

ICC-ES Evaluation Report


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<p>DIVISION: 06 00 00— WOOD, PLASTICS, AND COMPOSITES</p> <p>Section: 06 05 23— Wood, Plastic, and Composite Fastenings</p>	<p>REPORT HOLDER: JENWEST ENTERPRISES LLC DBA ADVANCED CONNECTOR SYSTEMS</p> <p>ADDITIONAL LISTEE: R.H. TAMLYN & SONS, LP</p>	<p>EVALUATION SUBJECT: TIE STRAPS, FACE MOUNT JOIST HANGERS AND FRAMING ANCHORS</p>	
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1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2021, 2018, 2015, 2012 and 2009 [International Building Code® \(IBC\)](#)
- 2021, 2018, 2015, 2012 and 2009 [International Residential Code® \(IRC\)](#)

Property evaluated:

Structural

2.0 USES

The Advanced Connector Systems STLA, STMA, STLI, STL, STMI, STM and STMC Series Straight Tie Straps; and the C and C3 Coiled Tie Straps, are used as wood framing connectors to transfer wind or seismic loads between wood members. The straps may also be used in structures regulated by the IRC where an engineered design is submitted in accordance with IRC Section R301.1.3.

The Advanced Connector Systems FLX, FHX, FHXC, FHHX, FHGX, F, FH, FHC, FSR/L, FSR/LC, FSHR/L AND FSHR/LC Series face-mount hangers; and L and PT framing anchors are used as wood framing connectors in accordance with IBC Section 2304.10.4 (2018 and 2015 Section 2304.10.3; 2012 and 2009 IBC Section 2304.9.3). The products may also be used in structures regulated under the IRC when an engineered design is submitted in accordance with Section R301.1.3 of the IRC.

3.0 DESCRIPTION

3.1 Straight Tie Straps:

The Advances Connector Systems STLA, STMA, STLI, STL, STMI, STM and STMC Series straight tie straps are supplied in the manufacturer-designated lengths with prepunched holes for nails.

3.1.1 STLA and STMA Series: The STLA and STMA Series tie straps are 11¹/₄ to 49³/₄ inches (286 to 1264 mm) long and 1¹/₄ inches (31.8 mm) wide. Each strap has two rows of staggered 0.156-inch-diameter (3.96 mm) prepunched nail holes. Longitudinal spacing (pitch) of consecutive holes alternates between 2¹/₄ inches (57.2 mm) and 1¹/₂ inches (12.7 mm), and the transverse distance (gage) between staggered holes is 1¹/₂ inch (12.7 mm). See [Figure 1](#) for a drawing of the STLA and STMA Series tie straps. See [Table 1](#) for strap dimensions, fastener schedules, and allowable tension loads.

3.1.2 STLI Series: The STLI Series tie straps are either 48 or 72 inches (1219 or 1829 mm) long and $3\frac{3}{4}$ inches (95.3 mm) wide. Each strap has two rows of staggered 0.156-inch-diameter (3.96 mm) prepunched nail holes. Longitudinal spacing (pitch) of consecutive holes in a row is 3 inches (76.2 mm), and the transverse distance (gage) between staggered holes in a row is $\frac{3}{8}$ inch (9.5 mm) and 2 inches (50.8 mm) between the holes in two rows. See [Figure 1](#) for a drawing of the STLI Series tie straps. See [Table 1](#) for strap dimensions, fastener schedules, and allowable tension loads.

3.1.3 STL Series: The STL9, STL12, STL18, and STL22 straps are $9\frac{3}{8}$ to $21\frac{5}{8}$ inches (267 to 549 mm) long and $1\frac{1}{4}$ inches (31.8 mm) wide. Each strap has unevenly staggered 0.156-inch-diameter (3.96 mm) prepunched nail holes spaced 1.228 inches (31 mm) on center. See [Figure 1](#) for a drawing of the STL9, STL12, STL18, and STL22 tie straps.

The STL292, STL2122, STL2215, STL6215, STL6224, and STL6236 straps are $10\frac{1}{2}$ to $34\frac{3}{4}$ inches (267 to 883 mm) long, and have a constant width of 2 inches (50.8 mm). Each STL strap has two rows of staggered 0.188-inch-diameter (4.8 mm) prepunched nail holes spaced at $\frac{7}{8}$ inch (22.2 mm) on center. The longitudinal spacing of consecutive holes in the same row is $1\frac{3}{4}$ inches (44.5 mm) on center and transverse distance between staggered holes is $1\frac{1}{4}$ inches (31.8 mm). See [Figure 1](#) for a drawing of the STL292, STL2122, STL2215, STL6215, STL6224, and STL6236 tie straps.

The STL2115 tie strap is $16\frac{5}{8}$ inches (422 mm) long and $\frac{3}{4}$ inch (19.1 mm) wide and has one row of 0.188-inch diameter (4.8 mm) prepunched nail holes, spaced at $1\frac{5}{8}$ inches (41.3 mm) on center. See [Figure 1](#) for a drawing of the STL2115 tie strap.

See [Table 1](#) for STL Series tie strap dimensions, fastener schedules, and allowable tension loads.

3.1.4 STMI Series: The STMI Series tie straps are $2\frac{1}{16}$ inches (52.4 mm) wide and from 26 to 72 inches (660 to 1829 mm) long. Each strap has three rows of 0.156-inch-diameter (3.96 mm) prepunched nail holes. The longitudinal spacing of consecutive holes in a row is 3 inches (76.2 mm) on center. The holes in adjacent rows are offset by 1 inch (25.4 mm), resulting in one nail hole per inch of strap. The transverse spacing between two holes is 0.813 inch (20.7 mm) and 0.5 inch (12.7 mm), respectively. See [Figure 1](#) for a drawing of the STMI Series tie straps. See [Table 1](#) for strap dimensions, fastener schedules, and allowable tension loads.

3.1.5 STM Series: The STM Series tie straps are 27 to 72 inches (786 to 1829 mm) long and 2 inches (50.8 mm) wide. Each strap has two rows of staggered 0.188-inch-diameter (4.8 mm) prepunched nail holes. The longitudinal spacing of consecutive holes in a row ranges from 1.68 inches (42.7 mm) to 1.77 inches (44.9 mm) on center. The transverse spacing between the staggered holes is $1\frac{1}{4}$ inches (31.8 mm) on center. See [Figure 1](#) for a drawing of the STM series tie straps. See [Table 1](#) for strap dimensions, fastener schedules, and allowable loads.

3.1.6 STMC Series: The STMC Series tie straps are 32 to 78 inches (813 to 1981 mm) long and 3 inches (76.2 mm) wide. Each strap has two rows of staggered 0.188-inch-diameter (4.8 mm) prepunched holes. The longitudinal spacing of consecutive holes in a row is $1\frac{1}{2}$ inches (38.1 mm) on center and the transverse spacing of the staggered holes is 1.5 inches (38.1 mm) on center. See [Figure 1](#) for a drawing of the STMC Series tie straps. See [Table 1](#) for strap dimensions, fastener schedules, and allowable tension loads.

3.2 Coiled Tie Straps:

The C and C13 Series straps are supplied in coils and are cut to a specified length at the jobsite for engineered applications where the connected wood members are not abutting each other.

3.2.1 C Series: The C14, C16, C18, C20 and C22 straps are supplied as 100-, 150-, 200-, 250-, and 300-foot-long (30.5, 45.7, 61.0, 76.2, and 91.4 m) coils, respectively. The coiled strap is $1\frac{1}{4}$ inches (31.8 mm) wide and has two rows of staggered 0.156-inch-diameter (3.96 mm) prepunched holes. The longitudinal spacing of the consecutive holes in each row is 2 inches (50.8 mm) on center. See [Figure 2](#) for a drawing of the C Series straps and [Figure 5](#) for a typical installation. See [Table 2](#) for strap dimensions, fastener schedules, and allowable tension loads.

3.2.2 C3 Series: The C312 strap is supplied as a 40-foot-long (12.19 m) coil, and the C314 strap is supplied as a $52\frac{1}{2}$ -foot-long (16.0 m) coil. The coiled strap is 3 inches (76.2 mm) wide and has two rows of alternating prepunched round holes with 0.188-inch-diameter (4.8 mm). The longitudinal spacing of the alternating holes in each row is $1\frac{3}{4}$ inches (44.5 mm) on center. See [Figure 4](#) for a drawing of the C314 and C312 strap, and [Figure 5](#) for a typical installation. See [Table 2](#) for strap dimensions, fastener schedules, and allowable tension loads.

The C316 strap is supplied as a 54-foot-long (16.46 m) coil. The coiled strap is 3 inches (76.2 mm) wide and has two rows of prepunched alternating round holes with 0.188-inch-diameter (4.8 mm). The longitudinal spacing of the alternating adjacent holes is 1½ inches (38.1 mm) and the transverse spacing between the adjacent alternating holes is 1½-inch (38.1 mm). See [Figure 3](#) for a drawing of the C316 strap and [Figure 5](#) for a typical installation. See [Table 2](#) for strap dimensions, fastener schedules, and allowable tension loads.

3.3 Face-mount Hangers:

3.3.1 FLX Series Hangers: The FLX series hangers are formed from No. 18 gage galvanized steel. The hangers have prepunched holes for the installation of nails that are driven at a 45-degree to 50-degree angle through the joist and into the header, which is described as double shear nailing in the installation instructions. See [Table 3](#) for the hanger dimensions, required fasteners, and allowable loads; [Figure 6](#) for a drawing of a typical FLX series hanger for 2x joists and [Figure 7](#) for a drawing of a typical FLX series hanger for all other joist sizes.

