ICC-ES Evaluation Report

ESR-5207

Issued December 2025

Subject to renewal December 2026

DIVISION: 06 00 00—WOOD, PLASTICS AND COMPOSITES **Section: 06 05 23—Wood, Plastic, and Composite Fastenings** **Section: 06 05 23.30—Connectors for Mass Timber**	**REPORT HOLDER:** **ROTHO BLAAS S.R.L.**	**EVALUATION SUBJECT:** **ALUMEGA BEAM CONNECTORS**	

1.0 EVALUATION SCOPE

Compliance with the following codes:

- 2024, 2021, 2018 and 2015 *International Building Code®* (IBC)
- 2024, 2021, 2018 and 2015 *International Residential Code®* (IRC)

Property evaluated:

- Structural

2.0 USES

The ALUMEGA beam connectors are used to transfer gravity loads from supported wood members (joists) to supporting material, such as wood headers or posts (columns), concrete or steel.

3.0 DESCRIPTION

3.1 General:

ALUMEGA connectors are generally T-shaped. The flanges of the T's are fastened to the wood members with dowel-type fasteners. The ALUMEGA connector fastened to the supported joist member and the ALUMEGA connector fastened to the supporting member (header or post) are bolted together at the jobsite.

Six connector products are available – three connectors for headers or posts, designated ALUMEGA HP, ALUMEGA HV, ALUMEGA HVG; and three connectors for joists, designated ALUMEGA JS, ALUMEGA JV, and ALUMEGA JVG. Each connector type comes in lengths ranging from 240 mm to 840 mm, at 60 mm increments, and can be cut to the required length. The various joist connectors can be combined with each of the various header connectors as needed to address the requirements of the connected members. The lengths of the paired connectors may differ. See Figure 1 for examples of how the connectors are used.

The ALUMEGA connectors are manufactured from AW-6082 T6 aluminum material complying with EN 573-3. See Tables 1 and 2 for typical connector models, dimensions and associated numbers of fasteners.

3.1.1 ALUMEGA HP: The ALUMEGA HP connector flange has two staggered rows of $^{1}/_{2}$-inch-round (13 mm) holes on either side of the stem and $^{3}/_{16}$-inch-round (5 mm) holes for positioning screws. The stem has horizontal oblong holes spaced $2^{3}/_{8}$ inches (60 mm) on center. The primary fasteners are installed perpendicular to the face of the wood. See Figure 2 for a representative image of the connector.

3.1.2 ALUMEGA HV: The ALUMEGA HV connector flange has a single row of vertical slotted holes on each side of the stem, which are spaced $2^3/_8$ inches (60 mm) on center. The flange also has $^3/_{16}$-inch-round (5 mm) holes for positioning screws. The stem has horizontal oblong holes spaced $2^3/_8$ inches (60 mm) on center. The primary fasteners are screws installed at a 45 degree angle to the face of the wood. This requires the use of proprietary washers installed in the slotted holes of the connector flange. See Figure 3 for a representative image of the connector.

3.1.3 ALUMEGA HVG: The ALUMEGA HVG connector flange has a single row of holes on each side of the stem. These holes are countersunk at a 45 degree angle and are spaced $2^3/_8$ inches (60 mm) on center. The flange also has $^3/_{16}$-inch-round (5 mm) holes for positioning screws. The stem has horizontal oblong holes spaced $2^3/_8$ inches (60 mm) on center. The primary fasteners are screws installed at a 45 degree angle to the face of the wood, without the use of a washer. See Figure 4 for a representative image of the connector.

3.1.4 ALUMEGA JV: The ALUMEGA JV connector flange has a single row of vertical slotted holes on each side of the stems, which are spaced $2^3/_8$ inches (60 mm) on center. The flange also has $^3/_{16}$-inch-round (5 mm) holes for positioning screws. The connector has two stem elements which have M12 threaded round holes spaced $2^3/_8$ inches (60 mm) on center. The primary fasteners are screws installed at a 45 degree angle to the face of the wood. This requires the use of proprietary washers installed in the slotted holes of the connector flange. See Figure 5 for a representative image of the connector.

3.1.5 ALUMEGA JVG: The ALUMEGA JVG connector flange has a single row of holes on each side of the stems. These holes are countersunk at a 45 degree angle and are spaced $2^3/_8$ inches (60 mm) on center. The flange also has $^3/_{16}$-inch-round (5 mm) holes for positioning screws. The connector has two stem elements which have M12 threaded round holes spaced $2^3/_8$ inches (60 mm) on center. The primary fasteners are screws installed at a 45 degree angle to the face of the wood, without the use of a washer. See Figure 6 for a representative image of the connector.

3.1.6 ALUMEGA JS: The ALUMEGA JS connector has a knife plate element that is installed in a slot in the joist and two stem elements. The flange has $^3/_{16}$-inch-round (5 mm) holes for positioning screws. The connector has two stem elements which have M12 threaded round holes spaced $2^3/_8$ inches (60 mm) on center. The knife plate has one row of 0.670-inch-round (17 mm) holes spaced $2^3/_8$ inches (60 mm) on center. The primary fasteners may be either smooth dowels or self-drilling dowels. See Figure 7 for a representative image of the connector.

3.2 Fasteners:

3.2.1 General: Installation of ALUMEGA connectors attached to wood requires fasteners which are relied upon to transfer the load (primary fasteners) and sometimes requires use of positioning screws to hold the connector in place while the primary fasteners are installed. Paired connectors are bolted together. See Sections 3.2.2 through 3.2.4 for descriptions of the primary fasteners; Section 3.2.5 for description of the positioning fasteners; and Section 3.2.6 for description of the bolts used to join connectors.

3.2.2 HP Connector: The required number of primary fasteners is shown in Table 1. Two options for fastening the HP Connector to the supporting header or post are addressed in this report. When screws are used, they must be 0.40 inch (10 mm), carbon steel HBS Plate (HBSPL) screws which are addressed in ICC-ES evaluation report ESR-4645. The screws may have any of the applicable coatings described in ESR-4645. When through-bolts are used to fasten HP Connectors to either one side or to opposing sides of the supporting wood member, they must be KOS through-bolts supplied by the report holder. The bolts comply with EN 14592, minimum class 8.8, M12 size.

3.2.3 HV, HVG, JV and JVG Connectors: The required number of primary screws is shown in Table 1 or 2, as applicable. The screws must be 0.36 inch (9 mm), carbon steel VGS screws. For the HV and JV connectors, VGU washers must be used with each VGS screw. Evaluation of these screws and washers is addressed in ICC-ES evaluation report ESR-4645. The screws and washers may have any of the applicable coatings described in ESR-4645.

