



CERTIFICATION



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ISO/IEC 17065
Product Certification Body



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Technical Evaluation Report

TER 1811-03

QuickTie™ U-Hanger Series Face Mount
Joist Hangers

QuickTie™ Products, Inc.

Product:

QuickTie™ U-Hanger Series

Issue Date:

June 14, 2019

Revision Date:

September 4, 2019

Subject to Renewal:

July 1, 2020



Technical Evaluation Report (TER)

QuickTie™ U-Hanger Series Face Mount Joist Hangers

TER No. 1811-03

QuickTie™ Products, Inc.

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Issue Date: June 14, 2019
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DIVISION: 06 00 00 – WOOD, PLASTICS, AND COMPOSITES

Section: 06 05 23 – Wood, Plastic, and Composite Fastenings

1. Products Evaluated:

1.1. QuickTie™ U-Hanger Series

- 1.1.1. UL Series – 20 gauge (ga.)
- 1.1.2. ULP & ULP-IF (Inverted Flange) Series – 18 ga.
- 1.1.3. UM Series – 16 ga.
- 1.1.4. UH & UH-IF (Inverted Flange) Series – 14 ga.

- 1.2. For the most recent version of this Technical Evaluation Report (TER), visit drjengineering.org. For more detailed state professional engineering and code compliance legal requirements and references, visit drjengineering.org/statelaw. DrJ is fully compliant with all state professional engineering and code compliance laws.
- 1.3. This TER can be used to obtain product approval in any country that is an IAF MLA Signatory (all countries found [here](#)) and covered by an [IAF MLA Evaluation](#) per the [Purpose of the MLA](#) (e.g., see [letter to ANSI](#) from the Standards Council of Canada). Manufacturers can go to jurisdictions in the U.S., Canada and other [IAF MLA Signatory Countries](#) and have their products readily approved by authorities having jurisdiction using [DrJ's SI accreditation](#).
- 1.4. Building code regulations require that evaluation reports are provided by an approved agency meeting specific requirements, such as those found in [IBC Section 1703](#). Any agency accredited in accordance with ANSI ISO/IEC 17065 meets this requirement within ANSI's scope of accreditation. For a list of accredited agencies, visit ANSI's [website](#). For more information, see drjcertification.org.
- 1.5. Requiring an evaluation report from a specific private company (i.e., ICC-ES, IAPMO, CCMC, DrJ, etc.) can be viewed as discriminatory and is a violation of international, federal, state, provincial and local anti-trust and free trade regulations.
- 1.6. DrJ's code compliance work:
 - 1.6.1. Conforms to code language adopted into law by individual states and any relevant consensus based standard such as an *ANSI* or *ASTM* standard.
 - 1.6.2. Complies with accepted engineering practice, all professional engineering laws and by providing an engineer's seal DrJ takes professional responsibility for its specified scope of work.

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2. Applicable Codes and Standards:¹

