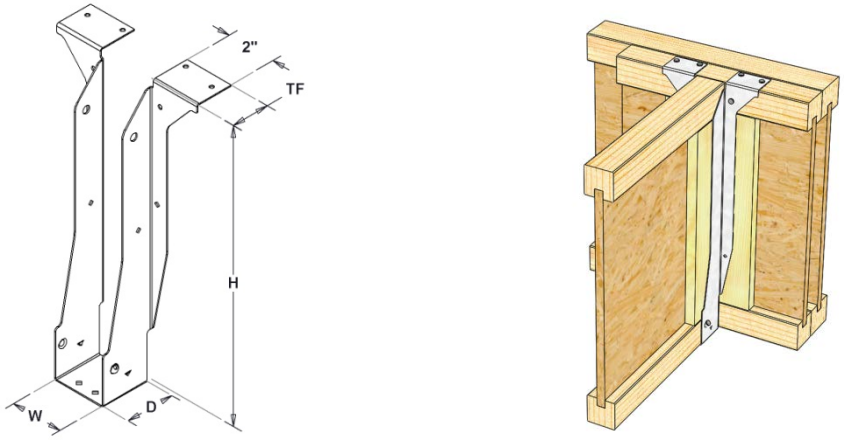



**FIGURE 21—TFL WOOD I-JOIST HANGER**

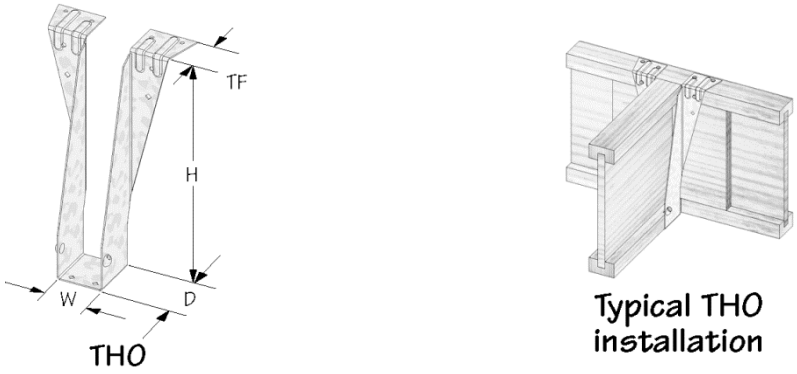



**FIGURE 22—THO TOP MOUNT HANGER**

**(See allowable loads for THO top mount hanger on the following page)**

## TABLE 22—THO TOP MOUNT HANGER ALLOWABLE LOADS[1,2,3]

| STOCK NO. | STEEL GAGE | DIMENSIONS (in.) | | | | NAIL SCHEDULE | | | | | ALLOWABLE LOADS (lbs.) | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Header | | | Joist | | $F_{C\text{-}perp}$ = 460 psi | | | $F_{C\text{-}perp}$ = 625 psi | | | Uplift |
| | | W | H | D | TF | Top | Face | Type | Qty | Type | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.0 | $C_D$ = 1.15 | $C_D$ = 1.25 | $C_D$ = 1.6 |
| THO15925 | 18 | 1 9/16 | 9 1/4 | 2 | 1 1/2 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,110 | 1,145 | 1,165 | 1,235 | 1,235 | 1,235 | 230 |
| THO15950 | 18 | 1 1/2 | 9 1/2 | 2 | 1 1/2 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 230 |
| THO15118 | 18 | 1 1/2 | 11 7/8 | 2 | 1 9/16 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 230 |
| THO15140 | 16 | 1 9/16 | 14 | 2 3/8 | 1 1/2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 230 |
| THO15950-2 | 16 | 3 1/16 | 9 1/2 | 2 3/8 | 1 1/2 | 4 | 6 | 16d Common | 6 | 10d Common | 2,120 | 2,240 | 2,320 | 2,525 | 2,525 | 2,525 | 1,135 |
| THO16950 | 18 | 1 11/16 | 9 1/2 | 2 | 1 1/2 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,110 | 1,145 | 1,165 | 1,235 | 1,235 | 1,235 | 230 |
| THO16112 | 16 | 1 11/16 | 11 1/4 | 2 | 1 1/2 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,110 | 1,140 | 1,160 | 1,235 | 1,235 | 1,235 | 230 |
| THO16118 | 16 | 1 11/16 | 11 7/8 | 2 | 1 1/2 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,110 | 1,140 | 1,160 | 1,235 | 1,235 | 1,235 | 230 |
| THO16140 | 16 | 1 11/16 | 14 | 3 | 1 3/4 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 230 |
| THO17925 | 18 | 1 13/16 | 9 1/4 | 2 | 1 9/16 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,145 | 1,180 | 1,200 | 1,235 | 1,235 | 1,235 | 230 |
| THO17950 | 18 | 1 3/4 | 9 1/2 | 2 | 1 1/2 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 230 |
| THO17118 | 18 | 1 3/4 | 11 7/8 | 2 | 1 9/16 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 230 |
| THO17925-2 | 16 | 3 9/16 | 9 1/4 | 2 3/8 | 1 1/2 | 4 | 6 | 16d Common | 6 | 10d Common | 2,120 | 2,240 | 2,315 | 2,565 | 2,680 | 2,760 | 1,135 |
| THO17950-2 | 16 | 3 9/16 | 9 1/2 | 2 3/8 | 1 9/16 | 4 | 6 | 16d Common | 6 | 10d Common | 2,170 | 2,290 | 2,370 | 2,630 | 2,750 | 2,830 | 1,135 |
| THO17118-2 | 16 | 3 9/16 | 11 7/8 | 2 3/8 | 1 9/16 | 4 | 6 | 16d Common | 6 | 10d Common | 2,020 | 2,140 | 2,220 | 2,430 | 2,550 | 2,630 | 1,135 |
| THO20950 | 18 | 2 1/8 | 9 1/2 | 2 3/8 | 1 15/16 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 230 |
| THO20118 | 18 | 2 1/8 | 11 7/8 | 2 3/8 | 1 15/16 | 4 | 2 | 10d Common | 2 | 10d x 1 1/2 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 1,235 | 230 |