3.2.4 JS Connector: The required number of dowels is shown in Table 2. Two options for fastening the knife plate to the supported wood member are addressed in this report. One requires the use of STA smooth dowels, which are available from the report holder. See Figure 7 for dimensions and specified F_{yb}. The second fastening option requires the use of SBD self-drilling threaded dowels, which are available from the report holder. See Figure 8 for dimensions and specified F_{yb}.

3.2.5 Positioning Fasteners: Positioning fasteners must be 0.20 inch (5 mm), carbon steel LBS or LBSH screws with a minimum length of $2^3/_8$ inch (60 mm), addressed in ICC-ES evaluation report ESR-4645. The required number of positioning screws is shown in Table 1 or 2, as applicable. The screws may have any of the applicable coatings described in ESR-4645.

3.2.6 Bolts for Joining Connectors: The bolts used to join connectors together must be minimum grade 8.8, M12 bolts. When supplied by the report holder, they are designated MEGABOLT and comply with the report holder's specifications.

3.3 Wood Members:

The connectors have been evaluated for use with supported wood members (joists) which are sawn lumber or structural glued laminated timber (glulam). The connectors have been evaluated for use with supporting wood members which include sawn lumber or glulam headers and sawn lumber or glulam posts. When screws are used to fasten connectors to wood members, the wood must be of sufficient thickness to allow the screws to be fully encapsulated in the wood.

Sawn lumber members and all plies of glulam members must have a minimum assigned specific gravity, SG_{NDS}, as required by the design. For sawn lumber, SG_{NDS} must be determined in accordance with Table 12.3.3 of the ANSI/AWC *National Design Specification for Wood Construction*® (NDS) or the NDS Supplement. For glulam, SG_{NDS} must be determined in accordance with Tables 5A through 5D of the NDS Supplement. For the design values shown in this report, the applicable SG_{NDS} values and the required reference compression strength perpendicular-to-grain, $F_{c\perp}$, are shown in the applicable table. The sawn lumber and glulam must have a moisture content of no more than 19 percent at the time of connector installation.

4.0 DESIGN AND INSTALLATION

4.1 Design:

4.1.1 General: The ALUMEGA connectors have been evaluated for use in resisting gravity loads. Resistance to other loading conditions, such as axial, torsional and uplift loading, is outside the scope of this evaluation, but may be addressed by others in accordance with the code.

The capacity of the connection between the joist and the supporting header or post is the lowest of the following capacities:

- The adjusted capacity of the ALUMEGA JV, JVG or JS connector fastened to the joist.
- The adjusted capacity of the ALUMEGA HP, HV or HVG connector fastened to the supporting header or post.
- The capacity of the connection between the two connectors.

4.1.2 Connector-to-Wood Design Values: A design method for determining the capacity of ALUMEGA connectors fastened to wood has been evaluated. This design method has been evaluated for use in designing the connections described in Table 3. The resulting design values are documented in the report holder's quality documentation. Sample design values determined in accordance with the approved design method are shown in Tables 5 through 10. For connector length between the tabulated lengths, the design values for the next shorter connector can be conservatively applied.

The design method takes into account the following, which must be addressed in calculations submitted to the code official for approval:

1. For the HP connector: lateral fastener capacity.
2. For the HV, HVG, JV and JVG connectors: the lateral resistance provided by the axial withdrawal resistance of the screws installed in the wood; the available tension strength of the screws.
3. For the JS connector: eccentricity between the center of the fastener group and the connection to the header connector: lateral fastener capacity.
4. For all: eccentric loading of the connector relative to the connector/wood interface; bearing of the connector plate on the wood due to the eccentric loading; shear capacity of the back plate of the connector.

The design values in this report are for connections where the wood members do not split. Connected wood members must be analyzed for load-carrying capacity at the connection in accordance with the NDS. In particular, the wood must be analyzed and reinforced, as needed, to ensure that splitting will not occur.

The tabulated allowable loads are for Allowable Stress Design (ASD) and include the load duration factor, C_D, addressed in the NDS. The tabulated values must not be increased for short duration loading. Tabulated allowable loads apply to joist-to-header and joist-to-post connections with wood which is used in dry conditions and where sustained temperatures are 100ºF (37.8ºC) or less. Use in wet service conditions is not expected and is outside the scope of this evaluation. When connectors are fastened to wood that will experience

sustained exposure to temperatures exceeding 100ºF (37.8ºC), the allowable loads in this report must be adjusted by the temperature factor, C_t, specified in NDS.

4.1.3 Connector-to-Connector Design Values: The connection between mated ALUMEGA connectors has been tested to determine the capacity per bolt. The determination of the connection strength has also considered the bolt strength and the minimum bearing capacity of the aluminum material. See Table 4 for the allowable load for the mated connectors, based on the number of bolts used.

4.2 Installation:

4.2.1 General: Installation of the connectors must be in accordance with this evaluation report, the Rotho Blaas published installation instructions (RBII) and the approved construction documents. In the event of a conflict amongst these documents, the most severe requirements govern. The applicable RBII must be available at the site of installation, at all times during installation.

Where required by the approved design, ALUMEGA connectors may be cut to achieve the desired length, in accordance with the RBII. The header connectors must be installed with the open bolt hole in the stem at the top of the connection. The joist connectors must be installed with the word 'TOP' marked on the product placed at the top of the connection.

Placement of the connectors must respect the edge and end distance requirements shown in the RBII. Also the edge and end distances to the outermost fasteners in the connections to wood member must be in accordance with the NDS or ICC-ES evaluation report ESR-4645, as applicable.

Wood members must be fabricated as required by the installation instructions and the approved construction documents, taking into account the installation tolerances described in the RBII. Typically, the connectors are fastened to the wood members offsite and then connected together at the jobsite when the joist is set in place.

Installation of self-drilling fasteners does not require predrilling. If predrilling is desired, to reduce the likelihood of splitting, refer to ESR-4645 for hole requirements for the HBSPL and VGS screws. For the SBD dowel used with the ALUMEGA JS connector, the recommended pilot hole dimension is $^5/_{32}$ inch.