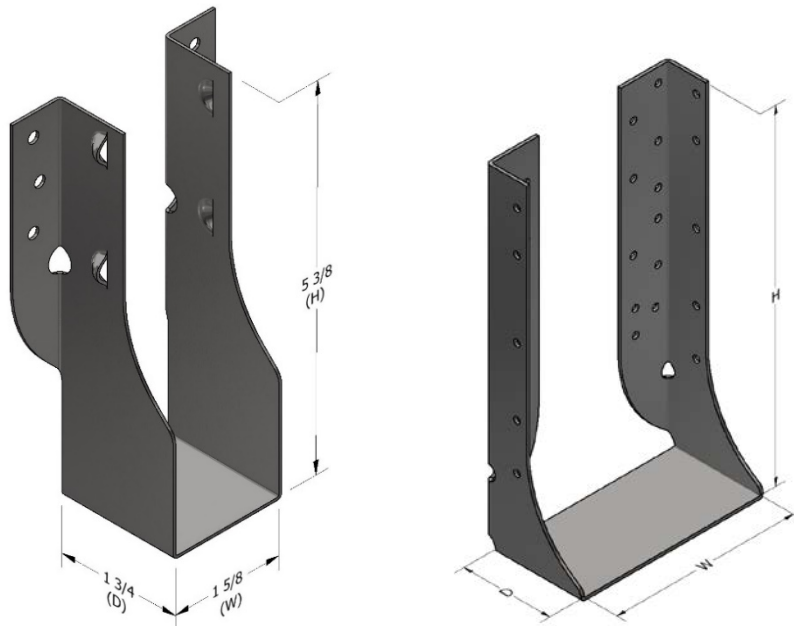
- 2.1. 2010, 2014 and 2017 Florida Building Code
- 2.2. 2012, 2015 and 2018 International Building Code (IBC)
- 2.3. 2012, 2015 and 2018 International Residential Code (IRC)
- 2.4. AISC 360 – Specification for Structural Steel Buildings
- 2.5. AISI S100 – North American Specification for the Design of Cold-formed Steel Structural Members
- 2.6. ANSI/AWC – National Design Specification (NDS) for Wood Construction
- 2.7. ASTM A370 – Standard Test Methods and Definitions for Mechanical Testing of Steel Products
- 2.8. ASTM D7147 – Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers
- 2.9. ASTM F1575 – Standard Test Method for Determining Bending Yield Moment of Nails

3. Performance Evaluation:

- 3.1. This TER evaluates QuickTie™ U-Hanger Series Face Mount Joist Hangers for:
 - 3.1.1. Structural performance of connectors under uplift and gravity load conditions.
 - 3.1.2. Performance for use in buildings of light-frame construction in accordance with the codes listed in [Section 2](#).
- 3.2. Products, materials, and configurations not highlighted in the tables of this report are outside the scope of this TER.
- 3.3. Any code compliance issues not specifically addressed in this section are outside the scope of this TER.

4. Product Description and Materials:

4.1. QuickTie™ U-Hanger Series



¹ Unless otherwise noted, all references in this code compliant technical evaluation report (TER) are from the 2018 version of the codes and the standards referenced therein, including, but not limited to, ASCE 7, SDPWS and WFCM. This product also complies with the 2000-2015 versions of the IBC and IRC and the standards referenced therein. As required by law, where this TER is not approved, the building official shall respond in writing, stating the reasons this TER was not approved. For variations in state and local codes, if any see [Section 8](#).

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Figure 1: 20 ga., 1-Ply 2x6 Hanger and 14 ga., 3-ply 2x12 IF Hanger

- 4.1.1. QuickTie™ U-Hanger Series Face Mount Joist Hangers are manufactured from minimum ASTM A653, Structural Steel, Grade 40 ($F_u = 55$ ksi, $F_y = 40$ ksi) steel galvanized with a G90 zinc coating. The U-Hanger series are designated as follows:
1. UL Series – 20 ga. (minimum coated thickness = 0.0356")
 2. ULP & ULP-IF Series – 18 ga. (minimum coated thickness = 0.0466")
 3. UM Series – 16 ga. (minimum coated thickness = 0.0575")
 4. UH & UH-IF Series – 14 ga. (minimum coated thickness = 0.0705")

5. Applications:

5.1. General

- 5.1.1. QuickTie™ U-Hanger Series Face Mount Joist Hangers are used to resist gravity loads and uplift loads due to wind in one-, two- and three-ply joist assemblies in light-frame wood construction.
- 5.1.2. QuickTie™ U-Hanger Series Face Mount Joist Hangers are used as wood framing connectors in accordance with [IBC Section 2304.10.3](#) and [IRC Section R301.1.3](#).
- 5.1.3. Where the application exceeds the limitations set forth herein, design shall be permitted in accordance with accepted engineering procedures, experience, and technical judgment.

