

HDU/DTT

Holdowns



This product is preferable to similar connectors because of (a) easier installation, (b) higher loads, (c) lower installed cost, or a combination of these features.

HDU holdowns are pre-deflected during the manufacturing process, virtually eliminating deflection under load due to material stretch. They use Strong-Drive® SDS Heavy-Duty Connector screws which install easily, reduce fastener slip and provide a greater net section when compared to bolts.

The DTT tension ties are designed for lighter-duty holddown applications on single 2x posts. The DTT1Z is installed with nails or Strong-Drive SD Connector screws and the DTT2 installs easily with the Strong-Drive SDS Heavy-Duty Connector screws (included). The DTT1Z holdowns have been tested for use in designed shearwalls and prescriptive braced wall panels as well as prescriptive wood-deck applications (see p. 295 for deck applications).

For more information on holddown options, contact Simpson Strong-Tie.

HDU Features:

- Uses Strong-Drive SDS Heavy-Duty Connector screws which install easily, reduce fastener slip and provide a greater net section area of the post compared to bolts
- Strong-Drive SDS Heavy-Duty Connector screws are supplied with the holdowns to ensure proper fasteners are used
- No stud bolts to countersink at openings

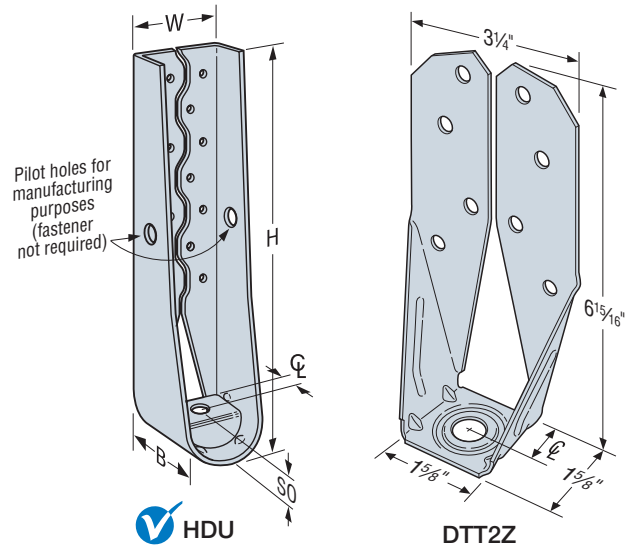
Material: See table

Finish: HDU — galvanized; DTT1Z and DTT2Z — ZMAX® coating; DTT2SS — stainless steel

Installation:

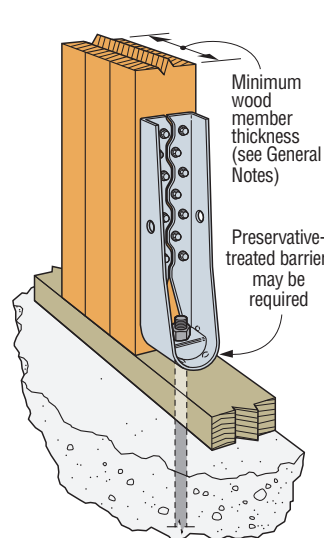
- See Holddown and Tension Tie General Notes on pp. 49–50.
- The HDU requires no additional washer; the DTT requires a standard-cut washer (included) be installed between the nut and the seat.
- Strong-Drive SDS Heavy-Duty Connector screws install best with a low-speed high-torque drill with a $\frac{3}{8}$ " hex-head driver.
- Fasteners and crescent washer are included with the holdowns. For replacements, order part no. SDS25212-HDU_ (Fill in the size needed, e.g., HDU2.)