For the installation of the VGS screws at the required 45 degree angle to the grain for ALUMEGA HV, HVG, JV and JVG connectors, an assembly jig is offered and recommended for use by the report holder to facilitate the installation. When using this jig, a pilot hole with a diameter of $^{13}/_{64}$ inch (5 mm) and a minimum length of 2 inch (50 mm) must be used.

5.0 CONDITIONS OF USE:

The ALUMEGA 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 ALUMEGA connectors must be manufactured and identified in accordance with this report.

5.2 Calculations and construction documents showing that the loads on the ALUMEGA connectors do not exceed the design values determined in accordance with the design method described in this report must be submitted to the code official for approval. The calculations and construction documents 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 For connection configurations which are not directly addressed in this report, design values must be determined by the report holder in accordance with the documented design method.

5.4 Fasteners and connected wood members must comply, respectively, with Sections 3.2 and 3.3 of this report.

5.5 In addition to use of the HP with wood, use with other materials, such as concrete, is possible. Such use is outside the scope of this report, but may be addressed by others in accordance with the code.

5.6 The connectors have only been evaluated for download capacity. Evaluation of resistance to other loads is outside the scope of this evaluation report, but may be addressed by others in accordance with the code.

5.7 The design values in this report are for the connections, assuming there is no splitting of the wood. Wood members must be designed to resist splitting.

5.8 The connectors have been evaluated for use in dry conditions and have not been evaluated for corrosion resistance.

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

5.10 The connectors are manufactured under a quality control program with inspections by ICC-ES.

6.0 EVIDENCE SUBMITTED

6.1 Data in accordance with the ICC-ES Acceptance Criteria for Joist Hangers and Similar Devices (AC13), dated April 2024.

6.2 Reports of testing and analysis in accordance with ASTM F1575 and quality documentation for the STA and SBD dowels.

7.0 IDENTIFICATION

7.1 The ICC-ES mark of conformity, electronic labeling, or the evaluation report number (ICC-ES ESR-5207) along with the name, registered trademark, or registered logo of the report holder must be included in the product label.

7.2 In addition, the ALUMEGA connectors are identified with the model number and an indication of the top of the joist connector.

7.3 The report holder's contact information is the following:

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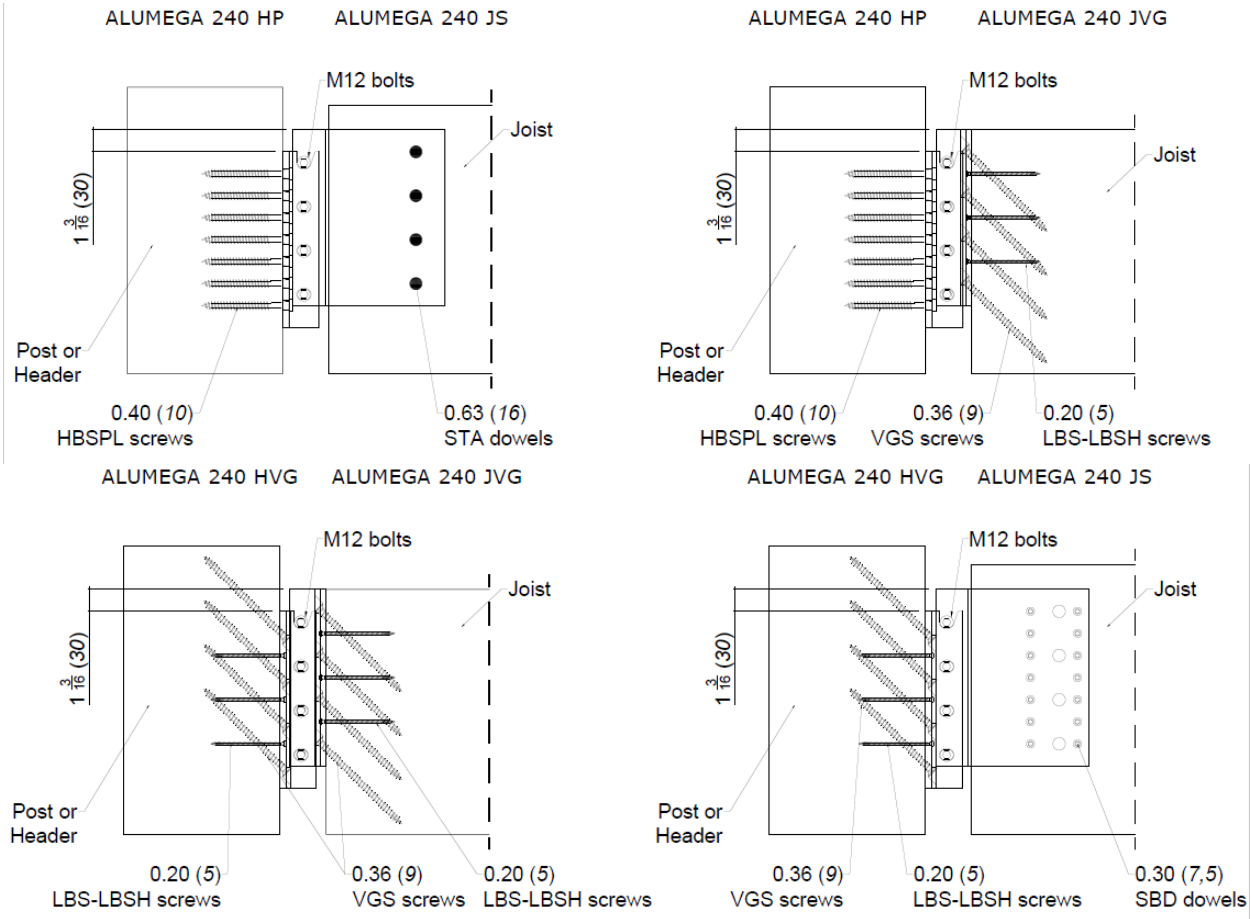


FIGURE 1—EXAMPLES OF ALUMEGA INSTALLATION

TABLE 1—ALUMEGA MODELS FOR USE WITH A SUPPORTING MEMBER (HEADER OR POST)[1]