5.2. Hanger Design Values

- 5.2.1. [Table 1](#) through [Table 4](#) give the allowable gravity and uplift loads for U-Hanger connectors with one-ply, two-ply, and three-ply lumber.
- 5.2.2. The design values in [Table 1](#) through [Table 4](#) were derived using the applicable adjustment factors in ASTM D7147 per [IBC Section 2303.5](#).
- 5.2.3. The responsible design professional (RDP) for project shall determine which type of U-Hanger is appropriate using [Table 1](#) through [Table 4](#).
- 5.2.4. **Table Notes**
1. The following notes apply to [Table 1](#) through [Table 4](#).
 2. Nails designated as 16d shall be 16d common nails (0.162" x 3.5", $F_{yb} = 90,000$ psi) and 10d shall be 10d common nails (0.148" x 3", $F_{yb} = 90,000$ psi).
 3. Allowable loads are provided for load duration factors (C_D) of 1.0, 1.15, 1.25 and 1.6.
 4. Allowable loads labeled "Floor" and "Roof" represent gravity loads.

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Table 1: UL Series Hanger – Allowable Gravity and Uplift Loads (lbf)

Part No. UL Series (-1, -2, -3 ply Joists)	Joist Size	Hanger Dimensions			Steel Thick.	Fasteners				SP/DF-L (G= 0.50)				HF/SPF (G= 0.42)			
		Width, W (in)	Height, H (in)	Depth, W (in)		Header		Joist		Floor	Roof	Roof	Uplift	Floor	Roof	Roof	Uplift
						Qty.	Size	Qty.	Size	1.0	1.15	1.25	1.6	1.0	1.15	1.25	1.6
UL26	2x6	1-5/8	5-3/8	1-3/4	20 ga	6	16d	4	16d	1215	1215	1215	510	965	965	965	440
UL26-2		3-1/8	4-5/8														
UL26-3		4-5/8	3-7/8														
UL28	2x8	1-5/8	7-1/8	1-3/4	20 ga	8	16d	6	16d	1695	1855	1895	910	1400	1455	1490	785
UL28-2		3-1/8	6-3/8														
UL28-3		4-5/8	5-5/8														
UL210	2x10	1-5/8	9-1/8	1-3/4	20 ga	10	16d	8	16d	2175	2495	2575	1315	1835	1940	2010	1130
UL210-2		3-1/8	8-3/8														
UL210-3		4-5/8	7-5/8														
UL212	2x12	1-5/8	10-3/16	1-3/4	20 ga	10	16d	10	16d	1570	1570	1570	1715	1265	1265	1265	1475
UL212-2		3-1/8	9-7/16														
UL212-3		4-5/8	8-11/16														

SI: 1" = 25.4 mm, 1 lbf = 4.5 N
See notes in [Section 5.2.4](#).

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Table 2: ULP & ULP-IF Series Hangers – Allowable Gravity and Uplift Loads (lbf)

Part No. ULP (-1, -2, -3 ply Joists)	Joist Size	Hanger Dimensions			Steel Thick.	Fasteners				SP/DF-L (G= 0.50)				HF/SPF (G= 0.42)			
		Width, W (in)	Height, H (in)	Depth, D (in)		Header		Joist		Floor	Roof	Roof	Uplift	Floor	Roof	Roof	Uplift
						Qty.	Size	Qty.	Size	1.0	1.15	1.25	1.6	1.0	1.15	1.25	1.6
ULP26	2x6	1-5/8	5-3/8	1-3/4	18 ga	6	16d	4	16d	1230	1415	1435	670	1065	1110	1110	580
ULP26-2		3-1/8	4-5/8														
ULP26-3		4-5/8	3-7/8														
ULP28	2x8	1-5/8	7-1/8	1-3/4	18 ga	8	16d	6	16d	1710	1955	2005	1025	1450	1525	1560	890
ULP28-2		3-1/8	6-3/8														
ULP28-3		4-5/8	5-5/8														
ULP210	2x10	1-5/8	9-1/8	1-3/4	18 ga	10	16d	8	16d	2190	2495	2575	1375	1835	1940	2010	1200
ULP210-2		3-1/8	8-3/8														
ULP210-3		4-5/8	7-5/8														
ULP212	2x12	1-5/8	10-3/16	1-3/4	18 ga	10	16d	10	16d	2265	2265	2265	1730	1825	1825	1825	1510
ULP212-2		3-1/8	9-7/16														
ULP212-3		4-5/8	8-11/16														
ULP-IF26	2x6	1-5/8	5-3/8	1-3/4	18 ga	6	16d	4	10d	830	955	1040	745	715	825	895	640
ULP-IF26-2		3-1/8	4-5/8														
ULP-IF26-3		4-5/8	3-7/8														
ULP-IF28	2x8	1-5/8	7-1/8	1-3/4	18 ga	8	16d	6	10d	1110	1275	1385	930	955	1100	1195	805
ULP-IF28-2		3-1/8	6-3/8														
ULP-IF28-3		4-5/8	5-5/8														
ULP-IF210	2x10	1-5/8	9-1/8	1-3/4	18 ga	10	16d	6	10d	1385	1590	1730	1115	1195	1375	1490	965
ULP-IF210-2		3-1/8	8-3/8														
ULP-IF210-3		4-5/8	7-5/8														

