Retrofit Girder Tiedowns

The LGT, VGT and FGTR products are moderate-to-high load capacity girder tiedowns for new or retrofit applications.

LGT connectors provide a low-profile connection to the wall for easy installation of drywall. Simple to install and can be installed on the inside or outside of the wall.

The VGT variable girder tiedown is a higher capacity alternative to the LGT and MGT for girder trusses. It attaches with Strong-Drive® SDS Heavy-Duty Connector screws to the side of truss and features a predeflected crescent washer that allows it to accommodate top chord pitches up to 8/12. The VGT is also available with one flange concealed for attachment to trusses with no tail.

The FGTR face-mount girder tiedown is a non-pitch specific girder tiedown that offers the highest uplift capacity for retrofit applications. The FGTRHL/R is designed for corner hip applications.

Material: VGT — 7 gauge; LGT2 — 14 gauge; LGT3/LGT4 — 12 gauge; FGTR — straps: 7 gauge, plate: 3 gauge

Finish: VGT, LGT — galvanized; FGTR — powder coated

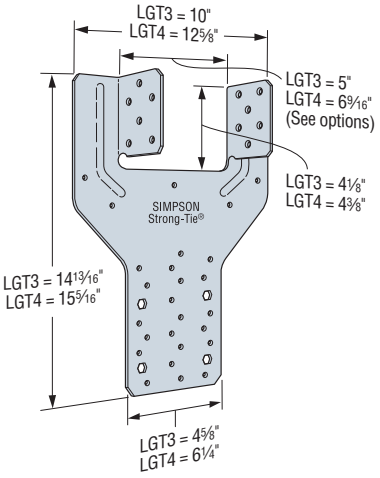
Installation:

- Use all specified fasteners; see General Notes.
- Connectors attached using Titen Turbo™ screws shall have hex heads.
- To achieve the loads listed in the table below, the product shall be attached to a grouted and reinforced block wall or a reinforced concrete wall designed by others to transfer the high concentrated uplift loads to the foundation.
- Strong-Drive SDS Heavy-Duty Connector screws included with LGT3, LGT4, VGT series and FGTR series.
- Products shall be installed such that Titen Turbo screws and non-stainless Titen HD® anchors are not exposed to the exterior environment.

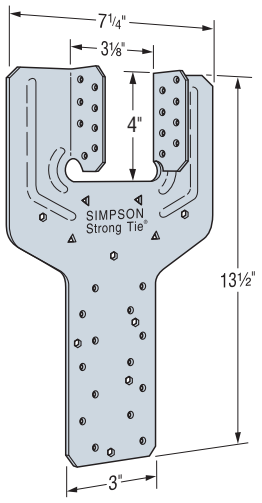
VGT/FGTR:

- Screw holes are configured to allow for double installation on a two-ply (minimum) truss.
- The product can be installed in a single application or in pairs to achieve a higher uplift capacity.
- Can be installed on roof pitches up to 8/12 or on a bottom chord designed to transfer the loads.
- FGTR — Only two of the four holes provided on each strap are required to be filled to achieve the catalog loads. The first Titen HD anchor ½" x 5" (THD included) shall be installed a minimum of 4" from the top of the wall. Anchors shall not be installed in adjacent holes.
- VGT — When installed on trusses with no overhangs, specify VGTR/L.
- VGT — Install washer component (provided) so that top of washer is horizontal as well as parallel with top of wall.