Codes: See p. 11 for Code Reference Key Chart

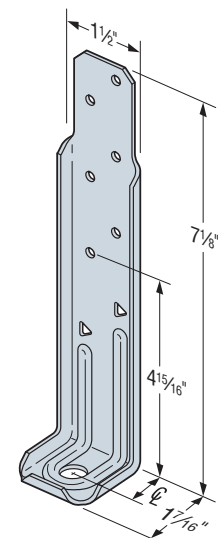


HDU

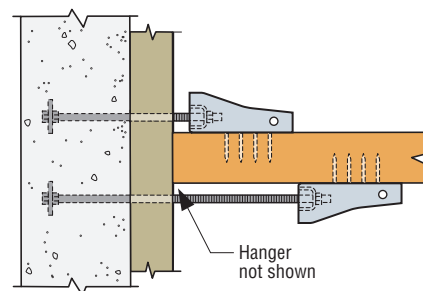
DTT2Z
US Patent
8,555,580



Vertical HDU Installation



DTT1Z
US Patent
10,865,558



Horizontal HDU Offset Installation
(plan view)

See Holddown and Tension Tie General Notes.

HDU/DTT

Holdowns (cont.)

These products are available with additional corrosion protection. For more information, see p. 14.

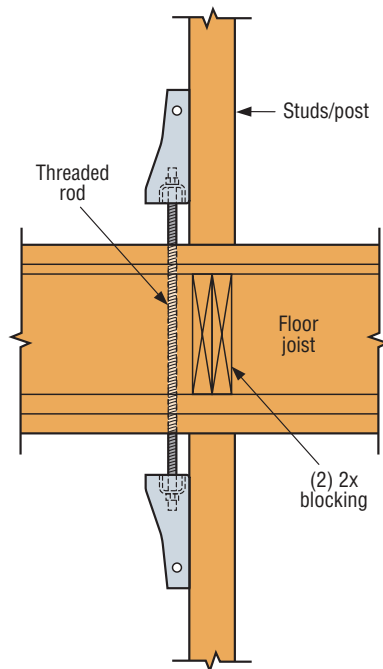
SS For stainless-steel fasteners, see p. 21.

SD Many of these products are approved for installation with Strong-Drive® SD Connector screws. See pp. 348–352 for more information.

