

ANCHOR SYSTEMS – TITEN HD® Heavy-Duty Screw Anchor for Cracked and Uncracked Concrete

The Titen HD is a patented, high-strength threaded anchor for concrete and masonry. The self-undercutting, non-expansion characteristics of the Titen HD makes it the ideal anchor for structural applications, even at minimum edge distances and under reduced spacing conditions. The proprietary cutting teeth enable the Titen HD to be installed in significantly less time than traditional expansion anchors, and at significantly reduced installation torques. This heat-treated anchor undercuts the concrete to form a strong mechanical interlock over the entire length of the anchor. The anchor can be installed with a standard ANSI masonry drill bit and is removable. The Titen HD is recommended for permanent dry, non-corrosive applications or temporary outdoor applications.

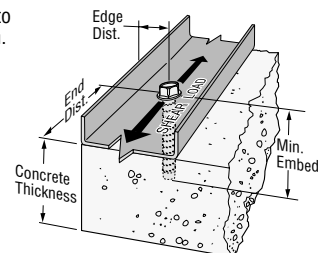
FEATURES:

- **Higher load capacity and vibration resistance:** Threads along the length of the anchor efficiently transfer the load to the base material.
- **Less spacing and edge distance required:** The anchor does not exert expansion forces on the base material.
- **No special drill bit needed:** Designed to install using standard sized drill bits.
- **Installs with 50% less torque:** Testing shows that when compared with a major competitor, the Titen HD requires 50% less torque to be installed in concrete.
- **Less installation time:** No secondary setting or torquing is required.
- **Stamped Hex-washer head:** Requires no separate washer and provides a clean installed appearance. The head is stamped with the Simpson Strong-Tie sign and the anchor length in inches for easy inspection. (Some local building jurisdictions may require a separate washer.)
- **Removable:** Ideal for temporary anchoring (e.g. formwork, bracing) or applications where fixtures may need to be moved.

• Mechanical galvanized coating is available. Refer to www.strongtie.com/info for corrosion information.

CODES: ICC ESR-2713; ICC ESR-1056; City of L.A. RR25560; City of L.A. RR25741; Florida FL 11506.7.
SEISMIC VALUES: IBC Section 1908.1.16 requires that concrete anchors in Seismic Design Categories C through F be governed by the strength of a ductile steel anchor. Alternately, for anchor solutions limited by the concrete capacity, the IBC requires that either the attachment to the structure shall undergo ductile yielding at a load level less than the anchor design capacity, or the anchor strength shall be at least 2.5 times the demand force.

For complete technical information please refer to the Simpson Strong-Tie® Anchoring and Fastening Systems for Concrete and Masonry catalog.



Edge and end distances for Titen HD in concrete slab corner condition
U.S. Patent 5,674,035

Titen HD® – Shear and Tension Loads Attaching Cold-Formed Steel To Normal-Weight Concrete

| Anchor Size | Drill Bit | Edge Distance | End Distance | Min. Emb. Depth | Concrete Thick. | Spacing | Concrete ^{2,4} (seismic) | | | | Cold-Formed Steel (ASD) ⁵ | | | |
|--|-----------|---------------|--------------|-----------------|-----------------|---------|-----------------------------------|--------------------------|------------------------------|---------------------------|--------------------------------------|----------------|----------------|----------------|
| | | | | | | | LRFD ¹ (seismic) | LRFD ⁸ (wind) | ASD ^{1,2} (seismic) | ASD ^{2,8} (wind) | 33 mil (20 ga) | 43 mil (18 ga) | 54 mil (16 ga) | 68 mil (14 ga) |
| Shear Loads Parallel-to-Edge⁶ (lbs/ft) | | | | | | | | | | | | | | |
| 3/8 x 3 | 3/8 | 1 1/4 | 7 | 2 1/2 | 3 3/4 | 0' - 8" | 660 | 880 | 475 | 550 | 765 | 1,030 | 1,860 | 2,350 |
| | | | | | | 1' - 0" | 440 | 585 | 315 | 365 | 510 | 685 | 1,240 | 1,565 |
| | | | | | | 1' - 4" | 330 | 440 | 235 | 275 | 385 | 515 | 930 | 1,175 |
| | | | | | | 2' - 0" | 220 | 295 | 155 | 185 | 255 | 340 | 620 | 780 |
| | | | | | | 2' - 8" | 165 | 220 | 120 | 135 | 190 | 255 | 465 | 585 |
| | | | | | | 4' - 0" | 110 | 145 | 80 | 90 | 130 | 170 | 310 | 390 |
| | | | | | | 6' - 0" | 75 | 100 | 55 | 60 | 85 | 115 | 205 | 260 |
| 1/2 x 4 | 1/2 | 1 1/4 | 8 | 3 3/4 | 5 | 0' - 8" | 1,065 | 1,420 | 760 | 890 | 895 | 1,320 | 2,485 | 3,130 |
| | | | | | | 1' - 0" | 710 | 945 | 505 | 590 | 595 | 880 | 1,655 | 2,085 |
| | | | | | | 1' - 4" | 535 | 710 | 380 | 445 | 445 | 660 | 1,240 | 1,565 |
| | | | | | | 2' - 0" | 355 | 475 | 255 | 295 | 300 | 440 | 830 | 1,045 |
| | | | | | | 2' - 8" | 265 | 355 | 190 | 220 | 220 | 330 | 620 | 780 |
| | | | | | | 4' - 0" | 180 | 240 | 130 | 150 | 150 | 220 | 415 | 520 |
| | | | | | | 6' - 0" | 120 | 160 | 85 | 100 | 100 | 145 | 275 | 350 |
| Tension Loads⁶ (lbs) | | | | | | | | | | | | | | |
| 3/8 x 3 | 3/8 | 1 1/4 | 3 | 2 1/2 | 3 3/4 | 6 | 600 | 800 | 430 | 500 | 390 | 505 | 920 | 1,160 |
| 1/2 x 4 | 1/2 | 1 1/4 | 4 | 3 1/4 | 5 | 8 | 940 | 1,255 | 670 | 785 | 390 | 505 | 920 | 1,160 |
| | | 4 | 4 | 3 3/4 | 5 | 8 | 1,490 | 1,985 | 1,065 | 1,240 | | | | |