| THO20140 | 18 | 2 1/8 | 14 | 2 3/8 | 1 15/16 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,425 | 2,460 | 2,480 | 2,525 | 2,525 | 2,525 | 230 |
| THO20160 | 18 | 2 1/8 | 16 | 2 3/8 | 1 15/16 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,425 | 2,460 | 2,480 | 2,525 | 2,525 | 2,525 | 230 |
| THO20950-2 | 16 | 4 3/16 | 9 1/2 | 3 | 2 | 4 | 6 | 16d Common | 6 | 10d Common | 2,845 | 2,920 | 2,920 | 2,920 | 2,920 | 2,920 | 1,135 |
| THO20118-2 | 16 | 4 3/16 | 11 7/8 | 3 | 2 | 4 | 6 | 16d Common | 6 | 10d Common | 2,920 | 2,920 | 2,920 | 2,920 | 2,920 | 2,920 | 1,135 |
| THO20140-2 | 12 | 4 3/16 | 14 | 3 | 1 15/16 | 4 | 6 | 16d Common | 6 | 10d Common | 3,190 | 3,300 | 3,380 | 3,640 | 3,640 | 3,640 | 1,145 |
| THO20160-2 | 12 | 4 3/16 | 16 | 3 | 1 15/16 | 4 | 6 | 16d Common | 6 | 10d Common | 3,190 | 3,300 | 3,380 | 3,640 | 3,640 | 3,640 | 1,145 |
| THO23140 | 18 | 2 3/8 | 14 | 2 3/8 | 2 | 4 | 8 | 10d Common | 2 | 10d x 1 1/2 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 230 |
| THO23180 | 18 | 2 3/8 | 18 | 2 3/8 | 2 | 4 | 10 | 10d Common | 2 | 10d x 1 1/2 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 230 |
| THO23200 | 18 | 2 3/8 | 20 | 2 3/8 | 2 | 4 | 10 | 10d Common | 2 | 10d x 1 1/2 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 230 |
| THO23950-2 | 12 | 4 3/4 | 9 1/2 | 3 | 2 | 4 | 6 | 16d Common | 6 | 10d Common | 3,090 | 3,200 | 3,280 | 3,640 | 3,640 | 3,640 | 1,145 |
| THO23118-2 | 12 | 4 3/4 | 11 7/8 | 3 | 2 1/8 | 4 | 6 | 16d Common | 6 | 10d Common | 3,445 | 3,560 | 3,640 | 3,640 | 3,640 | 3,640 | 1,145 |
| THO23140-2 | 12 | 4 3/4 | 14 | 3 | 2 1/8 | 4 | 8 | 16d Common | 6 | 10d Common | 3,790 | 3,940 | 4,045 | 4,420 | 4,420 | 4,420 | 1,145 |
| THO23160-2 | 12 | 4 3/4 | 16 | 3 | 2 1/8 | 4 | 8 | 16d Common | 6 | 10d Common | 3,790 | 3,940 | 4,045 | 4,420 | 4,420 | 4,420 | 1,145 |
| THO23180-2 | 12 | 4 3/4 | 18 | 3 | 2 1/8 | 4 | 10 | 16d Common | 6 | 10d Common | 4,135 | 4,325 | 4,455 | 5,000 | 5,190 | 5,320 | 1,145 |
| THO23200-2 | 12 | 4 3/4 | 20 | 3 | 2 1/8 | 4 | 10 | 16d Common | 6 | 10d Common | 4,135 | 4,325 | 4,455 | 5,000 | 5,190 | 5,320 | 1,145 |
| THO25950 | 18 | 2 9/16 | 9 1/2 | 2 3/8 | 1 15/16 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,290 | 2,390 | 2,455 | 2,525 | 2,525 | 2,525 | 230 |
| THO25118 | 16 | 2 9/16 | 11 7/8 | 2 3/8 | 1 15/16 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,315 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 230 |
| THO25140 | 18 | 2 9/16 | 14 | 2 3/8 | 2 | 4 | 8 | 10d Common | 2 | 10d x 1 1/2 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 230 |
| THO25925-2 | 12 | 5 1/8 | 9 1/4 | 3 | 2 11/16 | 4 | 6 | 16d Common | 6 | 10d Common | 3,640 | 3,640 | 3,640 | 3,640 | 3,640 | 3,640 | 1,145 |
| THO25950-2 | 12 | 5 1/8 | 9 1/2 | 3 | 2 1/8 | 4 | 6 | 16d Common | 6 | 10d Common | 3,125 | 3,240 | 3,315 | 3,640 | 3,640 | 3,640 | 1,145 |
