

# Hinge Connector Specifier Guide

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## Technical & Installation Notes

Hinge connectors are designed to transfer loads between two beams aligned end-to-end from the end of the supported beam to the end of the supporting beam through a combination of bearing plates, side plates and bolts. Besides supporting gravity load, hinge connectors can also be ordered with additional bolt holes to resist horizontal loads if the beams are part of the continuous lateral load path.

## General Requirements

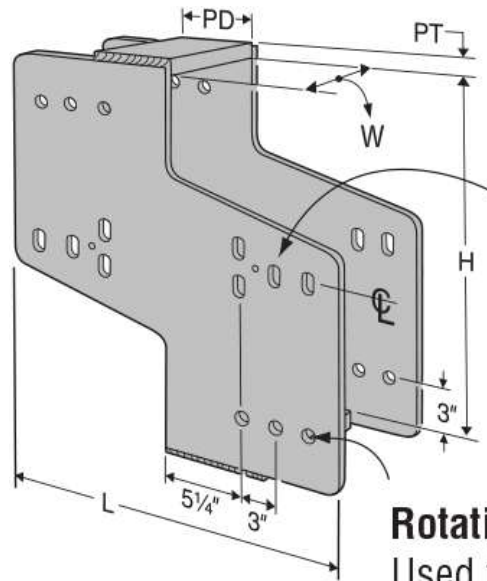
- Supporting and supported beams must be the same width.
- Supporting beam should be at least as deep as the supported beam. Contact Simpson Strong-Tie if the supporting beam is shallower than supported beam.
- Minimum supported beam depth is 8" for connectors without lateral capacity and 14" with lateral capacity. Maximum depth of the supported beam is 60".

## Special Considerations for Dapping

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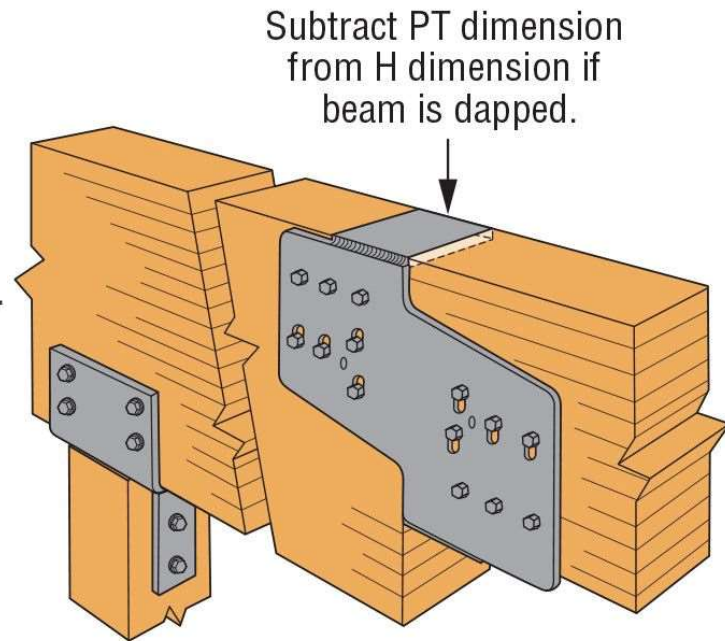
HCA hinge connectors can also be ordered to accommodate dapping, or notching on the top of the beam. This notching allows the bearing plate to be flush with the top surface. Dapping on the bottom of the beam is uncommon and requires approval from the Designer.

When ordering an HCA hinge connector for a beam dapped on the top side, remember to subtract the plate thickness from the height of the carried beam when specifying the connector height. See Step 4 below for an example for ordering a hanger for a dapped beam.



**Tension Bolts:**  
Optional bolts  
transferring  
horizontal loads.

**Rotation Bolts:**  
Used to resist rotation  
due to the offset or  
eccentricity between  
top and bottom  
bearing plates.



**HC4C3TA**  
Top of carrying beam dapped the PT  
thickness for flush installation

## How to Specify a Hinge Connector

### Example

6 3/4" x 21" glulam with 20,000 lb. of roof load and 11,000 lb. of horizontal load (@ 160% duration).

Step 1 — Select Base Model Prefix using the "Horizontal Load Table":

- If there is no horizontal load — pick either HCA or HC3A.
- For the 11,000 lb. shown in example, choose either HCCTA with two rotation bolts or HCC3TA with three rotation bolts each with 14,850 lb. of horizontal capacity.

### Horizontal Load Table

Model No. (Prefix)	Dimensions (in.)			Rotation Bolts per Beam	Slotted Tension Bolts	Allowable Horizontal Loads <sup>2,3</sup>  (160)
	L	H <sub>3</sub> Min.	H Max.			
HCA	19½	8	60	2	—	—
HCCTA	19½	14	60	2	3	14,850
HC3A	25½	8	60	3	—	—
HC4C3TA	25½	14	60	3	4	19,720

1. Loads include a 60% increase for earth quake or wind loading with no further increase allowed.
2. Horizontal loads are for Douglas fir–larch glulams minimum  $W = 3 \frac{1}{8}$ ". For other wood types, adjust the load according to the code.

Step 2 — Select Model Size Suffix using the "Allowable Download Table":

Capacity of a hinge connector is determined by the depth of the beam and the length of the bearing plates.