SI: 1" = 25.4 mm, 1 lbf = 4.5 N
See notes in [Section 5.2.4](#).

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Table 3: UM Series Hanger – Allowable Gravity and Uplift Loads (lbf)

Part No. UM (-1, -2, -3 ply Joists)	Joist Size	Hanger Dimensions			Steel Thick.	Fasteners				SP/DF-L (G= 0.50)				HF/SPF (G= 0.42)			
		Width, W (in)	Height, H (in)	Depth, D (in)		Header		Joist		Floor	Roof	Roof	Uplift	Floor	Roof	Roof	Uplift
						Qty.	Size	Qty.	Size	1.0	1.15	1.25	1.6	1.0	1.15	1.25	1.6
UM26	2x6	1-5/8	5-3/8	2-1/4	16 ga	6	16d	6	16d	1445	1540	1540	600	1245	1245	1245	525
UM26-2		3-1/8	4-5/8														
UM26-3		4-5/8	3-7/8														
UM28	2x8	1-5/8	7-1/8	2-1/4	16 ga	12	16d	6	16d	1885	1930	1930	600	1625	1625	1625	525
UM28-2		3-1/8	6-3/8														
UM28-3		4-5/8	5-5/8														
UM210	2x10	1-5/8	9-1/8	2-1/4	16 ga	18	16d	8	16d	2320	2320	2320	1065	2005	2005	2005	925
UM210-2		3-1/8	8-3/8														
UM210-3		4-5/8	7-5/8														
UM212	2x12	1-5/8	10-3/16	2-1/4	16 ga	22	16d	10	16d	1930	1930	1930	1530	1535	1535	1535	1325
UM212-2		3-1/8	9-7/16														
UM212-3		4-5/8	8-11/16														

SI: 1" = 25.4 mm, 1 lbf = 4.5 N
See notes in [Section 5.2.4](#).

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Table 4: UH & UH-IF Series Hangers – Allowable Gravity and Uplift Loads (lbf)