| THO25112-2 | 12 | 5 1/8 | 11 1/4 | 3 | 2 1/8 | 4 | 6 | 16d Common | 6 | 10d Common | 3,445 | 3,560 | 3,640 | 3,640 | 3,640 | 3,640 | 1,145 |
| THO25118-2 | 12 | 5 1/8 | 11 7/8 | 3 | 2 1/8 | 4 | 6 | 16d Common | 6 | 10d Common | 3,445 | 3,560 | 3,640 | 3,640 | 3,640 | 3,640 | 1,145 |
| THO25140-2 | 12 | 5 1/8 | 14 | 3 | 2 1/8 | 4 | 8 | 16d Common | 6 | 10d Common | 3,790 | 3,940 | 4,045 | 4,420 | 4,420 | 4,420 | 1,145 |
| THO25160-2 | 12 | 5 1/8 | 16 | 3 | 2 1/8 | 4 | 8 | 16d Common | 6 | 10d Common | 3,790 | 3,940 | 4,045 | 4,420 | 4,420 | 4,420 | 1,145 |
| THO25180-2 | 12 | 5 1/8 | 18 | 3 | 2 1/8 | 4 | 10 | 16d Common | 6 | 10d Common | 4,135 | 4,325 | 4,455 | 5,000 | 5,190 | 5,320 | 1,145 |
| THO25200-2 | 12 | 5 1/8 | 20 | 3 | 2 1/8 | 4 | 10 | 16d Common | 6 | 10d Common | 4,135 | 4,325 | 4,455 | 5,000 | 5,190 | 5,320 | 1,145 |
| THO26925 | 18 | 2 11/16 | 9 1/4 | 2 3/8 | 2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,285 | 2,390 | 2,450 | 2,525 | 2,525 | 2,525 | 230 |
| THO26950 | 18 | 2 11/16 | 9 1/2 | 2 3/8 | 2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,290 | 2,390 | 2,455 | 2,525 | 2,525 | 2,525 | 230 |
| THO26118 | 16 | 2 11/16 | 11 7/8 | 2 3/8 | 2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,335 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 230 |
| THO26140 | 18 | 2 11/16 | 14 | 2 3/8 | 2 | 4 | 8 | 10d Common | 2 | 10d x 1 1/2 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 230 |
| THO26160 | 18 | 2 11/16 | 16 | 2 3/8 | 2 | 4 | 8 | 10d Common | 2 | 10d x 1 1/2 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 230 |
| THO35925 | 16 | 3 9/16 | 9 1/4 | 2 3/8 | 2 1/2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 230 |
| THO35938 | 16 | 3 9/16 | 9 3/8 | 2 3/8 | 2 9/16 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 230 |
| THO35950 | 16 | 3 9/16 | 9 1/2 | 2 3/8 | 2 7/16 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 230 |
| THO35112 | 16 | 3 9/16 | 11 1/4 | 2 3/8 | 2 1/2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 2,370 | 230 |
| THO35118 | 18 | 3 9/16 | 11 7/8 | 2 3/8 | 2 1/2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,525 | 2,525 | 2,525 | 2,525 | 2,525 | 2,525 | 230 |
| THO35120 | 18 | 3 9/16 | 12 | 2 3/8 | 2 1/2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,525 | 2,525 | 2,525 | 2,525 | 2,525 | 2,525 | 230 |
| THO35130 | 18 | 3 9/16 | 13 | 2 3/8 | 2 1/2 | 4 | 6 | 10d Common | 2 | 10d x 1 1/2 | 2,525 | 2,525 | 2,525 | 2,525 | 2,525 | 2,525 | 230 |
| THO35140 | 18 | 3 9/16 | 14 | 2 3/8 | 2 1/2 | 4 | 8 | 10d Common | 2 | 10d x 1 1/2 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 230 |
| THO35160 | 18 | 3 9/16 | 16 | 2 3/8 | 2 1/2 | 4 | 8 | 10d Common | 2 | 10d x 1 1/2 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 2,400 | 230 |
| THO35180 | 18 | 3 9/16 | 18 | 2 3/8 | 2 1/2 | 4 | 10 | 10d Common | 2 | 10d x 1 1/2 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 2,705 | 230 |