3.3.2 FHX and FHXC Series Hangers: The FHX and FHXC series hangers are formed from No. 14 gage galvanized steel with the exception of the FHX26, FHX28, FHX210, and FHX1.81/10 hangers, which are formed from No. 16 gage galvanized steel. The FHX models having a seat width (W) equal to 3⁹/₁₆ inches (90.5 mm) are available with concealed flanges and are specified with the model designation FHXC. The hangers have prepunched holes for the installation of joist nails that are driven at a 45-degree to 50-degree angle through the joist and into the header, which is described as double shear nailing in the installation instructions. See [Table 3](#) for the hanger dimensions, required fasteners, and allowable loads; and [Figure 8](#) for a drawing of a typical FHX series hanger.

3.3.3 FHHX Series Hangers: The FHHX series hangers are formed from No. 14 gage galvanized steel. The hangers have prepunched holes for the installation of joist nails that are driven at a 45-degree to 50-degree angle through the joist and into the header, which is described as double shear nailing in the installation instructions. See [Table 3](#) for the hanger dimensions, required fasteners, and allowable loads; [Figure 9](#) for a drawing of a typical FHHX series hanger.

3.3.4 FHGX Series Hangers: The FHGX series hangers are formed from No. 12 or 11 gage galvanized steel. Refer to [Table 4](#) for steel gage used in producing FHGX series hangers. The hangers have prepunched holes for the installation of nails that are driven at a 45-degree to 50-degree angle through the joist and into the header, which is described as double shear nailing in the installation instructions. See [Table 4](#) for the FHGX series hanger model numbers, hanger dimensions, required fasteners, and allowable loads; and [Figure 10](#) for a drawing of a typical FHGX hanger.

3.3.5 F Series Hangers: The F series hangers are formed from No. 16 gage galvanized steel. The hangers have prepunched holes for the installation of nails. See [Table 5](#) for the hanger dimensions, required fasteners, and allowable loads; and [Figure 11](#) for a drawing of a typical F series hanger.

3.3.6 FH and FHC Series Hangers: The FH and FHC series hangers are formed from No. 14 gage galvanized steel. FH hangers having a width equal to or greater than 2⁹/₁₆ inches (65 mm) are available with concealed flanges and are specified with the model designation FHC. The hangers have prepunched holes for the installation of nails. See [Table 6](#) for the hanger width and height dimensions of specific model numbers and for the reference number for the applicable design values in [Table 6A](#). See [Table 6A](#) for allowable loads tabulated for the applicable seat width range, the seat depth and the minimum height of the FH series hangers; and the required type and number of fasteners. Refer to [Figure 12](#) for a drawing of a typical FH series hanger.

3.3.7 FSR/L and FSR/LC Series Hangers: The FSR/L series hangers are formed from No. 16 gage galvanized steel. The FSR and FSL hangers are mirror-image identical hangers, skewed at 45 degrees right and left, respectively. The hangers have prepunched holes for the installation of nails. The 2-2x and 4x FSR/L models are available with the A2 flanges concealed and are identified with the model designation FSR/LC. See [Table 7](#) for the hanger dimensions, required fasteners, and allowable loads; and [Figure 13](#) for a drawing of typical FSR/L series hangers.

3.3.8 FHSR/L and FHSR/LC Series Hangers: The FHSR/L series hangers are formed from No. 14 gage galvanized steel. The FHSR and FHSL hangers are mirror-image identical hangers, skewed at 45 degrees right and left, respectively. The hangers have prepunched holes for the installation of nails. The 2-2x and 4x FHSR/L models are available with the A2 flanges concealed and are identified with the model designation FHSR/LC. See [Table 7](#) for the hanger dimensions, required fasteners, and allowable loads; and [Figure 13](#) for a drawing of typical FHSR/L series hangers.

3.4 Framing Anchors: The L34 and L35 framing anchors are used to tie two wood framing members together that are oriented perpendicular to each other. The anchors have prepunched holes for the installation of nails. See [Figures 14, 15 and 18](#). The L35F and PT4 framing anchors are used to tie two wood members together parallel to and in the same plane to each other. See [Figures 16, 17 and 19](#). See [Table 8](#) for model numbers, fastener schedules, and allowable loads.

3.5 Materials:

3.5.1 Tie Strap Steel: The tie straps described in this report are manufactured from galvanized steel complying with ASTM A653, SS designation, and minimum G90 zinc coating specifications. Refer to [Tables 1 and 2](#) in this report for the minimum specified yield and tensile strengths, F_y and F_u , respectively, of the steel for each strap described in this report. The lumber treater or the holder of this evaluation report (JenWest Enterprises) should be contacted for recommendations on minimum corrosion resistance of steel connectors in contact with the specific proprietary preservative treated or fire-retardant treated lumber.

3.5.2 Hanger and Framing Anchor Steel: All hangers and framing anchors described in this report, with the exception of the FHGX series hangers, are manufactured from galvanized steel complying with ASTM A653 designation, Grade 33 with a minimum yield strength, F_y , of 33,000 psi (227 MPa) and a minimum tensile strength, F_u , of 45,000 psi (310 MPa). The FHGX series hangers are manufactured from galvanized steel complying with ASTM A653 designation, Grade 40 with a minimum yield strength, F_y , of 40,000 psi (276 MPa) and a minimum tensile strength, F_u , of 55,000 psi (379 MPa). All hangers and framing anchors have a minimum G90 zinc coating specification in accordance with ASTM A653. The lumber treater or the holder of this evaluation report (JenWest Enterprises) should be contacted for recommendations on minimum corrosion resistance of steel connectors in contact with the specific proprietary preservative treated or fire-retardant treated lumber.

3.5.3 Tie Strap, Hanger and Anchor Material Thickness: Minimum base-steel thicknesses for the tie straps, hangers and framing anchors in this report are as follows:

Nominal Thickness (gage)	Base Steel Thickness (inches)
No. 10	0.1275
No. 11	0.1196
No. 12	0.0975
No. 14	0.0685
No. 16	0.0555
No. 18	0.0445
No. 20	0.0334
No. 22	0.0274

For SI: 1 inch = 25.4 mm

3.5.4 Wood: Wood members with which the tie straps, hangers and framing anchors are used must be either sawn lumber having a minimum assigned specific gravity of 0.50 or engineered lumber having a minimum equivalent specific gravity of 0.50, and having a maximum moisture content of 19 percent (16 percent for engineered lumber), except as noted in Section 4.1. The hangers and framing anchors may also be used with structural glued laminated timbers with the same properties of sawn lumber. The thickness (depth) of the wood main member (header, beam, or ledger) must be equal to or greater than the length of the fasteners specified in the tables in this report, unless the reduced penetration effect on the load calculation per the applicable National Design Specification (NDS) for Wood Construction and its Supplement is taken into account, or as required by wood member design, whichever is greater.

3.5.5 Fasteners: Nails used for hangers described in this report must comply with ASTM F1667 and have the following minimum fastener dimensions and bending yield strengths (F_{yb}):

NAIL TYPE	SHANK DIAMETER (inches)	NAIL LENGTH (inches)	F_{yb} (psi)
8d x 1½	0.131	1½	100,000
8d common	0.131	2½	100,000
10d x 1½	0.148	1½	90,000
10d common	0.148	3	90,000
16d x 2½	0.162	2½	90,000
16d common	0.162	3½	90,000
16d sinker	0.148	¾	90,000

Fasteners used in contact with preservative treated or fire-retardant treated lumber must, as a minimum, comply with IBC Section 2304.10.6 (2018 and 2015 IBC Section 2304.10.5, 2012 and 2009 IBC Section 2304.9.5), IRC Section R317.3, as applicable. The lumber treater must be contacted for recommendations on minimum corrosion resistance and connection capacities of fasteners used with the specific proprietary preservative-treated or fire-retardant-treated lumber.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The tabulated allowable loads shown in this evaluation report are based on allowable stress design (ASD). These values include the load duration factor, C_D , corresponding to the applicable loads in accordance with the NDS, for cases in which the allowable load is governed by the calculated lateral or withdrawal load of the fasteners. Tabulated allowable loads are for applications in which the connectors are fastened to wood members used under continuous dry interior conditions, and where sustained temperatures are 100°F (37.8°C) or less. When the connectors are fastened to wood having a moisture content greater than 19 percent (16 percent for engineered wood products), or where wet service is expected, the allowable loads must be adjusted by the wet service factor, C_M , specified in the NDS. 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 the NDS.

Connected wood members must be analyzed for load-carrying capacity at the tie strap connection in accordance with the NDS.

4.2 Installation:

Installation of the connectors must be in accordance with this evaluation report and the manufacturer's published installation instructions. In the event of a conflict between this report and the manufacturer's published installation instructions, this report governs.

5.0 CONDITIONS OF USE:

The Advanced Connector Systems connectors 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 must be manufactured, identified, and installed in accordance with this report and the manufacturer's published installation instructions. A copy of the instructions must be at the jobsite at all times during construction.
- 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 Adjustment factors noted in Section 4.1 of this report and the applicable codes must be considered, where applicable.