Part No. UH (-1, -2, -3 ply Joists)	Joist Size	Hanger Dimensions			Steel Thick.	Fasteners				SP/DF-L (G= 0.50)				HF/SPF (G= 0.42)			
		Width, W (in)	Height, H (in)	Depth, D (in)		Header		Joist		Floor	Roof	Roof	Uplift	Floor	Roof	Roof	Uplift
						Qty	Size	Qty	Size	1.0	1.15	1.25	1.6	1.0	1.15	1.25	1.6
UH26	2x6	1-5/8	5-3/8	2-1/4	14 ga	6	16d	6	16d	1465	1540	1540	1155	1205	1205	1205	1005
UH26-2		3-1/8	4-5/8														
UH26-3		4-5/8	3-7/8														
UH28	2x8	1-5/8	7-1/8	2-1/4	14 ga	12	16d	6	16d	1865	1960	1985	1155	1495	1525	1550	1005
UH28-2		3-1/8	6-3/8														
UH28-3		4-5/8	5-5/8														
UH210	2x10	1-5/8	9-1/8	2-1/4	14 ga	18	16d	8	16d	2265	2375	2435	1565	1780	1850	1890	1365
UH210-2		3-1/8	8-3/8														
UH210-3		4-5/8	7-5/8														
UH212	2x12	1-5/8	10-3/16	2-1/4	14 ga	22	16d	10	16d	3060	3210	3310	1975	2355	2490	2575	1720
UH212-2		3-1/8	9-7/16														
UH212-3		4-5/8	8-11/16														
UH-IF26-2	2x6	3-1/8	4-5/8	2-1/4	14 ga	6	16d	6	10d	865	995	1080	1170	750	860	935	1015
UH-IF26-3		4-5/8	3-7/8														
UH-IF28-2	2x8	3-1/8	6-3/8	2-1/4	14 ga	12	16d	6	10d	1635	1775	1830	1170	1345	1470	1555	1015
UH-IF28-3		4-5/8	5-5/8														
UH-IF210-2	2x10	3-1/8	8-3/8	2-1/4	14 ga	18	16d	8	10d	2400	2555	2585	1560	1945	2085	2180	1355
UH-IF210-3		4-5/8	7-5/8														
UH-IF212-2	2x12	3-1/8	9-7/16	2-1/4	14 ga	22	16d	10	16d	3170	3335	3335	1950	2540	2695	2800	1690
UH-IF212-3		4-5/8	8-11/16														

SI: 1" = 25.4 mm, 1 lbf = 4.5 N

See notes in [Section 5.2.4](#).

6. Installation:

- 6.1. QuickTie™ U-Hanger Series Face Mount Joist Hangers shall be installed in accordance with the manufacturer's published installation instructions and this TER. In the event of a conflict between the manufacturer's installation instructions and this TER, the more restrictive shall govern.
- 6.2. A copy of the manufacturer's published installation instructions shall be available at all times on the jobsite during installation.

7. Test and Engineering Substantiating Data:

- 7.1. Bending yield testing in accordance with ASTM F1575, performed by Structural Building Components Research Institute (SBCRI).
- 7.2. Tensile strength testing in accordance with ASTM A370, performed by SBCRI.
- 7.3. Gravity and uplift load testing in accordance with ASTM D7147, performed by SBCRI.
- 7.4. The product(s) evaluated by this TER fall within the scope of one or more of the model, state or local building codes for building construction. The testing and/or substantiating data used in this TER is limited to buildings, structures, building elements, construction materials and civil engineering related specifically to buildings.
- 7.5. The provisions of model, state or local building codes for building construction do not intend to prevent the installation of any material or to prohibit any design or method of construction. Alternatives shall use consensus standards, performance-based design methods or other engineering mechanics based means of compliance. This TER assesses compliance with defined standards, accepted engineering analysis, performance-based design methods, etc. in the context of the pertinent building code requirements.
- 7.6. Some information contained herein is the result of testing and/or data analysis by other sources, which DrJ relies on to be accurate, as it undertakes its engineering analysis.
- 7.7. DrJ has reviewed and found the data provided by other professional sources are credible. The information in this TER conforms to DrJ's procedure for acceptance of data from approved sources.

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- 7.8. DrJ's responsibility for data provided by approved sources conforms to [IBC Section 1703](#) and any relevant professional engineering law.
- 7.9. Where appropriate, DrJ relies on the derivation of design values, which have been codified into law through codes and standards (e.g., *IRC, WFCM, IBC, SDPWS, NDS, ACI, AISI, PS-20, PS-2*, etc.). This includes review of code provisions and any related test data that aids in comparative analysis or provides support for equivalency to an intended end-use application. Where the accuracy of design values provided herein is reliant upon the published properties of commodity materials (e.g., lumber, steel, concrete, etc.), DrJ relies upon grade/properties provided by the raw material supplier to be accurate and conforming to the mechanical properties defined in the relevant material standard.

