The HTT22 is a single-piece formed tension tie—no rivets, and a 4-ply formed seat which won't unfold during loading. No washers required. The LTT19 Light Tension Tie is designed for 2x joists or purlins and the LTT20B is for nail- or bolt-on applications. The 3" nail spacing makes the LTT20B suitable for wood I-joists if 10dx1½" nails are substituted for the specified 16d's.

The LTTI31 is designed for wood chord open web truss attachments to concrete or masonry walls.

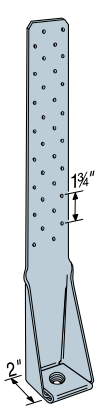
MATERIAL: See table

FINISH: Galvanized. MTT28B may be ordered HDG; check factory.

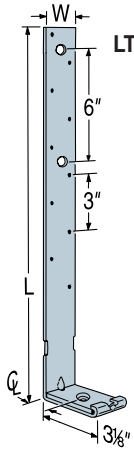
INSTALLATION: • Use all specified fasteners. See General Notes.

- Use the specified number and type of nails to attach the strap portion to the top or side of purlin or beam (minimum 4x width (2-2x4 or 4x4), except LTT19). Bolt the base to the wall or foundation with a suitable anchor; see table for the required bolt diameter.
- Do not install LTT, MTT tension ties raised off the mudsill.
- **The HTT22 can be substituted for the MTT28B.**
- See Epoxy-Tie Adhesive System, pages 34 for tested, load-rated epoxies for anchor bolt options.

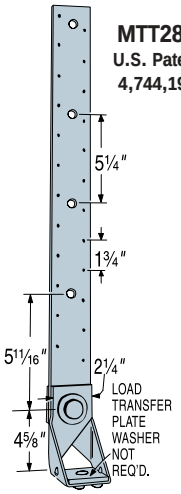
CODES: See page 8 for Code Listing Key Chart.



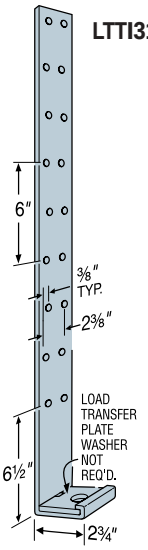
HTT22
(HTT16 similar)
U.S. Patent 5,467,570



LTT20B

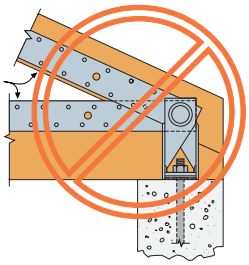


MTT28B
U.S. Patent 4,744,192

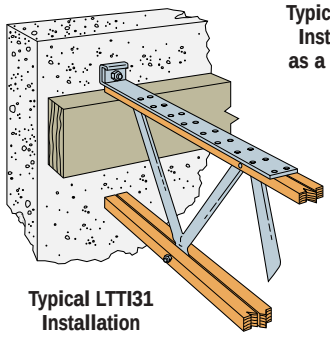


LTTI31

Do not modify the MTT28B.
Do not rotate the MTT28B's strap around the rivet. The strap must be in line vertically with the body of the holdown to achieve table loads.

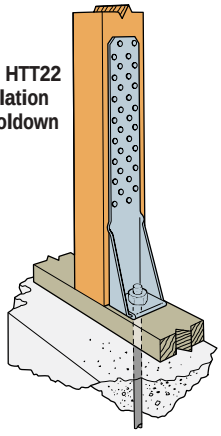


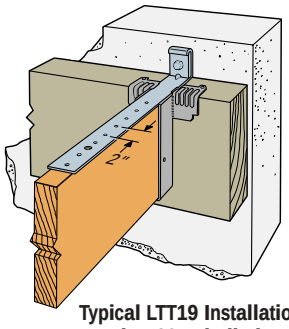
See Girder Tiedown Connectors on page 122 for installation solutions.