For **SI:** 1 inch = 25.4mm, 1 lbf = 4.45 N, 1 psi = 6.895 kPa.,

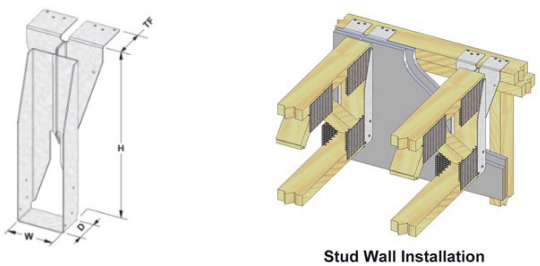
[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with section 3.24.2. Wood members must also have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of either 460 psi (3.17 MPa), or 625 psi (4.31 MPa), as specified in the table above.

**TABLE 23—ALLOWABLE LOADS FOR FWH TOP MOUNT FIREWALL HANGER INSTALLED ON STUD WALL[1,2,3,4]**

| STOCK NO. | STEEL GA. | DIMENSIONS (IN) | | | | FASTENER SCHEDULE | | | | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | W (in) | H (in) | D (in) | T.F. (in) | Top Plate | | Joist | | DF-L | | | Uplift |
| | | | | | | Top Qty. | Type | Qty | Type | 100% | 115% | 125% | 160% |
| FWH28 | 14 | $1^{9}/_{16}$ | $7^{1}/_{8}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH210 | 14 | $1^{9}/_{16}$ | $9^{1}/_{8}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH212 | 14 | $1^{9}/_{16}$ | $11^{1}/_{8}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH1795 | 14 | $1^{13}/_{16}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH17118 | 14 | $1^{13}/_{16}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH1714 | 14 | $1^{13}/_{16}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH1716 | 14 | $1^{13}/_{16}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2095 | 14 | $2^{1}/_{8}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH20118 | 14 | $2^{1}/_{8}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2014 | 14 | $2^{1}/_{8}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2016 | 14 | $2^{1}/_{8}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2395 | 14 | $2^{3}/_{8}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH23118 | 14 | $2^{3}/_{8}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2314 | 14 | $2^{3}/_{8}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2316 | 14 | $2^{3}/_{8}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2318 | 14 | $2^{3}/_{8}$ | $17^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2320 | 14 | $2^{3}/_{8}$ | $19^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2595 | 14 | $2^{9}/_{16}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH25118 | 14 | $2^{9}/_{16}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2514 | 14 | $2^{9}/_{16}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2516 | 14 | $2^{9}/_{16}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2518 | 14 | $2^{9}/_{16}$ | $17^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH2520 | 14 | $2^{9}/_{16}$ | $19^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH3595 | 14 | $3^{9}/_{16}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH35118 | 14 | $3^{9}/_{16}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH3514 | 14 | $3^{9}/_{16}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH3516 | 14 | $3^{9}/_{16}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH3518 | 14 | $3^{9}/_{16}$ | $17^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH3520 | 14 | $3^{9}/_{16}$ | $19^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH3522 | 14 | $3^{9}/_{16}$ | $21^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |
| FWH3524 | 14 | $3^{9}/_{16}$ | $23^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,045 | 2,045 | 2,045 | 180 |

**For SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of 625 psi (4.31 MPa).
[4]Install an additional 10d common nail into each of the two diamond holes in the face of the hanger for an uplift capacity of 380 lbs. at $C_D$=1.6; No further increase is permitted.
[5]When 10d common nails are installed in the two diamond nail holes in the face of the hanger:
