

LTT/MTT/HTT TENSION TIES

Tension Ties are ideal for retrofit or new construction and provide post-pour, concrete-to-wood connections.

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 10d x 1½" nails are substituted for the specified 16d's. Use the MTT28B Medium Tension Tie for heavier connections.

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

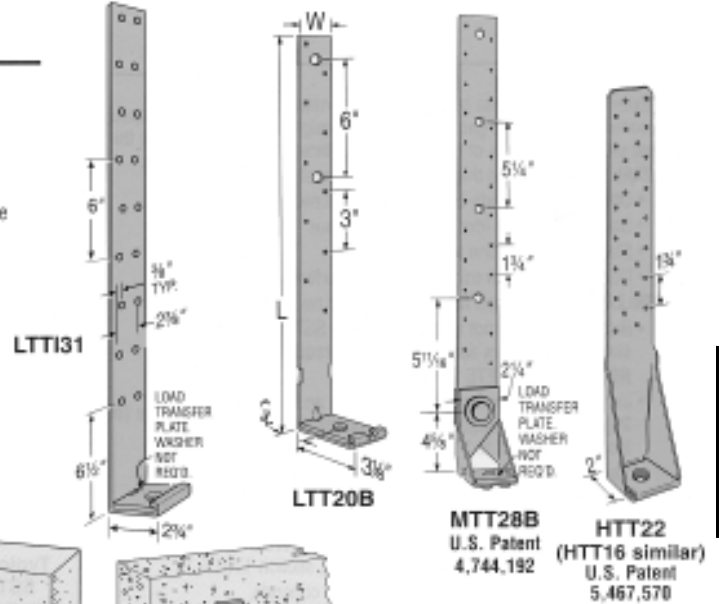
MATERIAL: See table

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 bottom 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.
- The HTT22 can have a maximum offset of 2" from the stud face to the centerline of the anchor bolt.
- Do not install LTT, MTT tension ties raised off the mudsill.
- See Epoxy-Tie Adhesive System, pages 32 and 33 for tested, load-rated epoxies for anchor bolt options.

CODES: BOCA, ICBO, SBCCI No. NER-393 and NER-432; ICBO 5313; City of LA RR 24818 and RR 25318.



Typical LTT19 Installation (LTT20B similar)

Typical LTTI31 Installation

Typical HTT22 Installation as a Holdown

Model No.	Material (Ga)		Dimensions			Fasteners			Avg Ult Tension	Allowable Tension Loads ¹				Deflection at Highest Allowable Design Load
	Strap	Plate	W	L	C ₁	Anchor Bolts	Nails	Bolts Qty		(133)		(160)		
										Nails	Bolts	Nails	Bolts	
LTT19	16	3	1 1/2	19 1/2	1 1/2	3/8"	8-16d Sinkers	—	4250	1205	—	1350	—	0.107
LTT20B ²	12	3	2	19 1/2	1 1/2	3/8", 1/2" or 5/8"	10-16d	2	8733	1750	1220	1750	1460	0.164
LTTI31	18	3	3 1/4	31	1 1/2	3/8"	18-10d x 1 1/2"	—	7770	2185	—	2310	—	0.125
HTT16	11	—	2 1/2	16	1 1/2	3/8"	18-16d	—	13150	3480	—	4175	—	0.037
HTT22	11	—	2 1/2	22	1 1/2	3/8"	32-16d Sinkers	—	13150	5250	—	5260	—	0.087
MTT28B	12	7	2 1/2	27	1 1/2	3/8" or 1/2"	24-16d	4	—	4455	2150	4455	2725	0.125

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 3N") 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.
5. Bolt values are based on a minimum lumber thickness of 1 1/2".

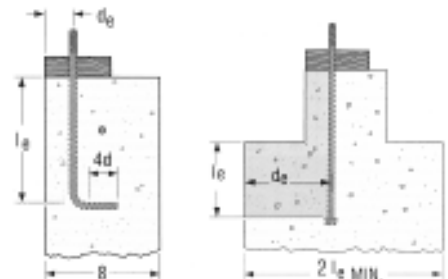
6. See HDA for deflection at highest allowable design load definition.
7. If a 1/2" or 3/4" anchor bolt is used for the LTT20B, add a standard cut washer to the seat. No additional washer is required for a 3/8" anchor bolt. See table for appropriate anchor bolt sizes.
8. HTT22 holdown installed off the plate has a reduced load of 5190 lbs. The HTT16 installed off the plate will achieve 4175 lbs. Both holdowns may have larger deflection values.
9. For Hem-Fir values, request T-Hemfir.

ADDITIONAL ANCHOR DESIGNS

Anchor Type	Dimensions				Minimum Concrete Strength (psi)	Allowable Tension Load (133)
	Dia	Min l _e ^{1,2}	d _e	Min End Dist		
A	1	36	2 1/2	5	2500	9795
A	1 1/2	36	2 1/2	5	2500	12900
B	1, 1 1/2	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 2l_e min. for anchors in tension at the same time.
4. "A" bolt minimum end distance is for corner with 12" return only (similar to SSTE28, see Typical Rebar Placement, Corner Installation). Otherwise, the minimum end distance is l_e for the full table load.

See SSTB, page 25. 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. 3), 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.