

TITEN HD® Heavy Duty Screw Anchor for Concrete & Masonry



The Titen HD is a patented, high-strength screw 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 one eighth of the time when compared to traditional expansion anchors, and at significantly reduced installation torques. The anchor can be installed with a standard ANSI tolerance drill bit and is removable. **Recommended for permanent dry, interior non-corrosive environments or temporary outdoor applications. Contact Simpson for more information.**

PERFORMANCE FEATURES:

- **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.
- **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 "≠" 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.
- **Less installation time:** No secondary setting or torquing is required.
- **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-1056; City of L.A. RR25560; Florida FL 2304.2; Factory Mutual 3017082; 3/4" dia. Meadow-Burke approved for tilt-up wall bracing.

TEST CRITERIA: The Titen HD anchor has been tested in accordance with ICC-ES's Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Concrete or Masonry (AC106) ICC report ESR-1056 recognizes the Titen HD for the following:


- Static tension and shear loading.
- Critical and minimum edge distance and spacing.
- Seismic and wind loading.
- Combination tension and shear loading.

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-THDINSPO4.

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 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" 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.

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, Dublin, CA. Anchors shall be installed per Simpson Strong-Tie's instructions for the Titen HD.



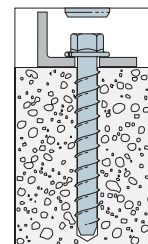
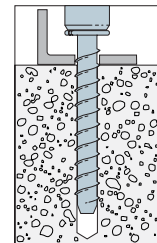
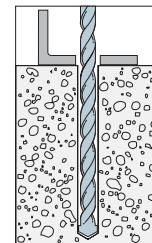
Titen HD
U.S. Patent
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Serrated teeth on the tip of the Titen HD facilitate cutting and reduce installation torque.



Installation Sequence



TITEN HD® Heavy Duty Screw Anchor for Concrete & Masonry

Titen HD 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
3/4 x 4	THD75400H	3/4	1-1/8	10	40
3/4 x 5	THD75500H			5	20
3/4 x 6	THD75600H			5	20
3/4 x 7	THD75700H			5	10

1. Zinc plating meets ASTM B633, SC1.



Titen HD 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

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 12 for details.

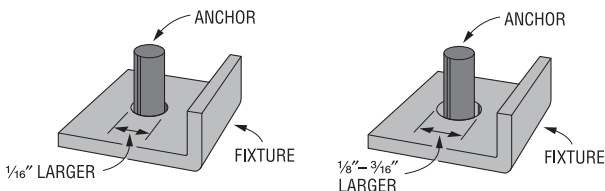


The Titen HD 3/4 x 6 and 3/4 x 7 have a 1" section under the head that is unthreaded to allow installation into tilt-up wall braces.

FIXTURE HOLE DIAMETER

Due to the full shank diameter and larger threads of the Titen HD, consideration needs to be given to specifying the appropriate diameter Titen HD 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.



Standard fixture hole

Oversized fixture hole

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

Hole Dimensions

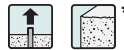
Titen HD Diameter (in)	Wrench Size (in)	Recommended Fixture Hole Size (in)
3/8	9/16	1/2
		9/16
1/2	3/4	5/8
		11/16
5/8	15/16	3/4
		13/16
3/4	1-1/8*	7/8
		15/16

*12 point socket required.



Reinstallation of Titen HD in Original Drilled Hole

Titen HD anchors may be removed and reinstalled in the original hole without reducing load capacity if the threads that were cut into the concrete during the original installation are followed. Start reinstallation of the anchor by hand to prevent cross-threading and a possible reduction in load capacity.