- 5.4 Connected wood members and fasteners must comply, respectively, with Sections 3.5.4 and 3.5.5 of this report.
- 5.5 Use of connectors with preservative-treated and fire-retardant-treated lumber must be in accordance with Sections 3.5.1 and 3.5.2 of this report. Use of fasteners with treated lumber must comply with Section 3.5.5 of this report.

6.0 EVIDENCE SUBMITTED

Data in accordance with the [ICC-ES Acceptance Criteria for Joist Hangers and Similar Devices \(AC13\)](#), dated October 2018 (editorially revised December 2020).

7.0 IDENTIFICATION

- 7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-2556) along with the name, registered trademark, or registered logo of the report holder and/or listee must be included in the product label.
- 7.2 In addition, each connector described in this report is die-stamped with the model number.
- 7.3 The report holder's contact information is the following:

JENWEST ENTERPRISES LLC DBA ADVANCED CONNECTOR SYSTEMS
3518 WEST BOULDEN BOULEVARD
BLUFFDALE, UTAH 84065
(801) 735-1178
jenwestutah@hotmail.com
www.connectwithacs.com

- 7.4 The Additional Listee's contact information is the following:

R.H. TAMLYN & SONS, LP
13623 PIKE ROAD
STAFFORD, TEXAS 77477
info@tamlyn.com

TABLE 1—ALLOWABLE TENSION LOADS FOR STRAIGHT TIE STRAPS

MODEL SERIES	MODEL NUMBER	TIE STRAP PROPERTIES					NAILS ¹ Total Qty-Type	ALLOWABLE TENSION LOADS ^{2,3,4,5} (lbf)
		Thickness (Gage No.)	Width (inches)	Length (inches)	Min. F _y (ksi)	Min. F _u (ksi)		C _D =1.6
STLA	STLA9	18	1 1/4	11 1/4	50	65	8-10d common	750
	STLA12	18	1 1/4	14	50	65	10-10d common	940
	STLA15	18	1 1/4	16 3/4	50	65	12-10d common	1,130
	STLA 18	18	1 1/4	19 1/2	50	65	14-10d common	1,315
	STLA 21	18	1 1/4	22 1/4	50	65	16-10d common	1,505
	STLA 24	18	1 1/4	25	50	65	18-10d common	1,620 ⁽⁵⁾
	STLA 30	16	1 1/4	30 1/2	50	65	22-10d common	2,015 ⁽⁵⁾
STMA	STMA9	18	1 1/4	11 1/4	50	65	8-10d common	750
	STMA12	18	1 1/4	14	50	65	10-10d common	940
	STMA15	18	1 1/4	16 3/4	50	65	12-10d common	1,130
	STMA18	18	1 1/4	19 1/2	50	65	14-10d common	1,315
	STMA21	18	1 1/4	22 1/4	50	65	16-10d common	1,505
	STMA24	16	1 1/4	25	50	65	18-10d common	1,730
	STMA30	14	1 1/4	30 1/2	50	65	22-10d common	2,190
	STMA36	14	1 1/4	36	50	65	26-10d common	2,490 ⁽⁵⁾
STLI	STLI49	18	3 3/4	48	40	55	32-10d x 1 1/2	2,970
	STLI73	18	3 3/4	72	40	55	48-10d x 1 1/2	4,205 ⁽⁵⁾
STL	STL292	20	2	10 1/2	33	45	12-16d x 2 1/2	1,305
	STL2122	20	2	14	40	55	16-16d x 2 1/2	1,685 ⁽⁵⁾
	STL2115	18	3/4	16 5/8	40	55	10-16d x 2 1/2	725 ⁽⁵⁾
	STL2215	20	2	17 1/2	50	65	20-16d x 2 1/2	2,030 ⁽⁵⁾
	STL6215	16	2	17 1/2	33	45	20-16d x 2 1/2	2,210 ⁽⁵⁾
	STL6224	16	2	24 1/2	40	55	28-16d x 2 1/2	2,800 ⁽⁵⁾
	STL6236	14	2	34 3/4	50	65	40-16d x 2 1/2	4,165 ⁽⁵⁾
	STL9	16	1 1/4	9 3/8	40	55	8-16d x 2 1/2	900
	STL12	16	1 1/4	11 7/8	40	55	10-16d x 2 1/2	1,125
	STL18	16	1 1/4	17 3/4	40	55	14-16d x 2 1/2	1,570
STMI	STMI26	12	2 1/16	26	40	55	26-10d x 1 1/2	2,745
	STMI36	12	2 1/16	36	40	55	36-10d x 1 1/2	3,805
	STMI48	12	2 1/16	48	40	55	48-10d x 1 1/2	5,070
	STMI60	11	2 1/16	60	40	55	60-10d x 1 1/2	6,220 ⁽⁵⁾
	STMI72	11	2 1/16	72	40	55	72-10d x 1 1/2	6,220 ⁽⁵⁾
STM	STM27	12	2	27	40	55	32-16d x 2 1/2	3,700
	STM37	12	2	37	50	65	42-16d x 2 1/2	5,360
	STM48	12	2	48	50	65	50-16d x 2 1/2	5,855 ⁽⁵⁾
	STM60	10	2	60	50	65	68-16d x 2 1/2	7,655 ⁽⁵⁾
	STM72	10	2	72	50	65	68-16d x 2 1/2	7,655 ⁽⁵⁾
STMC	STMC28	16	3	32	50	65	36-16d sinker	3,465
	STMC40	16	3	42	50	65	52-16d sinker	4,985 ⁽⁵⁾
	STMC52	16	3	54	50	65	62-16d sinker	4,985 ⁽⁵⁾
	STMC66	14	3	66	50	65	76-16d sinker	6,150 ⁽⁵⁾
	STMC78	14	3	78	50	65	76-16d sinker	6,150 ⁽⁵⁾

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

(Continued)

TABLE 1 Notes (Continued):

¹Total fasteners are the minimum number of nails to achieve the tabulated allowable loads. One half of the total number must be installed in each wood member forming the connection. Fasteners must comply with Section 3.5.5 of this report.

²Allowable tension loads are based on the steel straps connected to wood members having an assigned or equivalent minimum specific gravity of 0.50.

³Allowable tension loads are the lesser of the tie strap steel strength or the connection strength.

⁴Tabulated allowable tension loads are governed by connection strength, unless noted otherwise. Connection strength has been derived by multiplying the number of nails by the minimum value from the yield mode equations in Section 12.3.1 of the NDS (Section 11.3.1 for the 2012 and 2009 IBC), where the side member (i.e. the steel tie strap) dowel bearing strength, F_{bs} , is equal to $2.2F_u/C_D$, where the load duration factor, C_D , equals 1.6 as shown in the table, and where the minimum specified tensile strength, F_u , of the steel strap is as shown in the table. The tabulated allowable tension loads governed by connection strength have been multiplied by the load duration factor, C_D , noted in the table.

⁵The tabulated allowable tension load is governed by steel strength, and does not include a one-third stress increase or the load duration factor, C_D . The steel strength is the lesser of the yielding at the gross section of the strap, the fracture in the net section away from the connection, or the fracture at the connection in accordance with Section D of AISI S100 (Section C2 for the 2015, 2012 and 2009 IBC).