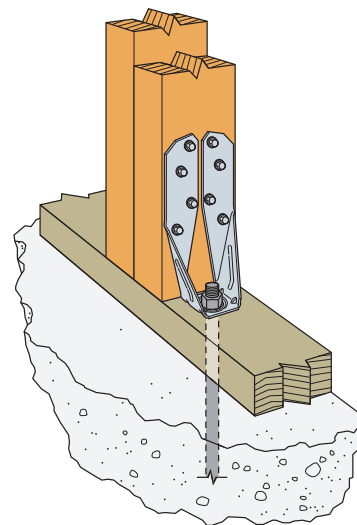
Holdowns and Tension Ties

Model No.	Ga.	Dimensions (in.)					Fasteners (in.)		Minimum Wood Member Size (in.)	Allowable Tension Loads (160)			Code Ref.
		W	H	B	CL	SO	Anchor Bolt Dia. (in.)	Wood Fasteners		DF/SP	SPF/HF	Deflection at Allowable Load (in.)	
DTT1Z	14	1 1/2	7 1/8	1 1/16	3/4	3/16	3/8	(6) #9 x 1 1/2" SD	1 1/2 x 5 1/2	840	840	0.17	IBC, FL, LA
								(6) 0.148 x 1 1/2		910	640	0.167	
								(8) 0.148 x 1 1/2		910	850	0.167	
DTT2Z	14	3 1/4	6 15/16	1 5/8	1 3/16	3/16	1/2	(8) 1/4 x 1 1/2 SDS	1 1/2 x 3 1/2	1,825	1,800	0.105	
								(8) 1/4 x 1 1/2 SDS	3 x 3 1/2	2,145	1,835	0.128	
DTT2Z-SDS2.5								(8) 1/4 x 2 1/2 SDS	3 x 3 1/2	2,145	2,105	0.128	
HDU2-SDS2.5	14	3	8 1/16	3 1/4	1 5/16	1 1/8	5/8	(6) 1/4 x 2 1/2 SDS	3 x 3 1/2	3,075	2,215	0.088	
HDU4-SDS2.5	14	3	10 15/16	3 1/4	1 5/16	1 3/8	5/8	(10) 1/4 x 2 1/2 SDS	3 x 3 1/2	4,565	3,285	0.114	
HDU5-SDS2.5	14	3	13 3/16	3 1/4	1 5/16	1 1/8	5/8	(14) 1/4 x 2 1/2 SDS	3 x 3 1/2	5,645	4,340	0.115	
HDU8-SDS2.5	10	3	16 5/8	3 1/2	1 3/8	1 1/2	7/8	(20) 1/4 x 2 1/2 SDS	3 x 3 1/2	6,765	5,820	0.11	
									3 1/2 x 3 1/2	6,970	5,995	0.116	
									3 1/2 x 4 1/2	7,870	6,580	0.113	
HDU11-SDS2.5	10	3	22 1/4	3 1/2	1 3/8	1 1/2	1	(30) 1/4 x 2 1/2 SDS	3 1/2 x 5 1/2	9,535	8,030	0.137	
									3 1/2 x 7 1/4	11,175	9,610	0.137	
HDU14-SDS2.5	7	3	25 1/16	3 1/2	1 5/16	1 1/8	1	(36) 1/4 x 2 1/2 SDS	3 1/2 x 5 1/2	10,770	9,260	0.122	
									3 1/2 x 7 1/4	14,390	12,375	0.177	
									5 1/2 x 5 1/2	14,445	12,425	0.172	

1. HDU14 requires heavy-hex anchor nut to achieve tabulated loads (supplied with holddown).
2. HDU14 loads on 4x6 post are applicable to installation on either the narrow or the wide face of the post.
3. **Fasteners:** Nail dimensions are listed diameter by length. SD and SDS screws are Simpson Strong-Tie® Strong-Drive SD Connector and SDS Heavy-Duty Connector screws. See pp. 21–22 for fastener information.



Typical HDU Tie Between Floors



Typical DTT2Z Installation

S/LTT, S/DTT and HTT Tension Ties

The HTT is a single-piece formed tension tie — no rivets, and a 4-ply formed seat. No washers are required.

S/DTT2Z tension tie is suitable for lighter-duty hold-down applications on single or back-to-back studs, and installed easily with #14 self-drilling screws.

The HTT, S/DTT and S/LTT tension ties are ideal for retrofit or new construction projects. They provide high-strength, post-pour, concrete-to-steel connections.

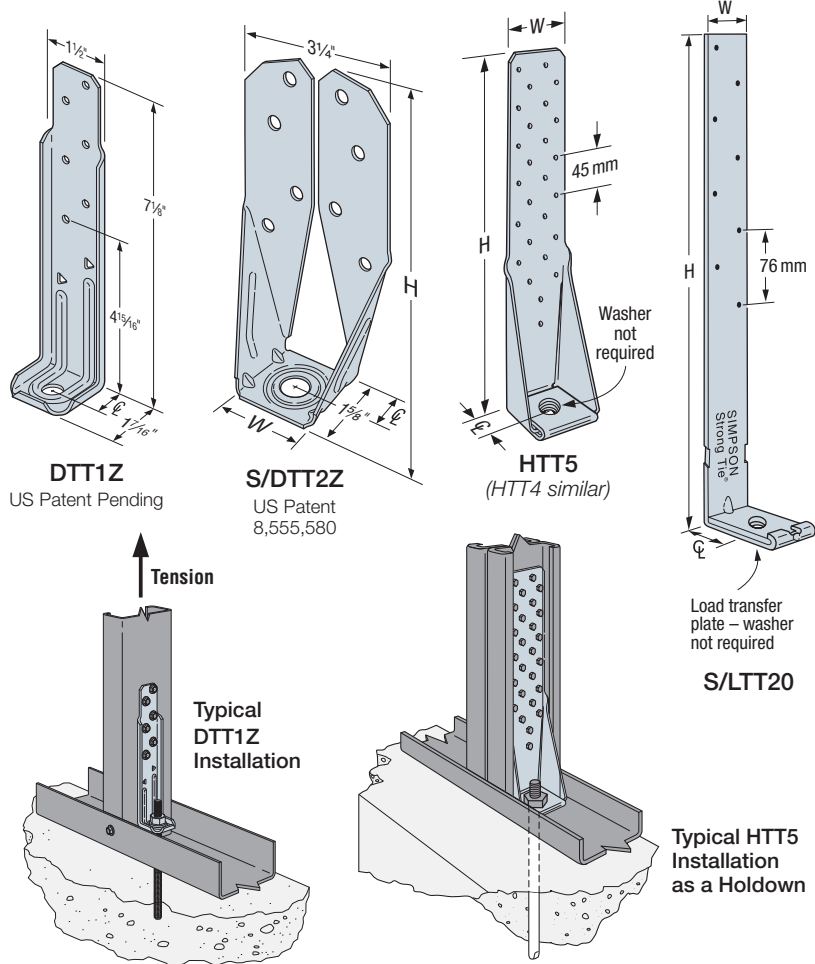
Material: HTT — 111 mil (11 ga.)
DTT1Z, S/DTT2Z — 68 mil (14 ga.)
S/LTT20 — Strap: 97 mil (12 ga.);
Plate: 229 mil (3 ga.)