· FWH hangers provide torsional resistance for dimension lumber joists or structural composite lumber up to 14 inches in depth, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm).
· The FWH hangers may be used with prefabricated wood I-joists or glued-laminated timber beams.
· The FWH hangers may be used with metal-plate-connected wood trusses. Trusses of all depths shall be braced to prevent rotation and provide lateral stability as specified in the contract documents based on the requirements of the code. For trusses up to 14 inches in depth, the hangers provide a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm).




Stud Wall Installation

**FIGURE 23—FWH TOP MOUNT FIREWALL HANGER AND TYPCIAL INSTALLATION ON STUD WALL**

**TABLE 24—ALLOWABLE LOADS FOR FWH TOP MOUNT FIREWALL HANGER INSTALLED ON SOLID SAWN HEADER[1,2,3,4]**

| STOCK NO. | STEEL GA. | DIMENSIONS (IN) | | | | FASTENER SCHEDULE | | | | ALLOWABLE LOADS (lbs.) | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | W (in) | H (in) | D (in) | T.F. (in) | Top Plate | | Joist | | DF-L | | | Uplift |
| | | | | | | Top Qty. | Type | Qty | Type | 100% | 115% | 125% | 160% |
| FWH28 | 14 | $1^{9}/_{16}$ | $7^{1}/_{8}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH210 | 14 | $1^{9}/_{16}$ | $9^{1}/_{8}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH212 | 14 | $1^{9}/_{16}$ | $11^{1}/_{8}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH1795 | 14 | $1^{13}/_{16}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH17118 | 14 | $1^{13}/_{16}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH1714 | 14 | $1^{13}/_{16}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH1716 | 14 | $1^{13}/_{16}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2095 | 14 | $2^{1}/_{8}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH20118 | 14 | $2^{1}/_{8}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2014 | 14 | $2^{1}/_{8}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2016 | 14 | $2^{1}/_{8}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2395 | 14 | $2^{3}/_{8}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH23118 | 14 | $2^{3}/_{8}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2314 | 14 | $2^{3}/_{8}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2316 | 14 | $2^{3}/_{8}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2318 | 14 | $2^{3}/_{8}$ | $17^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2320 | 14 | $2^{3}/_{8}$ | $19^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2595 | 14 | $2^{9}/_{16}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH25118 | 14 | $2^{9}/_{16}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2514 | 14 | $2^{9}/_{16}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2516 | 14 | $2^{9}/_{16}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2518 | 14 | $2^{9}/_{16}$ | $17^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH2520 | 14 | $2^{9}/_{16}$ | $19^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH3595 | 14 | $3^{9}/_{16}$ | $9^{7}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH35118 | 14 | $3^{9}/_{16}$ | $11^{13}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH3514 | 14 | $3^{9}/_{16}$ | $13^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH3516 | 14 | $3^{9}/_{16}$ | $15^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH3518 | 14 | $3^{9}/_{16}$ | $17^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH3520 | 14 | $3^{9}/_{16}$ | $19^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH3522 | 14 | $3^{9}/_{16}$ | $21^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |
| FWH3524 | 14 | $3^{9}/_{16}$ | $23^{15}/_{16}$ | 2 | $2^{5}/_{8}$ | 6 | 10d | 6 | 10d x $1^{1}/_{2}$ | 2,240 | 2,240 | 2,240 | 180 |