MODEL TYPE	MODEL DESIGNATION	CONNECTOR HEIGHT, H inches (mm)	FASTENERS TO WOOD (Type and Quantity)					NUMBER OF OBLONG BOLT HOLES[6]
			LBS/LBSH Positioning Screws[2]	Primary Fastening Using Screws[3]		Primary Fastening Using M12 Through Bolts[4]		
				Full	Partial[5]	Full	Partial[5]	
HP	ALUMEGA240HP	9 1/2 (240)	2	14	8	n/a	8	4
	ALUMEGA360HP	14 1/4 (360)	4	22	12		12	6
	ALUMEGA480HP	19 (480)	6	30	16		16	8
	ALUMEGA600HP	23 5/8 (600)	8	38	20		20	10
	ALUMEGA720HP	28 3/8 (720)	10	46	24		24	12
	ALUMEGA840HP	33 1/16 (800)	12	54	28		28	14
HV	ALUMEGA240HV	9 1/2 (240)	6	8	6	n/a		4
	ALUMEGA360HV	14 1/4 (360)	10	12	10			6
	ALUMEGA480HV	19 (480)	14	16	14			8
	ALUMEGA600HV	23 5/8 (600)	18	20	18			10
	ALUMEGA720HV	28 3/8 (720)	22	24	22			12
	ALUMEGA840HV	33 1/16 (800)	26	28	26			14
HVG	ALUMEGA240HVG	9 1/2 (240)	6	8	6	n/a		4
	ALUMEGA360HVG	14 1/4 (360)	10	12	10			6
	ALUMEGA480HVG	19 (480)	14	16	14			8
	ALUMEGA600HVG	23 5/8 (600)	18	20	18			10
	ALUMEGA720HVG	28 3/8 (720)	22	24	22			12
	ALUMEGA840HVG	33 1/16 (800)	26	28	26			14

[1]See Figures 1 through 3 for depictions of the connectors. The 'B' dimension is 3 3/4 inches (95 mm) and the 'P' dimension is 1 15/16 inches (50 mm).
[2]Maximum number of optional positioning screws for the HP connector. Minimum required number of positioning screws for the HV and HVG connectors. For the HVG connectors, positioning screws are to be installed in the rows of holes closest to the edges of the flange (outer holes). See Section 3.2.4 for detailed screw descriptions.
[3]Required number of screws for full and partial fastening. For the HV connector VGU washers must be used with each VGS screw. See Sections 3.2.1 and 3.2.2 for detailed screw descriptions.
[4]Required number of through bolts for partial fastening. See Section 3.2.1 for detailed bolt descriptions.
[5]For HP connectors, partial fastening uses all of the outer holes in the connector. For the HV and HVG connectors, partial fastening applies when the topmost holes of the connector are not used.
[6]Oblong bolt holes used for connection to opposing ALUMEGA connector. Includes open hole at top of connector stem.

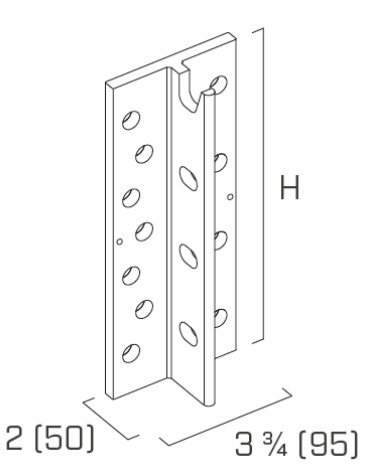


FIGURE 2—ALUMEGA HP CONNECTOR

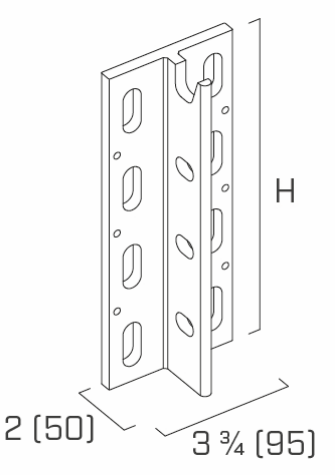


FIGURE 3—ALUMEGA HV CONNECTOR USED WITH VGU WASHERS (Not Shown)

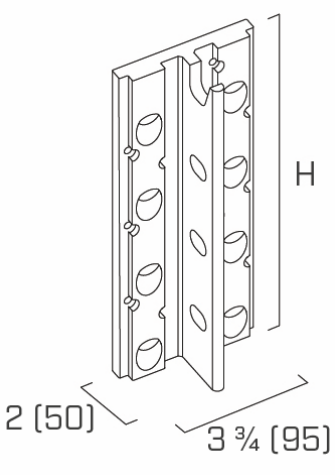


FIGURE 4—ALUMEGA HVG CONNECTOR

TABLE 2—ALUMEGA MODELS FOR USE WITH A SUPPORTED MEMBER (JOIST OR BEAM)

MODEL TYPE	MODEL DESIGNATION	CONNECTOR HEIGHT, inches (mm)	FASTENERS TO WOOD (Type and Quantity)					NUMBER OF BOLT HOLES[6]
			LBS/LBSH Positioning Screws[2]	Primary Fastening Using VGS Screws[3]		Knife Plate Fastening Options[5]		
				Full	Partial[4]	STA Dowels	SBD Dowels	
JV	ALUMEGA240JV	9 1/2 (240)	6	8	6	n/a		4
	ALUMEGA360JV	14 1/4 (360)	10	12	10			6
	ALUMEGA480JV	19 (480)	14	16	14			8
	ALUMEGA600JV	23 5/8 (600)	18	20	18			10
	ALUMEGA720JV	28 3/8 (720)	22	24	22			12
	ALUMEGA840JV	33 1/16 (800)	26	28	26			14
JVG	ALUMEGA240JVG	9 1/2 (240)	6	8	6	n/a		4
	ALUMEGA360JVG	14 1/4 (360)	10	12	10			6
	ALUMEGA480JVG	19 (480)	14	16	14			8
	ALUMEGA600JVG	23 5/8 (600)	18	20	18			10
	ALUMEGA720JVG	28 3/8 (720)	22	24	22			12
	ALUMEGA840JVG	33 1/16 (800)	26	28	26			14
JS	ALUMEGA240JS	9 1/2 (240)	6	n/a		4	14	4
	ALUMEGA360JS	14 1/4 (360)	8			6	22	6
	ALUMEGA480JS	19 (480)	10			8	30	8
	ALUMEGA600JS	23 5/8 (600)	12			10	38	10
	ALUMEGA720JS	28 3/8 (720)	14			12	46	12
	ALUMEGA840JS	33 1/16 (800)	16			14	54	14

[1]See Figures 4 through 6 for depictions of the connectors. The 'B' dimension is 3 3/4 inches (95 mm) and the 'P' dimension is 1 15/16 inches (49 mm), except for the JS connector, where the 'B' dimension is 2 11/16 inches 68 mm).
[2]Maximum number of optional positioning screws for the JS connector. Minimum required number of positioning screws for the JV and JVG connectors. For the JVG connectors, positioning screws are to be installed in the rows of holes closest to the edges of the flange (outer holes). See Section 3.2.4 for detailed screw descriptions.
[3]Required number of screws for full and partial fastening. For the JV connector VGU washers must be used with each VGS screw. See Section 3.2.2 for detailed screw descriptions.
[4]Partial fastening applies when the lowermost holes of the connector are not used.
[5]See Section 3.2.3 for detailed dowel descriptions.
[6]M12 threaded bolt holes in both stems of the connector for connection to the opposing ALUMEGA connector.