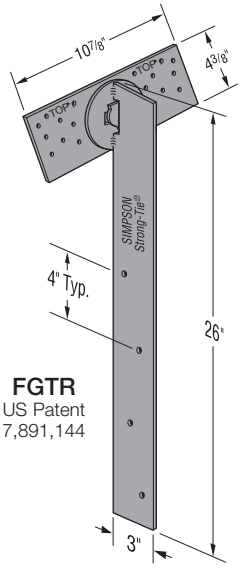
Codes: See p. 11 for Code Reference Key Chart



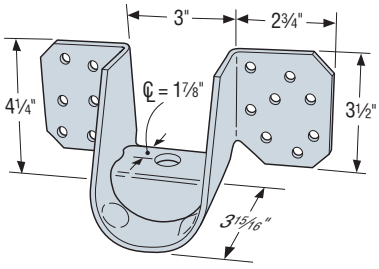
LGT3-SDS2.5
(LGT4-SDS3 similar)



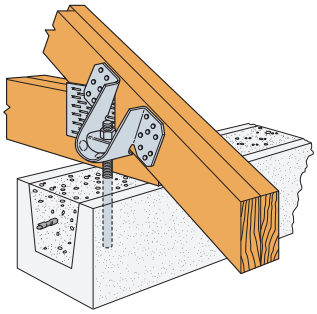
LGT2



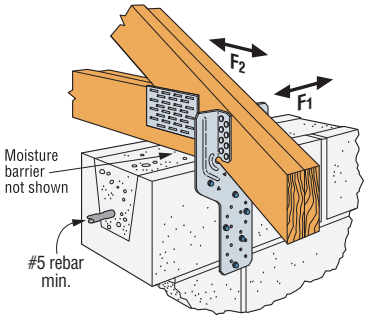
FGTR
US Patent
7,891,144



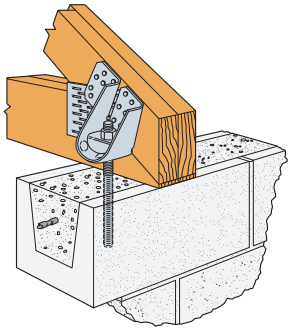
VGT
US Patent 7,707,785



Typical VGT Installation



Typical LGT2 Installation into Masonry
(LGT3 and LGT4 similar, but installed with Titen HD)



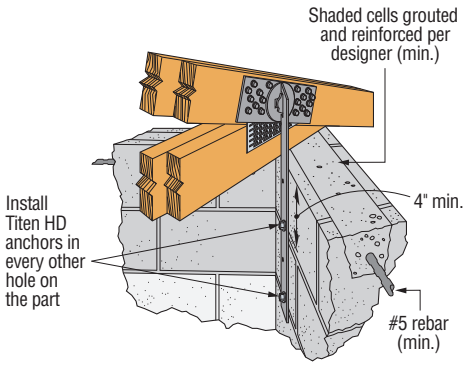
Typical VGTR Installation
(VGTL similar)

FGTR/LGT/VGT

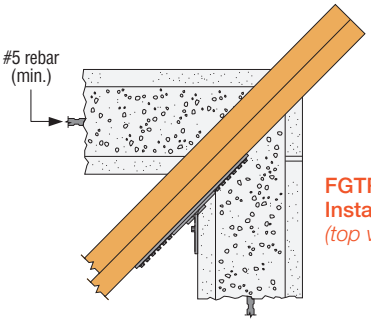
Retrofit Girder Tiedowns (cont.)

Model No.	Qty.	No. of Plies	Fasteners (in.)		Allowable Uplift Load (160)		Code Ref.
			Girder	Concrete and GFCMU	DF/SP	SPF/HF	
LGT2	1	2 ply	(16) 0.148 x 3¼	(7) ¼ x 2¼ Titen Turbo™[10]	2,030	1,750	FL
LGT3-SDS2.5	1	3 ply	(12) ¼ x 2½ SDS	(4) ⅜ x 5 Titen HD®	3,285	2,365	
LGT4-SDS3	1	4 ply	(16) ¼ x 3 SDS	(4) ⅜ x 5 Titen HD	3,285	2,365	
VGT	1	2 ply min.	(16) ¼ x 3 SDS	(1) ⅝ anchor[2]	4,940	3,555	IBC, FL, LA
	2	2 ply min.	(32) ¼ x 3 SDS	(2) ⅝ anchors[2]	7,185	5,170	
		3 ply min.	(32) ¼ x 3 SDS	(2) ⅝ anchors[2]	8,890	6,400	
VGTL/R	1	2 ply min.	(16) ¼ x 3 SDS	(1) ⅝ anchor[2]	2,225	1,600	
	2		(32) ¼ x 3 SDS	(2) ⅝ anchors[2]	5,545	3,990	
FGTR	1	2 ply min.	(18) ¼ x 3 SDS	(2) ½ x 5 Titen HD	4,725	3,400	FL
	2		(36) ¼ x 3 SDS	(4) ½ x 5 Titen HD	8,885	6,395	
FGTRHL/R	1	2 ply min.	(18) ¼ x 3 SDS	(2) ½ x 5 Titen HD	3,635	2,615	