Typical LTTI31 Installation

Typical HTT22 Installation as a Holdown





Typical LTT19 Installation (LTT20B similar)

Model No.	Material (Ga)		Dimensions			Seat Thickness	Fasteners				Avg Ult Tension	Allowable Tension Loads[4] DF/SP				Deflection[6] at Highest Allowable Design Load	Code Ref.
	Strap	Plate	W	L	℄		Anchor Bolts	Nails	Bolts Qty	Bolts Dia		(133) Nails	(133) Bolts	(160) Nails	(160) Bolts		
LTT19	16	3	1¾	19⅛	1⅜	5⁄16	¾	8-16d Sinkers	—	—	4250	1205	—	1350	—	0.107	2, 43, 82
LTT20B[7]	12	3	2	19¾	1⅜	5⁄16	½, ⅝ or ¾	10-16d	2	½	8733	1750	1220	1750	1460	0.164	
LTTI31	18	3	3¾	31	1⅜	¼	⅝	18-10dx1½	—	—	7770	2185	—	2310	—	0.125	2, 39, 82
HTT16	11	—	2½	16	1⅜	7⁄16	⅝	18-16d	—	—	13150	3480	—	4175	—	0.037	30, 99
HTT22	11	—	2½	22	1⅜	7⁄16	⅝	32-16d Sinkers	—	—	13150	5250	—	5260	—	0.087	
MTT28B	12	7	2⁹⁄₁₆	27	1½	⅜	⅝ or ¾	24-16d	4	½	—	4455	2150	4455	2725	0.125	2, 43, 82

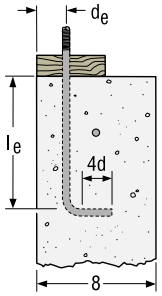
1. Allowable loads for HTT are based on the lower of the 1997 NDS fastener values or the ultimate load on a steel test jig divided by 2.5.
2. 16d sinkers (9 ga x 3¼") or 10d commons may be substituted for the specified 16d commons at 0.84 of the table loads.
3. The designer must specify anchor bolt type, length and embedment.
4. Allowable loads have been increased 33% and 60% for earthquake or wind loading with no further increase allowed; reduce where other loads govern.
5. Bolt values are based on a minimum lumber thickness of 1½".
6. See HDA for deflection at highest allowable design load definition.
7. If a ½" or ⅝" anchor bolt is used for the LTT20B, add a standard cut washer to the seat. No additional washer is required for a ¾" anchor bolt. See table for appropriate anchor bolt sizes.
8. HTT22 holdown installed off the plate has a reduced load of 5190 lbs. HTT16 installed off the plate will achieve the table loads.
9. For Hem-Fir values, request technical bulletin T-Hemfir-3R.

ADDITIONAL ANCHOR DESIGNS

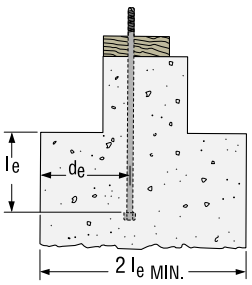
Anchor[2] Type	Dimensions				Minimum Concrete Strength (psi)	Allowable Tension Load (133)
	Dia	Min l_e[1,3]	d_e	Min End Dist		
A	1	36	2¾	5	2500	9795
A	1¼	36	2¾	5	2500	12900
B	1, 1¼	8	8	8	3000	15305

1. Anchor embedment length is based on a single-pour concrete foundation. Double pour foundation systems, masonry walls and masonry footings must be evaluated by the designer.
2. Anchor bolt B must be ASTM A307; anchor bolt A must be A36 steel or better.
3. Spacing between anchors is 2le min. for anchors in tension at the same time.
4. "A" bolt minimum end distance is for corner with 12" return only (similar to SSTB28, see Typical Rebar Placement, Corner Installation). Otherwise, the minimum end distance is le for the full table load.

See SSTB, page 18. Anchor types shown are made by others and used with Simpson Strong-Tie® holdowns. **The design engineer may specify an alternate anchorage system, provided the anchor diameter is the same.** See the Prestressed Concrete Institute Design Handbook (Ed. 4), Sec. 6.5.2.



Anchor Type A L-Bolt. Bend without cracking the outside of the bend portion. Place #4 rebar 3" to 5" from the top center of the foundation.



Anchor Type B Hex-Head Bolt. Design loads for Anchor Type B are calculated using a full shear cone. Multiple reductions must be taken for corner and edge distance conditions.