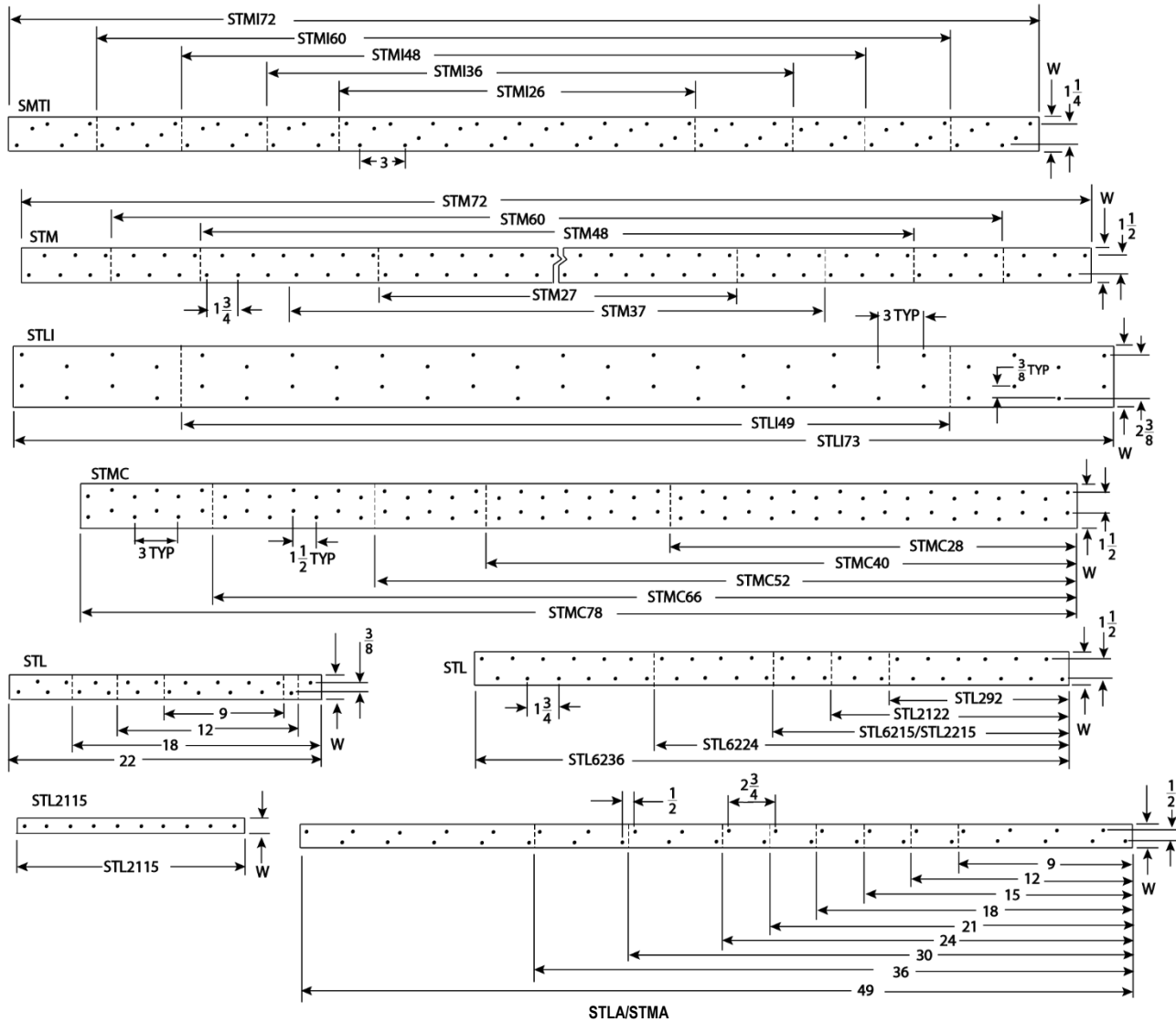


FIGURE 1—STRAIGHT STRAP TIES

TABLE 2—ALLOWABLE TENSION LOADS FOR COILED STRAPS

MODEL SERIES	MODEL NUMBER	TIE STRAP PROPERTIES					NAILS ¹ (Total Qty-Type)	ALLOWABLE TENSION LOADS ^{2,3} (lbf)	
		Thickness (Gage-No.)	Width (inches)	Length (inches)	Min. F _y (ksi)	Min. F _u (ksi)		Based on Connection Strength C _D =1.60 ⁽⁴⁾	Based on Steel Strength ⁵
C	C14	14	1 1/4	Cut to Length	50	65	30-10d common	2,990	2,490
							36-8d common	3,005	2,490
	C16	16	1 1/4	Cut to Length	50	65	22-10d common	2,115	2,015
							26-8d common	2,085	2,015
	C18	18	1 1/4	Cut to Length	50	65	18-10d common	1,690	1,620
							22-8d common	1,720	1,620
	C20	20	1 1/4	Cut to Length	40	55	14-10d common	1,295	1,215
							18-8d common	1,380	1,215
C22	22	1 1/4	Cut to Length	40	55	12-10d common	1,105	995	
						14-8d common	1,065	995	
C3	C312	12	3	Cut to Length	50	65	84-16d common	10,720	9,215
							96-10d common	10,980	9,215
	C314	14	3	Cut to Length	50	65	66-16d common	7,745	6,475
							78-10d common	7,770	6,475
	C316	16	3	Cut to Length	50	65	56-16d sinker	5,390	4,980

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

¹Total nails are the minimum number of nails to achieve the tabulated allowable loads. One half of the total number of nails must be installed in each wood member forming the connection. Fasteners must comply with Section 3.5.5 of this report.

²Allowable tension loads are based on the steel straps connected to wood members having an assigned or equivalent minimum specific gravity of 0.50.

³Allowable tension loads are the lesser of the tie strap steel strength or the connection strength.

⁴Allowable tension loads based on connection strength have been derived by multiplying the number of nails by the minimum value from the yield mode equations in Section 12.3.1 of the NDS (Section 11.3.1 for the 2012 and 2009 IBC), where the side member (i.e. the steel tie strap) dowel bearing strength, F_{es}, is equal to 2.2F_u/C_D, where the load duration factor, C_D, equals to 1.6 as shown in the table, and where the minimum specified tensile strength, F_u, of the steel strap is as shown in the table. The tabulated allowable tension loads governed by connection strength have been multiplied by the load duration factor, C_D, noted in the table.

⁵The tabulated allowable tension load does not include a one-third stress increase or the load duration factor, C_D. The steel strength is the lesser of the yielding at the gross section of the strap, the fracture in the net section away from the connection, or the fracture at the connection in accordance with Section D of AISI S100 (Section C2 for the 2015, 2012 and 2009 IBC).

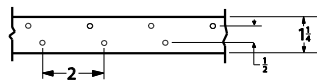


FIGURE 2—C SERIES STRAP

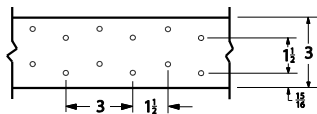


FIGURE 3—C1316 STRAP

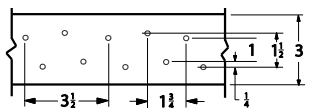


FIGURE 4—C1312 & C1314 STRAP

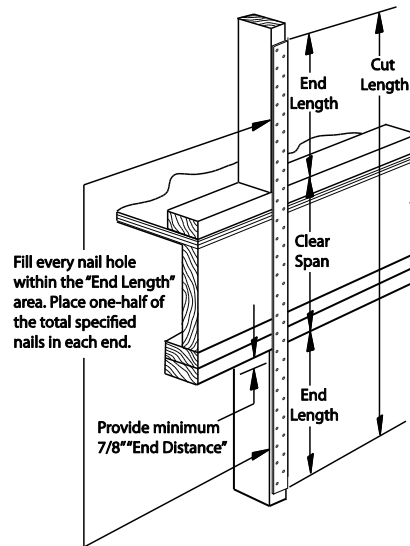


FIGURE 5—TYPICAL INSTALLATION OF COILED TIE STRAPS

TABLE 3—ALLOWABLE LOADS FOR THE FHFLX, FHX, FHXC AND FHHX SERIES JOIST HANGERS

MODEL SERIES	MODEL NUMBER	DIMENSIONS ¹ (inches)			COMMON NAILS ² (Quantity-Type)		ALLOWABLE LOADS ^{3,4} (lbf)			
		W	H	B	Header	Joist ⁵	Uplift ⁶			
							C _D =1.6	C _D =1.0	C _D =1.15	C _D =1.25
FLX	FLX24	1 ⁹ / ₁₆	3 ⁵ / ₁₆	1 ¹ / ₂	4-10d	2-10d	585	710	810	875
	FLX26	1 ⁹ / ₁₆	4 ⁷ / ₈	1 ¹ / ₂	6-10d	4-10d	1,080	1,180	1,350	1,460
	FLX28	1 ⁹ / ₁₆	6 ¹ / ₂	1 ¹ / ₂	8-10d	6-10d	1,730	1,655	1,665	1,665
	FLX210	1 ⁹ / ₁₆	7 ¹ / ₂	1 ¹ / ₂	10-10d	6-10d	1,730	1,715	1,715	1,715
	FLX24-2	3 ¹ / ₈	3 ⁵ / ₁₆	2	4-16d	2-16d	630	845	965	1,040
	FLX26-2	3 ¹ / ₈	5 ³ / ₁₆	2	4-16d	4-16d	1,125	1,410	1,610	1,745
	FLX28-2	3 ¹ / ₈	7 ³ / ₁₆	2	6-16d	4-16d	1,125	1,410	1,610	1,745
	FLX210-2	3 ¹ / ₈	9 ³ / ₁₆	2	8-16d	6-16d	2,800	1,975	2,255	2,445
	FLX214-2	3 ¹ / ₈	10 ¹¹ / ₁₆	2	10-16d	6-16d	2,800	2,255	2,545	2,545
	FLX26-3	4 ⁵ / ₈	5 ³ / ₁₆	2	4-16d	4-16d	1,125	1,410	1,610	1,745
	FLX28-3	4 ⁵ / ₈	7 ³ / ₁₆	2	6-16d	4-16d	1,125	1,410	1,610	1,745
	FLX210-3	4 ⁵ / ₈	9 ³ / ₁₆	2	8-16d	6-16d	2,800	1,975	2,255	2,445
	FLX36	2 ⁹ / ₁₆	5 ³ / ₁₆	2	4-16d	4-16d	1,125	1,410	1,610	1,745
	FLX310	2 ⁹ / ₁₆	7 ³ / ₁₆	2	6-16d	4-16d	1,125	1,975	2,255	2,265
	FLX44	3 ⁹ / ₁₆	3 ⁵ / ₁₆	2	4-16d	2-16d	630	845	965	1,040
	FLX46	3 ⁹ / ₁₆	5 ³ / ₁₆	2	6-16d	4-16d	1,125	1,410	1,610	1,745
	FLX48	3 ⁹ / ₁₆	7 ³ / ₁₆	2	4-16d	4-16d	1,125	1,410	1,610	1,745
	FLX410	3 ⁹ / ₁₆	9 ³ / ₁₆	2	8-16d	6-16d	2,800	1,975	2,255	2,445
FLX414	3 ⁹ / ₁₆	10 ¹¹ / ₁₆	2	10-16d	6-16d	2,800	2,255	2,575	2,790	
FHX/ FHXC	FHX26	1 ⁹ / ₁₆	5 ³ / ₁₆	3	14-16d	6-16d	1,590	2,905	2,905	2,905
	FHX28	1 ⁹ / ₁₆	7 ¹ / ₈	3	22-16d	8-16d	1,880	3,690	3,690	3,690
	FHX210	1 ⁹ / ₁₆	9 ¹ / ₈	3	30-16d	10-16d	2,695	4,165	4,165	4,165
	FHX46/FHXC46	3 ⁹ / ₁₆	4 ³¹ / ₃₂	2	4-16d	4-16d	1,430	1,160	1,320	1,425
	FHX48/FHXC48	3 ⁹ / ₁₆	6 ³¹ / ₃₂	2	6-16d	6-16d	1,430	1,740	1,980	2,140
	FHX410/FHXC410	3 ⁹ / ₁₆	8 ³¹ / ₃₂	2	8-16d	8-16d	2,845	2,320	2,640	2,855
	FHX412/FHXC412	3 ⁹ / ₁₆	10 ¹⁵ / ₃₂	2	10-16d	10-16d	3,705	2,900	3,300	3,565
	FHX26-2	3 ¹ / ₈	5 ³ / ₁₆	2	4-16d	4-16d	1,430	1,160	1,320	1,425
	FHX28-2	3 ¹ / ₈	7 ³ / ₁₆	2	6-16d	6-16d	1,430	1,740	1,980	2,140
	FHX210-2	3 ¹ / ₈	9 ³ / ₁₆	2	8-16d	8-16d	2,845	2,320	2,640	2,855
	FHX212-2	3 ¹ / ₈	10 ¹¹ / ₁₆	2	10-16d	10-16d	3,710	2,900	3,300	3,565
	FHX1.81/10	1 ¹³ / ₁₆	9 ¹ / ₈	3	30-16d	10-16d	2,695	4,165	4,165	4,165
FHHX	FHHX26-2	3 ⁵ / ₁₆	5 ³ / ₁₆	3 ¹ / ₄	14-16d	6-16d	2,080	2,930	3,015	3,015
	FHHX28-2	3 ⁵ / ₁₆	7	3 ¹ / ₄	22-16d	8-16d	2,080	4,400	4,510	4,510
	FHHX210-2	3 ⁵ / ₁₆	9	3 ¹ / ₄	30-16d	10-16d	3,410	5,875	6,055	6,055
	FHHX46	3 ⁵ / ₈	5 ³ / ₁₆	3 ¹ / ₄	14-16d	6-16d	2,080	2,930	3,015	3,015
	FHHX48	3 ⁵ / ₈	7	3 ¹ / ₄	22-16d	8-16d	2,080	4,400	4,510	4,510
	FHHX410	3 ⁵ / ₈	9	3 ¹ / ₄	30-16d	10-16d	3,410	5,875	6,055	6,055