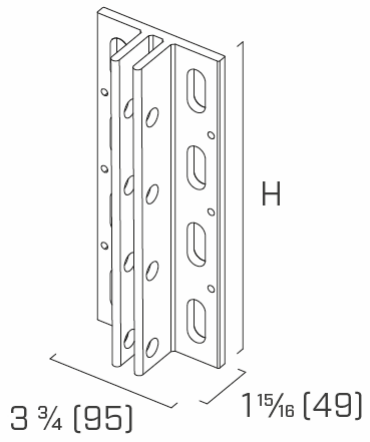


FIGURE 5—ALUMEGA JV CONNECTOR USED WITH VGU WASHERS (Not Shown)

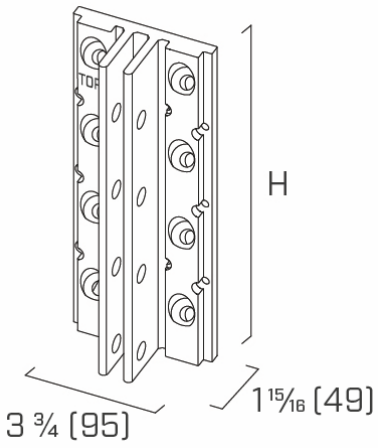


FIGURE 6—ALUMEGA JVG CONNECTOR

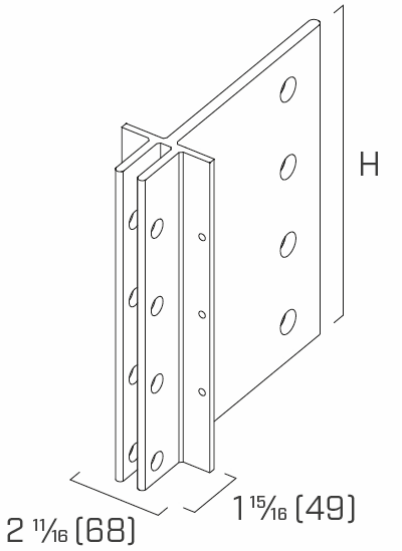


FIGURE 7—ALUMEGA JS CONNECTOR

TABLE 3—SCOPE OF EVALUATED DESIGNS

CONNECTOR	WOOD MEMBER[1]	SG_{NDS} RANGE	PRIMARY FASTENERS		FASTENING PATTERN
240HP to 840HP	Header or Post	0.35 to 0.55	Screws	HBSPL 0.40 x 4 inches to 0.40 x $7^1/_8$ inches (10x100 to 10x180 mm)	Full
240HP to 840HP	Header or Post	0.35 to 0.55	Screws		Partial
240HP to 840HP	Post min. $6^3/_4$ inches (171 mm) thick	0.35 to 0.55	Bolts	KOS $^1/_2$ inch (12 mm)	Partial
240HP to 840HP	Header min. $6^3/_4$ inches (171 mm) thick	0.35 to 0.55	Bolts	KOS $^1/_2$ inch (12 mm)	Partial
240HV to 840HV	Post or Header	0.35 to 0.55	Screws	VGS 0.36 x $7^1/_8$ inches to 0.36 x $11^3/_4$ inches (9x180 to 9x300 mm) (positioning screws required)	Full
240HV to 840HV	Post or Header	0.35 to 0.55	Screws		Partial
240JV to 840JV	Joist	0.35 to 0.55	Screws		Full
240JV to 840JV	Joist	0.35 to 0.55	Screws		Partial
240HVG to 840HVG	Post or Header	0.35 to 0.55	Screws	VGS 0.36 x $6^1/_4$ inches to 0.36 x $11^3/_4$ inches (9x160 to 9x300 mm) (positioning screws required)	Full
240HVG to 840HVG	Post or Header	0.35 to 0.55	Screws		Partial
240JVG to 840JVG	Joist	0.35 to 0.55	Screws		Full
240JVG to 840JVG	Joist	0.35 to 0.55	Screws		Partial
240JS to 840JS	Joist	0.35 to 0.55	Smooth Dowels	STA 0.63 inch (16 mm)	All predrilled holes
240JS to 840JS	Joist	0.35 to 0.55	Self-drilled Dowels	SBD 0.295 inch (7.5 mm)	Two rows of dowels[2]

[1]Unless otherwise noted, wood members must be of sufficient thickness to ensure the fasteners are fully embedded in the wood.
[2]See Figure 9 for dowel placement requirements.

TABLE 4—ALLOWABLE LOADS FOR CONNECTION OF JOIST CONNECTOR TO HEADER OR POST CONNECTOR

LENGTH OF SHORTER CONNECTOR (mm)	NUMBER OF BOLTS	ALLOWABLE LOAD (kips)
240	4	17.32
360	6	25.98
480	8	34.64
600	10	43.30
720	12	51.96
840	14	60.62

For SI: 1 kip = 4.45 kN.

TABLE 5—ALLOWABLE DOWNLOADS FOR ALUMEGA HP CONNECTORS FASTENED WITH HBS PLATE SCREWS[1,2,3]

CONNECTOR MODEL	ALLOWABLE DOWNLOAD (kips) Primary Fasteners: 0.40 x 4 inch (10 x 100 mm) or longer HBS Plate (HBSPL) Screws SG_{NDS} as shown below, $F_{c\perp} \geq 315$ psi											
	Full Fastening to Header[4]			Full Fastening to Post[5]			Partial Fastening to Header[4]			Partial Fastening to Post[5]		
	0.42	0.49	0.55	0.42	0.49	0.55	0.42	0.49	0.55	0.42	0.49	0.55
ALUMEGA240HP	4.72	5.39	5.44	7.03	7.50	7.39	2.70	3.08	3.11	4.02	4.28	4.22
ALUMEGA360HP	7.42	8.47	8.54	11.05	11.78	11.61	4.05	4.62	4.66	6.03	6.42	6.33
ALUMEGA480HP	10.12	11.55	11.65	15.06	16.06	15.83	5.40	6.16	6.21	8.03	8.57	8.44
ALUMEGA600HP	12.81	14.63	14.75	19.08	20.34	20.05	6.74	7.70	7.77	10.04	10.71	10.55
ALUMEGA720HP	15.51	17.71	17.86	23.10	24.63	24.27	8.09	9.24	9.32	12.05	12.85	12.66
ALUMEGA840HP	18.21	20.79	20.97	27.12	28.91	28.49	9.44	10.78	10.87	14.06	14.99	14.77

For SI: 1 kip = 4.45 kN, 1 psi = 6.89 kPa.

