

Holdowns are used to transfer tension loads between floors, to tie purlins to masonry or concrete, etc. Use HDAs and HDs for overturning requirements and other applications to transfer tension loads. **All HDAs and the HD15 are self-jigging, ensuring code-required minimum 7 bolt diameter spacing from the end of the wood member to the center of the first bolt hole.**

HD6A, HD8A, HD10A and HD14A's seat design allows greater installation adjustability. An overall width of 3¼" for the HD6A, HD8A and HD10A, and 3½" for the HD14A provides an easy fit in a standard 4x wall.

HDA SPECIAL FEATURES:

- Single piece non-welded design results in higher capacity.
- Load Transfer Plate eliminates the need for a seat washer.
- Fewer inspection problems.

MATERIAL: See table on opposite page.

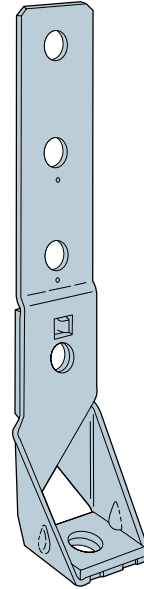
LOADS: See table on opposite page.

FINISH: HD2A, 5A, 6A, 8A, 10A, 14A—galvanized. May be ordered HDG; check with factory. HD15—Simpson gray paint.

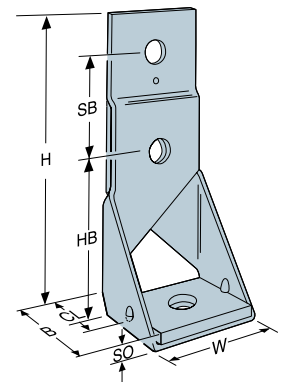
INSTALLATION: • Use all specified fasteners. See General Notes.

- **Contact engineered wood manufacturers for connections that are not through the wide face.**
- For an improved connection, use a steel nylon locking nut or a thread adhesive on the anchor bolt.
- Bolt holes shall be a minimum of ½" to a maximum of ⅙" larger than the bolt diameter (per 2001 NDS, section 11.1.2).
- Standard washers are required between the base plate and anchor nut (HD15 only), and on stud bolt nuts against the wood. The Load Transfer Plate is an integral part of the HDA Holddown and no washer is required. See page 17 for BP/LBP Bearing Plates.
- See SSTB Anchor Bolts, Simpson's Anchoring Systems and Additional Anchorage Designs for anchorage options. The design engineer may specify any alternate anchorage calculated to resist the tension load for a specific job.
- Locate on wood member to maintain a minimum distance of seven bolt diameters, distance is automatically maintained when end of wood member is flush with the bottom of the holddown.
- Stud bolts should be snugly tightened.
- **To tie double 2x members together, the Designer must determine the fasteners required to bind members to act as one unit without splitting the wood.**
- For additional information, request T-HD.
- **See Simpson Anchor Systems for tested, load-rated anchors and request T-ANCHORSPEC for more information.**

CODES: See page 10 for Code Listing Key Chart.

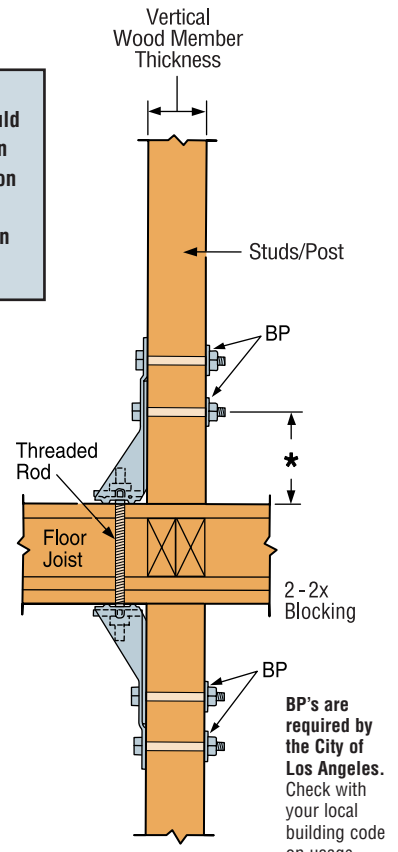


HD10A
(HD6A, HD8A and HD14A similar)



