

Titen HD® Heavy Duty Screw Anchor for Cracked and Uncracked Concrete



The Titen HD® anchor is a patented, high-strength screw anchor for concrete and masonry. It is designed for optimum performance in both cracked and uncracked concrete; a requirement that the 2009 IBC places on post-installed anchors. The high strength, easy to install Titen HD anchor has been tested and shown to provide outstanding performance in cracked and uncracked concrete under both static and seismic loading conditions. The self-undercutting, non-expansion characteristics of the Titen HD anchor make it ideal for structural applications, even at reduced edge distances and spacings. Recommended for permanent dry, interior non-corrosive environments or temporary outdoor applications.

PERFORMANCE FEATURES:

- Tested per AC193 to ensure outstanding performance in both cracked and uncracked concrete
- Higher load capacity and vibration resistance: Threads along the length of the anchor undercut the concrete and efficiently transfer the load to the base material.
- Vibration and shock resistance: The mechanical interlock of the threads and the ratchet teeth on the underside of the head help prevent the anchor from loosening in vibratory conditions. The Titen HD anchor has been tested to 12.6 million vibratory cycles with no performance reductions.
- Specialized heat treating process: Creates superior surface hardness at the tip to facilitate cutting, while at the same time not compromising ductility within the anchor body.
- Less spacing and edge distance required: The anchor does not exert expansion forces on the base material.
- Easy post-installation inspection: The head is stamped with the Simpson Strong-Tie® "≠" sign and the anchor length in inches.

INSTALLATION FEATURES:

- No special drill bit needed: Designed to install using standard sized ANSI tolerance drill bits
- Installs with 50% less torque: Testing shows that when compared to competitors, the Titen HD requires 50% less torque to be installed in concrete.
- Hex-washer head: Requires no separate washer and provides a clean installed appearance.*
- Removable: Ideal for temporary anchoring (e.g. formwork, bracing) or applications where fixtures may need to be moved. Re-use of the anchor to achieve listed load values is not recommended. See reinstallation note on next page.

MATERIAL: Carbon steel, heat treated

FINISH: Zinc plated or mechanically galvanized

CODES: ICC-ES ESR-2713 (concrete); ICC-ES ESR-1056 (CMU); City of L.A. RR25741 (concrete) City of L.A. RR25560 (CMU); Florida FL 11506.7; Factory Mutual 3017082, 3035761 and 3043442.

⚠ The load tables list values based upon results from the most recent testing and may not reflect those in current code reports. Where code jurisdictions apply, consult the current reports for applicable load values.

TEST CRITERIA: The Titen HD® anchor has been tested in accordance with ICC-ES AC193, ACI 355.2 and ICC-ES AC106 for the following:

- Static tension and shear loading in cracked and uncracked concrete
- Seismic and wind loading in cracked and uncracked concrete
- Performance in uncracked masonry

Anchor Fatigue Testing: Tested in accordance with ASTM E 488 for the effects of fatigue. 25% of the average ultimate load was applied to the anchor for 2 million cycles at a frequency of 15 Hz. Subsequent load tests showed no reduction in ultimate tension capacity.

Vibratory Load Testing: A 150 lb. concrete block was suspended from a 3/8" diameter anchor embedded at 1 1/2" and vibrated for 12.6 million cycles at a frequency of 30 Hz and an amplitude of 0.0325 inches. Subsequent load test showed no reduction in ultimate tension capacity.

Field Testing: For guidance on field testing see technical bulletin T-SAS-THDINSF.

INSTALLATION: Holes in metal fixtures to be mounted should match the diameter specified in the table on the next page.

⚠ Caution: Oversized holes in the base material will reduce or eliminate the mechanical interlock of the threads with the base material and will reduce the anchor's load capacity. Use a Titen HD screw anchor one time only. Installing the anchor multiple times may result in excessive thread wear and reduce load capacity.

- Drill a hole in the base material using a carbide drill bit the same diameter as the nominal diameter of the anchor to be installed. Drill the hole to the specified embedment depth plus 1/2" minimum to allow the thread tapping dust to settle and blow it clean using compressed air. Overhead installations need not be blown clean. Alternatively, drill the hole deep enough to accommodate embedment depth and dust from drilling and tapping.
- Insert the anchor through the fixture and into the hole.
- Tighten the anchor into the base material until the hex washer head contacts the fixture.
- Do not use impact wrenches to install into hollow CMU.

SUGGESTED SPECIFICATIONS: Screw anchors shall have 360-degree contact with the base material and shall not require oversized holes for installation. Fasteners shall be manufactured from carbon steel, and are heat-treated. Anchors shall be zinc plated in accordance with ASTM B633 or mechanically galvanized in accordance with ASTM B695. Anchors are not to be reused after initial installation. Screw anchors shall be Titen HD® anchors from Simpson Strong-Tie, Pleasanton, CA. Anchors shall be installed per the Simpson Strong-Tie instructions for the Titen HD anchor.

*Some jurisdictions require an additional square plate washer for sill plate applications.



Titen HD® Screw Anchor
U.S. Patent 5,674,035 & 6,623,228



Serrated teeth on the tip of the Titen HD® screw anchor facilitate cutting and reduce installation torque.

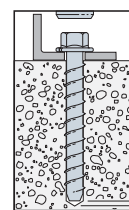
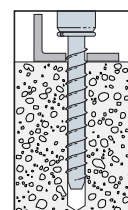
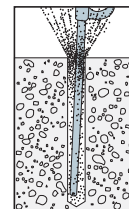
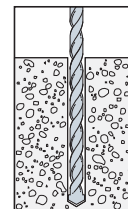


Suitable for use in place of code anchor bolts.