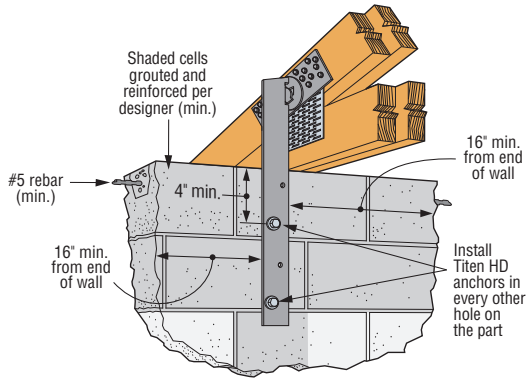
1. Allowable loads have been increased for wind or earthquake loading with no further increase allowed. Reduce where other loads govern.
2. To achieve the loads listed for the VGT single- and double-connector options, anchorage into a 8" wide concrete tie-beam or grouted and reinforced CMU bond beam can be made using SET-XP® anchoring adhesive with a minimum embedment depth of 12", with a minimum end distance of 12", and centered in the 8" member. Vertical reinforcement may be required to transfer the loads per designer. Alternate anchorage solutions may be determined by designer.
3. Concrete shall have a minimum compressive strength of f'_c = 2,500 psi.
4. Grout-filled CMU (GFCMU) shall have a minimum compressive strength of f'_m = 1,500 psi.
5. FGTR — minimum edge distance for Titen HD® anchor is 4".
6. FGTR — Titen HD anchors should be spaced in every other hole on the part.
7. FGTR — Titen HD anchors and Strong-Drive® SDS Heavy-Duty Connector screws are provided with the part.
8. For a single FGTR corner installation (4" min. end distance for Titen HD anchors), allowable uplift is 4,425 lb. (DF/SP) and 3,400 lb. (SPF/HF).
9. LGT2 — F_1 load = 700 lb.; F_2 load = 170 lb.; LGT3 — F_1 load = 795 lb.; F_2 load = 385 lb.; LGT4 — F_1 load = 2,000 lb.; F_2 load = 675 lb.
10. For concrete wall applications, use ¼" x 1¾" Titen Turbo screws.
11. Strong-Drive SDS Heavy-Duty Connector screws may be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014, Sections 7.5.3.4 and 8.9.2 are met (predrilling required through the plate using a 5⁄32" bit maximum).
12. See p. 353 for Titen Turbo screw information.
13. **Fasteners:** Nail dimensions are listed diameter by length. SDS screws are Simpson Strong-Tie® Strong-Drive screws. Titen Turbo screws are Simpson Strong-Tie concrete and masonry screws (hex-head model required). See pp. 21–22 for fastener information.



FGTRHL Installation *(FGTRHR similar)*

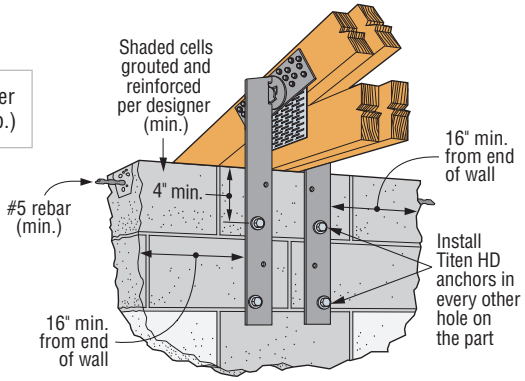


FGTRHL Installation *(top view)*



Typical FGTR Single Installation

Moisture barrier not shown (typ.)