**For SI:** 1 inch = 25.4 mm, 1 lbf = 4.45 N, 1 psi = 6.89 kPa

[1]Allowable loads have been adjusted for load duration factors, $C_D$, as shown, in accordance with the NDS. The allowable loads do not apply to loads of other durations, and are not permitted to be adjusted for other load durations. See Sections 4.1 and 4.2 for additional design and installation requirements.
[2]See Section 3.24.3 for required fastener dimensions and mechanical properties.
[3]Allowable loads shown are for installations in wood members complying with Section 3.24.2. Wood members must have a minimum reference compression perpendicular to grain design value, $F_{c\text{-}perp}$, of 625 psi (4.31 MPa).
[4]Install an additional 10d common nail into each of the two diamond holes in the face of the hanger for an uplift capacity of 380 lbs. at $C_D$=1.6; No further increase is permitted.
[5]When 10d common nails are installed in the two diamond nail holes in the face of the hanger:
· FWH hangers provide torsional resistance for dimension lumber joists or structural composite lumber up to 14 inches in depth, which is defined as a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm).
· The FWH hangers may be used with prefabricated wood I-joists or glued-laminated timber beams.
· The FWH hangers may be used with metal-plate-connected wood trusses. Trusses of all depths shall be braced to prevent rotation and provide lateral stability as specified in the contract documents based on the requirements of the code. For trusses up to 14 inches in depth, the hangers provide a moment of not less than 75 pounds (334 N) times the depth of the joist at which the lateral movement of the top or bottom of the joist with respect to the vertical position of the joist is 0.125 inch (3.2 mm).