1. Seismic tabulated values are for cracked concrete; an adjustment factor of 0.75 is assumed per ACI 318 Section D.3.3.3 for SDC C through F. See note regarding SEISMIC VALUES.
2. Converting LRFD to ASD assume LRFD values divided by 1.4 and 1.6 for seismic and wind respectively.
3. Shear load is applied parallel to the edge of concrete. Anchor is considered as an individual anchor without influence from other anchors
4. Concrete shall have a minimum f'c of 2,500 psi. Reference ICC-ES ESR-2713 for further information.

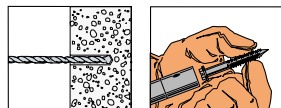
5. CFS values are based on 2001 AISI NAS, Eq. E3.3.1-1 for shear (m_f = 0.75, Ω = 2.5) and Eq. E4.4.2-1 for tension (Ω = 3.0, d_w = 0.5"). Reference General Notes for CFS properties.
6. Governing load is the lesser of Concrete and CFS.
7. For conditions not covered by this table use the Simpson Anchor Designer ACI 318 Software available at www.simpsonanchors.com.
8. Wind tabulated values are for uncracked concrete without supplemental reinforcement. Wind design includes SDC A and B.

TITEN® Concrete & Masonry Screws

Titen screws are 3/16" and 1/4" diameter masonry screws for attaching all types of components to masonry. Carbon-steel Titen screws are available in hex and phillips head designs in blue, white or silver colors. Use with appropriately sized Titen drill bits included with each box.

CODES: FL 2355.1 (Carbon-steel Titen)

Titen Installation Sequence



WARNING: Carbon Steel: Industry studies show that hardened fasteners can experience performance problems in wet environments. Accordingly, use this product in dry, interior applications only. Stainless Steel: Acceptable for use in exterior environments. See corrosion on page 16 of C-SAS-2009.



Special hex adapter on the bit allows the Titen Installation Tool to slide over the bit and lock in, ready to drive screws.



Titen® Screws – Shear and Tension Loads

| Anchor Size | Embed Depth | Edge Distance | Spacing | CMU ¹ | | Cold-Formed Steel ² | |
|--|-------------|---------------|---------|------------------|----------------|--------------------------------|------|
| | | | | Screw Steel Type | 33 mil (20 ga) | 43 mil (18 ga) | |
| (ASD) Allowable Shear Load^{3,4} (lbs/ft) | | | | | | | |
| 3/16 | 1 | 1 1/8 | 0' - 4" | 615 | — | 795 | 1020 |
| | | | 0' - 6" | 410 | — | 530 | 680 |
| | | | 1' - 0" | 205 | — | 265 | 340 |
| | | | 1' - 6" | 135 | — | 175 | 225 |
| | | | 2' - 0" | 100 | — | 135 | 170 |
| | | | 3' - 0" | 70 | — | 90 | 115 |
| | | | 4' - 0" | 50 | — | 60 | 75 |
| 1/4 | 1 | 1 1/2 | 0' - 4" | 750 | 300 | 1050 | 1365 |
| | | | 0' - 6" | 500 | 200 | 700 | 910 |
| | | | 1' - 0" | 250 | 100 | 350 | 455 |
| | | | 1' - 6" | 165 | 65 | 235 | 305 |
| | | | 2' - 0" | 125 | 50 | 175 | 230 |
| | | | 3' - 0" | 85 | 35 | 115 | 150 |
| | | | 4' - 0" | 60 | 25 | 90 | 115 |
| (ASD) Allowable Tension Load^{3,4} (lbs) | | | | | | | |
| 3/16 | 1 | 1 1/8 | 2 1/4 | 110 | — | 240 | 315 |
| 1/4 | 1 | 1 1/2 | 4 | 150 | 110 | 290 | 380 |

1. Allowable loads are based on a safety factor of 5.0 for installations under the IBC and IRC.
2. Cold-Formed Steel (CFS) values are based on 2001 AISI NAS, Section E4, Ω = 3.0, d_w = 5/16" (3/16" Titen) and d_w = 3/8" (1/4" Titen). Reference General Notes for CFS properties.
3. Governing load is the lesser of CMU and CFS.
4. Use interaction formula for combined tension and shear (P_s/P_t) + (V_s/V_t) ≤ 1.0.