



ICC-ES Evaluation Report

ESR-4300

Issued January 2023

Revised March 2023

This report is subject to renewal January 2024.

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

REPORT HOLDER:

KNAPP GmbH

EVALUATION SUBJECT:

RICON S VS 60 AND 80 SERIES BEAM HANGERS

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)

For evaluation for compliance with codes adopted by the Los Angeles Department of Building and Safety (LADBS), see [ESR-4300 LABC and LARC Supplement](#).

Property evaluated:

Structural

2.0 USES

The KNAPP GmbH RICON S VS 60 and 80 Series beam hangers described in this report are face-mounted hangers used as wood framing connectors complying with Section [2304.10.4](#) of the 2021 IBC (Section [2304.10.3](#) of the 2018 and 2015 IBC, Section [2304.9.3](#) of the 2012 and 2009 IBC). The hangers 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 General:

The RICON S VS 60 and 80 Series beam hangers are pairs of connectors which each consist of a die-formed steel plate with a welded stud and prepunched holes for the installation of screws. The XL 390x80 beam hanger has an additional welded bearing plate with holes for additional screws installed perpendicular to the wood and at a 30-degree

inclined angle. The beam hangers are installed in inverted pairs and face-mounted to structural glued-laminated timber (glulam), for beam-to-beam and beam-to-column connections. The beam hangers are installed using screws complying with Section 3.2.3 of this report. The total thickness of the installed beam hanger is 1 inch (25 mm). Table 1 lists beam hanger series, model number, dimensions, fastening schedules and allowable loads. Figures 1 and 2 show the beam hangers and typical installation of the beam hangers.

3.2 Materials:

3.2.1 Steel: The beam hangers are fabricated from carbon steels and are galvanized in accordance with the approved quality documentation. For 60 series beam hangers, the steel has a minimum yield strength, F_y , of 34 ksi (235 MPa) and a minimum tensile strength, F_u , of 45 ksi (310 MPa). For 80 series beam hangers, the steel has a minimum yield strength, F_y , of 37 ksi (255 MPa) and a minimum tensile strength, F_u , of 45 ksi (310 MPa). Base-metal thickness for the beam hangers is 0.197 inches (5 mm).

3.2.2 Wood: Wood beams and columns to which the beam hangers are face-mounted must be glulam complying with 2303.1.3 of the IBC, having a minimum assigned specific gravity of 0.50 and a maximum moisture content of 16 percent, except as noted in Section 4.1. The thickness of the supporting wood member (beam or column) must be equal to or greater than the length of the screws or the projected length of the inclined screws, or as required by wood member design, whichever is greater.

3.2.3 Screws: The screws used for installation of the beam hangers described in this report are SWG ASSYplus VG 4 countersunk screws, addressed in ESR-3178. See Table 1 for applicable sizes and lengths.

4.0 DESIGN AND INSTALLATION

4.1 Design:

The tabulated allowable loads shown in Table 1 of this report are for Allowable Stress Design (ASD) and include the load duration factor, C_D , addressed in the NDS.

Tabulated allowable loads apply to beam-to-beam and beam-to-column connections formed with the beam hangers described in this report and glulam used under dry conditions and where sustained temperatures are 100°F

(37.8°C) or less. When beam hangers are fastened to glulam having a moisture content greater than 19 percent, or where wet service is expected, the allowable loads must be adjusted by the wet service factor, C_M , specified in NDS Table 11.3.3. When connectors are fastened to glulam that will experience sustained exposure to temperatures exceeding 100°F (37.8°C), the allowable loads in this 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 connection in accordance with the NDS and the applicable evaluation report for engineered wood products.

4.2 Installation:

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

The connector plates must be installed symmetrically about the vertical axis of the cross-section of the supported beam. On the supported beam, the connector plate must be fastened with the stud towards the top of the beam. On the supporting beam or column, the companion connector plate must be fastened with the stud at the bottom. The minimum distances from the edges of the connector plates to the edge of the wood must be in accordance with the distributor's instructions. The screws must be installed in accordance with the screw manufacturer's published installation instructions.

The beam hanger may be recessed into one of the wood members, to conceal the hardware and to minimize the gap between the supported beam and the supporting beam or column.