Typical FGTR Double Installation

Girder Tiedowns

The LGT, MGT, VGT and HGT are girder tiedowns for moderate- to high-load capacity applications. The LGT and VGT are also suitable for retrofit applications.

LGT connectors provide a low-profile connection to the studs for easy installation of drywall. Simple to install and can be installed on the inside or outside of the wall. LGT connectors also provide exceptional bearing enhancement for heavy download applications.

The Variable Girder Tiedown (VGT) is a higher capacity alternative to the LGT and MGT for girder trusses. It attaches with Strong-Drive® SDS Heavy-Duty Connector screws to the side of truss and features a predeflected crescent washer that allows it to accommodate top chord pitches up to 8/12. The VGT is also available with one flange concealed for attachment to trusses with no tail.

The HGT offers the highest uplift capacity for girders and can be installed on trusses and beams with top chord slopes up to 8/12.

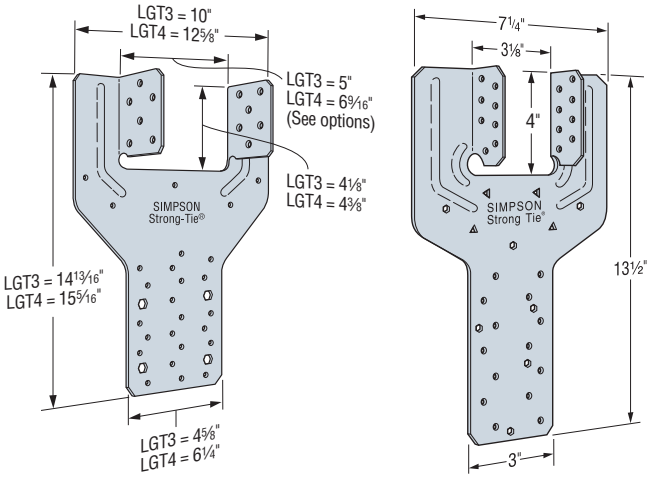
Material: HGT, VGT — 7 gauge; LGT2 — 14 gauge; MGT, LGT3, LGT4 — 12 gauge

Finish: HGT — Simpson Strong-Tie gray paint; LGT, MGT, VGT — galvanized

Installation:

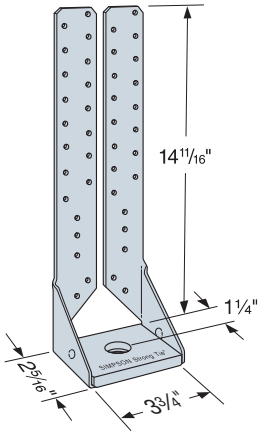
- When the HGT-3 is used with a 2-ply girder or beam, shimming is required. Fasten shim to act as one unit.
- Before installing fasteners, ensure LGT3-SDS2.5 makes complete contact with bottom of truss.
- Strong-Drive SDS Heavy-Duty Connector screws included with LGT3, LGT4 and VGT series.
- VGT — Can be installed on roof pitches up to 8/12 or on a bottom chord designed to transfer the load.
- VGT — Screw holes are configured to allow for double installation on a two-ply (minimum) truss.
- VGT — When installed on trusses with no overhangs, specify VGTR/L.
- VGT — Install washer component (provided) so that top of washer is horizontal as well as parallel with top-of-wall top plate.
- LGT3-SDS2.5 — The four large hexagon holes are intended for GFCMU and concrete applications.
- MGT — May be installed with straps straight vertically on minimum 5½"-wide truss web, or with straps wrapped over truss heel. For wrapped installations, install minimum of six nails into the face of the roof member on the same side as MGT base.
- See pp. 258–259 for masonry applications.