Finish: HTT, S/LTT — Galvanized (G90);
DTT1Z, S/DTT2Z — ZMAX® coating

Installation:

- Use all specified fasteners.
- Use the specified number of type of screws to attach the strap portion to the steel stud. Bolt the base to the wall or foundation with a suitable anchor; see table for the required bolt diameter.
- S/DTT2Z requires a standard cut washer (included) be installed between the nut and the seat.
- Do not install S/LTT20 raised off of the bottom track.
- See SB and SSTB Anchor Bolts on p. 163 for anchorage options.
- See SET-XP® and AT-XP® adhesive products at strongtie.com for anchor bolt retrofit options.

Codes: See p. 11 for Code Reference Key Chart



Holdowns and Tension Ties

Model	Dimensions (in.)			Fasteners		Stud Member Thickness mil (ga.)	ASD (lb.)		LRFD (lb.)		Nominal Tension Load ⁴ (lb.)	Code Ref.
	W	H	℄	Anchor Bolt Diameter ¹ (in.)	Stud Fasteners ⁵		Tension Load	Deflection at ASD Load ³	Tension Load	Deflection at LRFD Load ³		
DTT1Z	1½	7½	¾	¾	(6) #10	33 (20)	905	0.156	1,270	0.250	3,485	IBC, FL, LA
S/LTT20	2	20	1½	½	(8) #10	33 (20)	1,200	0.125	1,890	0.250	4,625	
S/DTT2Z	1½	6 15/16	1 3/16	½	(8) #14	33 (20)	1,570	0.138	2,200	0.250	4,265	
						43 (18)	1,685	0.151	2,355	0.250	5,570	
						2-33 (2-20)	1,735	0.153	2,430	0.250	5,735	
HTT4	2½	12¾	1¾	¾	(18) #10	33 (20)	3,180	0.104	4,770	0.187	8,215	
						2-33 (2-20)	4,395	0.125	6,675	0.250	11,835	
HTT5	2½	16	1¾	¾	(26) #10	43 (18)	4,240	0.125	6,505	0.250	11,585	
						2-43 (2-18)	4,670	0.125	6,970	0.250	12,195	
						1-54 (1-16)	4,150	0.125	6,425	0.250	12,365	

These products are available with additional corrosion protection. Additional products on this page may also be available with this option. Check with Simpson Strong-Tie for details.