[1]See Section 3.2.2 for detailed screw descriptions.
[2]Refer to Table 1 for the required number of screws per connector.
[3]All plies of the connector wood member must have the SG_{NDS} value shown in the table or higher.
[4]Fastening to header values apply when the screws impart load on the wood member that is perpendicular to the grain of the wood member.
[5]Fastening to post values apply when the screws impart load on the wood member that is parallel to the grain of the wood member.

TABLE 6—ALLOWABLE DOWNLOADS FOR ALUMEGA HV CONNECTORS FASTENED WITH VGS SCREWS[1,2,3]

CONNECTOR MODEL	ALLOWABLE DOWNLOAD (kips)							
	Fully Fastened				Partially Fastened			
	SG_{NDS} = 0.42 $F_{c\perp} \geq$ 315 psi	SG_{NDS} = 0.42 $F_{c\perp} \geq$ 500 psi	SG_{NDS} = 0.49 $F_{c\perp} \geq$ 560 psi	SG_{NDS} = 0.55 $F_{c\perp} \geq$ 650 psi	SG_{NDS} = 0.42 $F_{c\perp} \geq$ 315 psi	SG_{NDS} = 0.42 $F_{c\perp} \geq$ 500 psi	SG_{NDS} = 0.49 $F_{c\perp} \geq$ 560 psi	SG_{NDS} = 0.55 $F_{c\perp} \geq$ 650 psi
VGS 0.36 x 7 1/8 inch (9 x 180 mm)								
ALUMEGA240HV	7.93	9.77	11.05	12.13	7.33	7.33	8.29	9.10
ALUMEGA360HV	13.19	13.19	14.92	16.38	10.99	10.99	12.44	13.65
ALUMEGA480HV	17.59	17.59	19.90	21.84	15.39	15.39	17.41	19.11
ALUMEGA600HV	21.98	21.98	24.87	27.29	19.79	19.79	22.38	24.56
ALUMEGA720HV	26.38	26.38	29.85	32.75	24.18	24.18	27.36	30.02
ALUMEGA840HV	30.78	30.78	34.82	38.21	28.58	28.58	32.33	35.48
VGS 0.36 x 9 1/2 inch (9 x 240 mm) or longer								
ALUMEGA240HV	7.93	12.59	14.10	16.36	7.93	10.40	11.77	12.92
ALUMEGA360HV	14.00	18.73	21.18	23.25	14.00	15.60	17.65	19.37
ALUMEGA480HV	20.49	24.97	28.25	31.00	20.49	21.85	24.72	27.12
ALUMEGA600HV	27.20	31.21	35.31	38.75	27.20	28.09	31.78	34.87
ALUMEGA720HV	34.05	37.45	42.37	46.50	34.05	34.33	38.84	42.62
ALUMEGA840HV	40.99	43.69	49.43	54.24	40.57	40.57	45.90	50.37

For SI: 1 kip = 4.45 kN, 1 psi = 6.89 kPa.

[1]See Section 3.2.3 for detailed screw descriptions.
[2]Refer to Table 1 for the required number of screws per connector.
[3]Tabulated values apply to fastening of ALUMEGA to headers or posts.

TABLE 7—ALLOWABLE DOWNLOADS FOR ALUMEGA HVG CONNECTORS FASTENED WITH VGS SCREWS[1,2,3]

CONNECTOR MODEL	ALLOWABLE DOWNLOAD (kips)							
	Fully Fastened				Partially Fastened			
	SG_{NDS} = 0.42 $F_{c\perp} \geq$ 315 psi	SG_{NDS} = 0.42 $F_{c\perp} \geq$ 500 psi	SG_{NDS} = 0.49 $F_{c\perp} \geq$ 560 psi	SG_{NDS} = 0.55 $F_{c\perp} \geq$ 650 psi	SG_{NDS} = 0.42 $F_{c\perp} \geq$ 315 psi	SG_{NDS} = 0.42 $F_{c\perp} \geq$ 500 psi	SG_{NDS} = 0.49 $F_{c\perp} \geq$ 560 psi	SG_{NDS} = 0.55 $F_{c\perp} \geq$ 650 psi
VGS 0.36 x 6 1/4 inch (9 x 160 mm)								
ALUMEGA240HVG	7.93	9.29	10.51	11.54	6.97	6.97	7.88	8.65
ALUMEGA360HVG	12.54	12.54	14.19	15.57	10.45	10.45	11.83	12.98
ALUMEGA480HVG	16.73	16.73	18.92	20.77	14.64	14.64	16.56	18.17
ALUMEGA600HVG	20.91	20.91	23.65	25.96	18.82	18.82	21.29	23.36
ALUMEGA720HVG	25.09	25.09	28.39	31.15	23.00	23.00	26.02	28.55
ALUMEGA840HVG	29.27	29.27	33.12	36.34	27.18	27.18	30.75	33.75
VGS 0.36 x 8 inch (9 x 200 mm)								
ALUMEGA240HVG	7.93	12.03	13.61	14.93	7.93	9.02	10.20	11.20
ALUMEGA360HVG	14.00	16.23	18.37	20.16	13.53	13.53	15.31	16.80
ALUMEGA480HVG	20.49	21.65	24.49	26.87	18.94	18.94	21.43	23.52
ALUMEGA600HVG	27.06	27.06	30.61	33.59	24.35	24.35	27.55	30.23
ALUMEGA720HVG	32.47	32.47	36.73	40.31	29.76	29.76	33.67	36.95
ALUMEGA840HVG	37.88	37.88	42.86	47.03	35.18	35.18	39.80	43.67
VGS 0.36 x 9 1/2 inch (9 x 240 mm) or longer								
ALUMEGA240HVG	7.93	12.59	14.10	16.36	7.93	11.07	12.52	13.51
ALUMEGA360HVG	14.00	19.92	22.54	24.32	14.00	16.60	18.78	20.27
ALUMEGA480HVG	20.49	26.57	30.06	32.43	20.49	23.25	26.30	28.38
ALUMEGA600HVG	27.20	33.21	37.57	40.54	27.20	29.89	33.81	36.48
ALUMEGA720HVG	34.05	39.85	45.08	48.65	34.05	36.53	41.33	44.59
ALUMEGA840HVG	40.99	46.49	52.60	56.75	40.99	43.17	48.84	52.70

For SI: 1 kip = 4.45 kN, 1 psi = 6.89 kPa.