Tension Loads in Normal-Weight Concrete

Size in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing Dist. in. (mm)	Tension Load						
					f'c >= 2000 psi (13.8 MPa) Concrete			f'c >= 3000 psi (20.7 MPa)	f'c >= 4000 psi (27.6 MPa) Concrete		
					Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)
3/8 (9.5)	3/8	2 3/4 (70)	3 (76)	6 (152)	4,297 (19.1)	•	1,075 (4.8)	1,315 (5.8)	6,204 (27.6)	•	1,550 (6.9)
		3 3/4 (95)			7,087 (31.5)	347 (1.5)	1,770 (7.9)	2,115 (9.4)	9,820 (43.7)	1,434 (6.4)	2,455 (10.9)
1/2 (12.7)	1/2	2 3/4 (70)	4 (102)	8 (203)	4,610 (20.5)	•	1,155 (5.1)	1,400 (6.2)	6,580 (29.3)	•	1,645 (7.3)
		3 5/8 (92)			7,413 (33.0)	412 (1.8)	1,855 (8.3)	2,270 (10.1)	10,742 (47.8)	600 (2.7)	2,685 (11.9)
		5 3/4 (146)			10,278 (45.7)	297 (1.3)	2,570 (11.4)	3,240 (14.4)	15,640 (69.6)	2,341 (10.4)	3,910 (17.4)
5/8 (15.9)	5/8	2 3/4 (70)	5 (127)	10 (254)	4,610 (20.5)	•	1,155 (5.1)	1,400 (6.2)	6,580 (29.3)	•	1,645 (7.3)
		4 1/8 (105)			8,742 (38.9)	615 (2.7)	2,185 (9.7)	2,630 (11.7)	12,286 (54.7)	1,604 (7.1)	3,070 (13.7)
		5 3/4 (146)			12,953 (57.6)	1,764 (7.8)	3,240 (14.4)	3,955 (17.6)	18,680 (83.1)	•	4,670 (20.8)
3/4 (19.1)	3/4	2 3/4 (70)	6 (152)	12 (305)	4,674 (20.8)	•	1,170 (5.2)	1,405 (6.3)	6,580 (29.3)	•	1,645 (7.3)
		4 5/8 (117)			10,340 (46.0)	1,096 (4.9)	2,585 (11.5)	3,470 (15.4)	17,426 (77.5)	1,591 (7.1)	4,355 (19.4)
		5 3/4 (146)			13,765 (61.2)	1,016 (4.5)	3,440 (15.3)	4,055 (18.0)	18,680 (83.1)	1,743 (7.8)	4,670 (20.8)

See Notes Below

Shear Loads in Normal-Weight Concrete



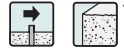
Size in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing Dist. in. (mm)	Shear Load						
					f'c >= 2000 psi (13.8 MPa) Concrete			f'c >= 3000 psi (20.7 MPa)	f'c >= 4000 psi (27.6 MPa) Concrete		
					Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)
3/8 (9.5)	3/8	2 3/4 (70)	4 1/2 (114)	6 (152)	6,353 (28.3)	•	1,585 (7.1)	1,665 (7.4)	•	•	1,740 (7.7)
		3 3/4 (95)			6,377 (28.4)	1,006 (4.5)	1,595 (7.1)	1,670 (7.4)	•	•	1,740 (7.7)
1/2 (12.7)	1/2	2 3/4 (70)	6 (152)	8 (203)	6,435 (28.6)	•	1,605 (7.1)	2,050 (9.1)	9,987 (44.4)	•	2,495 (7.8)
		3 5/8 (92)			9,324 (41.5)	1,285 (5.7)	2,330 (10.4)	2,795 (12.4)	13,027 (57.9)	597 (2.7)	3,255 (14.5)
		5 3/4 (146)			11,319 (50.3)	1,245 (5.5)	2,830 (12.6)	3,045 (13.5)	•	•	3,255 (14.5)
5/8 (15.9)	5/8	2 3/4 (70)	7 1/2 (191)	10 (254)	7,745 (34.5)	•	1,940 (8.6)	2,220 (9.9)	9,987 (44.4)	•	2,495 (11.1)
		4 1/8 (105)			8,706 (38.7)	1,830 (8.1)	2,175 (9.7)	3,415 (15.2)	18,607 (82.8)	1,650 (7.3)	4,650 (20.7)
		5 3/4 (146)			12,498 (55.6)	2,227 (9.9)	3,125 (13.9)	3,890 (17.3)	•	•	4,650 (20.7)
3/4 (19.1)	3/4	2 3/4 (70)	9 (229)	12 (305)	7,832 (34.8)	•	1,960 (8.7)	2,415 (10.7)	11,460 (51.0)	•	2,865 (12.7)
		4 5/8 (117)			11,222 (49.9)	2,900 (12.9)	2,805 (12.5)	4,490 (20.0)	24,680 (109.8)	2,368 (10.5)	6,170 (27.4)
		5 3/4 (146)			19,793 (88.0)	3,547 (15.8)	4,950 (22.0)	5,560 (24.7)	24,680 (109.8)	795 (3.5)	6,170 (27.4)