HD5A
(HD2A similar)
U.S. Patent No. 4,665,672

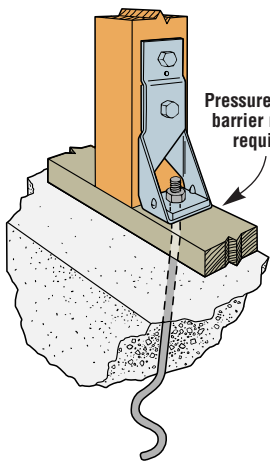
For holdowns, per ASTM test standards, anchor bolt nuts should be finger-tight plus ⅓ to ½ turn with a wrench, with consideration given to possible future wood shrinkage. Care should be taken to not over-torque the nut.



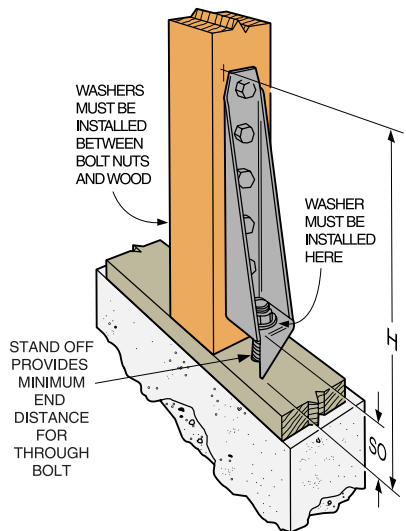
Typical HD5A Tie between Floors

BP's are required by the City of Los Angeles. Check with your local building code on usage.

* To achieve table loads, the minimum bolt end distance is seven bolt diameters. This distance is designed into holdowns. Bolt end distance may be increased, provided the anchor nut is not over-torqued, which could split the stud.



Typical HD5A Holddown Installation with SSTB anchor bolt.
Washers are not required at the base.



Typical HD15 Holddown Installation

Available with additional corrosion protection. Check with factory.

Model No.	Material		Dimensions							Fasteners			
	Base Ga	Body Ga	HB ⁴	SB	W	H	B	SO	CL	Anchor Dia ⁵	Stud Machine Bolts		
											Qty	Dia	
HD2A	7	12	4⅝	2½	2¾	8	2⅞	⅝	1⅞	⅝	2	⅝	
HD5A	3	10	5¼	3	3⅞	9⅞	3⅞	½	2⅞	⅝	2	¾	
HD6A	⅝	7	6⅞	3½	3¼	11⅞	3⅞	⅞	2⅞	⅞	2	⅞	
HD8A	⅝	7	6⅞	3½	3¼	14⅞	3⅞	⅞	2⅞	⅞	3	⅞	
HD10A	⅝	7	6⅞	3½	3¼	18⅞	3⅞	⅞	2⅞	⅞	4	⅞	
HD14A	⅝	3	7	4	3½	20⅞	3⅞	⅞	2⅞	1	4	1	
HD15	⅝	3	7	4	3½	24½	4⅞	3⅞	2⅞	1¼	5	1	

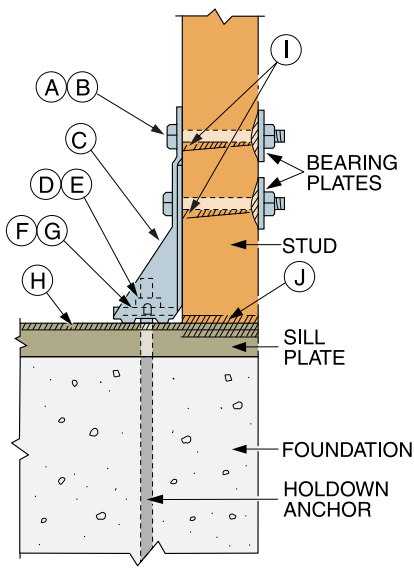
See notes below.