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

¹Refer to Figures 6, 7, 8 and 9 on this page for definitions of hanger nomenclature (W, H, B).

²All nails are common nails, unless otherwise noted. Refer to Section 3.5.5 for nail dimensions and required minimum physical properties.

³Tabulated allowable loads must be selected based on duration of load as permitted by the applicable building code.

⁴When FLX, FHHX, FHXC and FHHX Series hangers support joists, they provide torsional resistance, which is defined as resistance to a moment not less than 75 pounds (334N) 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 (3.2mm).

⁵Joist nails must be driven at a 45- to 50-degree angle through the joist into the header/beam (double shear nailing) to achieve the tabulated loads.

⁶Allowable uplift loads have been increased for wind or earthquake loading with no further increase allowed. The allowable uplift loads must be reduced when other load durations govern.

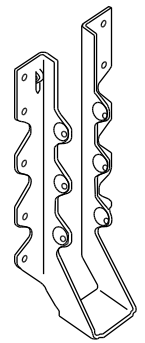


FIGURE 6—FLX HANGER FOR 2x JOISTS

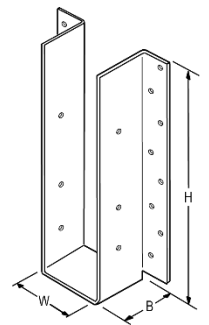


FIGURE 7—FLX HANGER FOR ALL OTHER SIZES

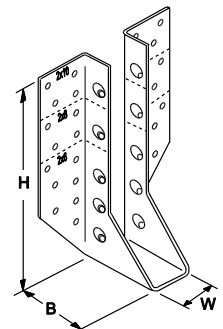


FIGURE 8—FHX HANGER

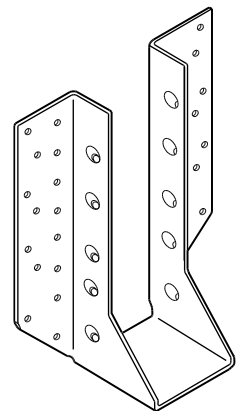


FIGURE 9—FHHX HANGER

TABLE 4—ALLOWABLE LOADS FOR THE FHGX SERIES JOIST HANGERS

MODEL NUMBER	GAGE	DIMENSIONS ¹ (inches)			COMMON NAILS ² (Quantity-Type)		ALLOWABLE LOADS ^{3,4} (lbf)			
							Uplift ⁵		Download	
		W	H	B	Header	Joist	C _D =1.6	C _D =1.0	C _D =1.15	C _D =1.25
FHGX26	12	1 ⁵ / ₈	5	4	20-16d	8-16d	1,845	3,285	3,285	3,285
FHGX26-2	12	3 ⁵ / ₁₆	5	4	20-16d	8-16d	1,845	3,910	3,910	3,910
FHGX26-3	12	4 ¹⁵ / ₁₆	5	4	20-16d	8-16d	1,845	3,910	3,910	3,910
FHGX26-4	12	6 ⁹ / ₁₆	5	4	20-16d	8-16d	1,845	3,910	3,910	3,910
FHGX28	12	1 ⁵ / ₈	7	4	34-16d	12-16d	2,620	4,300	4,300	4,300
FHGX28-2	12	3 ⁵ / ₁₆	7	4	34-16d	12-16d	2,620	6,595	6,595	6,595
FHGX28-3	12	4 ¹⁵ / ₁₆	7	4	34-16d	12-16d	2,620	6,595	6,595	6,595
FHGX28-4	12	6 ⁹ / ₁₆	7	4	34-16d	12-16d	2,620	6,595	6,595	6,595
FHGX210-2	11	3 ⁵ / ₁₆	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX210-3	11	4 ¹⁵ / ₁₆	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX210-4	11	6 ⁹ / ₁₆	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX212-3	11	4 ¹⁵ / ₁₆	11	4	54-16d	18-16d	4,695	8,820	8,820	8,820
FHGX212-4	11	6 ⁹ / ₁₆	11	4	54-16d	18-16d	4,695	9,815	9,815	9,815
FHGX214-3	11	4 ¹⁵ / ₁₆	13	4	64-16d	18-16d	4,695	8,820	8,820	8,820
FHGX214-4	11	6 ¹¹ / ₁₆	13	4	64-16d	18-16d	4,695	9,815	9,815	9,815
FHGX46	12	3 ⁵ / ₈	5	4	20-16d	8-16d	1,970	4,170	4,170	4,170
FHGX48	12	3 ⁵ / ₈	7	4	34-16d	12-16d	2,800	7,050	7,050	7,050
FHGX410	11	3 ⁵ / ₈	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX412	11	3 ⁵ / ₈	11	4	54-16d	18-16d	4,695	8,820	8,820	8,820
FHGX414	11	3 ⁵ / ₈	13	4	64-16d	18-16d	4,695	8,820	8,820	8,820
FHGX2.75/10	11	2 ³ / ₄	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX2.75/12	11	2 ³ / ₄	11	4	54-16d	18-16d	4,695	8,820	8,820	8,820
FHGX2.75/14	11	2 ³ / ₄	13	4	64-16d	18-16d	4,695	8,820	8,820	8,820
FHGX3.25/10	11	3 ¹ / ₄	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX3.25/12	11	3 ¹ / ₄	11	4	54-16d	18-16d	4,695	8,820	8,820	8,820
FHGX3.25/14	11	3 ¹ / ₄	13	4	64-16d	18-16d	4,695	8,820	8,820	8,820
FHGX5.25/10	11	5 ¹ / ₄	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX5.25/12	11	5 ¹ / ₄	11	4	54-16d	18-16d	4,695	9,815	9,815	9,815
FHGX5.25/14	11	5 ¹ / ₄	13	4	64-16d	18-16d	4,695	9,815	9,815	9,815
FHGX5.50/10	11	5 ¹ / ₂	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX5.50/12	11	5 ¹ / ₂	11	4	54-16d	18-16d	4,695	9,815	9,815	9,815
FHGX5.50/14	11	5 ¹ / ₂	13	4	64-16d	18-16d	4,695	9,815	9,815	9,815
FHGX7.25/10	11	7 ¹ / ₄	9	4	44-16d	14-16d	4,695	8,585	8,585	8,585
FHGX7.25/12	11	7 ¹ / ₄	11	4	54-16d	18-16d	4,695	9,815	9,815	9,815
FHGX7.25/14	11	7 ¹ / ₄	13	4	64-16d	18-16d	4,695	9,815	9,815	9,815

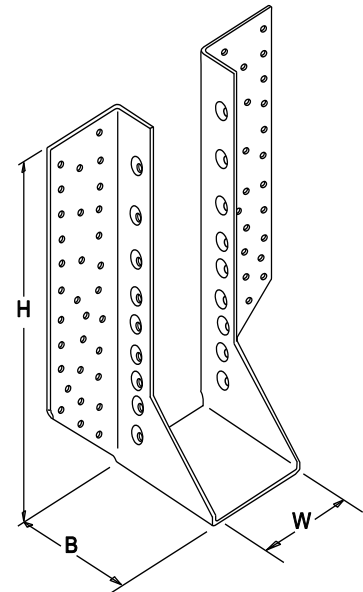


FIGURE 10—FHGX HANGER

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

¹Refer to Figure 10 for definitions of hanger nomenclature (W, H, B).