5.0 CONDITIONS OF USE

The RICON S VS 60 and 80 Series beam 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 beam hangers must be manufactured, identified and installed in accordance with this report and the distributor'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 screws must comply, respectively, with Sections 3.2.2 and 3.2.3 of this report.
- 5.5 The beam hangers do not resist uplift loads. If uplift loads are anticipated, additional fastening of the beam, designed in accordance with the code, is needed to prevent uplift.
- 5.6 The beam hangers have only been evaluated for download capacity. Evaluation of resistance to axial, rotational or transverse lateral loads is outside the scope of this evaluation report.
- 5.7 The beam hangers are expected to be protected by a weather-resistive envelope and have not been evaluated for corrosion resistance.
- 5.8 Use of beam hangers and screws with preservative or fire retardant treated lumber is outside the scope of this report.
- 5.9 The beam hangers are manufactured under a quality control program with inspections by ICC-ES.

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-4300) along with the name, registered trademark, or registered logo of the report holder (KNAPP GmbH.) must be included in the product label.
- 7.2 In addition, the RICON series number and the model number must be included in the product label.
- 7.3 The report holder's contact information is the following:
KNAPP GmbH
WASSERGASSE 31
A-3324 EURATSFELD
AUSTRIA
+43 7474 799 10
www.knappconnectors.com
- 7.4 The technical support and distributor company contact information is the following:

MASS TIMBER CONNECTIONS (MTC)
SOLUTIONS INC.
12941 115 Ave #105
SURREY, BC, CANADA V3R 0E2
(866) 899-4090
info@mtcsolutions.com
www.mtcsolutions.com

TABLE 1—RICON S VS 60 AND 80 SERIES BEAM HANGERS BEAM-TO-BEAM AND BEAM-TO-COLUMN ALLOWABLE LOADS

RICON SERIES	MODEL NO.	DIMENSIONS ¹ (inches)			FASTENERS ² (Quantity - Size)		ALLOWABLE DOWNLOADS ³ (lbf)
		W	H	H _{assembled}	Supported Beam	Supporting Beam/Column	C _D = 1.00/ 1.15/1.25
60	S VS 140X60	2 ³ / ₈	5 ¹ / ₂	5 ¹ / ₂	10 - 5/16" x 6 ¹ / ₄ "	10 - 5/16" x 3 ¹ / ₈ "	3,780
	S VS 200X60	2 ³ / ₈	7 ⁷ / ₈	7 ⁷ / ₈	16 - 5/16" x 6 ¹ / ₄ "	16 - 5/16" x 3 ¹ / ₈ "	4,780
80	S VS 200X80	3 ¹ / ₈	7 ⁷ / ₈	7 ⁷ / ₈	16 - 3/8" x 7 ⁷ / ₈ "	16 - 3/8" x 4"	6,880
	S VS 290X80	3 ¹ / ₈	11 ⁷ / ₁₆	11 ⁷ / ₁₆	20 - 3/8" x 7 ⁷ / ₈ "	20 - 3/8" x 4"	8,900
	S VS XL 390X80	3 ¹ / ₈	13 ³ / ₈	15 ³ / ₈	28 - 3/8" x 7 ⁷ / ₈ " plus 2 - 3/8" x 7 ⁷ / ₈ " Inclined	28 - 3/8" x 4" plus 2 - 3/8" x 7 ⁷ / ₈ " Inclined	15,000

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

¹Refer to Figure 1 for definitions of hanger nomenclature.

²Screws must be fully-threaded wood-drilling screws complying with Section 3.2.3 of this report.

³Tabulated allowable loads apply for all durations of loads as indicated in the table. No increase is allowed.

