

Use of Power-Driven Nails With Simpson Strong-Tie® Connectors

Simpson Strong-Tie® connectors have been designed and tested for use with specific types and sizes of nails. The specified nail size, type and quantity must be installed in the correct holes on the connector to achieve published loads. Power-driven tools and collated fasteners are often used to install Simpson Strong-Tie connectors. The Designer and installer need to be aware that there may be differences between the dimensions of the fastener that has been specified for the connector, and which fastener is being installed, as most dedicated power-driven connector nailers are not able to accommodate a fastener longer than 2½". As a result, the use of power-driven nails in Simpson Strong-Tie connectors may result in lower loads, depending on the connectors and the nails used in their installation.

The following table lists the dimensions and bending strength characteristics needed for power-driven nails used with Simpson Strong-Tie connectors. It is the responsibility of the nail manufacturer or nail provider to ensure compliance with these dimensions and bending strength, preferably with a building code evaluation and an ISO-compliant quality system that monitors critical-to-function characteristics of the nail.

Characteristics Needed for Power-Driven Nails Used with Simpson Strong-Tie Connectors

FASTENER	DIAMETER ¹ (IN)	LENGTH ¹ (IN)	HEAD STYLE	HEAD DIAMETER ² (IN)	MINIMUM BEND YIELD STRENGTH (PSI) ³
8d x 1½"	0.131	1.5	Round	0.281	100,000
8d x 2½" (8d common)	0.131	2.5	Round	0.281	100,000
10d x 1½"	0.148	1.5	Round	0.281	90,000
10d x 2½"	0.148	2.5	Round	0.281	90,000
16d x 2½"	0.162	2.5	Round	0.281	90,000

- 1. Tolerance per ASTM F1667
- 2. Tolerance on head diameter (±0.015")
- 3. Tested in accordance with ASTM F1575
- 4. All dimensions are prior to coating.

In cases where the power-driven nail matches the length and diameter of the nail specified in our *Wood Construction Connectors* catalog, no load reductions are needed. In cases where Simpson Strong-Tie face-mount joist hangers and straight straps are installed with power-driven nails that are a different type or size than those called out in the catalog load table, the adjustment factors listed in the "Load Adjustment Factors for Optional Nails Used with Face-Mount Hangers and Straight Straps" table in the current issue of the Simpson Strong-Tie *Wood Construction Connectors* catalog must be applied to the allowable loads listed for the hanger or strap.

In cases where the substitute nail does not meet the length required by the catalog, and the "Load Adjustment Factors for Optional Nails Used with Face-Mount Hangers and Straight Straps" table does not apply, the substitutions in the following tables are acceptable; with the load adjustment factors listed in the tables.

CAUTION: Nails must be placed with tool capable of precise hole locating. Do not overdrive nails.

Load Adjustment Factors for Optional Nails Used with Selected Connectors

MODEL	FASTENER	ADJUSTMENT FACTOR
EMBEDDED HOLDDOWNS		
PA	16d x 2½"	1.00
LSTHD	10d x 2½"	
STHD	10d x 2½"	
POST BASES		
ABA44Z	10d x 2½"	1.00
ABA46Z	16d x 2½"	
ABA66Z	16d x 2½"	
ABU	16d x 2½"	
POST CAPS		
PC44-16	16d x 2½"	1.00
PC66-16	16d x 2½"	
EPC44-16	16d x 2½"	
EPC66-16	16d x 2½"	

MODEL	FASTENER	ADJUSTMENT FACTOR
STUD PLATE TIES		
SP1	10d x 2½" Use 10d (0.148 x 3") hand nail for slant nail	1.00
SP2	10d x 2½" Use 10d (0.148 x 3") hand nail for slant nail	
SP3	10d x 2½" Use 10d (0.148 x 3") hand nail for slant nail	
WALL BRACING		
WB	16d x 2½" to Plate	1.00
	8d x 2½" to Studs	
RCWB	16d x 2½" to Plate	
	8d x 2½" to Studs	