²All nails are common nails, unless otherwise noted. Refer to Section 3.5.5 of this report for nail dimensions and required minimum physical properties. Joist nails must be driven at a 45- to 50-degree angle through the joist into the header/beam (double shear nailing) to achieve the tabulated loads.

³Tabulated allowable loads must be selected based on duration of load as permitted by the applicable building code.

⁴When FHGX Series hangers support joists, they provide torsional resistance, which is defined as resistance to a moment not less than 75 pounds (334N) 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).

⁵Allowable uplift loads have been increased for wind or earthquake loading with no further increase allowed. The allowable uplift loads must be reduced when other load durations govern.

TABLE 5—ALLOWABLE LOADS FOR THE F SERIES JOIST HANGERS

MODEL NUMBER	DIMENSIONS ¹ (inches)			COMMON NAILS ²		ALLOWABLE LOADS ^{4,5} (lbf)						
						Uplift ⁶	Download					
	C _D =1.6	C _D =1.0		C _D =1.15			C _D =1.25					
		10d	16d	10d	16d		10d	16d				
F24	1 ⁹ / ₁₆	3	2	4	2-10d x 1 ¹ / ₂	275	485	575	550	655	595	705
F26	1 ⁹ / ₁₆	4 ⁵ / ₈	2	6	4-10d x 1 ¹ / ₂	545	730	865	825	980	890	1,055
F210	1 ⁹ / ₁₆	7 ³ / ₄	2	10	6-10d x 1 ¹ / ₂	935	1,215	1,440	1,375	1,635	1,485	1,760
F214	1 ⁹ / ₁₆	10 ¹ / ₈	2	12	8-10d x 1 ¹ / ₂	935	1,460	1,730	1,655	1,890	1,780	2,030
F34	2 ⁹ / ₁₆	2 ³ / ₃₂	2	4	2-10d x 1 ¹ / ₂	375	485	575	550	655	595	705
F36	2 ⁹ / ₁₆	4 ²³ / ₃₂	2	8	4-10d x 1 ¹ / ₂	545	975	1,150	1,100	1,305	1,185	1,410
F310	2 ⁹ / ₁₆	8 ⁷ / ₃₂	2	14	6-10d x 1 ¹ / ₂	1,110	1,705	2,015	1,930	2,285	2,075	2,465
F314	2 ⁹ / ₁₆	10 ⁷ / ₃₂	2	16	6-10d x 1 ¹ / ₂	1,110	1,945	2,305	2,205	2,615	2,375	2,820
F24-2	3 ¹ / ₈	3 ³ / ₁₆	2	4	2-10d	370	485	575	550	655	595	705
F26-2	3 ¹ / ₈	5 ³ / ₁₆	2	8	4-10d	740	975	1,150	1,100	1,305	1,185	1,410
F210-2	3 ¹ / ₈	8 ¹¹ / ₁₆	2	14	6-10d	1,110	1,705	2,015	1,930	2,285	2,075	2,465
F44	3 ⁹ / ₁₆	2 ²³ / ₃₂	2	4	2-10d	370	485	575	550	655	595	705
F46	3 ⁹ / ₁₆	4 ³¹ / ₃₂	2	8	4-10d	740	975	1,150	1,100	1,305	1,185	1,410
F410	3 ⁹ / ₁₆	8 ¹⁵ / ₃₂	2	14	6-10d	1,110	1,705	2,015	1,930	2,285	2,075	2,465
F414	3 ⁹ / ₁₆	10 ¹⁵ / ₃₂	2	16	6-10d	1,110	1,945	2,305	2,205	2,615	2,375	2,820
F26-3	4 ¹ / ₁₆	5 ³ / ₃₂	2	8	4-10d	740	975	1,150	1,100	1,305	1,185	1,410
F66	5 ¹ / ₂	4 ³ / ₄	2	8	4-10d	740	975	1,150	1,100	1,305	1,185	1,410
F610	5 ¹ / ₂	8 ¹ / ₄	2	14	6-10d	1,110	1,705	2,015	1,930	2,285	2,075	2,465
F210-3	4 ¹ / ₁₆	8 ²¹ / ₃₂	2	14	6-10d	1,325	1,705	2,015	1,930	2,285	2,075	2,465
F24R	2	3	2	4	2-10d x 1 ¹ / ₂	275	485	575	550	655	595	705
F26R	2	5	2	8	4-10d x 1 ¹ / ₂	545	975	1,150	1,100	1,305	1,185	1,410
F210R	2	8 ¹ / ₂	2	14	6-10d x 1 ¹ / ₂	935	1,705	2,015	1,890	1,890	1,890	1,890
F44R	4	2 ³ / ₄	2	4	2-16d	385	485	575	550	655	595	705
F46R	4	4 ³ / ₄	2	8	4-16d	815	975	1,150	1,100	1,305	1,185	1,410
F410R	4	8 ¹ / ₄	2	14	6-16d	1,325	1,705	2,015	1,930	2,285	2,075	2,465
F66R	6	5	2	8	4-16d	815	975	1,150	1,100	1,305	1,185	1,410
F610R	6	8 ¹ / ₂	2	14	6-16d	1,325	1,705	2,015	1,930	2,285	2,075	2,465

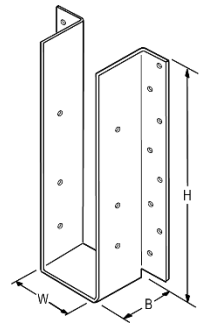


FIGURE 11—F HANGER

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

¹Refer to Figure 11 for definitions of hanger nomenclature (W,H,B).

²All nails are common nails, unless otherwise noted. Refer to Section 3.5.5 of this report for nail dimensions and required minimum physical properties.

³Tabulated allowable loads must be selected based on duration of load as permitted by the applicable building code.

⁴When F Series hangers support joists, they provide torsional resistance, which is defined as resistance to a moment not less than 75 pounds (334N) 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 (3.2mm).

⁵The quantity of 10d or 16d common nails specified in the "Header" column under "Fasteners" is required to achieve the tabulated allowable loads shown in the Allowable Download "10d" or "16d" columns.

⁶Allowable uplift loads are for hangers installed with either 10d or 16d common nails into the supporting header/beam, and have been increased for wind or earthquake loading with no further increase allowed. The allowable uplift loads must be reduced when other load durations govern.