1. The designer shall specify the foundation anchor material type, embedment and configuration.
2. Stud design by specifier. Tabulated loads are based on a minimum stud thickness for fastener connection.
3. Deflection at ASD or LRFD includes fastener slip, holdown deformation and anchor rod elongation for holdowns installed up to 4" above top of concrete. Holdowns may be installed raised, up to 18" above top of concrete, with no load reduction provided that additional elongation of the anchor rod is accounted for. See bottom of p. 169 for installation detail.
4. The Nominal Tension Load is based on the tested average ultimate (peak) load and is provided for design in accordance with section C5 of AISI S213 that requires a tension tie to have a nominal strength to resist the lesser of the amplified seismic load or the maximum force the system can deliver.
5. See *Fastening Systems* catalog (C-F-2019) on strongtie.com for more information on Simpson Strong-Tie fasteners.

DTT

Deck Tension Ties

DTT tension ties are safe, cost-effective connectors designed to meet or exceed code requirements for deck construction. These versatile DTT connectors are also load-rated as a holdown for light-duty shearwalls and braced-wall panel applications.

For new construction or to make an existing deck code-compliant, the DTT1Z can be used as a tension-tie to satisfy the 2015, 2018 and 2021 IRC provision for a 750 lb. lateral load connection to the house at four locations per deck. This code detail permits the lateral connection from the deck joists to be made to top plates, studs or headers within the supporting structure, which eliminates the need to access to the floor joists inside the home. The DTT1Z is available in a kit (DTT1Z-KT) that includes four DTT1Z connectors, four Strong-Drive® SDWH Timber-Hex HDG screws (SDWH27800G) and (26) #9 x 1 1/2" Strong-Drive SD Connector screws.

The DTT1Z fastens to the narrow or wide face of a single 2x with Strong-Drive SD Connector screws or nails and accepts a 3/8" bolt, anchor bolt or lag screw (washer required) or can be installed with the Strong-Drive SDWH Timber-Hex HDG screw with an integral washer.

The DTT2 can be used to satisfy the IRC provision for a 1,500 lb. lateral load connection at two locations per deck. Additionally, the DTT2 has been tested and evaluated in deck guardrail post applications to resist the code-specified lateral forces at the top of railing assemblies. The DTT2 is also available with longer 2 1/2" Strong-Drive SDS Heavy-Duty Connector screws (model DTT2Z-SDS2.5) to achieve higher loads when needed. The DTT2 fastens easily to the wide face of a single or double 2x using Strong-Drive SDS Heavy-Duty Connector screws (included) and accepts a 1/2"-diameter bolt or anchor bolt.

For guard post installations using Strong-Drive SDWS Timber screws, see technical bulletin [T-F-GRDPSTRL](#).

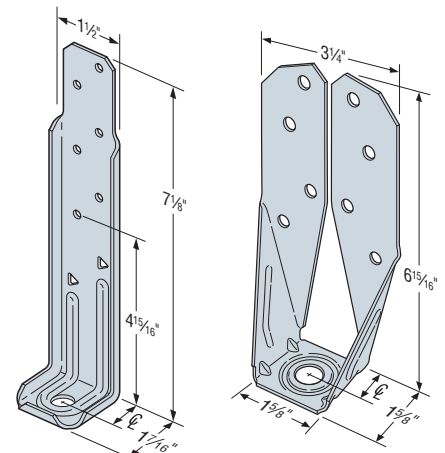
Material: 14 gauge

Finish: DTT1Z/DTT2Z — ZMAX® coating; DTT2SS — stainless steel; see Corrosion Information, pp. 12–15

Installation:

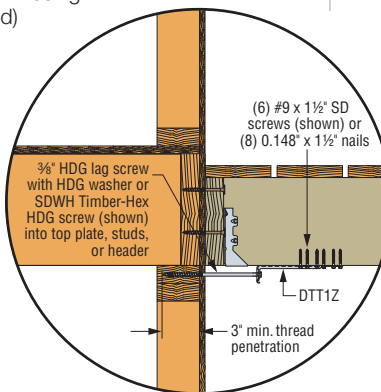
- Use all specified fasteners; see General Notes
- A standard cut washer (included for DTT2) must be installed between the nut and the seat
- Strong-Drive SDS Heavy-Duty Connector screws (SDS) install best with a low-speed high-torque drill with a 3/8" hex head driver (Model [BITHEXR38-R1](#))
- Strong-Drive SD Connector screws (SD) install with a 1/4" hex head driver
- Strong-Drive SDWH Timber-Hex HDG screws install with a 3/8" hex head driver (Model [BITHEXR38-R1](#))