Use of Pneumatically Driven Nails With Simpson Strong-Tie® Connectors

MODEL	FASTENER	ADJUSTMENT FACTOR ¹	
		UPLIFT	DOWN
HANGERS			
HU and HUC	16d x 2 1/2"	1.00	1.00
HUS	16d x 2 1/2"	0.85	0.85
HHUS26-2	16d x 2 1/2"	0.90	0.90
HHUS28-2	16d x 2 1/2"		
HGUS26-2	16d x 2 1/2"	0.85	0.95
HGUS28-2	16d x 2 1/2"		
HGUS26-3	16d x 2 1/2"		
HGUS28-3	16d x 2 1/2"		
LUS24	10d x 2 1/2"		
LUS26	10d x 2 1/2"	0.90	0.90
LUS28	10d x 2 1/2"		
LUS210	10d x 2 1/2"		
LUS410	16d x 2 1/2"	0.80	0.90
LUS414	16d x 2 1/2"		
LTHMA	10d x 2 1/2" 2-2x Header	1.00	1.00
	10d x 1 1/2" 2x Header		
	10d x 1 1/2" Joist		

MODEL	FASTENER	ADJUSTMENT FACTOR
		UPLIFT
TWIST STRAPS		
LTS	10d x 2 1/2"	1.00
MTS	10d x 2 1/2"	
HTS	10d x 2 1/2"	
TS	16d x 2 1/2"	
FLOOR TIE ANCHORS		
LFTA	10d x 2 1/2"	1.00

Care should be taken to avoid overdriving fasteners when using a power-driven tool.

OVER-DRIVEN NAILS IN CONNECTORS

A nail that is installed such that the head deforms the steel is considered over-driven. Simpson Strong-Tie has evaluated the effect of over-driven nails in connectors. No load reductions apply as a result of over-driven nails if all the following conditions are met:

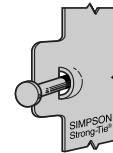
1. Connectors are 14-, 16- or 18-gauge steel.
2. The top of the nail head must not be driven past flush with the face of the connector.
3. The nail must go through an existing fastener hole without enlarging it.
4. The steel around the hole must not be torn or damaged other than the denting caused by the nail head.

Except as noted herein, all information pertaining to the use and installation of Simpson Strong-Tie connectors found in the current edition of the *Wood Construction Connectors* catalog shall apply.

MODEL	FASTENER	ADJUSTMENT FACTOR ¹	
		UPLIFT	DOWN
THA SERIES – FACE-MOUNT ONLY			
THA213	10d x 2 1/2"	0.90	1.00
THA218	10d x 2 1/2"		
THA218-2	16d x 2 1/2"		
THA222-2	16d x 2 1/2"		
THA413	10d x 2 1/2"		
THA418	16d x 2 1/2"		
THA422	16d x 2 1/2"		
THA29	10d x 2 1/2"		
LSSU & LSSUI SERIES – SLOPE ONLY			
LSSU28	10d x 2 1/2" Header	1.00	1.00
	10d x 1 1/2" Joist		
LSSU410	16d x 2 1/2" Header		
	10d x 1 1/2" Joist		
LSSU210	10d x 2 1/2" Header		
	10d x 1 1/2" Joist		
LSSUI25	10d x 2 1/2" Header		
	10d x 1 1/2" Joist		
LSSUI35	10d x 2 1/2" Header		
	10d x 1 1/2" Joist		

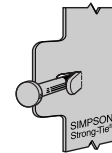
1. Double-Shear Slant Nailing Hangers: HUS, HHUS, HGUS, LUS and THA

Use 10d/16d common double shear nails, as cited in the current *Wood Construction Connectors* catalog, for full allowable loads. Hand installation is required.



Dome Double Shear Nailing - power-driven nail is acceptable.

U.S. Patent 5,603,580 preservative



Pan Double Shear Nailing - power-driven nail is acceptable.

When using ZMAX/HDG connectors in contact with preservative-treated wood, use hot-dip galvanized fasteners that conform to ASTM A153. See www.strongtie.com/info for proper use, limitations, warnings, warranties and additional information regarding use for exterior applications and use with preservative-treated wood.