

CH Machine Corporation

Vernon, Alabama 355925
(205) 695-0094

Evaluation subject:

CH Machine Structural Connectors

1.0 Evaluation Subject

Compliance with the following codes:

- 2014 Florida Residential Code® (FRC)
- 2014 Florida Building Code® (FBC)

Property evaluated:

Structural

2.0 USES

The CH Machine structural connectors described in this report are used for connecting wood framing members in accordance with Section 2304.9.3 of the Florida Building Code. Use of these connectors and related fasteners with pressure preservative treated or fire retardant treated wood is outside the scope of this report.

3.0 DESCRIPTION

3.1 CH01 & CH02 Tie Clip: The CH01 & CH02 Tie Clip is intended to anchor wood rafters or joists to wood wall plates. The CH01 & CH02 Tie Clip is formed from 18 gage galvanized steel. Nominal base metal thickness exclusive of coating material is 0.0456 inches.

3.2 CH09 & CH11 Tie Clip: The CH09 & CH11 Tie Clip is intended to anchor wood rafters or joists to wood wall plates. The CH09 & CH11 Tie clip is formed from 16 gage galvanized steel. Nominal base metal thickness exclusive of coating material is 0.0565 inches.

3.3 Load Tables and Drawings: See Table 1 for CH01 load values, Table 2 for CH02 load values, Table 3 for CH09 & CH11 load values, Figure 1 for drawing of the CH01 Tie Clip, Figure 2 for drawing of the CH02 Tie Clip and Figure 3 for typical installation configurations of CH01 & CH02 Tie Clips with designated load directions. See Figure 4 for drawing and typical installation of CH09 Tie Clip and Figure 5 for drawing and typical installation of CH11 Tie Clip.

3.4 Materials

3.4.1 Steel: Unless otherwise noted, the connectors described in this report are fabricated from ASTM A 653 Grade 40 SS minimum galvanized steel with a minimum yield strength, F_y , of 40,000 psi and a minimum tensile strength, F_u , of 55,000 psi, with a minimum G90 zinc coating specification in accordance with ASTM A 653.

3.4.2 Wood: Supporting wood members to which these connectors are fastened must be solid sawn lumber, glued-laminated lumber, or engineered lumber [such as Laminated Veneer Lumber (LVL), Parallel Strand Lumber (PSL), and Laminated Strand Lumber (LSL)] having dimensions consistent with the connector dimensions shown in this report. Unless otherwise noted, supporting wood members and supported members must have an assigned minimum specific gravity of 0.55 (minimum equivalent specific gravity of 0.55 for engineered lumber). The lumber used with the connectors described in this report must have a maximum moisture content of 19 percent (16 percent for engineered lumber) except as noted in Section 4.1.

3.4.3 Fasteners: Nails used for connectors described in this report must comply with ASTM F 1667 and be of a minimum of 8d nails which shall be of 0.131 inches diameter, minimum length of 1 ½ inches with a minimum bending yield strength (F_{yb}) of 100,000 psi. Fasteners to be galvanized in HVHZ in Florida per FBC 2321.6.1.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The tabulated allowable loads shown in this report in Tables 1, 2 & 3 are based on allowable stress design (ASD) and are reported with the load duration factor, C_D , corresponding with the applicable loads in accordance with the NDS.

Tabulated allowable loads apply to products connected to wood used under dry conditions and where sustained temperatures are 100°F or less. When products are installed to wood having a moisture content greater than 19 percent (16 percent for Engineered wood products), or when 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, the allowable loads in this report must be adjusted by the temperature factor, C_t , specified in the NDS. Other adjustment factors may also apply. See Table 10.3.1, Applicability of Adjustment Factors for Connections, in the 2012 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.

4.3 Special Inspection:

4.3.1 Special Inspections are not required for connectors used in structures regulated under the FBC in that Section 1704 is presently Reserved.

5.0 CONDITIONS OF USE

The CH Machine framing hardware described in the report comply with, or are suitable alternative 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 available at the jobsite at all times during installation

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 and the applicable codes must be considered, where applicable.

5.4 Connected wood members and fasteners must comply, respectively, with Sections 3.4.2 and 3.4.3 of this report.

5.5 Use of connectors with preservative- or fire retardant- treated lumber is outside the scope of this report.

5.6 Connectors covered in this report are manufactured at the designated facilities under a quality control program with inspection by PFS Corporation.

6.0 EVIDENCE SUBMITTED

FBC Section 1711.1.1 references ASTM D7147-11. FBC Section 1711.1.2 references ASTM D1761-06. Appropriate portions of these two ASTM standards were used to determine allowable design values for these connectors. Test data were provided in PFS Test Reports 11-081-Rev1, 12-050, and 14-007.

7.0 IDENTIFICATION

Each connector described in this report is identified by the product model number stamped in the part.

Table 1: CH01 TIE CLIP LOAD CAPACITIES^{1,2}

Load	Load Duration Factors (C _D)		
	1.0	1.33	1.6
F1	205	272	328
F2	130	172	208
F3	453	602	725

¹ Load per clip

² When Attached with a Minimum of Ten #8 Wood Screws or 8d Nails in SYP.

Table 2: CH02 TIE CLIP LOAD CAPACITIES^{3,4}

Load	Load Duration Factors (C _D)		
	1.0	1.33	1.6
F1	174	231	278
F2	205	272	328
F3	269	358	430

³ When Attached with a Minimum of Ten #8 Wood Screws or 8d Nails in SYP.