- The allowable loads listed are based on a safety factor of 4.0.
- Allowable loads may be increased 33 1/3% for short term loading due to wind or seismic forces where permitted by code.
- Refer to allowable load adjustment factors for spacing and edge distance on pages 108-109.

- The minimum concrete thickness is 1 1/2 times the embedment depth.
- Tension and Shear loads for the Titen HD may be combined using the elliptical interaction equation (n=5/8). Allowable load may be interpolated for concrete compressive strengths between 2000 psi and 4000 psi.

*See page 5 for an explanation of the load table icons

Titen HD Shear Loads in Normal-Weight Concrete, Load Applied Parallel to Edge

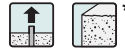


Size in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Minimum Edge Dist. in. (mm)	Minimum End Dist. in. (mm)	Minimum Spacing Dist. in. (mm)	Shear Load Based on Concrete Edge Distance		
						f'c >= 2500 psi (17.2 MPa) Concrete		
						Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)
1/2 (12.7)	1/2	2 3/4 (70)	1 3/4 (45)	8 (203)	8 (203)	4,660 (20.7)	575 (2.6)	1,165 (5.2)
		3 1/4 (83)				•	•	1,530 (6.8)
		3 1/2 (89)				6,840 (30.4)	860 (3.8)	1,710 (7.6)
		4 1/2 (114)				7,800 (34.7)	300 (1.3)	1,950 (8.7)
5/8 (15.9)	5/8	2 3/4 (70)	1 3/4 (45)	10 (254)	10 (254)	4,820 (21.4)	585 (2.6)	1,205 (5.3)
		3 1/4 (83)				•	•	1,580 (7.0)
		3 1/2 (89)				7,060 (31.4)	1,284 (5.7)	1,765 (7.9)

* See page 5 for an explanation of the load table icons

1. The allowable loads listed are based on a safety factor of 4.0.
2. Allowable loads may be increased 33 1/3% for short term loading due to wind or seismic forces where permitted by code.
3. The minimum concrete thickness is 1 1/2 times the embedment depth.

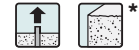
Tension Loads in Normal Weight Concrete Stemwall



Size in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Stemwall Width in. (mm)	Min. Edge Dist. in. (mm)	Min. End Dist. in. (mm)	Tension Load			
						f'c >= 2500 psi (17.2 MPa) Concrete		f'c >= 4500 psi (31.0 MPa) Concrete	
						Ultimate lbs. (kN)	Allow. lbs. (kN)	Ultimate lbs. (kN)	Allow. lbs. (kN)
1/2 (12.7)	1/2	10 (254)	6 (152)	1 3/4 (44)	8 (203)	15,420 (68.6)	3,855 (17.1)	20,300 (90.3)	5,075 (22.6)
					4 3/8 (111)	14,280 (63.5)	3,570 (15.9)	19,040 (84.7)	4,760 (21.2)

1. The allowable loads are based on a factor of safety of 4.0.
2. Allowable loads may be increased 33 1/3% for short-term loading due to wind or seismic forces where permitted by code.
3. The minimum anchor spacing is 15 inches.
4. The minimum concrete thickness is 12 inches.
5. Allowable loads may be interpolated for compressive strengths between 2,500 and 4,500 psi.