[1]See Section 3.2.3 for detailed screw descriptions.
[2]Refer to Table 1 for the required number of screws per connector.
[3]Tabulated values apply to fastening of ALUMEGA to headers or posts.

TABLE 8—ALLOWABLE DOWNLOADS FOR ALUMEGA JV CONNECTORS FASTENED WITH VGS SCREWS[1,2]

CONNECTOR MODEL	ALLOWABLE DOWNLOAD (kips)					
	Fully Fastened			Partially Fastened		
	SG_{NDS} = 0.42	SG_{NDS} = 0.49	SG_{NDS} = 0.55	SG_{NDS} = 0.42	SG_{NDS} = 0.49	SG_{NDS} = 0.55
VGS 0.36 x 7 1/8 inch (9 x 180 mm)						
ALUMEGA240JV	9.77	11.05	12.16	7.33	8.29	9.10
ALUMEGA360JV	13.19	14.92	16.38	10.99	12.44	13.65
ALUMEGA480JV	17.59	19.90	21.84	15.39	17.41	19.11
ALUMEGA600JV	21.98	24.87	27.29	19.79	22.38	24.56
ALUMEGA720JV	26.38	29.85	32.75	24.18	27.36	30.02
ALUMEGA840JV	30.78	34.82	38.21	28.58	32.33	35.48
VGS 0.36 x 9 1/2 inch (9 x 240 mm) or longer						
ALUMEGA240JV	13.87	15.69	17.22	10.40	11.77	12.92
ALUMEGA360JV	18.73	21.18	23.25	15.60	17.65	19.37
ALUMEGA480JV	24.97	28.25	31.00	21.85	24.72	27.12
ALUMEGA600JV	31.21	35.31	38.75	28.09	31.78	34.87
ALUMEGA720JV	37.45	42.37	46.50	34.33	38.84	42.62
ALUMEGA840JV	43.69	49.43	54.24	40.57	45.90	50.37

For SI: 1 kip = 4.45 kN, 1 psi = 6.89 kPa.

[1]See Section 3.2.3 for detailed screw descriptions.
[2]Refer to Table 1 for the required number of screws per connector.

TABLE 9—ALLOWABLE DOWNLOADS FOR ALUMEGA JVG CONNECTORS FASTENED WITH VGS SCREWS[1,2]

CONNECTOR MODEL	ALLOWABLE DOWNLOAD (kips)					
	Fully Fastened			Partially Fastened		
	SG_{NDS} = 0.42	SG_{NDS} = 0.49	SG_{NDS} = 0.55	SG_{NDS} = 0.42	SG_{NDS} = 0.49	SG_{NDS} = 0.55
VGS 0.36 x 6 1/4 inch (9 x 160 mm)						
ALUMEGA240JVG	9.29	10.51	11.54	6.97	7.88	8.65
ALUMEGA360JVG	12.54	14.19	15.57	10.45	11.83	12.98
ALUMEGA480JVG	16.73	18.92	20.77	14.64	16.56	18.17
ALUMEGA600JVG	20.91	23.65	25.96	18.82	21.29	23.36
ALUMEGA720JVG	25.09	28.39	31.15	23.00	26.02	28.55
ALUMEGA840JVG	29.27	33.12	36.34	27.18	30.75	33.75
VGS 0.36 x 8 inch (9 x 200 mm)						
ALUMEGA240JVG	12.03	13.61	14.93	9.02	10.20	11.20
ALUMEGA360JVG	16.23	18.37	20.16	13.53	15.31	16.80
ALUMEGA480JVG	21.65	24.49	26.87	18.94	21.43	23.52
ALUMEGA600JVG	27.06	30.61	33.59	24.35	27.55	30.23
ALUMEGA720JVG	32.47	36.73	40.31	29.76	33.67	36.95
ALUMEGA840JVG	37.88	42.86	47.03	35.18	39.80	43.67
VGS 0.36 x 9 1/2 inch (9 x 240 mm) or longer						
ALUMEGA240JVG	14.76	16.70	18.02	11.07	12.52	13.51
ALUMEGA360JVG	19.92	22.54	24.32	16.60	18.78	20.27
ALUMEGA480JVG	26.57	30.06	32.43	23.25	26.30	28.38
ALUMEGA600JVG	33.21	37.57	40.54	29.89	33.81	36.48
ALUMEGA720JVG	39.85	45.08	48.65	36.53	41.33	44.59
ALUMEGA840JVG	46.49	52.60	56.75	43.17	48.84	52.70

For SI: 1 kip = 4.45 kN, 1 psi = 6.89 kPa.

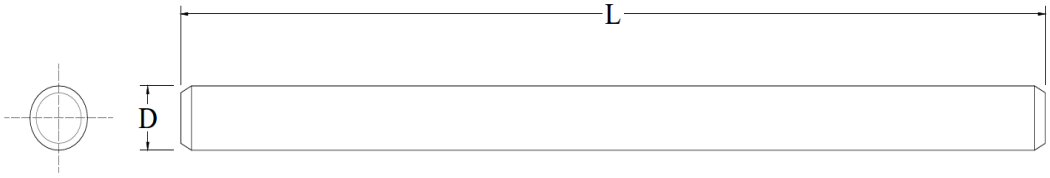
[1]See Section 3.2.3 for detailed screw descriptions.
[2]Refer to Table 1 for the required number of screws per connector.