TABLE 6—APPLICABLE MODEL NUMBERS FOR THE FH SERIES JOIST HANGERS

MODEL NUMBER	TABLE 6A ² REF. NO.	DIMENSIONS ¹ (inches)		MODEL NUMBER	TABLE 6A ² REF. No.	DIMENSIONS ¹ (inches)		MODEL NUMBER	TABLE 6A ² REF. NO.	DIMENSIONS ¹ (inches)	
		W	H			W	H			W	H
FH24-2	12	3 ¹ / ₈	3 ³ / ₁₆	FH34	1	2 ⁹ / ₁₆	2 ²³ / ₃₂	FH810 Min	27B	7 ¹ / ₂	8 ¹ / ₄
FH26	1	1 ⁹ / ₁₆	3	FH36	3	2 ⁹ / ₁₆	4 ²³ / ₃₂	FH810 Max	30	7 ¹ / ₂	8 ¹ / ₄
FH26-2 Min	13	3 ¹ / ₈	5 ³ / ₁₆	FH38	5	2 ⁹ / ₁₆	6 ⁷ / ₃₂	FH812 Min	28	7 ¹ / ₂	10 ¹ / ₄
FH26-2 Max	15	3 ¹ / ₈	5 ³ / ₁₆	FH310	8	2 ⁹ / ₁₆	8 ⁷ / ₃₂	FH812 Max	33	7 ¹ / ₂	10 ¹ / ₄
FH26-3 Min	13	4 ¹¹ / ₁₆	5 ³ / ₃₂	FH312	9	2 ⁹ / ₁₆	10 ⁷ / ₃₂	FH814 Mi	29	7 ¹ / ₂	12 ¹ / ₄
FH26-3 Max	15	4 ¹¹ / ₁₆	5 ³ / ₃₂	FH314	10	2 ⁹ / ₁₆	12 ⁷ / ₃₂	FH814 Max	34	7 ¹ / ₂	12 ¹ / ₄
FH28	2	1 ⁹ / ₁₆	4 ⁵ / ₈	FH316	11	2 ⁹ / ₁₆	13 ⁷ / ₃₂	FH816 Min	31	7 ¹ / ₂	13 ¹ / ₄
FH28-2 Min	14	3 ¹ / ₈	6 ¹¹ / ₁₆	FH44	12	3 ⁹ / ₁₆	2 ³¹ / ₃₂	FH816 Max	35	7 ¹ / ₂	13 ¹ / ₄
FH28-2 Max	16A	3 ¹ / ₈	6 ¹¹ / ₁₆	FH46 Min	13	3 ⁹ / ₁₆	4 ³¹ / ₃₂	FH3.25/10.5	21	3 ¹ / ₄	10 ¹ / ₄
FH28-3 Min	14	4 ¹¹ / ₁₆	6 ²¹ / ₃₂	FH46 Max	15	3 ⁹ / ₁₆	4 ³¹ / ₃₂	FH3.25/12	22	3 ¹ / ₄	11 ³ / ₄
FH28-3 Max	16A	4 ¹¹ / ₁₆	6 ²¹ / ₃₂	FH48 Min	14	3 ⁹ / ₁₆	6 ¹⁵ / ₃₂	FH5.125/12	32	5 ¹ / ₄	10 ¹ / ₄
FH28-4 Min	25	6 ¹ / ₈	6 ⁷ / ₈	FH48 Max	16A	3 ⁹ / ₁₆	6 ¹⁵ / ₃₂	FH5.125/13.5	35	5 ¹ / ₄	13 ¹ / ₄
FH28-4 Max	27A	6 ¹ / ₈	6 ⁷ / ₈	FH410 Min	16B	3 ⁹ / ₁₆	8 ¹⁵ / ₃₂	FH5.125/16	35	5 ¹ / ₄	13 ⁷ / ₈
FHFH210	4	1 ⁹ / ₁₆	6 ³ / ₈	FH410 Max	19	3 ⁹ / ₁₆	8 ¹⁵ / ₃₂				
FH210-2 Min	16B	3 ¹ / ₈	8 ¹¹ / ₁₆	FH412 Min	17	3 ⁹ / ₁₆	10 ¹⁵ / ₃₂				
FH210-2 Max	19	3 ¹ / ₈	8 ¹¹ / ₁₆	FH412 Max	21	3 ⁹ / ₁₆	10 ¹⁵ / ₃₂				
FH210-3 Min	16B	4 ¹¹ / ₁₆	8 ²¹ / ₃₂	FH414 Min	18	3 ⁹ / ₁₆	12 ¹⁵ / ₃₂				
FH210-3 Max	19	4 ¹¹ / ₁₆	8 ²¹ / ₃₂	FH414 Max	22	3 ⁹ / ₁₆	12 ¹⁵ / ₃₂				
FH210-4 Min	27B	6 ¹ / ₈	8 ⁷ / ₁₆	FH416 Min	20	3 ⁹ / ₁₆	13 ¹⁵ / ₃₂				
FH210-4 Max	30	6 ¹ / ₈	8 ⁷ / ₁₆	FH416 Max	23	3 ⁹ / ₁₆	13 ¹⁵ / ₂₂				
FHFH212	6	1 ⁹ / ₁₆	7 ³ / ₄	FH66 Min	24	5 ¹ / ₂	4 ³ / ₄				
FH212-2 Min	17	3 ¹ / ₈	10 ¹¹ / ₁₆	FH66 Max	26	5 ¹ / ₂	4 ³ / ₄				
FH212-2 Max	21	3 ¹ / ₈	10 ¹¹ / ₁₆	FH68 Min	25	5 ¹ / ₂	6 ¹ / ₄				
FH212-3 Min	17	4 ¹¹ / ₁₆	10 ²¹ / ₃₂	FH68 Max	27A	5 ¹ / ₂	6 ¹ / ₄				
FH212-3 Max	21	4 ¹¹ / ₁₆	10 ²¹ / ₃₂	FH610 Min	27A	5 ¹ / ₂	8 ¹ / ₄				
FHFH214	7	1 ⁹ / ₁₆	10 ¹ / ₈	FH610 Max	30	5 ¹ / ₂	8 ¹ / ₄				
FH214-2 Min	18	3 ¹ / ₈	12 ¹¹ / ₁₆	FH612 Min	28	5 ¹ / ₂	10 ¹ / ₄				
FH214-2 Max	22	3 ¹ / ₈	12 ¹¹ / ₁₆	FH612 Max	33	5 ¹ / ₂	10 ¹ / ₄				
FH214-3 Min	18	4 ¹¹ / ₁₆	12 ²¹ / ₃₂	FH614 Min	29	5 ¹ / ₂	12 ¹ / ₄				
FH214-3 Max	22	4 ¹¹ / ₁₆	12 ²¹ / ₃₂	FH614 Max	34	5 ¹ / ₂	12 ¹ / ₄				
FH216-2 Min	20	3 ¹ / ₈	13 ¹¹ / ₁₆	FH616 Min	31	5 ¹ / ₂	13 ¹ / ₄				
FH216-2 Max	23	3 ¹ / ₈	13 ¹¹ / ₁₆	FH616 Max	35	5 ¹ / ₂	13 ¹ / ₄				
FH216-3 Min	20	4 ¹¹ / ₁₆	13 ²¹ / ₃₂	FH88 Min	25	7 ¹ / ₂	6 ¹ / ₄				
FH216-3 Max	23	4 ¹¹ / ₁₆	13 ²¹ / ₃₂	FH88 Max	27A	7 ¹ / ₂	6 ¹ / ₄				

For SI: 1 inch = 25.4 mm

¹Refer to Figure 12 (next page) for definitions of hanger nomenclature (W, H).

²For allowable loads of each specific model number shown in the chart above refer to Table 6A on the next page. Match the "Reference Number" shown in Table 6 to the corresponding "Reference Number" shown in Table 6A. "Min" and "Max" refer to the use of the minimum and maximum number of fasteners applicable to the hanger model.

TABLE 6A—ALLOWABLE LOADS FOR THE FH AND FHC SERIES JOIST HANGERS

MODEL ³	DIMENSIONS ¹ (inches)			TABLE 6 ⁷ REF. NO.	FASTENERS ² (Quantity-Type)		ALLOWABLE LOADS ^{4,5,6} (lbf)			
	W	H (min)	B		Header	Joist	Uplift	Download		
							C _D =1.6	C _D =1.0	C _D =1.15	C _D =1.25
FH FHC	1 1/2 to 3	2 ^{23/32}	2	1	4-16d	2-10d x 1 1/2	295	595	670	725
		4 ^{5/8}	2	2	6-16d	4-10d x 1 1/2	585	895	1,010	1,085
		4 ^{23/32}	2	3	8-16d	4-10d x 1 1/2	585	1,190	1,345	1,445
		6 ^{3/8}	2	4	8-16d	6-10d x 1 1/2	1,005	1,190	1,345	1,445
		6 ^{7/32}	2	5	10-16d	4-10d x 1 1/2	585	1,490	1,510	1,510
		7 ^{3/4}	2	6	10-16d	6-10d x 1 1/2	1,005	1,490	1,680	1,805
		10 ^{1/8}	2	7	12-16d	6-10d x 1 1/2	1,005	1,785	2,015	2,030
		8 ^{7/32}	2	8	14-16d	6-10d x 1 1/2	1,135	2,085	2,350	2,530
		10 ^{7/32}	2	9	16-16d	6-10d x 1 1/2	1,135	2,380	2,685	2,790
		12 ^{7/32}	2	10	18-16d	8-10d x 1 1/2	1,515	2,680	3,015	3,100
		13 ^{7/32}	2	11	20-16d	8-10d x 1 1/2	1,515	2,885	3,015	3,100
	3 to 4 1/2	2 ^{31/32}	2	12	4-16d	2-10d	380	595	670	725
		4 ^{31/32}	2	13	8-16d	4-10d	760	1,190	1,345	1,445
		6 ^{15/32}	2	14	10-16d	4-10d	760	1,490	1,680	1,680
		4 ^{3/32}	2	15	12-16d	6-10d	1,135	1,790	2,015	2,165
		6 ^{5/32}	2	16A	14-16d	6-10d	1,135	2,085	2,350	2,530
		8 ^{15/32}	2	16B	14-16d	6-10d	1,135	2,085	2,350	2,530
		10 ^{15/32}	2	17	16-16d	6-10d	1,135	2,380	2,685	2,890
		15 ^{15/32}	2	18	18-16d	8-10d	1,515	2,680	3,020	3,250
		8 ^{5/32}	2	19	18-16d	10-10d	1,770	2,680	3,020	3,250
		13 ^{15/32}	2	20	20-16d	8-10d	1,515	2,975	3,360	3,610
		10 ^{1/4}	2	21	22-16d	10-10d	1,895	3,275	3,695	3,970
	11 ^{3/4}	2	22	24-16d	12-10d	2,275	3,570	4,030	4,335	
	13 ^{15/32}	2	23	26-16d	12-10d	2,275	3,870	4,365	4,465	
	5 1/8 to 5 1/2	4 ^{3/4}	2	24	8-16d	4-16d	875	1,190	1,345	1,445
		6 ^{1/4}	2	25	10-16d	4-16d	875	1,490	1,680	1,680
		4 ^{3/4}	2	26	12-16d	6-16d	1,345	1,785	2,015	2,165
		6 ^{1/4}	2	27A	14-16d	6-16d	1,345	2,085	2,350	2,530
		8 ^{1/4}	2	27B	14-16d	6-16d	1,345	2,085	2,350	2,530
		10 ^{1/4}	2	28	16-16d	6-16d	1,345	2,380	2,685	2,890
		12 ^{1/4}	2	29	18-16d	8-16d	1,770	2,680	3,020	3,250
		8 ^{1/8}	2	30	18-16d	10-16d	1,770	2,680	3,020	3,250
		13 ^{1/4}	2	31	20-16d	8-16d	1,770	2,975	3,360	3,610
		10 ^{1/4}	2	32	22-16d	8-16d	1,770	3,275	3,695	3,970
		12 ^{1/4}	2	33	22-16d	10-16d	1,770	3,275	3,695	3,970
10 ^{1/4}		2	34	24-16d	12-16d	2,695	3,570	4,030	4,335	
10 ^{1/4}		2	35	26-16d	12-16d	2,695	3,870	4,365	4,465	

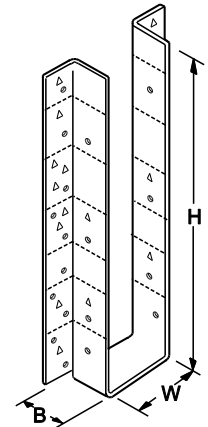


FIGURE 12—FH HANGER

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

¹Refer to Figure 12 for definitions of hanger nomenclature (W, H, B). H is the minimum height of the hangers.