Tension Loads in Normal Weight Concrete, Load Applied at 60-degree Angle to Horizontal for Tilt-Up Wall Braces



Size in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Tension Applied at 60-degrees to Horizontal		
			f'c >= 2500 psi (17.2 MPa) Concrete		
			Ultimate lbs. (kN)	Std. Dev. lbs. (kN)	Allow. lbs. (kN)
5/8 (15.9)	5/8	5 (127)	13,420 (59.7)	1,273 (5.7)	6,710 (29.8)
3/4 (19.1)	3/4	5 (127)	15,180 (67.5)	968 (4.3)	7,590 (33.8)

1. The allowable loads are based on a safety factor of 2.0 for tilt-up wall braces.
2. Anchor must be installed into a concrete floor slab, footing, or deadman with sufficient area, weight, and strength to resist the anchorage load.
3. Testing was performed using a Meadow-Burke brace shoe.
4. Titen HD has been qualified for temporary outdoor use of up to 90 days through testing for this application.

Tension and Shear Loads in Lightweight Concrete over Metal Deck



Size in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical Spacing Dist. in. (mm)	Install in Concrete				Install through Metal Deck			
					Tension Load		Shear Load		Tension Load		Shear Load	
					f'c >= 3000 psi (20.7 Mpa) Lightweight Concrete	f'c >= 3000 psi (20.7 Mpa) Lightweight Concrete	f'c >= 3000 psi (20.7 Mpa) Lightweight Concrete	f'c >= 3000 psi (20.7 Mpa) Lightweight Concrete	f'c >= 3000 psi (20.7 Mpa) Lightweight Concrete	f'c >= 3000 psi (20.7 Mpa) Lightweight Concrete	f'c >= 3000 psi (20.7 Mpa) Lightweight Concrete	f'c >= 3000 psi (20.7 Mpa) Lightweight Concrete
Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	
3/8 (9.5)	3/8	2 3/4 (70)	6 (152)	6 (152)	2,560 (11.4)	640 (2.8)	4,240 (18.9)	1,060 (4.7)	•	•	•	•
		3 (76)			•	•	•	•	5,420 (24.1)	1,355 (6.0)	4,100 (18.2)	1,025 (4.6)
1/2 (12.7)	1/2	2 3/4 (70)	8 (203)	8 (203)	3,040 (13.5)	760 (3.4)	6,380 (28.4)	1,595 (7.1)	•	•	•	•
		4 (102)			•	•	•	•	7,020 (31.2)	1,755 (7.8)	6,840 (30.4)	1,710 (7.6)
5/8 (15.9)	5/8	2 3/4 (70)	10 (254)	10 (254)	3,100 (13.8)	775 (3.4)	6,380 (28.4)	1,595 (7.1)	•	•	•	•
		5 (127)			•	•	•	•	8,940 (39.8)	2,235 (9.9)	10,700 (47.6)	2,675 (11.9)

1. The allowable loads listed are based on a safety factor of 4.0.
2. Allowable tension loads for anchors installed in the concrete side may be increased 33 1/3% for short-term loading due to wind or seismic forces where permitted by code. Allowable shear loads for anchors installed through the metal deck side shall not be increased for wind or seismic forces.
3. Allowable loads for anchors installed in the lower flute of the steel deck are for flutes with a trapezoidal profile with a depth of 3 inches, and a width varying from 4 1/2 inches at the bottom to 7 1/2 inches at the top. The spacing of the flutes is 12 inches. The metal deck must be minimum 20-gage with a minimum yield strength of 38 ksi and minimum ultimate strength of 45 ksi.
4. Anchors may be installed off-center in the lower flute (up to 1 1/2" from the edge of the lower flute) without a load reduction.
5. 100% of the allowable load is permitted at critical edge distance and critical spacing. Testing at smaller edge distances and spacings has not been performed.