TABLE 10—ALLOWABLE DOWNLOADS FOR ALUMEGA JS CONNECTORS WITH STA DOWELS[1,2,3,4]

CONNECTOR MODEL	ALLOWABLE DOWNLOAD (kips) Primary Fasteners: STA Dowels		
	SG_{NDS} = 0.42	SG_{NDS} = 0.49	SG_{NDS} = 0.55
STA 0.630 x 7 1/8 inch (16 x 180 mm)			
ALUMEGA240JS	3.34	3.81	3.96
ALUMEGA360JS	6.21	7.13	7.80
ALUMEGA480JS	9.36	10.80	12.04
ALUMEGA600JS	12.59	14.57	16.30
ALUMEGA720JS	15.80	18.34	20.56
ALUMEGA840JS	18.96	22.05	24.76
STA 0.630 x 8 inch (16 x 200 mm)			
ALUMEGA240JS	3.55	3.83	3.96
ALUMEGA360JS	6.66	7.34	7.80
ALUMEGA480JS	10.01	11.36	12.11
ALUMEGA600JS	13.43	15.64	16.73
ALUMEGA720JS	16.82	19.65	21.47
ALUMEGA840JS	20.15	23.59	26.24
STA 0.630 x 8 5/8 inch (16 x 220 mm)			
ALUMEGA240JS	3.55	3.83	3.96
ALUMEGA360JS	6.76	7.34	7.80
ALUMEGA480JS	10.42	11.36	12.11
ALUMEGA600JS	14.30	15.65	16.73
ALUMEGA720JS	17.91	20.04	21.47
ALUMEGA840JS	21.41	24.45	26.24

For SI: 1 inch = 25.4 mm, 1 kip = 4.45 kN.

[1]See Section 3.2.4 and Figure 7 for detailed dowel description.
[2]Refer to Table 1 for the required number of dowels per connector.
[3]Tabulated values are based on the length of the dowel on either side of the knife plate being equal. Longer dowels may be used, as long as the minimum dowel length on either side of the knife plate is equal to one-half the dowel length addressed in the table.
[4]Tabulated values are based on a slot in the wood for the knife plate with a dimension of 7/16 inch.



D_{nom} [inch (mm)]	DESIGNATION	L (inches)	D_s (inch)	F_{yb} (psi)
0.63 (16)	STA	4 to 15	0.630	55000

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa.

FIGURE 8—STA SMOOTH DOWEL

TABLE 11—ALLOWABLE DOWNLOADS FOR ALUMEGA JS CONNECTORS WITH SBD DOWELS[1,2,3,4]

CONNECTOR MODEL	ALLOWABLE DOWNLOAD (kips) Primary Fasteners: SBD Dowels		
	SG_{NDS} = 0.42	SG_{NDS} = 0.49	SG_{NDS} = 0.55
SBD 0.295 x $6^{7}/_{8}$ inch (7.5 x 175 mm)			
ALUMEGA240JS	3.68	4.26	4.54
ALUMEGA360JS	7.74	8.91	9.49
ALUMEGA480JS	12.78	14.80	15.78
ALUMEGA600JS	18.40	21.38	22.97
ALUMEGA720JS	24.32	28.34	30.71
ALUMEGA840JS	30.37	35.47	38.74
SBD 0.295 x $7^{11}/_{16}$ inch (7.5 x 195 mm)			
ALUMEGA240JS	3.91	4.26	4.54
ALUMEGA360JS	8.19	8.91	9.49
ALUMEGA480JS	13.58	14.81	15.78
ALUMEGA600JS	19.70	21.52	22.97
ALUMEGA720JS	26.23	28.72	30.71
ALUMEGA840JS	32.98	36.18	38.74
SBD 0.295 x $8^{7}/_{16}$ inch (7.5 x 215 mm)			
ALUMEGA240JS	3.91	4.26	4.54
ALUMEGA360JS	8.19	8.91	9.49
ALUMEGA480JS	13.58	14.81	15.78
ALUMEGA600JS	19.70	21.52	22.97
ALUMEGA720JS	26.23	28.72	30.71
ALUMEGA840JS	32.98	36.18	38.74

For SI: 1 inch = 25.4 mm, 1 kip = 4.45 kN.

[1]See Section 3.2.4 and Figure 8 for detailed dowel description. See Figure 9 for dowel placement requirements.
[2]Refer to Table 1 for the required number of dowels per connector.
[3]Tabulated values are based on the length of the dowel on either side of the knife plate being equal. Longer dowels may be used, as long as the minimum dowel length on either side of the knife plate is equal to one-half the dowel length addressed in the table.
[4]Tabulated values are based on a slot in the wood for the knife plate with a dimension of $^{7}/_{16}$ inch.

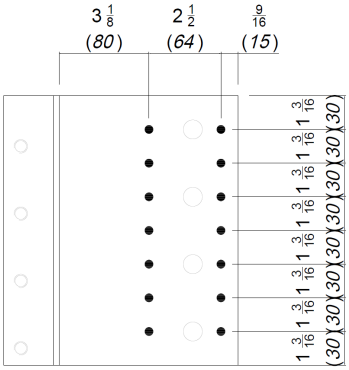
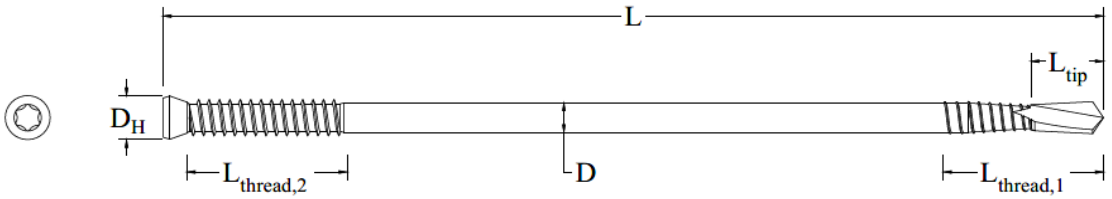


FIGURE 9—REQUIRED PLACEMENT OF SBD SELF-DRILLING DOWELS



D_{nom} [inch (mm)]	DESIGNATION	L (inches)	$L_{thread,1}$ (inches)	$L_{thread,2}$ (inches)	D_H (inch)	DRIVE TYPE AND SIZE	D (inch)	L_{tip} (inch)	F_{yb} (psi)
0.30 (7.5)	SBD	3 3/4 to 5 5/16	1 9/16	3/8	0.433	TX 40	0.295	0.787	150000
		6 1/8	1 9/16	13/16	0.433	TX 40	0.295	0.787	150000
		6 7/8 to 9 1/4	1 9/16	1 9/16	0.433	TX 40	0.295	0.787	150000

For SI: 1 inch = 25.4 mm, 1 psi = 6.89 kPa.

FIGURE 9—SBD SELF-DRILLING DOWEL