⁴ Load per clip. Can be installed in pairs or singularly, except in HVHZ in Florida where they must be installed in pairs.

Table 3: CH09 & CH11 TIE CLIP LOAD CAPACITIES^{5,6}

Load	Load Duration Factors (C _D)		
	1.0	1.33	1.6
F1	88	117	140
F2	92	122	147
F3	600	798	960

⁵ Load per clip.

⁶ When Attached with a Minimum of Twelve (six in each leg) #8 Wood Screws or 8d Nails installed in centermost holes of clip in SYP.

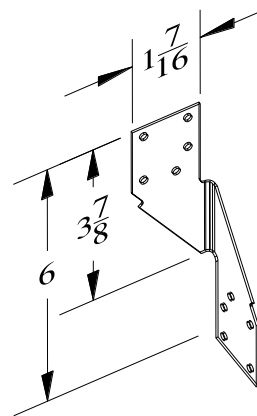


Figure 1: CH01 Dimensions

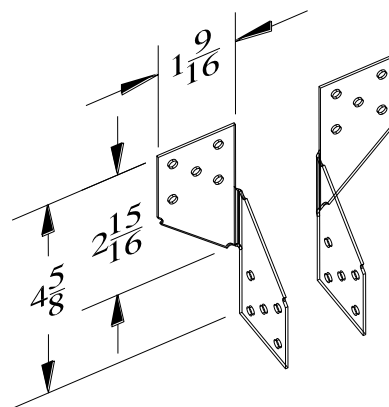


Figure 2: CH02 Dimensions

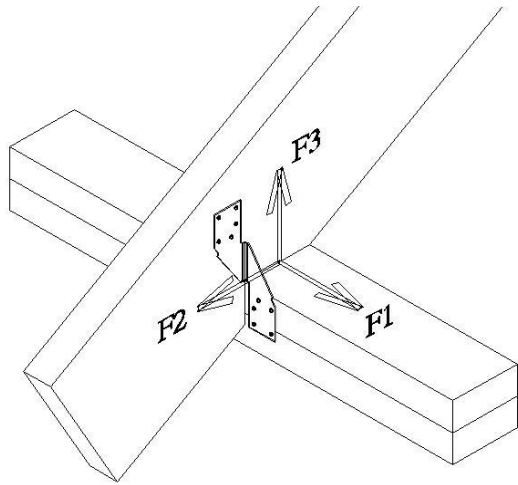


Figure 3: CH01 & CH02 Installation Diagram and Load Directions

Load Directions:
 F1 Perpendicular to Joist
 F2 Co-linear with Joist
 F3 Uplift

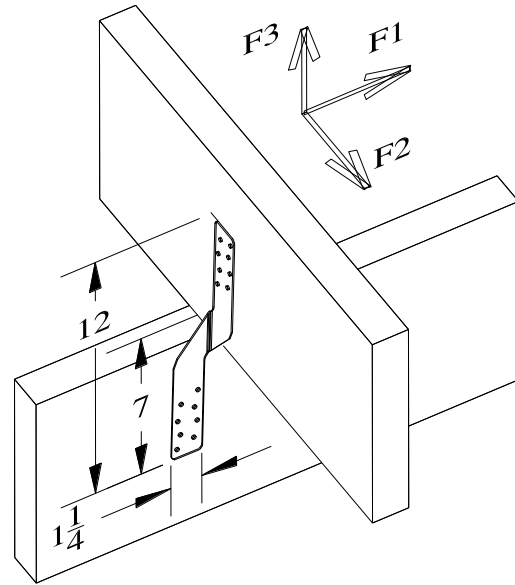


Figure 4: CH09 Dimension, Installation Diagram and Load Directions

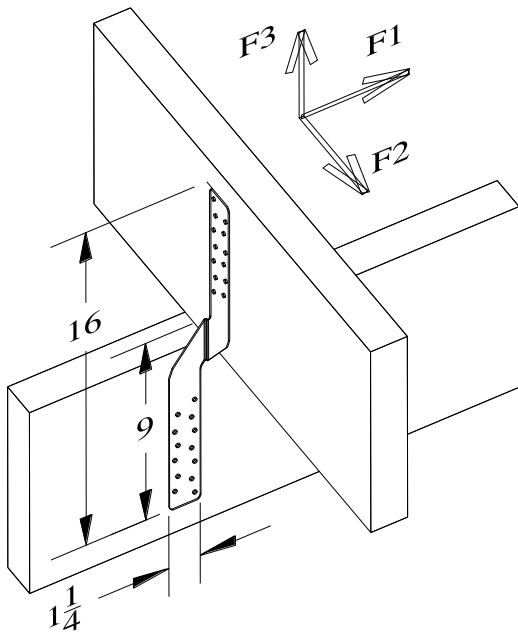


Figure 5: CH11 Dimensions, Installation Diagram and Load Directions

Note: The design values contained in this report are based upon raw data from product testing done by PFS Corporation. Data for CH01 are reported in PFS Test Report 11-081-Rev1. Data for CH02 are reported in PFS Test Report 12-050. Data for CH09 and CH 11 are reported in PFS Test Report 14-007. Raw data were analyzed to obtain the design values contained in Tables 1, 2 and 3 of this report.