Codes: See p. 11 for Code Reference Key Chart



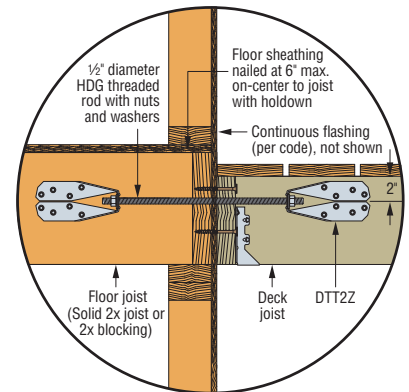
DTT1Z
US Patent 10,865,558

DTT2Z
US Patent 8,555,580



Typical DTT1Z Deck-to-House Lateral Load Connection

For more information on lateral load connections, see technical bulletin [T-C-DECKLAT](#) at [strongtie.com](#)



Typical DTT2Z Deck-to-House Lateral Load Connection

For more information on lateral load connections, see technical bulletin [T-C-DECKLAT](#) at [strongtie.com](#)

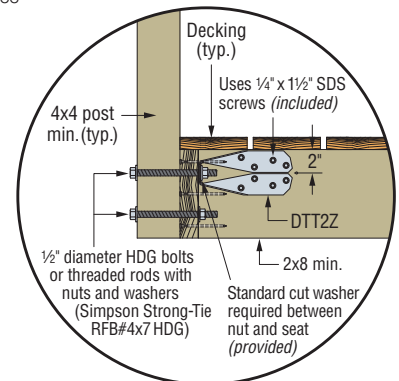
These products are available with additional corrosion protection. For more information, see p. 14.

SS For stainless-steel fasteners, see p. 21.

SD Many of these products are approved for installation with Strong-Drive® SD Connector screws. See pp. 348–352 for more information.

Model No.	CL	Anchor Diameter	Fasteners (in.)	Min. Wood Member Thickness (in.)	Allowable Tension Loads		Code Ref.
					DF/SP (160)	SPF/HF (160)	
DTT1Z	3/4	3/8 ⁶ or SDWH ³	(6) #9 x 1 1/2" SD	1 1/2	840	840	IBC, FL, LA
			(6) 0.148 x 1 1/2"		910	640 ²	
			(8) 0.148 x 1 1/2"		910	850	
DTT2Z/DTT2SS	1 3/16	1/2	(8) 1/4 x 1 1/2 SDS	1 1/2	1,825	1,800	
				3	2,145	1,835	
DTT2Z-SDS2.5	1 3/16	1/2	(8) 1/4 x 2 1/2 SDS	3	2,145	2,105	

1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
2. DTT1Z installations with allowable loads below 750 lb. do not satisfy the 2015/2018/2021 IRC requirements for deck-to-house lateral load connections.
3. The Strong-Drive® SDWH Timber-Hex HDG screw with a minimum of 3" thread penetration into dry lumber has an allowable withdrawal load (160) of 1,380 lb. into SP, 1225 lb. into DF, and 1,020 lb. into SPF/HF.
4. Load values are valid if the product is flush with the end of the framing member or installed away from the end.
5. The guardrail post illustration above addresses an outward force on the guardrail. An additional DTT2 can be added at the lower bolt to address an inward force.
6. A 3/8" HDG round washer is required with the use of a lag screw.
7. **Fasteners:** Nail dimensions are listed diameter by length. SD and SDS screws are Simpson Strong-Tie® Strong-Drive screws. See pp. 21–22 for fastener information.



DTT2Z Installed for a Deck Guardrail Post

For more information on guardrail post connections, see technical bulletin [T-C-GRDRLPST](#) at [strongtie.com](#)