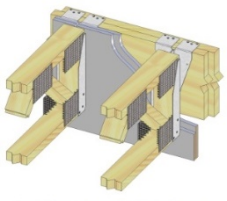


Solid Sawn Header Installation

**FIGURE 24—FWH TOP MOUNT FIREWALL HANGER AND TYPICAL INSTALLATION ON SOLID SAWN HEADER**

**TABLE 25—STEEL TYPES AND CORROSION RESISTANCE**

| PRODUCT | STEEL | CORROSION PROTECTION |
|---|---|---|
| BPH Beam and Purlin Hanger | ASTM A653, SS designation, Grade 40 | G90 [1] |
| HBPH Bean and Purlin Hanger | ASTM A653, SS designation, Grade 40 | G90 [1] |
| HDO Top Mount Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| HL Light Gauge Purlin Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| HLBH Beam Hangers | ASTM A1011, SS designation, Grade 40 | Painted |
| JH Joist Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| JPF Purlin Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| KEG Glulam Beam Hanger | 7 Gage material: ASTM A1011, SS designation, Grade 40; 3 Gage material: ASTM A36 | Painted |
| KEGQ Top Mount Girder Hanger | 7 Gage material: ASTM A1011, SS designation, Grade 40 3 Gage material: ASTM A36 | Painted |
| KF Panel Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| KGLS Glulam Saddle Hanger/ KGLST Glulam Saddle Hanger | 7 Gage material: ASTM A1011, SS designation, Grade 40; 3 Gage material: ASTM A36 | Painted |
| KGLT Glulam Beam Hanger | 7 Gage material: ASTM A1011, SS designation, Grade 40; 3 Gage material: ASTM A36 | Painted |
| KHC Hinge Connector/ KHCST Seismic Strap | 7 Gage material: ASTM A1011, SS designation, Grade 40; 3 Gage material: ASTM A36 | Painted |
| KHGLS Glulam Saddle Hanger/ KHGLST Glulam Saddle Hanger | 7 Gage material: ASTM A1011, SS designation, Grade 40; 3 Gage material: ASTM A36 | Painted |
| KHGLT Glulam Beam Hanger | 7 Gage material: ASTM A1011, SS designation, Grade 40; 3 Gage material: ASTM A36 | Painted |
| KLB Glulam Beam Hanger | 14 Gage material: ASTM A653 SS designation, Grade 40 | G90[1] |
| KB Glulam Beam Hanger | 12 Gage material: ASTM A653, SS designation, Grade 40 | G90[1] |
| KHHB, KGB, and KHG Glulam Beam Hanger | ASTM A1011, SS designation, Grade 40 | Painted |
| KLEG Glulam Beam Hanger | ASTM A1011, SS designation, Grade 40 | Painted |
| KMEG Glulam Beam Hanger | ASTM A1011, SS designation, Grade 40 | Painted |
| KHW Top Mount Hanger | ASTM A1011, SS designation, Grade 40 | Painted |
| MSH Strap Hanger | ASTM A653, SS designation, Grade 40 | G90 [1] |
| PHG Panel Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| PHM Top Flange Hanger | ASTM A1011, SS designation, Grade 40 | Painted |
| PHXU Beam and Purlin Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| SW, SWH, and KHW Top Mount Hanger | ASTM A1011, SS designation, Grade 40 | Painted |
| SCA Stair Angle | ASTM A653, SS designation, Grade 40 | G185[1] |
| TFI Top Mount Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| TFL Wood I-joist Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| THO Top Mount Hanger | ASTM A653, SS designation, Grade 40 | G90[1] |
| FWH Top Mount Firewall Hanger | ASTM A653 SS designation, Grade 40 | G90[1] |

[1]Corrosion protection is a zinc coating in accordance with ASTM A653.

**TABLE 26—CROSS REFERENCE OF PRODUCT NAMES WITH APPLICABLE REPORT SECTIONS, TABLES AND FIGURES**

| PRODUCT NAME | REPORT SECTION | TABLE NO. | FIGURE NO. |
|---|---|---|---|
| BPH Beam and Purlin Hanger | 3.1 | 1 | 1 |
| HBPH Beam and Purlin Hanger | 3.2 | 2 | 2 |
| HDO Top Mount Hanger | 3.3 | 3 | 3 |
| HL Light Gage Purlin Hanger | 3.4 | 4 | 4 |
| HLBH Beam Hanger | 3.5 | 5 | 5 |
| JH Joist Hanger | 3.6 | 6 | 6 |
| JPF Purlin Hanger | 3.7 | 7 | 7 |
| KEG Glulam Beam Hanger [1] | 3.8 | 8 | 8 |
| KEGQ Top Mount Girder Hanger | 3.9 | 9 | 9 |
| KF Panel Hanger | 3.10 | 10 | 10 |
| KGLS Glulam Saddle Hangers [1] | 3.11 | 11 | 11 |
| KGLST Glulam Saddle Hanger [1] | 3.11 | 11 | 11 |
| KGLT Glulam Beam Hanger [1] | 3.12 | 12 | 12 |
| KHC Hinge Connector [1] | 3.13 | 13 | 13 |
| KHCST and KHCSTR Seismic Strap [1] | 3.13 | 13 | 13 |
| KHGLS Glulam Saddle Hanger [1] | 3.11 | 11 | 11 |
| KHGLST Glulam Saddle Hanger [1] | 3.11 | 11 | 11 |
| KHGLT Glulam Beam Hanger [1] | 3.12 | 12 | 12 |
| KLB, KB, KHHB, KGB, and KHGB Top Mount Hangers | 3.14 | 14 | 14 |
| KHW Top Mount Hanger [1] | 3.19 | 19 | 19 |
| KLEG Glulam Beam Hanger [1] | 3.8 | 8 | 8 |
| KMEG Glulam Beam Hanger [1] | 3.8 | 8 | 8 |
| MSH Strap Hanger | 3.153 | 15 | 15 |
| PHG Panel Hanger | 3.16 | 16 | 16 |
| PHM Top Flange Hanger [1] | 3.17 | 17 | 17 |
| PHXU Beam and Purlin Hanger | 3.18 | 18 | 18 |
| SW and SWH Top Mount Hanger [1] | 3.19 | 19 | 19 |
| TFI Top Mount Hanger | 3.20 | 20 | 20 |
| TFL Top Mount Hanger | 3.21 | 21 | 21 |
| THO Top Mount Hanger | 3.22 | 22 | 22 |
| FWH Top Mount Firewall Hanger | 3.23 | 23 and 24 | 23 and 24 |

[1]Products with factory welds are manufactured at the MiTek manufacturing facilities in Largo, Florida; Tolleson, Arizona; and Montgomery, Minnesota, under a quality-control program with inspections by ICC-ES.

**DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES**
**Section: 06 05 23—Wood, Plastic, and Composite Fastenings**

**REPORT HOLDER:**

**MITEK® INC.**

**EVALUATION SUBJECT:**

**MITEK USP TOP MOUNT HANGERS**

## 1.0 REPORT PURPOSE AND SCOPE

**Purpose:**

The purpose of this evaluation report supplement is to indicate that MiTek USP Top Mount Hangers for connecting wood framing members, described in ICC-ES evaluation report ESR-3444, have also been evaluated for compliance with the codes noted below as adopted by the Los Angeles Department of Building and Safety (LADBS).

**Applicable code editions:**

- 2020 *City of Los Angeles Building Code* (LABC)
- 2020 *City of Los Angeles Residential Code* (LARC)

## 2.0 CONCLUSIONS

The MiTek USP Top Mount Hangers for connecting wood framing members, described in Sections 2.0 through 7.0 of the evaluation report ESR-3444, comply with the LABC Chapter 23, and the LARC, and are subjected to the conditions of use described in this supplement.

## 3.0 CONDITIONS OF USE

MiTek USP Top Mount Hangers for connecting wood framing members, described in this evaluation report supplement must comply with all of the following conditions:

- All applicable sections in the evaluation report ESR-3444.
- The design, installation, conditions of use and identification are in accordance with the 2018 *International Building Code®* (IBC) provisions noted in the evaluation report ESR-3444.
- The design, installation and inspection are in accordance with additional requirements of LABC Chapters 16 and 17, as applicable.
- The supported end of joist or beam must be within $^1/_4$-inch from the supporting member.
- Solid blocking must be required for all joist hangers supporting roof joists having one end twisted more than one-half degree per foot of length relative to the other end, except as specifically noted in the evaluation report.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This supplement expires concurrently with the evaluation report, reissued October 2020.

**DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES**
**Section: 06 05 23—Wood, Plastic, and Composite Fastenings**

**REPORT HOLDER:**

**MITEK® INC.**

**EVALUATION SUBJECT:**

**MITEK USP TOP MOUNT HANGERS**

## 1.0 REPORT PURPOSE AND SCOPE

**Purpose:**

The purpose of this evaluation report supplement is to indicate that the MiTek USP Top Mount Hangers, described in ICC-ES evaluation report ESR-3444, have also been evaluated for compliance with the codes noted below.

**Applicable code editions:**

- 2020 and 2017 *Florida Building Code—Building*
- 2020 and 2017*Florida Building Code—Residential*

## 1.0 CONCLUSIONS

The MiTek USP Top Mount Hangers, described in Sections 2.0 through 7.0 of the evaluation report ESR-3444, comply with the *Florida Building Code—Building*, and the *Florida Building Code—Residential*, provided the design requirements are determined in accordance with the *Florida Building Code-Building* or the *Florida Building Code-Residential*, as applicable. The installation requirements noted in ICC-ES evaluation report ESR-3444 for the 2018 and 2015 *International Building Code®* meet the requirements of the *Florida Building Code-Building* or the *Florida Building Code-Residential*, as applicable..

Use of the MiTek USP Top Mount Hangers has also been found to be in compliance with the High-Velocity Hurricane Zone provisions of the *Florida Building Code—Building*, and the *Florida Building Code—Residential* with the following condition:

a. For connections subject to uplift, the connection must be designed for no less than 700 pounds (3114 N).

For products falling under Florida Rule 61G20-3, verification that the report holder's quality assurance program is audited by a quality assurance entity approved by the Florida Building Commission for the type of inspections being conducted is the responsibility of an approved validation entity (or the code official when the report holder does not possess an approval by the Commission).

This supplement expires concurrently with the evaluation report, reissued October 2020.