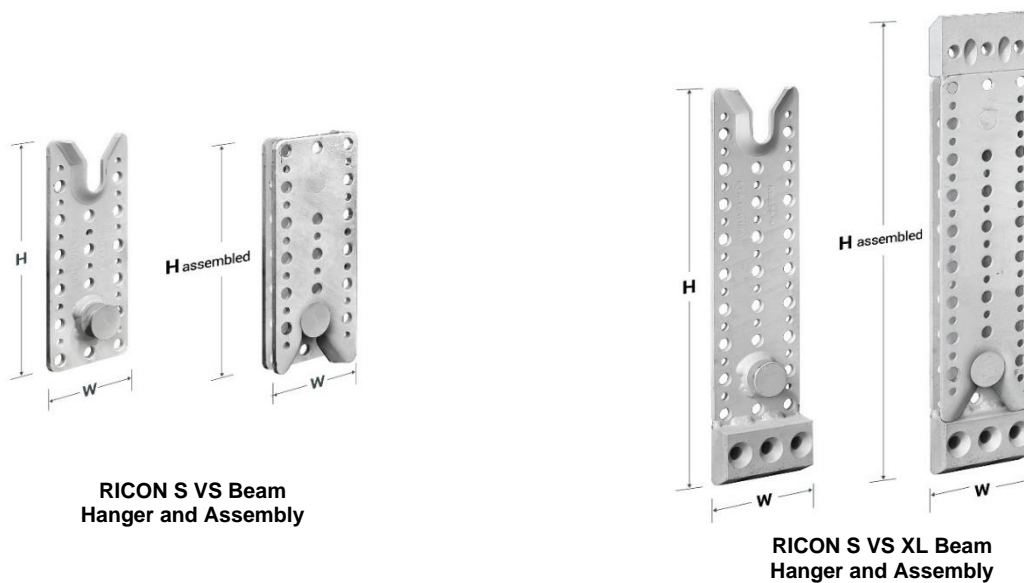


FIGURE 1—RICON S VS BEAM HANGERS AND ASSEMBLY



FIGURE 2—RICON S VS SERIES BEAM HANGER INSTALLATION

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

REPORT HOLDER:

KNAPP GmbH

EVALUATION SUBJECT:

RICON S VS 60 AND 80 SERIES BEAM HANGERS

1.0 REPORT PURPOSE AND SCOPE

Purpose:

The purpose of this evaluation report supplement is to indicate that KNAPP GmbH RICON S VS 60 and 80 Series beam hangers, described in ICC-ES evaluation report [ESR-4300](#), 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:

- 2023 *City of Los Angeles Building Code* (LABC)
- 2023 *City of Los Angeles Residential Code* (LARC)

2.0 CONCLUSIONS

The KNAPP GmbH RICON S VS 60 and 80 Series beam hangers, described in Sections 2.0 through 7.0 of the evaluation report [ESR-4300](#), comply with the LABC Chapter 23, and the LARC, and are subject to the conditions of use described in this supplement.

3.0 CONDITIONS OF USE

The KNAPP GmbH RICON S VS and XL Series beam hangers, described in this evaluation report supplement, must comply with all of the following conditions:

- All applicable sections in the evaluation report [ESR-4300](#).
- The design, installation, conditions of use and identification are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report [ESR-4300](#).
- 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.
- Under the LARC, an engineered design in accordance with LARC Section R301.1.3 must be submitted.

This evaluation report supplement expires concurrently with the evaluation report ESR-4300, issued January 2023 and revised March 2023.

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1.0 REPORT PURPOSE AND SCOPE**Purpose:**

The purpose of this evaluation report supplement is to indicate that KNAPP GmbH RICON S VS 60 and 80 Series beam hangers, described in ICC-ES evaluation report ESR-4300, have also been evaluated for compliance with the codes noted below.

Applicable code editions:

- 2022 California Building Code (CBC)

For evaluation of applicable chapters adopted by the California Office of Statewide Health Planning and Development (OSHPD) AKA: California Department of Health Care Access and Information (HCAI) and the Division of State Architect (DSA), see Sections 2.1.1 and 2.1.2 below.

- 2022 California Residential Code (CRC)

2.0 CONCLUSIONS**2.1 CBC:**

The KNAPP GmbH RICON S VS 60 and 80 Series beam hangers, described in Sections 2.0 through 7.0 of the evaluation report ESR-4300 comply with CBC Chapter 23, provided the design and installation are in accordance with the 2021 *International Building Code*® (IBC) provisions noted in the evaluation report and the additional requirements of CBC Chapters 16, 17 and 23, as applicable.

2.1.1 OSHPD: The applicable OSHPD Sections and Chapters of the CBC are beyond the scope of this supplement.

2.1.2 DSA: The applicable DSA Sections and Chapters of the CBC are beyond the scope of this supplement.

2.2 CRC:

The KNAPP GmbH RICON S VS 60 and 80 Series beam hangers, described in Sections 2.0 through 7.0 of the evaluation report ESR-4300, comply with CRC Chapter 3, provided the design and installation are in accordance with the 2021 *International Residential Code*® (IRC) provisions noted in the evaluation report.

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