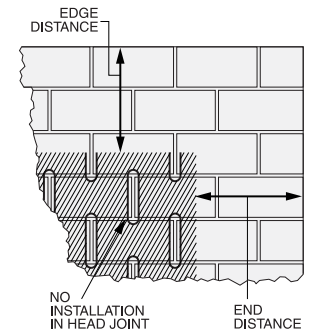
Tension and Shear Loads in 8-inch Lightweight, Medium-Weight and Normal-Weight Grout Filled CMU



Size in. (mm)	Drill Bit Dia. in.	Min. Embed. Depth in. (mm)	Critical Edge Dist. in. (mm)	Critical End Dist. in. (mm)	Critical Spacing Dist. in. (mm)	Values for 8-inch Light, Medium or Normal Weight Grout Filled CMU			
						Tension Load		Shear Load	
						Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)
Anchor Installed in the Face of the CMU Wall (See Figure 1)									
3/8 (9.5)	3/8	2 3/4 (70)	12 (305)	12 (305)	6 (152)	2,390 (10.6)	600 (2.7)	4,340 (19.3)	1,085 (4.8)
1/2 (12.7)	1/2	3 1/2 (89)	12 (305)	12 (305)	8 (203)	3,440 (15.3)	860 (3.8)	6,920 (30.8)	1,730 (7.7)
5/8 (15.9)	5/8	4 1/2 (114)	12 (305)	12 (305)	10 (254)	5,300 (23.6)	1,325 (5.9)	10,420 (46.4)	2,605 (11.6)
3/4 (19.1)	3/4	5 1/2 (140)	12 (305)	12 (305)	12 (305)	7,990 (35.5)	2,000 (8.9)	15,000 (66.7)	3,750 (16.7)

*See page 5 for an explanation of the load table icons

Figure 1



Install minimum 1 1/4" from vertical head joints and T joints

- The tabulated allowable loads are based on a safety factor of 4.0 for installations under the UBC. For installations under the IBC and IRC, use a safety factor of 5.0 (multiply the tabulated allowable loads by 0.80).
- Values for 8-inch wide CMU Grade N, Type II, lightweight, medium-weight and normal weight concrete masonry units conforming to UBC Standard 21-4 or ASTM C90.
- The masonry units must be fully grouted with grout complying with UBC Section 2103.4 or IBC Section 2103.10.
- Mortar is prepared in accordance with UBC Section 2103.3 and UBC Standard 21-15, or IBC Section 2103.7.
- The minimum specified compressive strength of masonry, f'm at 28 days is 1,500 psi.
- Embedment depth is measured from the outside face of the concrete masonry unit.
- Allowable loads may be increased 33 1/3% for short-term loading due to wind or seismic forces where permitted by code.
- Grout filled CMU wall design must satisfy applicable design standards and be capable of withstanding applied loads.
- Refer to allowable load adjustment factors for spacing and edge distance on page 110.

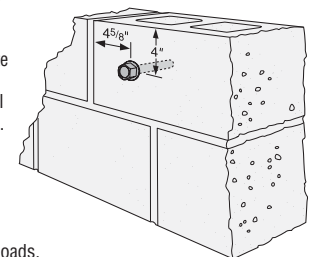
Tension and Shear Loads in 8-inch Lightweight, Medium-Weight and Normal-Weight Hollow CMU