Codes: See p. 11 for Code Reference Key Chart

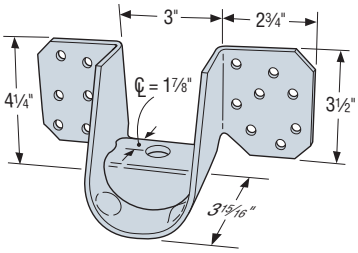


LGT3-SDS2.5
(LGT4-SDS3 similar)

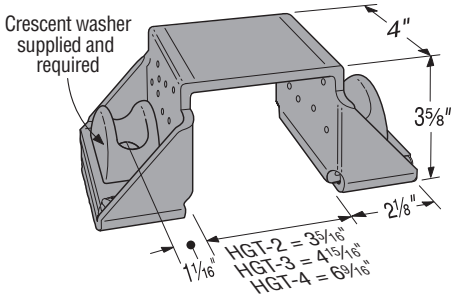
LGT2



MGT



VGT
US Patent
7,707,785



HGT-2
(HGT-3, HGT-4 similar)

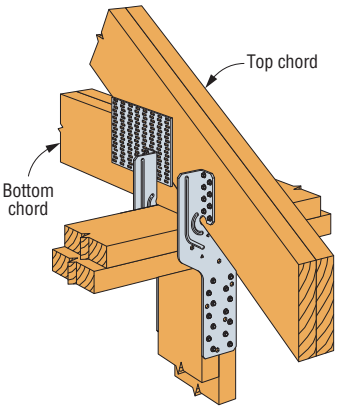
LGT/MGT/VGT/HGT

Girder Tiedowns (cont.)

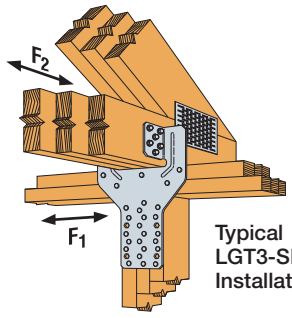
These products are available with additional corrosion protection. For more information, see p. 14.

Model No.	Qty.	No. of Plies	O.C. Dim. Between Anchors (in.)	Fasteners (in.)		DF/SP Allowable Loads			SPF/HF Allowable Loads			Code Ref.
				Stud/Plate Nails or Anchor Diameter	Girder	Uplift (160)	F_1 (160)	F_2 (160)	Uplift (160)	F_1 (160)	F_2 (160)	
LGT2	1	2 ply	—	(14) 0.148 x 3¼	(16) 0.148 x 3¼	2,040	700	170	1,755	700	170	FL
	1	2 ply	—	(14) #9 x 1½" SD	(16) #9 x 1½" SD	2,465	700	170	2,125	700	170	
LGT3-SDS2.5	1	3 ply	—	(26) 0.148 x 3¼	(12) ¼ x 2½ SDS	3,480	795	385	2,505	795	385	
LGT4-SDS3	1	4 ply	—	(30) 0.148 x 3¼	(16) ¼ x 3 SDS	4,060	2,000	675	2,920	2,000	675	
MGT	1	1 ply min.	—	(1) ⅝	(22) 0.148 x 1½	3,165	—	—	2,720	—	—	IBC, FL, LA
	1	2 ply min.	—	(1) ⅝	(22) 0.148 x 3	3,965	775	525	3,330	775	525	
VGT	1	2 ply min.	—	(1) ⅝	(16) ¼ x 3 SDS	4,940	1,185	590	3,555	1,185	590	
	2	2 ply min.	—	(2) ⅝	(32) ¼ x 3 SDS	7,185	1,185	590	5,170	1,185	590	
	2	3 ply min.	—	(2) ⅝	(32) ¼ x 3 SDS	8,890	1,185	590	6,400	1,185	590	
VGTR/L	1	2 ply min.	—	(1) ⅝	(16) ¼ x 3 SDS	2,225	650	630	1,600	650	630	
	2	2 ply min.	—	(2) ⅝	(32) ¼ x 3 SDS	5,545	650	630	3,990	650	630	
HGT-2	1	2 ply	5¾	(2) ⅝	(16) 0.148 x 3	10,345	—	—	6,485	—	—	
HGT-3	1	3 ply	7⅜	(2) ⅝	(16) 0.148 x 3	10,440	—	—	9,035	—	—	
HGT-4	1	4 ply	9	(2) ⅝	(16) 0.148 x 3	11,395	—	—	9,250	—	—	