Longer 1/2" diameter Titen HD anchors achieve sufficient embedment depth to develop tension loads equal to many Simpson Strong-Tie holdowns that specify a 3/4" diameter anchor. Testing has been conducted to assure compatibility of these holdowns' anchor holes with the 1/2" Titen HD screw anchor.

Installation Sequence



1/2" min.

Titen HD® Heavy Duty Screw Anchor for Cracked and Uncracked Concrete

Titen HD® Anchor Product Data - Zinc Plated

Size (in.)	Model No.	Drill Bit Dia. (in.)	Wrench Size (in.)	Quantity			
				Box	Carton		
3/8 x 3	THD37300H	3/8	9/16	50	200		
3/8 x 4	THD37400H			50	200		
3/8 x 5	THD37500H			50	100		
3/8 x 6	THD37600H			50	100		
1/2 x 3	THD50300H	1/2	3/4	25	100		
1/2 x 4	THD50400H			20	80		
1/2 x 5	THD50500H			20	80		
1/2 x 6	THD50600H			20	80		
1/2 x 6 1/2	THD50612H			20	40		
1/2 x 8	THD50800H			20	40		
1/2 x 12	THD501200H			20	40		
1/2 x 13	THD501300H			20	40		
1/2 x 14	THD501400H			20	40		
1/2 x 15	THD501500H			20	40		
5/8 x 4	THD62400H			5/8	15/16	10	40
5/8 x 5	THD62500H					10	40
5/8 x 6	THD62600H	10	40				
5/8 x 6 1/2	THD62612H	10	40				
5/8 x 8	THD62800H	10	20				
5/8 x 4	THDB62400H	5/8	15/16	10	40		
5/8 x 5	THDB62500H			10	40		
5/8 x 6	THDB62600H			10	40		
5/8 x 6 1/2	THDB62612H			10	40		
5/8 x 8	THDB62800H			10	20		
3/4 x 4	THD75400H			3/4	1 1/8	10	40
3/4 x 5	THD75500H	5	20				
3/4 x 6	THDT75600H	5	20				
3/4 x 7	THD75700H	5	10				
3/4 x 8 1/2	THD75812H	5	10				
3/4 x 10	THD75100H	5	10				

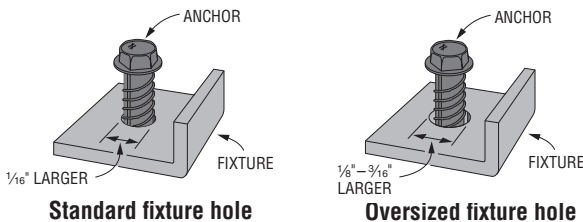
1. Zinc plating meets ASTM B633, SC1.
2. Length is measured from the underside of the head to the tip of the anchor.



FIXTURE HOLE DIAMETER:

Due to the full shank diameter and larger threads of the Titen HD® screw anchor, consideration needs to be given to specifying the appropriate diameter Titen HD anchor based on the fixture hole type to be used. The American Institute of Steel Construction (AISC) has established the following guidelines with regards to fixture hole sizing depending on the hole type:

- “Standard” fixture holes are 1/16" larger than the nominal anchor diameter.
- “Oversized” fixture holes are 1/8" - 3/16" larger than the nominal anchor diameter, depending upon the specific anchor diameter.



Use the following table to identify which diameter Titen HD® screw anchor to use based on the fixture hole type and diameter. In most cases where a smaller diameter Titen HD anchor is called out in comparison to the competitor's larger diameter anchor, the Titen HD anchor still generally provides allowable tension and shear load values comparable to or greater than those of the competitor's anchor.

Titen HD Anchor Product Data - Mechanically Galvanized

Size (in.)	Model No.	Drill Bit Dia. (in.)	Wrench Size (in.)	Quantity	
				Box	Carton
3/8 x 5	THD37500HMG	3/8	9/16	50	100
3/8 x 6	THD37600HMG			50	100
1/2 x 5	THD50500HMG	1/2	3/4	20	80
1/2 x 6	THD50600HMG			20	80
1/2 x 6 1/2	THD50612HMG			20	40
1/2 x 8	THD50800HMG	20	40		
5/8 x 5	THD62500HMG	5/8	15/16	10	40
5/8 x 6	THD62600HMG			10	40
5/8 x 6 1/2	THD62612HMG			10	40
5/8 x 8	THD62800HMG			10	20
5/8 x 5	THDB62500HMG	5/8	15/16	10	40
5/8 x 6	THDB62600HMG			10	40
5/8 x 6 1/2	THDB62612HMG			10	40
5/8 x 8	THDB62800HMG			10	20
3/4 x 8 1/2	THD75812HMG	3/4	1 1/8	5	10
3/4 x 10	THD75100HMG			5	10

1. Mechanical galvanizing meets ASTM B695, Class 65, Type 1. Intended for some pressure-treated wood sill plate applications. Not for use in other corrosive or outdoor environments. See page 11 or visit www.strongtie.com/info for more corrosion information.



The Titen HD® screw anchor 3/8" x 6" and 3/8" x 7" (models THDT75600H and THD75700H) have a 1" section under the head that is unthreaded to allow installation into tilt-up wall braces.



Hole Dimensions

Titen HD Diameter (in.)	Wrench Size (in.)	Recommended Fixture Hole Size (in.)
3/8	9/16	1/2 to 9/16
1/2	3/4	5/8 to 11/16
5/8	15/16	3/4 to 13/16
3/4	1 1/8	7/8 to 15/16