- For minimum allowable load capacity, beam depth has to be at least 8" (Min. H).
- For 100% of the allowable load, beam depth has to meet or exceed H<sub>1</sub> dimension.
- For depth between min. H and H<sub>1</sub>, load value can be interpolated using the following equation:  

$$[(H_1 \text{Capacity} - H_{\min} \text{Capacity}) \times (H_{\text{actual}} - H_{\min}) / (H_1 - H_{\min})] + H_{\min} \text{Capacity}$$

Allowable Download Table


1. Loads include a 25% increase for live loads; reduce for other durations according to code.
2. Wood-bearing loads are 750 psi for PSL and 560 for glulam.
3. See Horizontal Load Table for models with three rotation bolts.
4. H<sub>i</sub> is the minimum dimension required to achieve full load for the hinge connector. For H dimensions between H<sub>i</sub> and minimum H, loads may be linearly interpolated.

HCA3-5	3 1/8	3 1/4	3/4	5	3/4	12	8,750	8	3,070	10	8,750	8	4,465
HCA3-7				7	3/4	18	12,250	15	9,240	14	12,250	12	9,235
HCA3.62-5	3 1/2	3 5/8	3/4	5	3/4	15	13,125	8	3,100	12	13,125	8	4,625
HCA3.62-6				6	3/4	20	15,750	17	14,265	15	15,750	13	13,560
HCA3.62-7				7	3/4	24	18,375	21	16,725	18	18,375	16	16,670
HCA3.62-9				9	3/4	34	23,625	28	19,160	25	23,625	21	19,550
HCA5-5	5 1/4	5 1/4	3/4	5	3/4	17	16,015	8	3,100	13	16,015	8	4,560
HCA5-7				7	3/4	27	22,420	20	14,835	20	22,420	16	15,505
HCA5-9				9	3/4	40	28,830	25	16,365	29	28,830	19	16,030
HCA5.37-5	5 1/4	5 3/8	1	5	3/4	19	19,690	8	3,100	15	19,690	8	4,640
HCA5.37-6				6	3/4	26	23,625	22	20,755	20	23,625	17	21,360
HCA5.37-7				7	3/4	31	27,565	28	24,530	24	27,565	21	25,045
HCA5.37-9				9	3/4	40	29,605	38	27,865	34	35,440	28	28,690
HCA5.62-5	5 1/2	5 5/8	3/4	5	3/4	18	17,190	8	3,100	14	17,190	8	4,640
HCA5.62-7				7	3/4	28	24,065	22	17,840	21	24,065	17	18,360
HCA7-5	6 1/4	6 7/8	1	5	3/4	20	21,095	8	3,100	16	21,095	8	4,605
HCA7-6				6	3/4	26	25,315	15	11,670	18	23,275	13	13,580

Allowable Download Table

HCA7-7				7	3/4	33	29,530	24	19,850	24	29,530	18	19,845
HCA7-9				9	3/4	40	29,600	30	20,905	36	37,890	22	20,190
HCA7.12-5	7	7 1/8	1 1/4	5	3/4	23	26,250	8	3,100	18	26,250	8	4,635
HCA7.12-6				6	3/4	31	31,500	12	7,780	23	31,500	11	9,700
HCA7.12-7				7	3/4	39	36,750	16	11,150	29	36,750	14	13,350
HCA7.12-9				9	3/4	40	29,600	24	15,670	40	44,330	19	16,950
HCA9-5	8 7/8	8 7/8	1 1/4	5	3/4	23	27,345	8	3,100	18	27,345	8	4,605
HCA9-6				6	3/4	32	32,815	11	6,485	23	32,815	10	7,755
HCA9-7				7	3/4	40	37,900	29	25,455	29	36,280	22	26,145
HCA9-9				9	3/4	40	29,600	37	27,000	40	44,320	27	27,160
HCA11-5	10 7/8	10 7/8	1 1/2	5	3/4	28	33,595	8	3,100	21	33,595	8	4,605
HCA11-6				6	3/4	38	40,315	25	24,655	27	40,313	18	23,270
HCA11-7				7	3/4	40	37,900	34	31,230	35	47,030	25	30,815
HCA11-9				9	3/4	40	29,600	40	29,615	40	44,325	32	33,630

Step 3 — Select suffix based on width of the beam:

Using the "Beam Width" column, a 6 3/4"-wide glulam requires a 7 series connector (highlighted box in table).

Step 4 — Determine the exact height (H) of the beam:

Bearing plates will protrude beyond the beams which may interfere with applying plywood or other finish material. To flush the connector, the beams can be dapped to recess the bearing plates, which reduces the effective height of the beam (H dimension) by the thickness of the bearing plate (PT). In the example, H will become 21"-1" = 20" to flush out the top bearing plate. The following steps assume the beam is undapped.

Step 5 — Determine the allowable load:

Loads listed in the table include a 25% increase for roof loads. If the hinge connector is used to support other loading conditions, reduce the values according to code.

Step 6 — Narrow down the selection based on beam depth and load requirement:

20,000 lb. is required, so 7-5 does not work because the allowable roof load capacity is 18,900 lb.. 7-6 initially looks suitable, but the 21" beam is shallower than 24" H, dimension. Interpolation is required. Using numbers from "Two Rotation Bolts Per Beam" columns the allowable is determined to be:

$$[(22,680 \text{ lb.} - 2,595 \text{ lb.}) \times (21" - 8") / (24" - 8")] + 2,595 \text{ lb.} = 18,914 \text{ lb.} < 20,000 \text{ lb. required.}$$

Two rotation bolts per beam are not enough to handle the load. To achieve higher load capacity, upgrade to three rotation bolts and use the values from "Three Rotation Bolts Per Beam" columns. The allowable roof load at H, of 18" is 22,680 lb. > 20,000 lb. required.

Final Step:

Combining the model prefix, suffix and height, the hinge connector most suitable for our example is:

HCC3TA7-6, H = 21"