Model No.	Avg Ult	Allowable Tension Loads (DF/SP) (133)						Allowable Tension Loads (SPF/HF) (133)					Holdown ⁹ Deflection at Highest Allowable Design Load	Holdown ⁹ Deflection at Highest Allowable Design Load Raised	Code Ref.	
		Vertical Wood Member Thickness						Vertical Wood Member Thickness								
		1½	2	2½	3	3½	5½	1½	2	2½	3	3½				5½
HD2A	12150	1555	2055	2565	2775	2775	2760	1320	1740	2165	2570	2565	2550	0.058	0.077	40, 105, 122
HD5A	20767	1870	2485	3095	3705	4010	3980	1585	2110	2625	3130	3645	3680	0.067	0.117	
HD6A	27333	2275	2980	3685	4405	5105	5510	1870	2470	3065	3680	4280	5020	0.041	0.125	
HD8A	28667	3220	4350	5415	6465	7460	7910	2710	3655	4530	5480	6350	7330	0.111	0.121	40, 105
HD10A	28667	3945	5540	6935	8310	9540	9900	3275	4600	5745	7045	8160	9195	0.269	0.269	
HD14A	38167	—	—	—	—	—	11080	13380	—	—	—	—	9495	12485	0.215	
HD15	55333	—	—	—	—	—	—	15305	—	—	—	—	—	13810	0.082	0.082

1. Allowable loads have been increased 33% for earthquake or wind loading and are governed by the stud bolt calculations. No further increase allowed; reduce where other loads govern.
2. HD15 requires a minimum 4x8 (in a 3½" wide shearwall) or a 6x6 nominal post to ensure the tension load carrying capacity of the critical net section meets the holddown capacity.
3. Use a minimum 4x6 nominal post for the HD14A. Minimum post size is required to ensure the tension load carrying capacity of the critical net section meets the holddown capacity.
4. HB is the required minimum distance from the end of the stud to the center of the first stud bolt hole. End distance may be increased as necessary for installation.
5. The designer must specify anchor bolt type, length and embedment. See SSTB Anchor Bolts (page 24) and Additional Anchor Designs (page 34).
6. See page 16 and 24 for anchor bolt retrofit.
7. Lag bolts will not develop the listed loads.
8. See page 11 for testing and other important information.
9. Deflection at Highest Allowable Design Load:
The deflection of a holddown measured between the anchor bolt and the strap portion of the holddown when loaded to the highest allowable load listed in the catalog table. This movement is strictly due to the holddown deformation under a static load test conducted on a steel jig. **All other sources of deflection shall be in addition.**
10. When using structural composite lumber columns, screws must be applied to the wide face of the column.

Sources of Deflection at Shearwall Holddown Connections

- A. Bolt slip can occur at holddown stud bolts.
- B. Increased bolt slip can occur if oversized holes are drilled through the stud for holddown stud bolts (oversized holes are when the hole diameter is greater than the bolt diameter plus ⅙" per 2001 NDS 11.1.2).
- C. When a holddown is installed on only one side of the stud, an eccentricity exists during loading which can cause more movement in the shearwall system.
- D. Unrestrained anchor bolt nuts can spin loose during cyclic loading; using steel nylon locking nuts or thread adhesive may prevent nut spin.
- E. Movement can occur when nuts are not tightened enough. Retightening bolts before covering wall may prevent this.
- F. Deflection can occur in the holddown under load caused by stresses due to earthquake or high wind.
- G. Lateral displacement at the top of the wall rotates the stud around its base causing the holddown base plate to displace vertically.
- H. Wood shrinkage can occur due to drying of the sill plate, rim joist, and/or top plate; nuts may require retightening.
- I. Uplift forces on the bolts can cause localized wood crushing at bolt bearing locations. Using larger bearing plates may prevent this.
- J. Wood at the end of the studs (sill plates, rim joists, etc.) may crush under normal dead and live loading; additional compressive forces due to overturning during earthquake and high wind loads add to the deflection.



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(A) (B) and (F) do not apply to the PHD and HDQ.