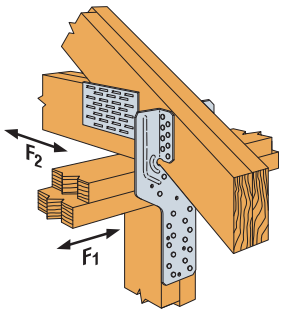
1. See pp. 266–267 for Straps and Ties General Notes.
2. LGT2 — F_2 load requires installation of four 0.148" x 3¼" sinkers or four #9 x 1½" SD Connector screws (SD) in optional nail holes.
3. LGT4 — F_2 load requires installation of seven 0.148" x 3¼" sinkers in optional nail holes.
4. LGT4 — Uplift for DF/SP girder and SPF studs is 3,860 lb.
5. LGT connectors can provide bearing enhancement loads for truss download reactions. For more information, refer to technical bulletin T-C-HTIEBEAR at **strongtie.com**.
6. LGT2 installed with #9 x 1½" SD Connector screws (SD) will achieve double the uplift load when installed on opposite sides of the top plates, but on separate truss members. See typical back-to-back LGT2 installation detail. Lateral loads may not be doubled.
7. Girder tiedowns installed on the outside of the wall require a 3½" overhang to achieve table loads.
8. Strong-Drive® SDS Heavy-Duty Connector screws (SDS) may be installed through metal truss plates as approved by the Truss Designer, provided the requirements of ANSI/TPI 1-2014, Sections 7.5.3.4 and 8.9.2 are met (predrilling required through the plate using a ⅝₂" bit maximum).
9. **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.



Typical LGT2 Back-to-Back Installation on Separate Truss Members

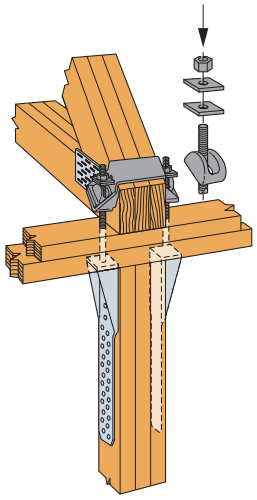


Typical LGT3-SDS2.5 Installation

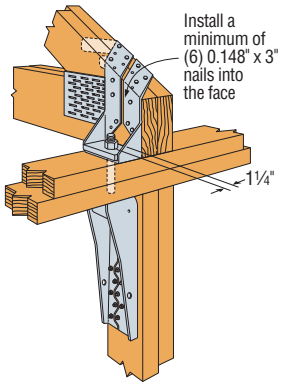


Typical LGT2 Installation

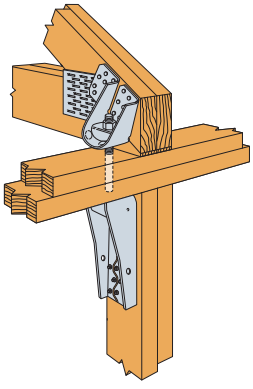
Install two LBP⅝" washers on top of each crescent washer (total four ⅝" washers) for wood installation. All washers and crescent washers are required. Crescent washers are supplied.



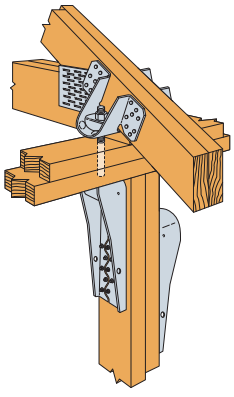
Typical HGT-3 Installation with Full-Height Threaded Rod



Typical MGT Installation with HDU4



Typical VGTR Single Installation with HDU2



Typical VGT Double Installation with HDU4s