²Refer to Section 3.5.5 of this report for nail sizes and required minimum physical properties.

³FH series hangers with widths (W) equal to or greater than 2^{9/16} inches (65 mm) are available with header flanges turned in (concealed) and are identified with the model designation FHC#.

⁴Tabulated allowable loads must be selected based on duration of load as permitted by the applicable building code.

⁵FH Series hangers provide torsional resistance, which is defined as a moment not less than 75 pounds (334N) 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).

⁶Allowable uplift loads have been increased for wind or earthquake loading with no further increase allowed. The allowable uplift loads must be reduced when other load durations govern.

⁷Refer to Table 6 on the previous page for specific model numbers assigned to the reference number shown in the column titled "Table 6 Reference Number" above.

TABLE 7—ALLOWABLE LOADS FOR THE FSR/L AND FHSR/L SERIES JOIST HANGERS

MODEL SERIES	MODEL NUMBER	DIMENSIONS ¹ (inches)					COMMON NAILS ² (Quantity-Type)		ALLOWABLE LOADS ^{3,4} (lbf)			
		W	H	B	A1	A2	Header	Joist	Uplift ⁵			
									C _D =1.6	C _D =1.0	C _D =1.15	C _D =1.25
FSR/L	FSR/L24	1 ⁹ / ₁₆	3 ¹ / ₈	1 ¹⁵ / ₁₆	1 ¹ / ₈	1 ⁷ / ₁₆	4-16d	4-10d x 1 ¹ / ₂	435	575	655	705
	FSR/L26	1 ⁹ / ₁₆	5	1 ¹⁵ / ₁₆	1 ¹ / ₈	1 ⁷ / ₁₆	6-16d	6-10d x 1 ¹ / ₂	750	865	980	1,060
	FSR/L210	1 ⁹ / ₁₆	8 ¹ / ₈	1 ¹⁵ / ₁₆	1 ¹ / ₈	1 ⁷ / ₁₆	10-16d	10-10d x 1 ¹ / ₂	1,340	1,440	1,635	1,765
	FSR/L214	1 ⁹ / ₁₆	10	1 ¹⁵ / ₁₆	1 ¹ / ₈	1 ⁷ / ₁₆	12-16d	12-10d x 1 ¹ / ₂	1,545	1,730	1,960	2,115
	FSR/L26-2	3 ¹ / ₈	4 ¹⁵ / ₁₆	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	8-16d	4-10d x 1 ¹ / ₂	805	1,150	1,305	1,315
	FSR/L210-2	3 ¹ / ₈	8 ⁵ / ₈	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	14-16d	6-16d x 2 ¹ / ₂	1,325	2,015	2,285	2,470
	FSR/L214-2	3 ¹ / ₈	12 ⁵ / ₈	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	18-16d	8-16d x 2 ¹ / ₂	1,745	2,585	2,585	2,585
	FSR/L46	3 ⁹ / ₁₆	4 ¹⁵ / ₁₆	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	8-16d	4-10d x 1 ¹ / ₂	805	1,150	1,305	1,315
	FSR/L410	3 ⁹ / ₁₆	8 ⁵ / ₈	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	14-16d	6-16d x 2 ¹ / ₂	1,325	2,015	2,285	2,465
	FSR/L414	3 ⁹ / ₁₆	12 ⁵ / ₈	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	18-16d	8-16d x 2 ¹ / ₂	1,745	2,585	2,585	2,585
FHSR/L	FHSR/L26-2	3 ¹ / ₈	4 ¹⁵ / ₁₆	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	12-16d	4-16d x 2 ¹ / ₂	800	1,790	1,890	1,890
	FHSR/L210-2	3 ¹ / ₈	8 ⁵ / ₈	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	20-16d	6-16d x 2 ¹ / ₂	1,345	2,975	3,360	3,610
	FHSR/L214-2	3 ¹ / ₈	12 ⁵ / ₈	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	26-16d	8-16d x 2 ¹ / ₂	1,735	3,870	4,350	4,350
	FHSR/L46	3 ⁹ / ₁₆	4 ¹⁵ / ₁₆	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	12-16d	4-16d	800	1,790	1,890	1,890
	FHSR/L410	3 ⁹ / ₁₆	8 ⁵ / ₈	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	20-16d	6-16d	1,345	2,975	3,360	3,610
	FHSR/L414	3 ⁹ / ₁₆	12 ⁵ / ₈	2 ⁵ / ₈	1 ¹ / ₄	2 ¹ / ₈	26-16d	8-16d	1,735	3,870	4,350	4,350

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

¹Refer to Figure 13 for definitions of hanger nomenclature (W, H, B, A1, A2).

²All nails are common nails, unless otherwise noted. Refer to Section 3.5.5 of this report for nail dimensions and required minimum physical properties.

³Tabulated allowable loads must be selected based on duration of load as permitted by the applicable building code.

⁴When FSR/L and FHSR/L series hangers support joists, they provide torsional resistance, which is defined as resistance to a moment not less than 75 pounds (334N) 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" must be at least 60% of the total joist height unless additional lateral resistance is provided as designed by others.

⁵Allowable uplift loads have been increased for wind or earthquake loading with no further increase allowed. The allowable uplift loads must be reduced when other load durations govern.

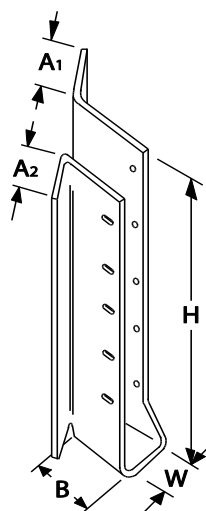


FIGURE 13— FSR/L AND FHSR/L HANGERS

TABLE 8—FRAMING ANCHORS

MODEL NUMBER	FASTENERS (Quantity-Type)		DIRECTION OF LOAD ^{1,2}	ALLOWABLE LOADS ^{3,4,5} (lbf)			
	Joist, Rim Joist or Blocking	Header or Plate(s)		C _D =1.0	C _D =1.15	C _D =1.25	C _D =1.6
L34	6-8d x 1½	6-8d x 1½	F ₁	395	430	430	430
L35	6-8d x 1½	6-8d x 1½	F ₁	595	650	650	650
L35F	6-8d x 1½	6-8d x 1½	G or H	595	670	670	670
PT4	6-8d x 1½	6-8d x 1½	G or H	595	670	730	910

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

¹Some illustrations show connections that could cause splitting due to cross-grain tension or bending of the wood during loading if not reinforced sufficiently. In this case, mechanical reinforcement should be considered.

²Refer to illustrations in Figures 18 and 19 for definitions of load directions (F₁, G, or H).

³Tabulated allowable loads must be selected based on duration of load as permitted by the applicable building code.

Allowable loads are for one anchor. When anchors are installed on each side of the joist member the minimum joist thickness is 3 inches.

⁴Allowable loads under C_D = 1.6 column have been increased for wind or earthquake loading. No further increase is allowed.

⁵The PT4 and L35F anchors may be installed over wood based structural sheathing (as shown in Figure 19 having a maximum thickness of ½ inch without adversely affecting the tabulated allowable loads.

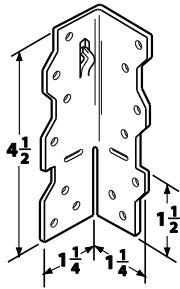


FIGURE 14—L35

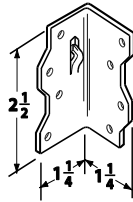


FIGURE 15—L34

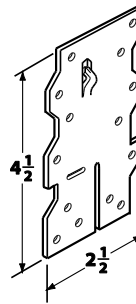


FIGURE 16—L35F

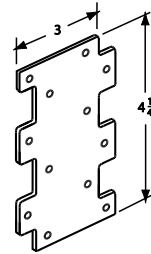


FIGURE 17—PT4

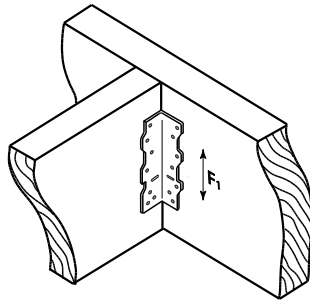


FIGURE 18—TYPICAL INSTALLATION FOR L34 AND L35

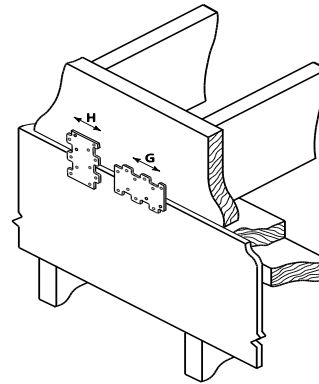


FIGURE 19—TYPICAL INSTALLATION FOR PT4 AND L35F