Size in. (mm)	Drill Bit Dia. in.	Embed. Depth ⁴ in. (mm)	Min. Edge Dist. in. (mm)	Min. End Dist. in. (mm)	8-inch Hollow CMU Loads Based on CMU Strength			
					Tension Load		Shear Loads	
					Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)
Anchor Installed in Face Shell (See Figure 2)								
3/8 (9.5)	3/8	1 3/4 (44)	4 (102)	4 5/8 (117)	720 (3.2)	180 (1.0)	1,240 (5.5)	310 (1.4)
1/2 (12.7)	1/2	1 3/4 (44)	4 (102)	4 5/8 (117)	760 (3.4)	190 (1.1)	1,240 (5.5)	310 (1.4)
5/8 (15.9)	5/8	1 3/4 (44)	4 (102)	4 5/8 (117)	800 (3.6)	200 (1.2)	1,240 (5.5)	310 (1.4)
3/4 (19.1)	3/4	1 3/4 (44)	4 (102)	4 5/8 (117)	880 (3.9)	220 (1.2)	1,240 (5.5)	310 (1.4)

- The tabulated allowable loads are based on a safety factor of 4.0 for installations under the UBC. For installations under the IBC and IRC, use a safety factor of 5.0 (multiply the tabulated allowable loads by 0.80).
- Values for 8-inch wide CMU Grade N, Type II, lightweight, medium-weight and normal weight concrete masonry units conforming to UBC Standard 21-4 or ASTM C90.
- The minimum specified compressive strength of masonry, f'm at 28 days is 1,500 psi.
- Embedment depth is measured from the outside face of the concrete masonry unit and is based on the anchor being embedded an additional 1/2 inch through 1 1/4" thick face shell.
- Allowable loads may not be increased for short-term loading due to wind or seismic forces. CMU wall design must satisfy applicable design standards and be capable of withstanding applied loads.

Figure 2

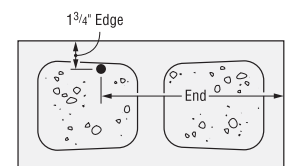


Tension and Shear Loads in 8" Wide Lightweight, Medium-Weight and Normal-Weight Grout Filled CMU Stem Wall



Size in. (mm)	Drill Bit Dia. in.	Embed. Depth in. (mm)	Min. Edge Dist. in. (mm)	Min. End Dist. in. (mm)	Critical Spacing Dist. in. (mm)	8-inch Grout Filled CMU Allowable Loads Based on CMU Strength					
						Tension		Shear Perp. to Edge		Shear Parallel to Edge	
						Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)	Ultimate lbs. (kN)	Allowable lbs. (kN)
Anchor Installed in Cell Opening or Web (Top of Wall) (See Figure 3)											
1/2 (12.7)	1/2	4 1/2 (114)	1 3/4 (44.5)	8 (203)	8 (203)	2,860 (12.7)	715 (3.2)	800 (3.6)	200 (0.9)	2,920 (13.0)	730 (3.2)
5/8 (15.9)	5/8	4 1/2 (114)	1 3/4 (44.5)	10 (254)	10 (254)	2,860 (12.7)	715 (3.2)	800 (3.6)	200 (0.9)	3,380 (15.0)	845 (3.8)

Figure 3



Anchor installed in top of wall

- The tabulated allowable loads are based on a safety factor of 4.0 for installations under the UBC. For installations under the IBC and IRC, use a safety factor of 5.0 (multiply the tabulated allowable loads by 0.80).
- Values are for 8-inch wide CMU, Grade N, Type II, lightweight, medium-weight, and normal-weight concrete masonry units conforming to UBC Standard 21-4 or ASTM C90.
- The masonry units must be fully grouted with grout complying with UBC Section 2103.4 or IBC section 2103.7.
- The minimum specified compressive strength of masonry, f'm at 28 days is 1,500 psi.
- Allowable loads may be increased 33 1/3% for short-term loading due to wind or seismic forces where permitted by code.
- Grout filled CMU wall design must satisfy applicable design standards and be capable of withstanding applied design loads.
- Loads are based on anchor installed in either the web or grout-filled cell opening in the top of wall.