8. Findings:

- 8.1. Based on data and engineering analysis, QuickTie™ U-Hanger Series Face Mount Joist Hangers as described in this TER conform to the codes listed in [Section 2](#).
- 8.2. QuickTie™ U-Hanger Series Face Mount Joist Hangers are approved for use where the design values listed in [Table 1](#) through [Table 4](#) meet the requirements of the building design.
- 8.3. [IBC Section 104.11](#) ([IRC Section R104.11](#) and [IFC Section 104.9](#) are similar) states:

104.11 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed design is satisfactory and complies with the intent of the provisions of this code, and that the material, method or work offered is, for the purpose intended, not less than the equivalent of that prescribed in this code. ... Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.
- 8.4. This product has been evaluated with the codes listed in [Section 2](#), and is compliant with all known state and local building codes. Where there are known variations in state or local codes that are applicable to this evaluation, they are listed here:
 - 8.4.1. No known variations
- 8.5. This TER uses professional engineering law, the building code, *ANSI/ASTM* consensus standards and generally accepted engineering practice as its criteria for all testing and engineering analysis. DrJ's professional engineering work falls under the jurisdiction of each state Board of Professional Engineers, when signed and sealed.

9. Conditions of Use:

- 9.1. Where required by the authority having jurisdiction (AHJ) in which the project is to be constructed, this TER and the installation instructions shall be submitted at the time of permit application.
- 9.2. Any generally accepted engineering calculations needed to show compliance with this TER shall be submitted to the code official for review and approval.
- 9.3. Design loads shall be determined in accordance with the building code adopted by the jurisdiction in which the project is to be constructed.
- 9.4. Calculations showing compliance with this TER must be submitted to the code official. The calculations must be prepared by a RDP.
- 9.5. Design
 - 9.5.1. Building Designer Responsibility
 - 9.5.1.1. Unless the AHJ allows otherwise, the Construction Documents shall be prepared by a Building Designer for the Building and shall be in accordance with [IRC Section R106](#) and [IBC Section 107](#).
 - 9.5.1.2. The Construction Documents shall be accurate and reliable and shall provide the location, direction and magnitude of all applied loads and shall be in accordance with [IRC Section R301](#) and [IBC Section 1603](#).

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9.5.2. Construction Documents

9.5.2.1. Construction Documents shall be submitted to the Building Official for approval and shall contain the plans, specifications and details needed for the Building Official to approve such documents.

9.6. Responsibilities

- 9.6.1. The information contained herein is a product, material, detail, design and/or application TER evaluated in accordance with the referenced building codes, testing and/or analysis through the use of accepted engineering practice, experience and technical judgment.
- 9.6.2. DrJ TERs provide an assessment of only those attributes specifically addressed in the Products Evaluated or Code Compliance Process Evaluated sections.
- 9.6.3. The engineering evaluation was performed on the dates provided in this TER, within DrJ's professional scope of work.
- 9.6.4. This product is manufactured under a third-party quality control program in accordance with [/IRC Section R104.4](#) and [R109.2](#) and [/IBC Section 104.4](#) and [110.4](#).
- 9.6.5. The actual design, suitability and use of this TER, for any particular building, is the responsibility of the Owner or the Owner's authorized agent, and the TER shall be reviewed for code compliance by the Building Official.
- 9.6.6. The use of this TER is dependent on the manufacturer's in-plant QC, the ISO/IEC 17020 third-party quality assurance program and procedures, proper installation per the manufacturer's instructions, the Building Official's inspection and any other code requirements that may apply to demonstrate and verify compliance with the applicable building code.

10. Identification:

- 10.1 The QuickTie™ products described in this TER are identified by a label bearing the manufacturer's name, product name, label of the third-party inspection agency, and other information to confirm code compliance.
- 10.2 Additional technical information can be found at quicktieproducts.com.

11. Review Schedule:

- 11.1 This TER is subject to periodic review and revision. For the most recent version of this TER, visit drjcertification.org.
- 11.2 For information on the current status of this TER, contact [DrJ Certification](#).



- [Mission, Belief and Independence](#)
- [Product Evaluation Policies](#)
- [Product Approval – Building Code, Administrative Law and P.E. Law](#)